COMMUNITY PARTICIPATION IN HEALTH SYSTEM STRENGTHENING: CO-PRODUCTION OF LOCAL EVIDENCE TO INFLUENCE ACTION FOR HEALTH IMPROVEMENT IN RURAL SOUTH AFRICA

Jennifer Hove

Original published work submitted to the Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, in fulfilment of the requirements for the degree of PhD in Public Health

Johannesburg, 31 March 2023

SUPERVISORS

Professor Kathleen Kahn, MRC/Wits Rural Public Health and Health Transitions Research Unit (Agincourt), School of Public Health, University of the Witwatersrand, South Africa

Dr Rhian Twine, MRC/Wits Rural Public Health and Health Transitions Research Unit (Agincourt), School of Public Health, University of the Witwatersrand, South Africa

Dr Lucia D'Ambruoso, Aberdeen Centre for Health Data Science, Institute of Applied Health Sciences, School of Medicine, Medical Sciences and Nutrition, University of Aberdeen, SCOTLAND, UK

DECLARATION

Student's contribution to article(s) and agreement of co-author(s)

I, Jennifer Hove, student number 511695 declare that this Thesis/Dissertation/Research Report is my own work and that I contributed adequately towards research findings published in the article(s) stated below which are included in my Thesis/Dissertation/Research Report.

Signature of Student  **Date** 02 Feb 2023

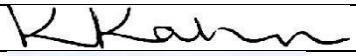
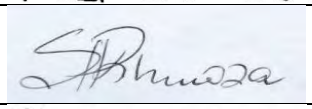
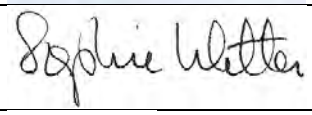
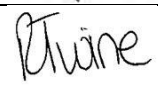
Name of Primary Supervisor Prof Kathleen Kahn

Signature of Primary Supervisor  **Date** 17 March 2023

Agreement by co-authors: By signing this declaration, the co-authors listed below agree to the use of the article(s) by the student as part of his/her Thesis/Dissertation/Research Report. In cases where the student is not the 1st author of a published article, the primary supervisor must explain (under comments) why the student is entitled to use the paper for his/her degree purposes.

Article 1: 'Water is life' 'developing community participation for clean water in rural South Africa. BMJ Glob Heal. 2019; 4:1–13. Available from doi:10.1136/ bmjgh-2018-001377

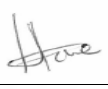
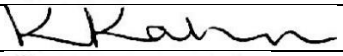
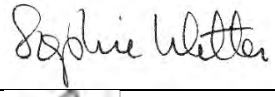
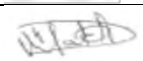
Authors	Name	Signature	Date
1st author	Jennifer Hove		1 Feb 2023
2nd author	Lucia D'Ämbruoso		5 Feb 2023
3rd author	Denny Mabetha		2 Feb 2023

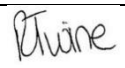
4th author	Maria van der Merwe		9 Feb 2023
5th author	Peter Byass	Deceased	
6th author	Kathleen Kahn		17 Mar 2023
7th author	Sonto Khosa		27 Feb 2023
8th author	Sophie Witter		8 Feb 2023
9th author	Rhian Twine		7 Feb 2023

Comments by primary supervisor:

The candidate played a significant role in the preparation and implementation of fieldwork, data collection, and data storage in all eight workshops in the first phase which make up data for this paper. She also managed data storage, performed quality checks of all transcripts, as well as data analysis. The candidate wrote the first draft of the manuscript, finalised the paper with inputs from co-authors, responded to reviewers and made necessary adaptations to the paper.

Article 2: Lessons from community participation in primary health care and water resource governance in South Africa: a narrative review. Global Health Action. 2021;14: 1-17 Available from: https://doi.org/10.1080/16549716.2021.2004730.

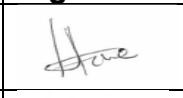
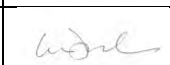
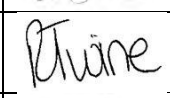
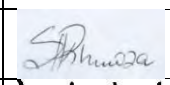
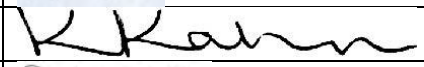
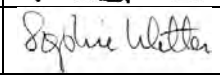
Authors	Name	Signature	Date
1st author	Jennifer Hove		01 Feb 2023
2nd author	Lucia D'Ambruoso		05 Feb 2023
3rd author	Kathleen Kahn		17 Mar 2023
4th author	Sophie Witter		8 Feb 2023
5th author	Maria van der Merwe		9 Feb 2023
6th author	Denny Mabetha		02 Feb 2023
7th author	Kingsley Tembo		08 Feb 2023

8th author	Rhian Twine		07 Feb 2023

Comments by primary supervisor:

Candidate conducted the literature review on community participation in health and water governance and performed data analysis. She wrote the first draft of the manuscript, finalised the paper based including co-author comments, managed the process of publication, and responded to reviewer comments.

Article 3: Developing stakeholder participation to address lack of safe water as a community health concern in a rural province in South Africa. Global Health Action. 2021;14: 1-13 Available from: https://doi.org/10.1080/16549716.2021.1973715.

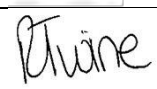
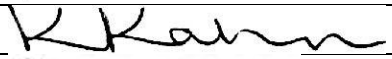
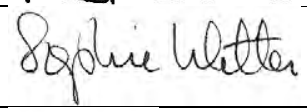
Authors	Name	Signature	Date
1st author	Jennifer Hove		01 Feb 2023
2nd author	Lucia D' Ambruoso		05 Feb 2023
3rd author	Rhian Twine		07 Feb 2023
4th author	Denny Mabetha		02 Feb 2023
5th author	Maria van der Merwe		09 Feb 2023
6th author	Ishmael Mtungwa		10 Feb 2023
7th author	Sonto Khoza		27 Feb 2023
8th author	Kathleen Kahn		17 Mar 2023
9th author	Sophie Witter		8 Feb 2023

Comments by primary supervisor:

The candidate worked collaboratively with LD, KK, RT, DM, MD to plan the workshops and design workshop guides. With the assistance of a trained fieldworker, and co-authors, the candidate collected data. She then performed data analysis with inputs from co-authors. The candidate took the lead in writing the first

draft of the manuscript and subsequently edited all subsequent drafts including revisions following reviews from the journal.

Article 4: Participatory action research to address lack of safe water, a community stakeholder nominated health priority in rural South Africa. PLoS ONE 18 .2023; 7:1-23 https://doi.org/10.1371/journal.pone.0288524

Authors	Name	Signature	Date
1st author	Jennifer Hove		01 Feb 2023
2nd author	Denny Mabetha		02 Feb 2023
3rd author	Maria van der Merwe		09 Feb 2023
4th author	Rhian Twine		07 Feb 2023
5th author	Kathleen Kahn		17 Mar 2023
6th author	Sophie Witter		08 Feb 2023
7th author	Lucia D' Ambruoso		05 Feb 2023

Comments by primary supervisor:

Candidate collaborated with co-authors to collect data and conducted data analysis with their support. She wrote the first draft of the manuscript and revised all subsequent drafts based on co-author input. She will now revise the manuscript based on reviewer comments from PLOS ONE and resubmit by the deadline of 1 May 2023.

ABSTRACT

Background

Participation is increasingly seen as a fundamental right in open and democratic societies. In many African countries, it serves as a means to decolonise and a way to fight against the oppression and discrimination of marginalised populations. Despite global evidence indicating that participation can lead to improved health outcomes and a more equitable health system, there is lack of information and consensus on how to implement such participation effectively. To address this issue, we used participatory action research (PAR) to elicit local knowledge on health priorities and develop community evidence for local policy and planning in a rural South African community. We then engaged multisectoral stakeholders to address the issue of unsafe water as a community-nominated health priority and facilitated connections between service users and providers to generate and act on research evidence. We explored participants' perspectives on the process involved in the collective implementation of the health-related local action plan. We also conducted a narrative literature review to gain a better understanding of the forms, extent, and dynamics of community participation in health and water governance structures in South Africa.

Methods

This PhD was embedded in the wider Verbal Autopsy with Participatory Action Research (VAPAR) programme which was conducted over 5 years in the Medical Research Council / Wits University Rural Public Health and Health Transitions Research Unit (Agincourt) from 2017-2022. This study employed participatory action research (PAR) methods, and the data collection for this PhD was carried out from August 2017- to April 2019. We engaged community members, the Department of Health, other government departments and non-governmental organisations (NGOs) in a non-linear stepwise process to collaboratively produce local evidence, interpret the findings, and develop action plans to address the lack of water, which had been identified as a priority health concern by the community. A series of participatory workshops were held, where stakeholders worked collaboratively as co-researchers

to develop shared understanding of the problem and develop recommendations to address it. The process involved fostering consensus on the problem, initiating constructive dialogue, and mapping existing planning and policy landscapes in an inclusive learning environment.

Results

Community stakeholders identified lack of safe water as a local priority public health issue, and collectively generated evidence on causes, contributors as well as the health and social impacts of the issue. This evidence was then corroborated by government and NGO stakeholders. Working together, stakeholders developed a local action plan through consensus and feasibility appraisal. The action plan included commitments to individual and community behavioural change and reorganisation of existing services and was developed in consideration of current policies and strategies. Following the process, stakeholders engaged in a critical and collective reflection. The greatest benefit identified was the creation of safe spaces for dialogue, which facilitated mutual understanding, learning by doing and insights into the functioning of other sectors.

Discussion and conclusion

The participatory process focused on improving a key determinant of health of neglected communities through a collaborative and empowering approach. The approach allowed for deeper understanding of the root causes and impacts of lack of safe water and the development of culturally appropriate relevant solutions. Through the process, community members were empowered to become active agents in their health and wellbeing. Findings from this study demonstrated the importance of engaging marginalised communities in research to ensure that their voices and experiences were heard and that interventions become tailored to their unique needs. PAR helped with connecting communities with service providers, creating a platform for learning, building trust and collaborative relationships despite the action items being only partially achieved. By prioritising the needs and perspectives of communities, community participation in health can help to address health inequity and ensure that health care is accessible, culturally appropriate, and relevant for all.

DEDICATION

To my family, friends, and mentors.

I dedicate this thesis to you with immense gratitude and appreciation for your unwavering support throughout this challenging yet rewarding journey. Your encouragement, guidance, and inspiration have been instrumental in helping me reach this milestone.

I am grateful to my family, who has always been my source of strength, love, and motivation. Their unconditional support and understanding have sustained me through the ups and downs of this journey.

I would like to express my deepest appreciation to my mentors and advisors for their invaluable guidance, encouragement, and support. Their mentorship has shaped me both professionally and personally, and I am grateful for the opportunity to have worked under their supervision.

I am thankful to my friends, who have been my pillars of support, providing comfort and solace during moments of despair and sharing my joy during moments of triumph.

I also dedicate this thesis to all individuals who have participated in my research, whose contributions have made this work possible.

Finally, in memory of Peter Byass, your legacy will live on through your work, expertise, and dedication. I will always remember you as an outstanding scientist and mentor.

This thesis is a testament to the collective effort, hard work, and determination of all those who had supported and encouraged me. Thank you for being part of my journey.

FOREWORD

It is with great pleasure that I present to you my PhD thesis. This work represents the culmination of years of research and study, and I am honoured to share it with you.

Throughout this thesis, I have endeavoured to explore and contribute to the field of rural health, with a particular focus on community participation in health. My research has been guided by a deep passion for understanding the forms, processes, contexts, and mechanisms of community participation in health, and have been fortunate enough to collaborate with many skilled and expert individuals within the Agincourt Health and socio-Demographic Surveillance System Site and along the way.

As you read through these pages, I hope that you will gain greater appreciation for the complexity and importance of community participation in decision making. I believe that the insights and findings presented here will make a valuable contribution to the ongoing conversation in the field and look forward to seeing how they may be built upon and expanded in the future.

I would like to express my sincere gratitude to my supervisors, advisors and mentors for their guidance and support throughout this process. Their patience, expertise and encouragement have been instrumental in helping me to bring this work to fruition.

Finally, I would like to thank my family for their unwavering love and support. Without their prayers, encouragement and belief in me, this achievement would not have been possible.

Thank you for taking time to read this thesis, and I hope that it will inspire further exploration and discovery in the field of community participation and participatory action research.

ACKNOWLEDGEMENTS

I would like to express my sincere gratitude to the study participants in my research. Their valuable contribution has been instrumental in shaping my understanding of rural health and has provided critical insights that have helped to further our knowledge in this field. Without their participation, this research would not have been possible. Their willingness to share their time, knowledge and experiences have been invaluable and greatly appreciated.

I would also like to extend my gratitude to the MRC/Wits-Agincourt staff for their unwavering support throughout the research process. In addition, VAPAR team's dedication and commitment to excellence have been invaluable in ensuring the success of my study. Thank for your contributions, and I am grateful for the opportunity to collaborate with you.

This study was funded by the Joint Health Systems Research Initiative from Department for International Development/MRC/Welcome Trust/Economic and Social Research Council (MR/N005597/1 and MR/P014844/1). This work was nested within the MRC/Wits Rural Public Health and Health Transitions Research Unit and Agincourt Health and Socio-Demographic Surveillance System, a node of the South African Population Research Infrastructure Network (SAPRIN), supported by the Department of Science and Innovation, the University of the Witwatersrand, and the Medical Research Council, South Africa, and previously the Wellcome Trust, UK (grants 058893/Z/99/A; 069683/Z/02/Z; 085477/Z/08/Z; 085477/B/08/Z).

LIST OF FIGURES

Figure 1.1 Conceptual framework adapted from Alberts et al.2021 [20] pg.3..... 5

Figure 2.1 The ladder of citizen participation developed by Arnstein [39] p.217 12

Figure 3.1 Map of Agincourt Health and Sociodemographic Surveillance System Study Area [73]. 24
Figure 3.2 The iterative process of participatory action research [34] p.13 27
Figure 3.3 VAPAR cycles, the blue arrow highlights C1, the focus of this study [81] .....**Error! Bookmark not defined.**
Figure 3.4 Data collection process in participatory learning and action cycle adapted from the VAPAR programme [62,81].....**Error! Bookmark not defined.**
Figure 3.5 A mobile tanker supplying water due to areas experiencing frequent water shortages [90] 45

Figure 4.1 Thematic framework..... 48
Figure 4.2 Process photo; community stakeholders selecting priority topic from the list..... 49
Figure 4.3 Visual evidence; due to the lack of running water in communal standpipes, women and children were forced to do their laundry by the river side on rocks and wash dishes. Washing clothes by the river eliminated the need to carry water back to the household [106]. (Photo taken by participant)..... 50
Figure 4.4 Community member fetching dirty water at the river for household use. (Photo taken by community participant) 51
Figure 4.5 Problem tree developed by community stakeholders to understand and explore relationships between causes and effects of lack of water in Agincourt HDSS 52
Figure 4.6 Visual evidence; empty water tank in Agincourt HDSS area (photo taken by community participant). 55
Figure 4.7 Venn diagram prepared by community stakeholders showing level of importance of actors and connection to the community. 57
Figure 4.8 Process photo; community stakeholder presenting a Venn diagram collectively produced to the group during workshop deliberations. 58
Figure 4.9 Literature Search flow chart, Hove et al.2022 [109] 61
Figure 4.10 Participation in health and water governance..... 62
Figure 4.11 Map showing the locations of merged water governance bodies included in this study, Faysse N, et al 2004, Meissner R, et al 2016 [132,133]. 69

Figure 5.1 Factors that affect participation in a participatory action research process, adapted from Arnstein 1969 [39] 95

LIST OF TABLES

Table 1.1 Community participation: Key themes covered by the PhD and related papers. 7

Table 2.1 A typology of interest 13

Table 3.1 Composition of discussion groups in all three villages A, B and C 31
Table 3.2 Composition of discussion group in Village A that nominated water as a priority topic 32
Table 3.3 Composition of workshop discussion groups in Cycle one, step 1-2. . **Error! Bookmark not defined.**
Table 3.4 Data collection process and tools ..... **Error! Bookmark not defined.**

Table 4.1 Health committees per province, and their functions [95]. **Error! Bookmark not defined.**
Table 4.2 Number of cases included per water governance body (CMA WUA/IBs and CMF) ..... **Error! Bookmark not defined.**
Table 4.3 Progress towards local action plan 77

KEYWORDS

Collaboration
Community participation
Community priority
Co-production
Empowerment
Institutionalisation
Invented spaces
Invited spaces
Local action plan
Mutual understanding
Participation Spaces
Participatory Action Research
Photovoice
Shared learning
Water governance

ABREVIATIONS

ART: Antiretroviral therapy
BBR: Bushbuckridge
CMAs: Catchment Management Agency
CMFs: Catchment Management Forum
COVID:19 Corona Virus Disease of 2019
CVD: Cardio-vascular diseases
CHW: Community Health Worker
DoH: Department of Health
DSD: Department Social Development
DWS: Department of Water and Sanitation
EHPs: Environmental Health Practitioners
EHS: Environmental Health Services
FHS: Family Health Strategy
HAST HIV/Aids: Sexually Transmitted Infections and TB
HDSS: Health and Demographic Surveillance System
HIV: Human Immunodeficiency Virus
IB: Irrigation Board
IUCMA: Inkomati Usuthu Catchment Management Agency
LDC: Less Developed Countries
LMIC: Low- and Middle-Income Countries
MCWYH &N: Maternal child, women, and Youth Health and Nutrition
MDoH: Mpumalanga Department of Health
MHS Municipal Health Services
MRC: Medical Research Council
NCDs: Non-Communicable Diseases
NGOs: Non-Governmental Organisations
NHA: National Health Act
NHI: National Health Insurance
OTL: Outreach Team Leader
PAR: Participatory Action Research
PHC: Primary Health Care

SA: South Africa

SAPRIN: South African Population Research Infrastructure Network

SAR-COV2: Severe Acute respiratory Syndrome Coronavirus 2

SDG: Sustainable Development Goals

UNICEF: United Children's Fund

VAPAR: Verbal Autopsy and Participatory Action Research

WBPHCOTs: Ward Based Primary Heath Care Outreach Teams

WHO: World Health Organization

WUAs: Water User Associations

LIST OF PAPERS

Paper 1: Hove J, D'Ambruoso L, Mabetha D, Van Der Merwe M, Byass P, Kahn K, et al. "Water is life": Developing community participation for clean water in rural South Africa. BMJ Glob Heal. 2019;4(3):1–13. Hove J, D'Ambruoso L, Kahn K, Witter S, van der Merwe M, Mabetha D, et al.

Paper 2: Hove J, D'Ambruoso L, Kahn K, Witter S, van der Merwe M, Mabetha D, Tembo K, and Twine R. Lessons from community participation in primary health care and water resource governance in South Africa: a narrative review. Glob Health Action [Internet]. 2022;15(1). Available from: https://doi.org/10.1080/16549716.2021.2004730

Paper 3: Hove J, D'Ambruoso L, Twine R, Mabetha D, van der Merwe M, Mtungwa I, et al. Developing stakeholder participation to address lack of safe water as a community health concern in a rural province in South Africa. Glob Health Action [Internet]. 2021;14(1). Available from: https://doi.org/10.1080/16549716.2021.1973715

Paper 4: Hove J, Mabetha D, van der Merwe M, Twine T, Kahn K, Witter S, D'Ambruoso L. Participatory action research to address lack of safe water, a community stakeholder nominated health priority in rural South Africa. PloS One, 18(7), e0288524. Available from: https://doi.org/10.1371/journal.pone.0288524

The papers are all published under creative commons attribution licences, which permits their reproduction in this thesis.

CONTENTS

DECLARATION ii
ABSTRACT vi
DEDICATION viii
FOREWORD ix
ACKNOWLEDGEMENTS x
LIST OF FIGURES xi
LIST OF TABLES xii
KEYWORDS xiii
ABREVIATIONS xiv
CHAPTER 1: INTRODUCTION 1
1.1 Problem formulation 1
1.2 Research questions and objectives 2
1.3 Conceptual Framework 4
1.4 Thesis Structure 4
CHAPTER 2: BACKGROUND AND LITERATURE REVIEW 8
2.1 Community participation 8
2.2 Spectrum of participation 10
2.3 Participation spaces 16
2.4 Community participation in South Africa 17
2.4.1. Community oriented primary care 18
2.4.2 Community participation in primary health care 19
CHAPTER 3: SETTING AND METHODS 23
3.1 Study design 23
3.2 Study setting 23
3.3 Participatory action research 26
3.3.1 PAR distinctiveness 28
3.3.2 PAR in this study 29
3.4 Data Collection 31
3.4.1 Step1: Engage/Observe 31
3.4.2 Step 2: Analyse/Plan 35
3.4.3 Step 3: Act/Reflect 37
3.5 Narrative review 38
3.6 Data analysis and management 39
3.7 Positionality and reflexivity 41

3.8 Ethical Considerations 45
CHAPTER 4: RESULTS 47
4.1 Step 1: Engage/observe; Coproduction of Community Evidence 47
4.1.1..... Problem definition: Lack of household water supply, access, and unregulated sources 47
4.1.1.2 Perceived causes and contributors of water shortages 53
4.1.1.3 Perceived health and social impacts 54
4.1.2 Priorities for action 56
4.2 Lessons learnt from participation in health and water governance in South Africa 60
4.2.1: Community participation in health committees 63
4.2.2 Community participation in water governance 67
4.3 Step 2: Analyse and Plan: Multisectoral collaboration: 74
4.3.1 Planning, and a developing local action plan to address lack of safe water 74
4.4: Step 3: Act /reflect: Approaches to the implementation process 75
4.4.2 Community stakeholder reflections on the process 79
4.3.3 Service provider reflections 82
CHAPTER 5: DISCUSSION 84
5.1 Lack of clean water 84
5.2 Institutionalisation of community participation 88
5.3 Methodological reflections 93
5.4 Strengths and limitations 96
CHAPTER 6: CONCLUSION AND RECOMMENDATIONS 98
REFERENCES 101
APPENDICES 115
Appendix A: Workshop 1 Topic Guide ;Agreeing topics and expansion 115
Appendix B: Workshop 2 Topic Guide; understanding causes of the topic 117
Appendix C: Workshop 3; Impacts, gaps/strengths, addressing the issues 119
Appendix D: Workshop 4; Change pathways & action plan 121
Appendix E: Workshop 5; Developing shared understandings of the topic 123
Appendix F: Workshop 6: Addressing the issues 125
Appendix G: Workshop 7; Change pathways & action plan 127
Appendix H: Workshop 8; Reflect on and finalise analysis/process, next steps 129
Appendix I: Department of Health research brief 131
Appendix J: Local action plan; record of action 133
Appendix K: Search Terms 135
Appendix L: VAPAR Theory of change 136
Appendix M: Informed consent, information sheet with photo voice. 137
Appendix N: Ethics certificates 145

Appendix M: published papers 154
Paper 1 154
Paper 2 167
Paper 3 184
Paper 4 197

CHAPTER 1: INTRODUCTION

1.1 Problem formulation

Through participatory action research (PAR), this thesis sought to ascertain how the voices of disadvantaged people could influence policy and improve health service delivery in their own communities. In South Africa, the legacy of apartheid and economic deprivation has resulted in widespread disparities in health care services [1–3]. Those who are marginalised often lack a platform for their concerns to be heard. This inconspicuousness/invisibility of marginalised communities is partly due to lack of relevant data on the people excluded and low utilisation of research data by health care stakeholders. This thesis sought to understand priority health issues in a rural community and bring the voice of people into planning for action.

In post-apartheid South Africa, health policies and legislation shifted from a centralised to a decentralised district health system to promulgate community involvement in health governance [1]. This was in line with the World Health Organization (WHO) declaration of people-focused health services, which intentionally incorporates the perspectives of individuals, families, and communities in providing care [4,5]. This approach sees people as active participants, as well as beneficiaries of reliable health systems that address people's needs and preferences in humane and comprehensive ways [4,5].

There is considerable normative support for participatory processes and collaborative policy measures in many countries and contexts. These approaches are viewed as important for promoting democratic decision-making, enhancing transparency and accountability, and ensuring that policies and programmes are sensitive to the requirements and preferences of local communities [6,7]. However, despite this support, there are still significant challenges in ensuring meaningful community engagement in decision-making processes, particularly at the local level.

One of the obstacles to meaningful community participation is a lack of resources and capacity. Many communities, especially those in low and middle income or

marginalised areas, might not possess adequate resources and expertise to contribute effectively in decision-making processes [7]. This can be due to factors such as limited access to information, language barriers, or lack of formal education or training in policy analysis and advocacy [7,8]. As a result, even when opportunities for participation are provided, these communities may not be able to effectively participate. Another challenge is uneven power and influence on decision-making processes [9]. Participatory processes maybe dominated and controlled by elites and experts, shaping how knowledge is produced while failing to empower local communities, and more likely to prioritise the interests of powerful groups over those of low income or marginalised communities [10–12]. This can lead to decisions that do not reflect the needs or preferences of the broader community and can contribute to a sense of distrust over public institutions. Enhancing capacity is crucial in empowering participants to effectively influence decisions. Capacity in participation pertains to the ability of a person or members in a group to engage in the decision-making process actively and effectively [10,11]. This includes having the necessary skills, knowledge, resources, and power to effectively participate and influence outcomes [10,11]. A high level of capacity in participation can lead to more informed, equitable and inclusive decision-making.

There is a gap between knowledge produced through conventional research, and the translation of the outcomes into interventions and policies [13,14]. Collaboration among health care users, providers and researchers holds the potential to create a foundation of culturally tailored interventions or programs that can be more impactful, inclusive, and sustained. Addressing these challenges requires sustained efforts that build capacity, promote transparency and accountability, and empower marginalised communities to participate effectively in decision-making.

1.2 Research questions and objectives

The thesis reports on how communities in local health systems assessed their own health care delivery systems, identified priorities, co-produced local evidence, and developed action plans; to bring the voice of people into planning. The approach incorporated the knowledge and opinions of local people into the planning and development of local action plans to address co-identified health challenges. Based

on the current insufficient inclusion in decision making of marginalised communities, the main research question was:

> *What participatory processes of co-producing evidence through partnerships with service users/communities, service providers and researchers help to develop action to improve health in rural area of South Africa?*

In this inclusive approach, bringing different stakeholders together as equal research partners was essential in improving knowledge on local health priorities, as was connecting government stakeholders, and embodying new practices of power sharing and problem solving. Therefore, the aim of the study was:

> *To understand the process of co-producing evidence in an effort to improve health in a rural area of northeast South Africa, I explored how evidence co-produced in partnerships with service users/ community members, researchers and service providers could result in action to improve health.*

The following research objectives were formulated to answer the primary research question above and structure this study:

1. To understand how local knowledge on health priorities can be effectively produced and utilised in the development of community evidence for local policy and planning in a rural area of South Africa.

2. To explore the forms, extents, and dynamics of community participation in the planning process for health interventions addressing a community nominated priority in rural South Africa.

3. To determine the extent and nature of multisectoral stakeholders engaged to respond to the lack of water as a community nominated health priority in a rural South African setting.

4. To assess key factors involved in collective implementation of a health-related local action plan as perceived by stakeholders, and how they impact the success of the plan.

1.3 Conceptual Framework

Internationally, community participation is recognised in health reforms as important in addressing inequality and exclusion from health systems through customised solutions [15,16]. Using the conceptual framework in Figure 1.1, this thesis explored how communities in partnership with Department of Health (DoH); were engaged in designing a process of setting priorities and making decisions (level 1-Design). The framework provides a clear and concise understanding of how a participatory process was implemented and what results it was expected to achieve. The conceptual framework ensured that the research was grounded in the reality of the problem, and the context in which it existed (level 1-Design). It outlines key assumptions, causal relationships and intermediate steps that were predicted to lead to the desired outcome (level 1-Design) [17,18]. It outlines too the 'how 'and 'why' of the change that is sought and helped to guide development and implementation of the participatory process (levels 2 and 3-Inputs and Mechanisms) [17,18]. Overall, this conceptual framework provided a roadmap, documenting the participatory process; design, inputs, mechanisms, outputs, outcomes and impact of community participation and how the local action plan was developed and implemented [18,19]. In participatory processes, it is important to involve stakeholders at all stages, from problem definition, goal setting, implementation, and evaluation (levels 1-6) [17,18]. This conceptual framework was effective tool for facilitating this process, as it provides a clear and structured way of thinking about the problem and outlines steps required to address it.

1.4 Thesis Structure

In the first chapter, the research scope is introduced, with an attempt to clarify the significance of community participation, providing context, and outlining the research problems. I raise the questions that the study explores, and the extent to which participatory practices can represent a considerable shift in health care practices.

The conceptual framework developed in planning and learning about participatory process is explained in this chapter.

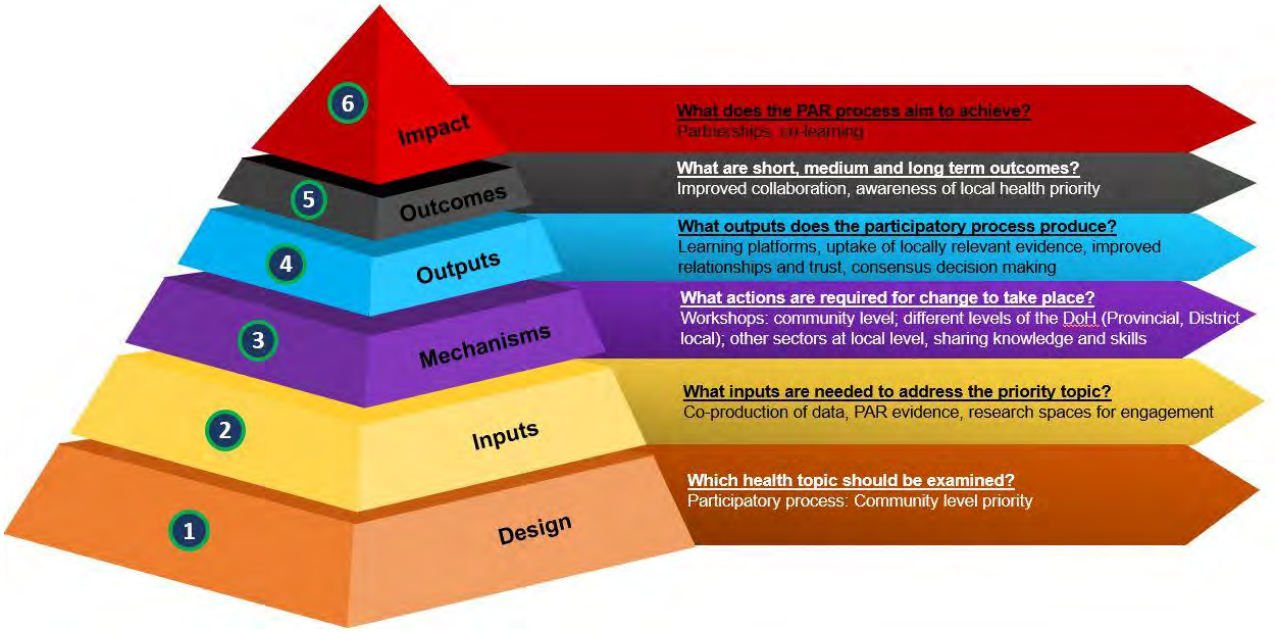


Figure 1.1 Conceptual framework adapted from Alberts et al.2021 [20] pg.3.

Chapter two presents a literature review that covers participation, theoretical underpinnings and discussion surrounding the practice. In this chapter, I also examine previous research studies on community participation, synthesising and identifying key findings.

Description of the research design, including the selection of methods, and procedures for data collection are presented in Chapter three. This chapter describes in detail how learning was achieved following a stepwise process, engaging multi-sectoral stakeholders. Learning was an important aspect in this process.

Chapter four presents the empirical findings of the participatory process on the community identified health priority - lack of safe water - and analysis of the dynamics of community participation in both health and water governance (narrative review).

Chapter five gives an interpretation of the empirical findings, and institutionalisation of participation in both sectors of health and water. This section provides insightful perspectives based on personal experiences, findings and a literature search and delves into the implications for practice, policy, and future research. The findings will be discussed according to the three main themes as indicated in Table 1.1. Chapter 6 summarises the conclusions and provides recommendations.

Table 1.1 Community participation: Key themes covered by the PhD and related papers.

Themes	**PAPERS**			
	1. Developing community participation for clean water	2. Lessons learnt from water and health participatory governance structures	3. Multisectoral collaboration to address lack of water	4.Implementation process of a local action plan

Perception of community members regarding priority health topic	Co-production of knowledge
	• PAR Methods
	  ○ Pair wise ranking
	  ○ Problem tree
	  ○ Venn Diagrams
	  ○ Action Pathway
	  ○ Photovoice
		Community participation
		• Institutionalisation of community participation
				Community led-local action plan
				• Dialogue created with local municipality
				• Learning platforms

Lessons learnt from participation in health and water governance: Policy and Practice	Levels of participation • Priority setting • Decision making	The role of community participation in health and water governance • Normative support of community participation. • Good policies in place	Claimed and invited spaces	Good policies but not implemented *Challenge*s • Lack of collective leadership • Resources: scarcity/corruption • Elite capture • Lack of training
Multisectoral collaboration: approaches to the implementation process	Provision of locally relevant data	Facilitators/enablers and barriers to participation • Lack of capacity • Lack of resources • Power imbalance • Interest • Misrepresentation	Creating partnerships • Creating dialogue • Developing relationships • Planning and advocacy • Improved engagement	Participation remains relevant • Consensus decision-making • Connecting service users and providers • Learning platforms • Support legitimacy and ownership • Trusting relationships • Empowerment • Rebalancing of power and intertest

CHAPTER 2: BACKGROUND AND LITERATURE REVIEW

This chapter gives an overview of community participation in the South African context, and how it has been progressed in different settings. Community participation has been embraced by integrating participatory processes and collaborative policy measures. The institutionalisation of community participation sought to strengthen health governance.

2.1 Community participation

South Africa (SA), being a middle-income country, is presently undergoing a rapid health transition. This is distinguished by a quadruple burden of disease which includes communicable diseases, a rise in non-communicable disease, disproportionately high levels of perinatal and maternal mortality and violence related injuries and deaths [21–23]. Multi-morbidity, poor access to appropriate health care, poor lifestyle choices and lack of self-efficacy and capacity to address health needs play crucial roles in morbidity and mortality of people who are socioeconomically disadvantaged [24].

Despite recent global health gains, the COVID-19 pandemic caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was a significant cause of morbidity and mortality globally in in 2020-2021 [25,26].There is a growing burden of disease in low- and middle-income countries (LMICs), driven both by communicable as well as non-communicable diseases (NCDs) like cardiovascular diseases and diabetes [27]. The World Health Organization (WHO) reported that NCDs now account for more than one-half of the global disease burden, and much of the burden and deaths occur in LMICs [25,26]. The growth of NCDs in LMICs is ascribed to transitions owing to ageing populations, urbanisation, and steeper declines in deaths as a result of communicable, neonatal and maternal causes [26,28–30]. The rise in chronic conditions in LMICs increases the burden of disease and has a devastating

effect on already fragile health systems as well as society at large, reversing previous health gains [30].

The South African population faces many health challenges including persistent marked health disparities experienced by most vulnerable black rural communities [1,22]. Rural communities are disproportionately at risk of lacking access to health services and experiencing worse health outcomes from preventable and treatable diseases [1]. The health and mortality gaps between groups; the rich-poor, rural-urban, black-white continue to widen. Globally, there is recognition that factors beyond the health system have an impact on health [31,32]. These challenges have prompted the global health community to rethink their approach to health and consciously involve communities in planning, decision-making, implementation of interventions, and health care programmes and services [4,33]. A community is defined as people in the same geographical location who have certain characteristics in common, in this case, health and social conditions [34].

Despite the lack of a universal definition, Alma-Ata Declaration on Primary Health Care (PHC), dating back to 1978, stressed the importance of community participation in achieving equitable and sustained improvement in health [33]. This declaration recognised the right of individuals or groups to participate in both the planning and execution of their healthcare [33]. From the Alma-Ata moving towards achieving health coverage for all, from the 2030 programme for Sustainable Development Goals (SDGs), and from the recent signing of the Astana Declaration, member states reaffirmed their commitment to promote multisectoral action, empowering local communities through participation to strengthen PHC [4].

While participation is increasingly seen as a right in open and democratic societies in many African countries, it is a means to decolonise, and a process to fight against oppression and discrimination of poor marginalised people particularly in rural areas [35]. In simple terms, community participation involves the dynamic engagement of individuals or groups of people who are affected, interested, or have the ability to influence decisions [36,37]. However, there is lack of consensus in definition of community participation, and how best it must be progressed. The term participation is used inconsistently, with other terms such as ‘involvement’, ‘mobilisation’, and

‘engagement’ being used interchangeably [5,16,35,36,38]. This lack of clarity on definition and how it should be operationalised, means ‘*it became many different things to different people’* according to Rifkin [38] p. 80. Hence, it is open to multiple interpretations and is complex to measure, report and compare outcomes of various programmes. In addition, participation’s role in improving health care remain both contested and complex. Some believe that it is key in programme planning and addressing social injustices while others disregard its value [38].

From this perspective, my focus was on the co-production process of generating evidence through a partnership with communities/ service users, service providers and researchers to enhance healthcare. For my thesis, participation involves a partnership between three categories of actors or stakeholders;(1) policy makers, planners, and service providers - government stakeholders, (2) people living in rural villages/ service users – community stakeholders and (3) researchers. In this study by stakeholders, I mean a set of actors directly involved or having influence on priority health topics identified at community level.

2.2 Spectrum of participation

Literature suggests that participation is ‘multifaceted’ [35,37,39–41]. Despite many models, frameworks and theories developed to unpack participation it remains elusive. Chambers’ work has been instrumental in shaping the philosophy behind PAR. “Putting the Last First”, he advocates for the importance of prioritising the voices and needs of marginalised and vulnerable communities in development initiatives [42,43]. Chambers emphasises the value of participatory approaches in understanding local realities and involving communities in decision making process[42] . This notion aligns with the core principles of PAR, where active participation and empowerment are paramount. The ladder of citizen participation developed by Arnstein [39] is widely recognised and frequently referenced framework (Figure 2.1). Arnstein’s [39] typology of participation is structured as a ladder with eight rungs, in ascending order from non-participation with no power to varying degrees of tokenism and ultimately citizen power. The lower rungs, categorised as non-participation, include “manipulation" and "therapy”. The next

rungs which make up tokenism comprise of “informing," "consultation," and "placation" [39]. The upper three rungs of the ladder represent increasing degrees of citizen power described as "partnership," "delegated power," and "citizen control” [39].

Non-participation refers to a type of participation where participants are regarded as objects, and powerful actors impose their own agenda, though benefits may be derived. In tokenism, input is seen as participation but with no influence to change the status quo, and programmes will not reflect the interests, the voice, and values of the citizens. According to this framework, for participation to be meaningful and effective, it requires a genuine transfer of power in the form of resources and decision-making authority, enabling citizens to address issues that impact their communities. This approach empowers citizens to act and make a difference. This raises questions around power such as, ‘what is it’, ‘what are the sources of power’? As expressed by Ganz [44], power is the capacity, or ability, or influence generated by the relationship between interest and resources to realise a goal or purpose [44]. Arnstein [39] explicitly puts power at the centre of participation, where citizens need to develop control. Without addressing power dynamics, Arnstein argued that participation remains a good concept and principle, while maintaining the status quo in reality:

> *“The idea of citizen participation is a little like eating spinach: no one is against it in principle because it is good for you. Participation of the governed in their government is, in theory, the cornerstone of democracy—a revered idea that is vigorously applauded by virtually everyone. The applause is reduced to polite handclaps, however, when this principle is advocated by the have-not blacks, Mexican Americans, Puerto Ricans, Indians, Eskimos, and whites”* [39] *p.216*

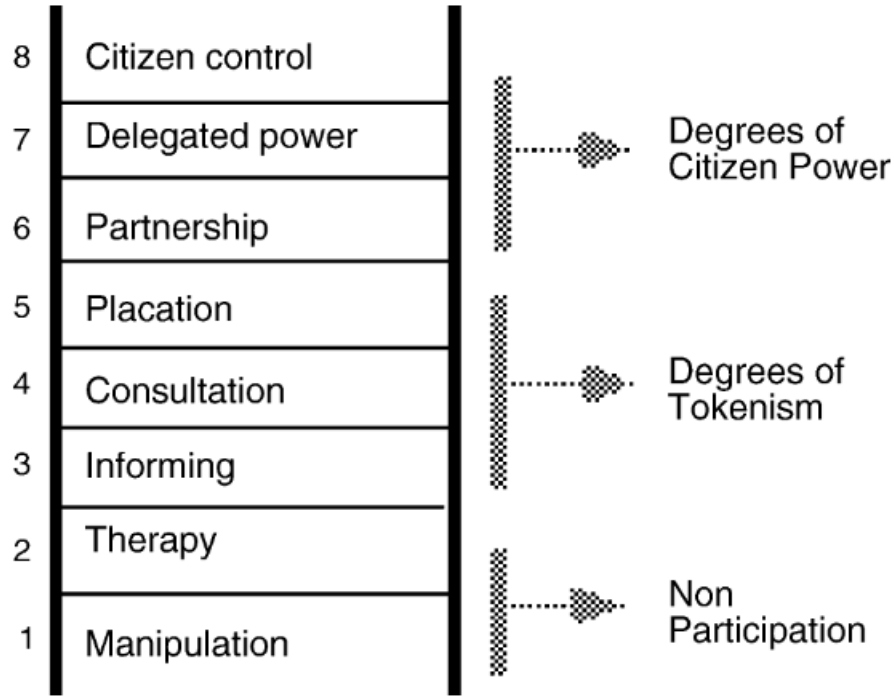


Figure 2.1 The ladder of citizen participation developed by Arnstein [39] p.217.

White [45] and Cornwall [41] build upon Arnstein's [39] model by moving beyond basic categorisation of community participation based solely on the perspective of the citizen involved. Rather, they consider the diverse interests of actors at different levels in different forms of participation (Table 2.1). White offers some insights into different functions and claims that implementing agencies and those on the receiving end may have different perceptions, of and interest in each form of participation. Even though Arnstein [39] offers a powerful influential framework, in practice, many more levels - not linear or sequential - may exist within the same intervention. Critics argue that the ladder oversimplifies the complexities of participation, and fails to account for power dynamics, and nuances within participatory processes [46,47]. According to White's framework [45], participation is dynamic-one, or more than one form of participation may be found in an intervention within a broader context.

Table 2.1 A typology of interest

Form	Top-down:What 'participation' means to the implementing agency	Bottom Up: -What 'participation 'means for those on the receiving end	Function: What 'participation' is for
Nominal	Legitimation-to show they are doing something	Inclusion-to retain some access to potential benefits	Display
Instrumental	Efficiency-to limit funders input, draw on community contribution and make projects more cost-effective	Cost-of time spent on project-related labour and other activities	As a means to achieving cost-effectiveness and local facilities
Representative	Sustainability-to avoid creating dependency	Leverage-to influence the shape the project takes and its management	To give people a voice in determining their own development
Transformative	Empowerment-to enable people to make their own decisions, work out what to do and act	Empowerment-to be able to decide and act for themselves	Both as a means and an end, a continuing dynamic

Sources: Cornwell 2008 and White 1996 [41,45]

Nominal participation occurs when implementers (more powerful actors) involve less powerful actors (communities) to endorse or legitimise the intervention, or a developmental programme or process, but which does not result in change [45]. Instrumental participation is task-oriented, where communities provide labour or skills and knowledge for the implementation of a project. For example, local people may be asked to provide labour for the construction of a school while the funders provide raw materials [45]. Participation in this scenario functions as a means to achieve the end. Instrumental participation is driven by a need for certain services or infrastructure for the beneficiaries. On the other hand, representative participation seeks to give communities a say in the decision-making and implementation of projects that meet their needs [45]. Representative participation for powerful stakeholders means the process has the potential to be sustainable and effective while for the communities, it offers space to express their own interests. Transformative participation happens when those involved acquire the skills and ability to influence decisions and actions that impact their lives through practical

involvement in the process [45]. In this form, participation is empowering to both the more and less powerful stakeholders and has the potential to mitigate health-related social inequalities [45].

Rifkin [40] has spent years in non-governmental organisations (NGOs) and universities establishing community-based health programmes, focusing on primary health care, community participation, empowerment, and health policy. In 1986, Rifkin published an article that reviewed 200 case studies, examining the lessons learned by planners from empirical community participation projects in low- and middle-income countries [40]. Rifkin drew on her research findings from these projects to inform her analysis. Five conceptions stemmed from the review, which are essential in the development of a framework, which planners could adopt to establish community participation in health programmes [40]. First, the review highlighted that due to the dynamic nature of community participation it is neither practical nor beneficial to establish a universal definition [40]. As a result, participation may mean different things to various people engaged depending on time and space. Secondly, the review recognised that sustainable community participation could only be achieved through intersectoral collaboration, not within the health sector alone [36,40]. Globally, there is recognition that health is created by many factors outside the health system, and as a result may require an integrated and holistic approach by bringing together many sectors of society to act for health [36,40].

A third lesson is that it is practically impossible for community participation to be created and initiated outside of a political context [40]. From these lessons, Rifkin recognised that the following assumptions are not quite correct with regards to participation:

> *- "Communities are homogeneous",*
> *- "Leaders act in the best interest of their people",*
> *- "Government and community workers share the same goals for community development",*
> *- "The belief that working towards social justice for the poor is in their best interest"* [40] p.244

Rifkin challenges and critiques the above assumptions, arguing that participation is about power and control [36,40]. Finally, developing a universal model for managing community participation in health-related interventions and programmes is not practical [36,38,40]. According to Rifkin, community participation is shaped by many various factors, making it difficult to duplicate a community programme from one region to another due to its contextual specificity [38,40]. Rifkin's framework introduces the concept of stakeholder participation, emphasising the need for a broad range of stakeholders to be involved in decision making. However, it is argued that while this framework recognises diverse participants, it may still not fully address power imbalances[47,48].

Complementing Arnstein, White and Rifkin are recent theories of participation by Tritter and McCallum which delve into the intricacies of patient and public involvement in healthcare decision-making, highlighting the tension between tokenistic involvement and genuine influence[48]. Their work underscores the imperative to move beyond tokenistic participation to ensure the authentic voices of marginalised groups are heard and acted upon. Burgess et al.'s contributions further enrich the discourse by exploring the complexities of public involvement in health research[49]. They stress the significance of recognising the diverse perspectives of the public and adapting participation strategies to different contexts. This research also emphasises the need to confront power differentials between researchers, policymakers, and the public.

Moreover, the incorporation of intersectionality, inspired by Kimberlé Crenshaw's work, sheds light on how intersecting dimensions of identity—such as race, gender, class, and sexuality—shape individuals' opportunities and experiences in participation [50]. Recognising and addressing these multiple axes of inequality is paramount in contemporary participation theories [46,49,50].

The evolving consideration of expertise in participation theories challenges traditional hierarchies of knowledge, arguing that expertise should extend beyond professionals to encompass the experiential knowledge of affected communities[46,49]. Lastly, the linkage of participation to health rights underscores that participation is not merely a privilege but a fundamental right [51]. This perspective emphasises the legal and

ethical obligations to ensure meaningful and equitable participation in health decision-making processes.

This doctoral dissertation used Arnstein's notions of forms and extent, as well as White and Rifkin's concepts of contexts and dynamics as frameworks through which to explore co-production of local evidence to influence action for healthcare improvement. Incorporating the three classic participation theories, namely Rifkin, White, and Arnstein, into a PhD thesis is not only a recognition of their historical significance but also a demonstration of their enduring relevance. Despite their age, these theories offer foundational insights that continue to be invaluable in contemporary discussions on participation. Their inclusion enriches the research by providing a solid theoretical framework and historical context that can enhance the understanding and analysis of current participation dynamics, making the thesis more robust and comprehensive.

2.3 Participation spaces

Participation can occur in many different 'spaces' where an opportunity is presented for people to exercise this right. In these spaces, participation has different meanings to different actors. These include 'spaces' that are created through an invitation to participate [52]. 'Invited spaces' are top-down existing or initiated spaces controlled by authority or an institution [52,53]. The form, function, and the agenda behind participation in invited spaces depends on the interests, intentions, and motives of those who initiated the participatory process [41]. Invited spaces can be created for legitimacy, or to promote certain agendas [41,54]. These 'spaces' are in many cases owned by those who initiate them, though in isolated events transformation occurs [52,53]. Further, creating spaces for dialogue is important but may not be enough to enable meaningful participation whereby power is transferred from those who initiate the process to the participants. In these spaces, the participatory process is complex, and inclusion does not necessarily mean giving people a voice [41,52]. It is practically impossible to include everyone in any participation process, and those included may not represent the interests of everyone [45]. Meanwhile, participants could take advantage of this space to advance a completely different agenda, not originally envisaged by the initiators [41].

‘Invented spaces’ are bottom-up, often referred to as claimed or created spaces, created by the people who themselves are often excluded from decision-making, to pursue shared interests and values [52]. Invented spaces are neutral, autonomous platforms with fewer power imbalances and conflicts of interests, where people mobilise themselves through social movements or informal groups (neighbours or work colleagues, women etc) coming together to challenge the status quo [52,54]. Invented spaces manifest in various ways: they operate autonomously, in terms of who participates, how they participate and how the agenda is set. In most cases, these spaces are created by less powerful actors sharing something in common. Invented spaces can emerge as a result of continuous engagement and deliberations in invited spaces, by those without exclusive control of the agenda or changing the status quo [54]. In both invited and invented spaces, degrees of participation may vary depending on who participates, why they participate, who is included, excluded or who excluded themselves and why?

2.4 Community participation in South Africa

In South Africa, involving communities in decision-making processes, programme design, and implementation of health initiatives has been recognised as a vital strategy to attain sustainable and equitable health outcomes [55]. The country’s healthcare system is characterised by disparities, constrained resources, and a high burden of diseases particularly among marginalised communities [1,2]. To tackle these obstacles, the South African government has endorsed participation to enhance access to healthcare services and reducing health inequities.

Community participation has taken many forms in health systems in South Africa, including clinic health committees, community health workers (CHWs), and community-based organisations. These measures have been successful in increasing awareness of health issues, improving health-seeking behaviour, and empowering communities to take active role in their own health.

However, challenges remain in ensuring that community participation is effective and sustainable. These include limited resources, inadequate infrastructure, and the

need for greater collaboration between government and community-based organisations. Despite these challenges, community participation remains an important approach for achieving health equity and improving health outcomes in South Africa.

2.4.1. Community oriented primary care

The international declaration, i.e., the 1978 WHO Alma Ata, recognised the importance of PHC as a fundamental approach for providing equitable health services and ensuring sustainable action [33]. One of the antecedents of the declaration was the community-oriented primary care (COPC) method, which originated in South Africa in the 1940s [56]. COPC was founded on the efforts of Sidney and Emily Kark in Pholela in South Africa [56]. In this approach, the Karks emphasised integration of services at individual, family and community levels working with a defined community, forming part of an overall community diagnosis [56,57]. During community diagnosis processes, curative, preventive, and promotive health services were provided paying attention to local social and environmental risks. Some of the problems addressed by the Karks at Pholela included malnutrition, syphilis, and infant mortality, among others, through community led interventions [56,58]. Community participation was a central part of COPC intervention programs.

The remarkable efforts of Sidney and Emily Kark at the Pholela Health Centre was inspirational and prompted the South African government to plan the establishment of more than 200 community health centres similar to Pholela [55,59]. In 1940, the Institute of Family and Community Health was established at Natal University currently known as the University of KwaZulu-Natal (UKZN) offering academic training and research support for establishment of community health centres throughout the country [55]. However, political changes in South Africa and the introduction of apartheid policies interfered with the establishment of new community health centres, and the 49 already created were forced to close [55,56,59]. Despite establishing the COPC approach, the Karks and some of their partners left the country in 1958 [56]. From the 1960s to the late apartheid era, opportunities for

community participation were limited, and the healthcare system was highly centralised.

2.4.2 Community participation in primary health care

Following the end of apartheid, community participation re-gained prominence, and various legislation and policies were introduced to foster participation at the local level. After 1994, with the advent of the new democratic government, South Africa shifted from a centralised clinical healthcare system to a decentralised district health system, committing to the principles of Alma -Ata declaration [60]. PHC was an important element to attain these goals. In the 1997 White Paper on the healthcare transformation system, community participation was embraced as fundamental to PHC. This aimed to address persistent health disparities and create a more adaptable healthcare system that catered to the specific needs of local communities [61]. Additionally, the White Paper called for the implementation of governance structures that would serve as a means of connecting communities with healthcare facilities, with the aim of promoting equitable access to health care [61].

The National Health Act 61 of 2003 facilitated the provision of a framework for the formation of Health Committees (HC), hospital boards and district health councils as means of community participation at facility level [62]. Health committees' roles were designed to foster accountability and responsiveness of the PHC facility. These committees were expected to act as mediators between the PHC facility and the community it served. Institutionalisation of community participation was left to the provincial health departments through provincial legislation, as required in the NHA 61 of 2003 to establish and describe the functions, roles, and responsibilities of HCs [62]. Each clinic or community health centre was required to have a HC. HC members were composed of representatives from the community, a local ward councillor, and the head of the facility [62]. The general roles and functions of HCs were:

- Overseeing adherence to and the and provision of PHC packages,
- Identifying health issues within the community,
- Monitoring, assessing, and reporting the degree to which the PHC facility meets health indicators and goals,

- Keeping track of how the PHC facility handles patient complaints.
- Ensuring that management implements decisions made during committee meetings,
- Developing partnerships with other community stakeholders,
- Raising funds for PHC activities and managing the funds,
- Advocating for the use of PHC facilities as the initial point of healthcare entry,
- Providing spaces for patient and community grievances, engaging in social mobilisation, and building relationships with staff through visibility.

In 2010, the South African government introduced a service delivery strategy, *PHC Re-engineering*, to transform the health system. This approach further devolved governance power and authority to the periphery, as considerable district health system revival was needed to achieve equitable access and universal health coverage (UHC), key to the pending single payer National Health Insurance (NHI) [63,64]. The current two-tier system comprises a public sector, state funded, that provides free or low-cost health services and a private sector, funded mainly through individual contributions to medical schemes or health insurance. The NHI system seeks to pool funds from different sources, including taxpayers, to finance health services that are accessible, affordable and of good quality.

The Kark's community oriented primary health care approach, the 1978 Alma-Ata declaration, and the Brazilian model of PHC influenced the re-engineering programme. The Brazilian model is a family health strategy (FHS) which was introduced in the 1990s, and one of most successful in the world [65]. The FHS is a community-based approach that emphasises prevention, promotion, and management of chronic diseases among other things [65]. The Brazilian model of PHC places a strong emphasis on community participation and social accountability. In South Africa, the Re-engineering of PHC is characterised by integration of curative, therapeutic and preventive care, and health promotion by using community Ward Based Primary Health Care Outreach Teams (WBPHCOTs). The composition of the WBPHCOT comprises of one outreach team leader (OTL) who is an enrolled professional nurse, one environmental health office, one health promotion practitioner, one data capturer, and six to ten community health workers (CHWs), to

provide comprehensive people-centred health care within a defined community [60,66].

Revitalising PHC is central to the establishment of a properly functioning district health system. The main purpose of the WBPHCOTs is to enhance access to PHC services in South Africa through a holistic approach to health and wellbeing [63,67,68]. Health was supposed to be provided in partnership by a multidisciplinary team through a range of accessible and equitable PHC services in collaboration with local communities [63]. Each WBPHCOT was supposed to cover approximately 6000 people or 1500 households [60]. Therefore, each community health worker (CHW) was supposed to have 250 households in an urban, 169 in a rural and 96 in a deep rural area [60]. A professional nurse team leader was to provide supervision and support to the CHWs so they could perform the following distinct roles and responsibilities in the community:

- Community / household profiling and screening for further evaluation and testing.
- Recognise pregnant women, offer services during pregnancy and postnatal period.
- Health education; maternal child behaviour including breast feeding, family planning, counselling.
- Collaborating with school health teams and other CHWs in implementing screening and health promotion programs in schools and early childhood development centres.
- Follow-up and help individuals manage chronic health problems, distribution of chronic medicines, assist with adherence, and tracing defaulters.
- Support linkages of communities to health care facilities.
- Support in integrating health care at community level.

Despite policy commitment to the inclusion of community participation in health governance in South Africa, a gap remains between policy and implementation to deliver improved PHC service since the dawn of democracy in 1994. Created governance spaces to advance community participation are not functioning effectively. Institutionalisation of community participation for communities to engage

in priority setting and decision-making have not yet yielded intended results. Service delivery remains fragmented, communities' ability to participate as equal partners in health programmes within their context is limited and weak. Participation is a form of practice, and its effectiveness is underpinned by how communities are viewed and treated.

In this thesis I set out to understand the process of co-producing local evidence through partnerships with communities, service providers and researchers. The benefit of community participation in advancing health was identified years back in the Alma Ata declaration and has continued to be important. There are many potential advantages and benefits of community participation. Hence, there is need to understand the process of working collaboratively with people affected by the problem of or having interest in planning and implementation of health programmes

CHAPTER 3: SETTING AND METHODS

3.1 Study design

This study used participatory action research (PAR) methods. PAR uses both qualitative and quantitative methods to collect data, depending on the research question [34,69,70]. In this study, qualitative data collection methods were used. Data was collected in the MRC/Wits Rural Public Health and Transitions Research Unit (Agincourt) study area. PAR is a non-linear context specific process that involves collaboration between the researchers and community, in this study to address lack of water, a community nominated health issue. In this design, co-creation of the research question was promoted, and the research questions were developed through a collaborative process to ensure that the study addressed the issues and needs of the community. The community members were actively involved in every stage of the research process, from data collection, interpretation, and implementation of the developed local action plan. Empowerment of the community was prioritised through giving them a voice in the research process by valuing their perspectives, experiences, and feedback. The researchers, service providers and communities were all engaged in practical and reflective activities observing, planning, and implementing the local action plan. Mutual learning was promoted, researchers, service providers and community members learnt from each other, building a shared understanding of lack of clean water.

3.2 Study setting

The research was progressed at the Agincourt Health and Socio-Demographic Surveillance System (HDSS) in Mpumalanga province, northeast South Africa (Figure 3.1). The Agincourt HDSS, established in 1992, located in a rural area of Bushbuckridge (BBR) municipality is one of Africa's largest population-based cohorts collecting information on vital events including births, deaths, migration, and socioeconomic status [71]. The Agincourt HDSS is one of the sites that make up the South African Population Research Infrastructure Network (SAPRIN) of which it is the founding member and continues to take an important role in the network's

activities. The area is densely populated with 120,000 people in 21,500 households in 31 villages covering 450 square kilometres. Approximately, 30% of the population comprises former Mozambican refugees [71]. BBR local municipality is one of the presidential nodal points, with many service delivery challenges and inadequate access to basic services such as water, sanitation, health, and education [72]. Many households rely on pit latrines. While electricity is available, it is affordable to a minority [71].

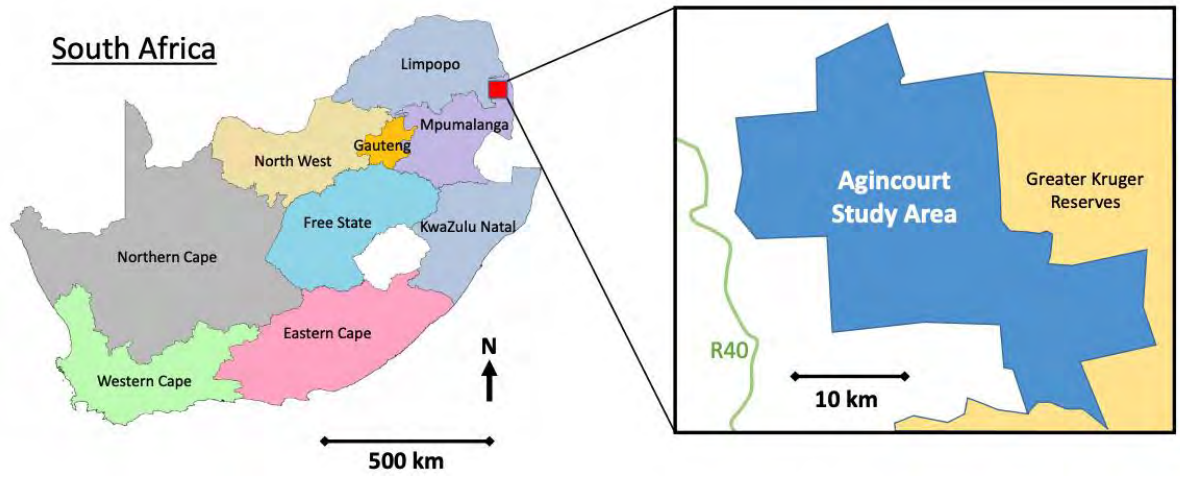


Figure 3.1 Map of Agincourt Health and Sociodemographic Surveillance System Study Area, Wariri et al.2017 [73].

Access to water in Agincourt HDSS is primarily through communal standpipes which are shared water sources located in public areas such as community centres or street corners [71]. Most households in the area rely on these standpipes for their daily water needs. However, some households have private taps or boreholes, and there have been endeavours made recently to broaden the availability of piped water and improve the quality of water sources in the area [72,74]. These efforts include the installation of new boreholes and bulk water pipelines, as well as the rehabilitation of existing water infrastructure [72,74]. In South Africa, government provides 6000 litres per household per month to poor households, mostly in rural municipalities to meet basic human needs [75]. This includes households in the Agincourt HDSS. XiTsonga is the common language spoken in the area [71]. The region is characterised by elevated levels of labour migration due to high unemployment and a restricted economic foundation with a majority of households relying on government social grants [71]. Although there has been an improvement

in the socio-economic status of households since 2001, the progress has been comparatively slower for poorer households with no income or in a lower income bracket [76,77].

Since 1994, there has been an enhancement in the delivery of health services as the national government has been advocating for decentralisation in the provision of health services [2,64]. However, lack of income or lower income leads to exclusion from access for most people in the study area. Being a middle-income economy, the landscape of care in South Africa continues to be influenced by persistent disparities across socio-economic status and socio-demographic characteristics [1]. More needs to be done to redress inequities in health care access, specifically in the rural areas. In BBR, there are three district hospitals serving the population across the whole district including the population in the AHDSS, two health centres, and seven PHC clinics serving the AHDSS population specifically.

South Africa experiences high HIV prevalence, with roughly 8.2 million individuals living with HIV in 2021 [78]. Despite that, life expectancy has improved significantly for people living with HIV due to an effective antiretroviral therapy (ART) programme. However, cardiovascular diseases (CVDs) are steadily increasing among HIV infected people [79–81]. The prevalence of multiple morbidities (hypertension, obesity, hypercholesterolaemia) among people living with HIV on ART is rising [80,81]. There is need to produce timely evidence that addresses the health needs of communities.

The study was part of a wider programme, Verbal Autopsy with Participatory Action Research (VAPAR) (www.vapar.org) with a goal to establish partnerships and strengthen and expand a knowledge base for health equity [70]. The Agincourt HDSS, a reliable public health observatory, facilitated the adoption of a process of participatory action research (PAR) for engaging various stakeholders in the health system, neighbouring government departments and NGOs as well as rural communities across different levels and sectors.

3.3 Participatory action research

PAR is a systematic enquiry approach that emphasises collaboration and creation of partnerships between researchers and local stakeholders (including communities) affected by the problem to work together, analyse the problem, and reflect for action [34,69,82]. PAR embraces an epistemology that underpins the idea that knowledge is embedded in relationships. This means that knowledge is not something that exists in isolation, or is possessed by individuals, but is something created and shared through interactions and relationships between people. In this study, knowledge was seen as a collective that was generated through dialogue, collaboration, and engagement with the community. The emphasis on relationships in PAR reflects a belief that knowledge is not neutral or objective but is shaped by social and cultural contexts.

The reflective process opens room for participants understanding of their own environment, culture, and context [69]. Fundamentally, it facilitates co-production of evidence, mutual transfer of expertise, power, and ownership between the researcher and the researched [34,83]. PAR is a bottom-up process that is increasingly seen as important in the decolonisation and decentralisation of the healthcare system processes in LMIC [69,83,84]. By embracing an epistemology that values relationships and collective knowledge creation, PAR aims to empower individuals to actively participate in the research process and to use the knowledge generated to effect positive social change. Collaborating with impoverished and vulnerable communities can facilitate learning experiences that transform individual's life paths [69,82]. By working in partnership, people's perceptions can shift, leading to a greater sense of worth and ownership of plans. This collaborative approach has the potential to significantly impact the trajectory of people's lives [69,82]. Owing to the cyclical, iterative nature of a PAR process, it has the potential to achieve longer, more authentic sustained partnerships among researchers, local stakeholders, policy makers and DoH stakeholders moving from conventional research to action (Figure 3.2) [34] .

This cyclical nature of PAR has a significant influence on its inclusive and transformative objectives as well as its commitment to social justice (Figure 3.2).

PAR allows for the involvement of wide range of stakeholders who are typically marginalised or excluded from decision making. Through the process of collaboration, and partnerships, PAR aims to ensure that diverse perspectives are heard and valued, and the knowledge generated is inclusive and relevant to the needs and experiences of all participants. The transformative objectives aim to challenge and change existing power structures and systems through ongoing reflection and adaptation, which can help to identify barriers to change and support the development of more effective strategies for social transformation. PAR is also committed to social justice, which is reflected in its emphasis on addressing systemic issues and working towards social change. By engaging in a participatory process of research and action, PAR aims to challenges the status quo and to work towards creating more equitable and just social conditions.

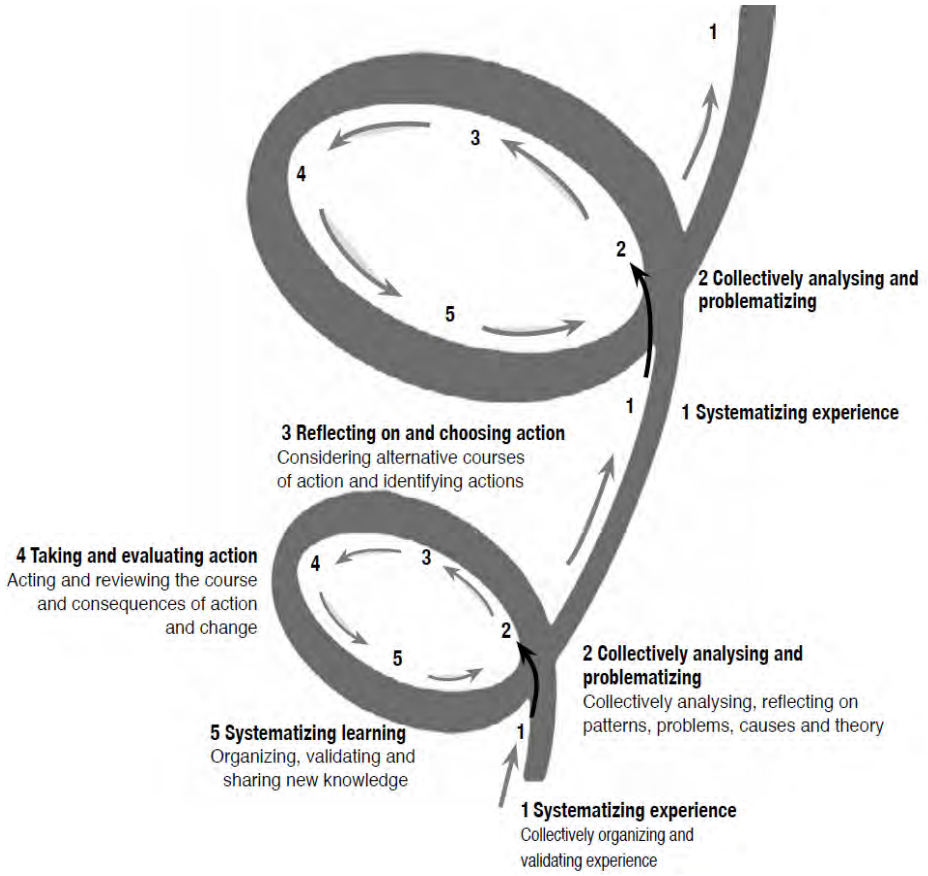


Figure 3.2 The iterative process of participatory action research, Arnstein1969 [34] p.13

It is widely acknowledged that community participation is essential in various aspects of healthcare, including policymaking and planning, monitoring of services and conducting health research. Evidence shows, as documented by Loeweson [85], that in high-, middle- and low-income settings, the use of participatory practices for health improvement have demonstrated a range of social outcomes, and a more responsive health service. PAR recognises the limitations of expert knowledge/ conventional research when confronted with complex human problems [69,83,86]. Meaningful participation leads to the sharing of information, knowledge, and skills, promoting the development of a diverse of capabilities that can enhance health outcomes, particularly in marginalised communities. Such capabilities include increased health literacy, improved leadership skills for effective facilitation, teamwork, communication, negotiation, as well as ability to engage with and evaluate health services [34,82,83,85,87].

3.3.1 PAR distinctiveness

PAR varies from conventional research in various respects. To start with, it focuses on inclusion and social action for change [86]. Secondly, it is an approach that recognises the participants or the researched as equal partners, doing research 'WITH' not 'FOR', in a joint shared process [82,88]. A fundamental premise of the PAR approach is that individuals/ communities are experts, that power is deliberately shared, and participants cease to be objects of the research as they might be in a positivist paradigm [87]. In a positivist approach, the emphasis is collecting objective data that can be used to test a hypothesis, in which participants are often seen as passive objects whose experiences and perspectives are measured and analysed by the researcher. PAR takes a different approach. Participants are seen as active agents who bring their own unique experience, expertise, and knowledge to the research process. Central to PAR is the attitude of the researcher which is key to attaining social change:

> *"Researchers need to always be working from the perspective that they may not actually understand what they think they understand*" [69] p.209

Participants are actively engaged in problem identification, study planning and designing, data collection processes, analysis, action implementation, and evaluation. Democratisation of the research process opens room for learning and development of relationships to promote change [69]. Thirdly, PAR is an empowering process that has the potential to lead people to develop increased control over their healthcare and lives through growth in various capabilities [69,73,82,83,89].

3.3.2 PAR in this study

In this study, the PAR method was initiated to enable health care users to assess health care delivery systems in their communities, identify priorities and develop action plans for positive health change through a partnership approach. The data generated were used to connect communities with health systems and other relevant stakeholders. The approach was to incorporate knowledge and opinions of the local population into planning, development, and delivery of their healthcare.

The collective local knowledge of people regarding health and illness in their own communities has the potential to make significant contributions to the understanding of social determinants of health and their implications. This PhD was embedded in the "Verbal Autopsy with Participatory Action Research (VAPAR)" programme, which develops and implements methods to incorporate the lived experiences of disadvantaged people and evaluate this as a method of informing policy and improving health service delivery from the bottom up. In the VAPAR main study, four reflective, iterative action learning cycles were conducted over an eight-year study period among service users and providers to: 1) identify and document priority issues, 2) build shared understanding of the problem, 3) jointly plan for action, 4) and implement action and monitor progress in the community and service provider context (Figure. 3.3). Each VAPAR reflective iterative action learning cycle consist of three stages: engage/observe, analyse/plan, and act/reflect**.** This PhD focused on the practicability of the PAR approach to bring change to respond to health priorities defined by the communities, during the first cycle of the four reflective iterative action learning cycles (Figure 3.4) and guided the second cycle of the main study (Figure 3.3).

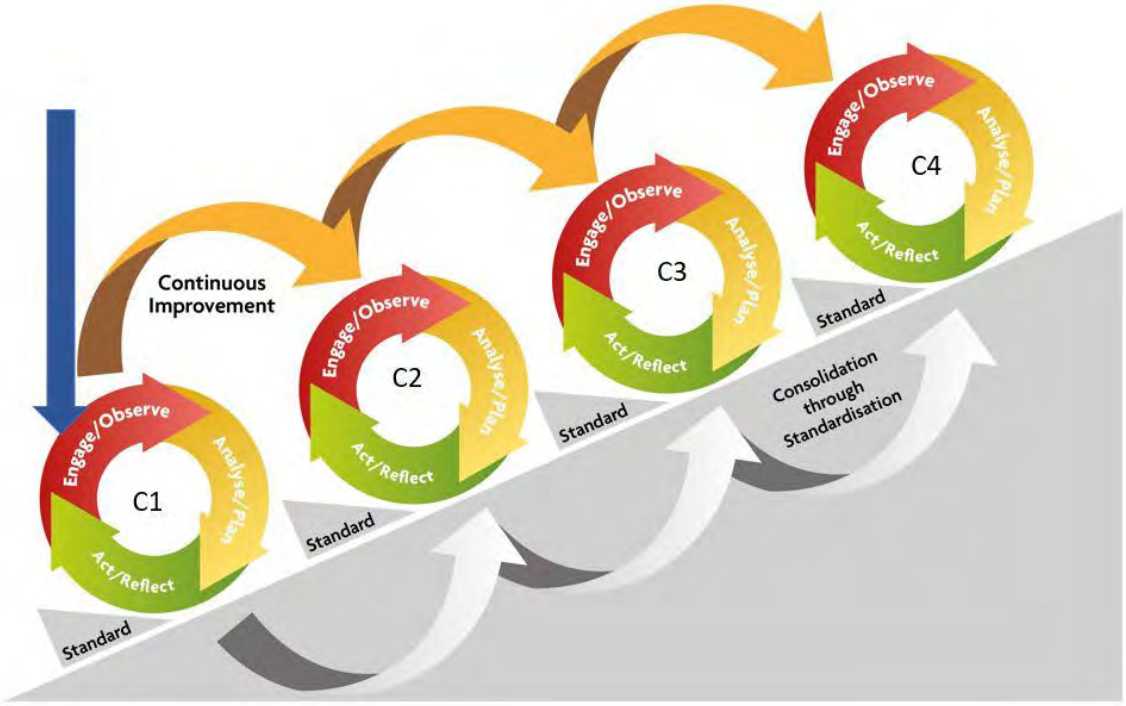


Figure 3.3 VAPAR cycles, the blue arrow highlights C1, the focus of this study D'Ambruoso 2017 [90]

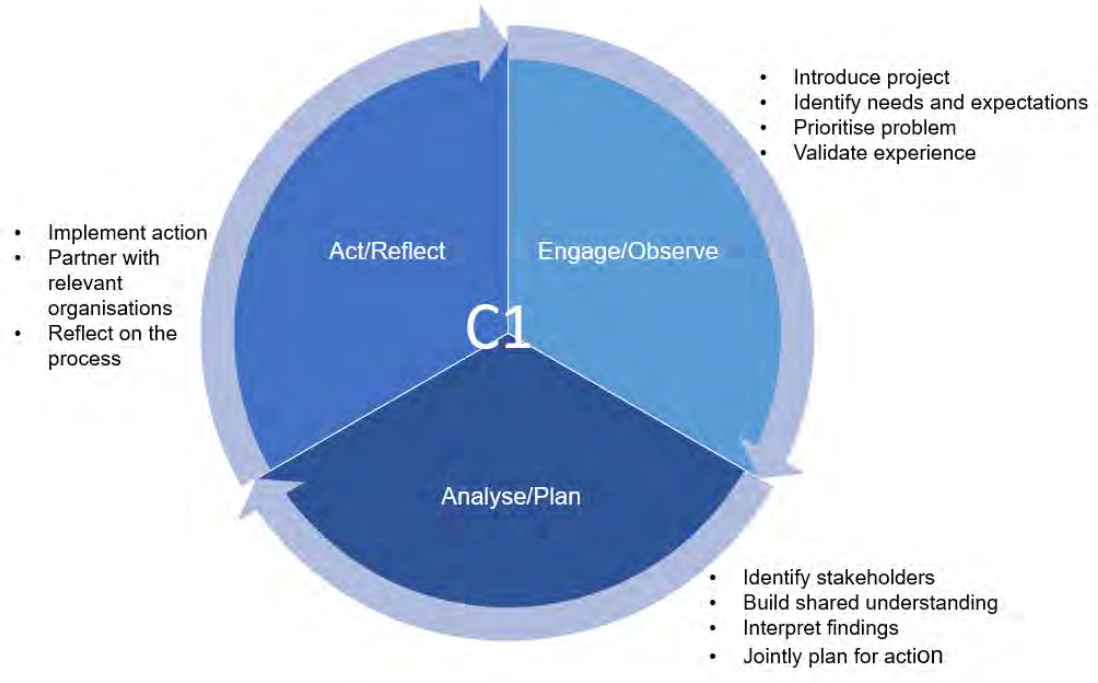


Figure 3.4 Data collection process in participatory learning and action cycle adapted from the VAPAR programme. Witter et al 2020, D' Ambruoso 2017[70,90]

3.4 Data Collection

3.4.1 Step1: Engage/Observe

In the first stage, PAR was progressed in three villages in the Agincourt HDSS study area which were part of the pilot work for the VAPAR programme from 2015 to 2016. In the pilot work, the three villages were purposively selected based on demographic variation, distance from health facility, and socio-economic status. In each village, participants were purposively recruited to understand the subjective experiences of health using a maximum variation sampling technique. Within each village, participants were carefully chosen to represent a cross-section of the community including family members, traditional healers, clinic committee members, community health workers, community, and religious leaders (Table 3.1). Information on village and household characteristics was obtained from the Agincourt HDSS database. The research team telephonically contacted twenty-four participants (eight from each village) from the pilot phase for recruitment as co-researchers rather than passive research subjects. Out of 24 original participants, 13 agreed to continue with the process while 10 were unable due to other commitments or having moved away, and one had passed away. Participants who were not able to continue were replaced by individuals with similar characteristics and recruited to attend the first, introductory village-based workshop discussing health problems affecting their communities.

Table 3.1 Composition of discussion groups in all three villages A, B and C

Selection criteria/Primary role in community	Original Participants (A1, B1, C1)	'New' participants (A2, B2, C2)	Total
Traditional healers	3		3
Religious leaders	1		1
Community health volunteer	3		3
Community officials	5		5
Family members*	7	4	11
Women of reproductive age	5	4	9
Youth		16	16
Total number of participants	24	24	48
Proportion female (%)	75	92	83

A total of eight workshops were conducted in stage 1, and participants met once per week. In each workshop, PAR principles of representation, lived experience,

ownership, and collective validation were observed (Paper 1). Workshops 1-4 were held in each of the three villages separately to build shared understanding of the problem and jointly plan for action. In the next four workshops (workshops 5-8) 48 participants from three villages convened together to reflect on the process and cross-validate each village's findings (Table 3.1). Table 3.1 provides details of the participants in all three villages. In addition, Table 3.2 presents the composition of participants from Village A who nominated water as their priority topic. The workshops were jointly facilitated by the VAPAR research team in Xitsonga and partly in English using a workshop guide (Appendix A-H). Participants had active roles in each workshop. Workshop guides were translated from English to Xitsonga. Details of the workshops and process are provided in Table 3.3.

Table 3.2 Composition of discussion group in Village A that nominated water as a priority topic.

Selection criteria	Original participants (A1)	'New' participants (A2)	Total
Traditional healers	1		1
Community health volunteer	1		1
Community officials	2		2
Family members*	3	3	6
Women of reproductive age	1	5	6
Total number of participants	8	8	16
Proportion female (%)	63	100	81

*Participants recognised that they have multiple roles both at home and in the community. It was mutually agreed with them to identify their primary role.

Workshop 1: In the introductory, separate village-based workshop, eight participants convened to codesign; identify, document a priority topic and expand the participant base by identifying people affected by the nominated health issue and often excluded from decision making. Participants used *pair wise ranking*, a systematic way to collectively narrow down a number of topics into one topic and for the priority topic to represent the collective perception of the group. In one village, water was identified as a priority health issue leading to the selection of an additional eight participants. Specifically, women of reproductive age, between 18-50 were nominated as directly affected by lack of water, and often marginalised in planning and decision making.

Table 3.3 Composition of workshop discussion groups in Cycle one, step 1-2.

	Step 1: Priority setting	Step2: Analyse/Plan				
Workshops	1-8	1	2	3	4	5
Participants**						
Religious Leader	1	-	-	-	-	
Traditional Healer	3	-	-	-	-	
Community Official	5	-	-	1	1	1
Community Health Worker	3	-	-	1	1	-
Family member	11	-	-	1	1	-
Women of Reproductive Health	6	-	-	-	-	-
Youth	16	-	-	-	-	-
Department of Health - Province	-	12	6	2	4	2
Department of Health -District	-	1	3	3	5	5
Cooperative Governance and Traditional Affairs	-	-	1	1	1	1
Department of Social Development -Province	-	-	1	2	2	1
Home Affairs	-	-	1	-	-	-
Department of Basic Education	-	-	1	1		-
Department of Water and Sanitation	-	-		2		-
Department of Culture, Sports, and Recreation	-	-		1		-
Inkomati Usuthu Catchment Management Agency (IUCMA)	-	-				1
Ward Counsellor	-	-				1
Ward Committee Member	-	-				1
Africa Foundation	-	-				1
Researchers	4	5	4	3	3	5
Total	**52***	**18**	**17**	**18**	**19**	**20**

The initial eight participants played a pivotal role recruiting women from this demographic, with each of them responsible for recruiting one participant. In the other two villages, alcohol, and other drug abuse (AOD) was nominated as a priority health topic, and youth and adolescents aged 18-35 were identified as people affected, and whose voices were often excluded in decision making. **This PhD focuses on the village that nominated water, Village A,** and the details of the groups that nominated AOD abuse is reported elsewhere [6,91,92].

Workshop 2: In village A, participants used a 'problem tree' which also known as an issue tree or cause and effect tree, it is a visual participatory tool used in problem analysis and planning[93] . Participants collectively analysed shortage of safe water at various levels, identifying key issues, delving deeper into the underlying causes, developing shared accounts on health, social and economic impacts.

Workshop 3: Using the problem tree developed in workshop 1, 16 participants in village 'A' identified key actors and institutions using a Venn diagram, building shared understanding of relationships, interest, power and influence. Interrelationships were mapped, and levels of importance and connection to the community discussed.

Workshop 4: In the fourth week, in the same village, participants developed an action agenda to address lack of safe water, using a stepwise pathway, making references to the problem tree and the Venn diagram developed in workshops 2 and 3 respectively.

Workshops 5-7: All 48 participants in the three villages came together to validate their findings, build consensus on the action agendas, and reflect on the process. In these workshops, participants presented their outputs to others and led the workshop discussions. The outputs were recorded on flip charts and signed by the participants at the end of each workshop to determine a collective agreement.

Workshop 8: In the final workshop, participants reflected on the process and how the process could be carried forward with service providers; government and non-

governmental organisations and other stakeholders within the sub-district and provincial level (Appendix G).

Photovoice, a visual method was also used. Photovoice is a research methodology that combines photography and storytelling to empower marginalised communities to document and reflect on their lived experiences [94]. Wang and Burris developed this PAR approach in the 1990s, and their work has been influential in the fields like public health and community development [94]. Participants were given digital cameras and asked to take photographs to capture, document, reflect and communicate issues relating to lack of water in their environment. During the introductory workshop 1, participants were trained how to use the cameras, and obtain consent to take the images. In workshops 3-8, participants presented their photographs and discussed with other participants what the photos meant to them individually and collectively as a group. Data was summarised and organised into a research brief by the research team for the next step (Appendix I).

3.4.2 Step 2: Analyse/Plan

A total of five multisectoral facilitated workshops were conducted to analyse, and plan on PAR findings from step 1 with community, government, and non-governmental stakeholders from January to September 2018 (Figure 3.4) (Paper 3). In the 1st workshop, we reconnected with eight stakeholders who had been identified during the VAPAR pilot work in 2016 in order to maintain prior partnerships. These stakeholders included provincial and district DoH officials from the Maternal Child, Women, and Youth Health and Nutrition (MCWYH&N), HIV/AIDS sexually transmitted infections and TB (HAST), and non-communicable diseases (NCD) directorates.

The eight stakeholders were initially contacted by email and telephone to explain the purpose of the first workshop. They were given a three-day window to confirm availability and provide consent. The relatively short confirmation period was possible due to pre-existing relationships established during the pilot phase, aiming to minimise the need for reminders. Experience gained during previous engagements also showed that giving too much notice decreased participation as

people forgot about the engagement request. The workshop convened at the DoH offices in the city of Mbombela (formerly Nelspruit) in Mpumalanga province. Additionally, five stakeholders from the DoH were included in the process. During the workshop, the research brief from step 1 was discussed and reviewed. Stakeholders considered in detail policy, and pragmatic contexts in which to address lack of water, the priority health topic identified by the community.

There was consensus that the community priority, lack of water extended beyond the health care system. It was evident that a multisectoral approach was necessary. To ensure that the process was co-designed to promote ownership, transparency and control, participants in workshop 1 collectively decided which sectors should be invited to join the process for workshops 2 and 3. Therefore, the subsequent two workshops convened a diverse group of stakeholders. These included representatives from various sectors, such as provincial and district DoH, water and sanitation, education, social development, cooperative governance and traditional affairs, and culture, sports, and recreation.

Participatory approaches group model building, and rich pictures were used to enhance the capacity of stakeholders in systematic thinking. These approaches facilitated a, a deeper understanding of the systemic factors contributing to lack of water, and fostered consensus for actionable solutions. Group model building is structured process in which diverse stakeholders collaboratively develop a shared understanding of complex problems, guiding subsequent policy and practice decisions [95]. Rich pictures on the other hand are detailed and unstructured visual representation used to map or explore intricate issues [96].

As the process unfolded in workshops 2 and 3, participants progressively gained deeper insights and assumed more active roles, particularly in presenting their group model building- outcomes and rich pictures. Representatives from the communities, selected by community members in step 1, were subsequently designated to represent their communities in Step 2, workshops 2, 3 and 4 during the analysis and planning stage. Throughout these workshops, recommendations were collaboratively developed, with a simultaneous identification of challenges, opportunities, and strategies aimed at addressing lack of safe water within local and service provider

contexts. To provide a breakdown of workshop attendance, the 1st, 2nd and 3rd workshops convened 18, 17 and 18 stakeholders respectively, refer to Table 3.3 for details.

Furthermore, two workshops were, convened at the Agincourt HDSS offices in BBR with the primary aim to collectively strategizing for local action. Participants included representatives from communities from step 1, district, sub-district, and local DoH stakeholders, as well as adjacent governmental and non-governmental district-level stakeholders. During the 4th workshop, participants opted to refine the topic to "lack of safe water and its effect on child health". This adjustment was made to align with the shared priorities of both local communities and the DoH stakeholders. The process involved facilitated discussions aimed at leveraging existing resources and experiences thereby avoiding 're-inventing the wheel' or duplication of efforts. In doing so we mapped the environment in which the local action plans could be implemented, considering by-laws, resolutions or policies in place that could support or affect implementation.

In a collective effort, the stakeholder and research team reflected on the specific actions that needed to be undertaken, identifying responsible stakeholders, establishing timelines, and outlining the requisite resources for each action item. F. Subsequently a local action plan was formulated with seven distinct action items. Importantly, we initiated partnerships with existing organisations that were already engaged in addressing lack of safe water within the community. Committed stakeholders from these organisations volunteered to assume the leadership roles for the respective action items based on their capacity to influence implementation. Furthermore, a comprehensive monitoring plan was established to ensure effective oversight of these action items.

3.4.3 Step 3: Act/Reflect

During a four-month monitoring period, from January to April 2019, a series of follow up visits were conducted regularly with participants who had committed to specific action items to document progress. Participants were visited at venues of their choice to report and reflect on progress of the specific action items, document

mechanisms through which change did, or did not occur. During the follow up visits, a structured record of action (Appendix J) was used to capture reflections, for example how the action was started, interim steps, meetings held, minutes of meetings held, or coordination with other departments. At the end of four months, 27 follow-up visits had been completed and an additional eight follow-ups done telephonically with participants from the community, government departments and NGOs at sub-district and district levels who had committed to progress the action items. Discussions on transparency of the process and information-sharing among participants were made, and all the information reported was recorded on the record of action and signed by both the participant and the researcher. The research team convened weekly to discuss initial impressions and reflections from the participant's perspective and experience. Data was collated and analysed, opportunities and barriers were documented, and action items were classified as achieved, partially achieved, or not achieved.

3.5 Narrative review

In paper 2, a narrative review was conducted to examine community participation in PHC and water resource governance. The review focused on governance structures in health and water sectors, such as health committees and catchment management agencies (CMA) to explore the involvement of marginalised communities in planning and decision-making processes. The establishment of community governance structures has been part of the decentralisation process aimed at improving participation of marginalised communities who were often excluded from decision making process.

Literature was found by searching databases using key search terms; community participation, community involvement, community engagement, community activism, community mobilisation, PHC, CMAs, WUAs, IBs, and CMFs (Appendix K). Databases including Ovid-Medline, PubMed, EMBASE, Web of Science, Google scholar, WHO Global Health Library, Global Health and Science Citation Index were searched. The Google Scholar search engine was also used, searching libraries and websites of PHC and water management institutions available as grey literature.

Grey literature from DoH, Health Systems Trust, World Health Organization (WHO), United Nations Children's Fund (UNICEF), Department of Water and Sanitation, Department of Agriculture Rural Development, Land, and Environmental Affairs, The Water Project, Life Water International and International Water Resource Association were included. A Boolean search was conducted using Boolean operators 'AND', 'OR', and 'NOT'. Titles and abstracts were read, assessed, and screened according to inclusion criteria.

Inclusion Criteria: All articles reporting on participation in clinic health committees in PHC, and CMAs, CMFs, WUAs and IBs in water governance in South Africa from January 1994 to June 2020 were included. In PHC governance, the review included studies that involved the community health promotion, disease prevention, health living or health service delivery. In water governance, studies included involved community in water conversation, management, monitoring and supply decisions. English articles were critically reviewed, and no restrictions were applied based on the study design. Both qualitative and quantitative studies were included. Literature reporting on community participation outside clinic health committees, CMAs, WUAs, IBs, and CMFs in PHC and water governance were excluded from the review.

3.6 Data analysis and management

Multiple data sources were collected from step 1 to step 3; these included workshop recordings, visuals, minutes, research briefs, group models, rich pictures, observational notes, attendance registers, flip charts, reports, and researcher's reflective journals (Table 3.4). Data analysis was undertaken by the researcher (PhD student). An essential component of the PAR process involved validation of the analysis by the participants themselves, emphasising the collaborative nature of the research process. The transcribed narratives were coded using NVivo, a qualitative analysis software.

Table 3.4 Data collection process and tools

Step	Level	Theme	Mechanisms	Activity	Data Sources
Engage/Observe	Community: three villages in Agincourt HDSS	Problem identification, problematisation, causes and contributors, health, and social impacts,	Facilitated 8 village-based workshops	Pair wise ranking, Venn diagrams, Action Pathway, Photo voice	Transcripts, visuals
Analyse/Plan	Province: DoH, relevant stakeholders with influence on lack of water, see Table 3.2. Sub-district, district and local	Prioritisation, interpret, plan for action, reflection on the process	Facilitated 5 workshops	Group model building, rich pictures, action pathway	Workshop minutes, research briefs, recommendations, workshop reports, operation plans
Act/Reflect	Agincourt HDDS (local)	Local Action Plan	Implementation process	Document process and progress	Record of action, minutes, reflection journals
Tools					
Pair-wise ranking	Village based participants listed various health issues affecting their lives during the introductory workshop. To identify a priority topic of relevance, and to represent a collective view of the group, each participant was given two adhesive stickers to vote for topics of highest importance to them.				
Problem Tree	Participants used a problem tree to collectively develop a shared understanding of the cause-and effect of lack of safe water at various levels, with ground depicting political systems and values, trunk and roots representing structural intermediary causes, while branches reflecting immediate causes and lastly the pods are the effects or the consequences.				
Venn Diagram	Venn diagrams were collectively used to map actors and relationship between actors and service provided. Circles of different sizes were used to indicate importance and distance from each other indicated relationships.				
Action Pathway	A road map of the interim plans and key steps needed to achieve the desired goal was collectively developed through a series on interconnected events.				
Photovoice	Participants were given cameras to capture lived experience of lack of water as it existed in their environment. Photographs taken by participants were presented and discussed in workshops to establish a shared view of the situation and develop captions.				

The thematic approach adopted for data analysis adhered to contemporary standards in qualitative research. The process began with an initial phase of data familiarisation; a deductive code frame was developed supplemented with emerging codes from the data (inductive). Themes were identified and generated through careful analysis and thoughtful engagement with the data. In addition, more themes were derived and constructed through systematic, interpretive and analytical process. Finally, themes were synthesized from the data, by identifying commonalities, divergences, connections and meaning.

The analytical process unfolded in multiple iterations, with active involvement of participants at various stages This dynamic engagement with participants fostered a deeper understanding of the data and ensured that their insights were integrated into the analytical narrative. The analysis focused several critical dimensions, including narratives, mechanisms of change, relationships and interactions, learning, impact, and contextual factors related to the theory of change that was developed for this work. The theory of change was adapted, reviewed, and revised on continuous engagement with stakeholders (Appendix L).

The thematic analysis was extended to the examination of the articles selected for the narrative review. Common themes were identified, trends and patterns that emerged across the selected studies. Studies with similar findings or perspectives were grouped together to develop themes on forms and extent, and contexts and dynamics of community participation in both health and water governance sectors. The themes were organised in a structured way according to health and governance structures to facilitate the synthesis process. Using a narrative approach, we wove the identified themes and findings from different studies into a coherent narrative. This involves summarising and discussing each theme, presenting the evidence from the studies, and highlighting any contradictions or gaps in the literature.

3.7 Positionality and reflexivity

My personal positionality within this research is multifaceted. I am a black Zimbabwean married woman who has been living in the study area in rural South

Africa over a decade. My journey in health research endeavour commenced during my Master of Public Health (MPH), conducted within the same study area that has been my home since 2009. This prior experience significantly influenced my ontological, and epistemological assumptions as well as my individual beliefs about human nature and agency. Positionality is the social, political, historical, economic, and religious context of a person that influences how they view and understand the world and potential biases in a qualitative research process [97–99].

My journey into qualitative research began with a focus on understanding illness progression among chronic HIV positive patients who received care from home-based caregivers. My aim was to illuminate the patient's perspective, experiencing life with a disease both before and after diagnosis. This early research experience challenged and broadened my understanding of human experience and the significance of individual values and beliefs in shaping responses to illness.

As a PhD student researcher, my positionality in the PAR process reflects elements of both an insider and outsider perspectives. On one hand, my years of residence in the study site and my familiar ties have cultivated a deep understanding of the local Shangaan culture and I am intimately familiar with the research environment. As a black African woman, there was a presumption among community participants that I was an insider from our first interactions. Some of the research team members were white and during my first encounters in the field, the participants would address me in Xitsonga because the population is exclusively black African. Nonetheless, the local project coordinator always provided assistance when my Xitsonga language skills were limited. This immediate rapport facilitated the development of relationships with the participants, a fundamental element in addressing power dynamics within PAR.

However, it is essential to acknowledge that despite shared cultural characteristics, there were factors that positioned me as an outsider within the community. Distinctions in educational, social class, language and residing in a different town contributed to this outside role.

The HDSS is integral to the community and the Mpumalanga Department of Health [100]. Their established relationship with the communities in the study area facilitated easy entry to the community, and engagement with various stakeholders. I navigated the issues of power dynamics and my role as a researcher by employing PAR methods and principles that prioritise inclusive participation, emphasising representation, lived experience, and collective knowledge production [101]. We recognised the importance of lived experience through allowing community members (most affected) to lead the process by setting the agenda. This involved identifying a priority health topic, by a group of people affected, choosing the venue, and setting the duration of the workshops. Participants were provided with cameras to identify, document and communicate issues relating to the priority health topic using visual images. Training the participants on PAR principles and use of cameras was intriguing to the participants as their roles shifted from being the researched to co-researcher role. The collaborative approach aimed to empower participants, fostering their confidence in open and inclusive dialogue. As co-researchers, participants were involved at every stage of the research process [83].

I started the research process with more power as I was involved in the initial design and planning, designing of the topic guides for the workshops and initial recruitment of the first group of participants. Power imbalances were addressed through reflexive discussions and co-development for subsequent steps. My role evolved throughout the process, as did that of participants. I provided technical assistance as this was new to the participants, and much of the learning was by doing and this assisted participants to continually learn and grow as they engage in the process. To promote power-sharing, participants co-facilitated workshops and a relaxed neutral environment was created.

One of the primary tenets of participatory research is amplifying the voice of marginalised groups [34]. It was unanticipated that communities would identify lack of safe water as a health priority topic to be progressed, given its role as a social determinant of health. At this juncture, the power dynamic shifted significantly as participants assumed a more central role throughout data collection, action planning and implementation.

To address water-related challenges, we facilitated dialogue between communities, service providers, and researchers. Trust was gradually rebuilt through repeated interaction and collective planning and implementation and new connections were made with sub-regional BBR local municipalities. Multi-stakeholder platforms are globally recognised as a possible solution to deal with complex problems, though their sustainability is challenged by a lack of mandate, resources, and legitimacy [102–104].Working with government stakeholders during this process helped me to understand the complexities and bureaucratic implementation procedures among government departments and the difficulties of connecting knowledge with action [102,105]

Throughout this process, my perspective on lack of water was challenged. What I perceived as a positive aspect of water provision, the use of water tankers (Figure 3.5) during water shortages, was viewed differently by the community. To the community, the water tankers were associated with corruption and crime and were an impediment to provision of a tap in each household and alleged to deliver contaminated water.

In conclusion, my positionality as a researcher in this PAR process encompassed both insider and outsider roles, shaped by mu personal experiences and the dynamic interactions with the communities and stakeholders. This positionality influenced my approach to addressing power dynamics, facilitating inclusive participation, and ultimately shaping the trajectory of the research.



Figure 3.5 A mobile tanker supplying water due to areas experiencing frequent water shortages Hove et al 2019 [106] p.8.

3.8 Ethical Considerations

Ethical considerations related to PAR were observed from the beginning. The role of the researcher, democratic and power-sharing principles, confidentiality and anonymity, ownership, and research control was openly discussed with commitment to ensuring that participants were not subjected to any form of control or manipulation. The process was progressed according to issues important to the participants and they were involved in priority setting, design, and implementation to allow power sharing between the researchers and the participants. Participants were asked to identify a priority health topic, solutions to address the health issues and develop a local action plan to address the health issue identified. Informed consent was sought from all participants, explaining the details of the research at a level understandable to everyone so that participants could make an informed decision

and participate. On visual data, participants were trained on how to obtain media release permission. In addition, all participants in this study granted permission for the use of their images.

Participants were provided with refreshments and transport costs and were re-imbursed for time spent in workshops with 300ZAR per participant at each step. The initiation of the participatory action research raised expectations of other participants significantly. In their anticipation of positive change, they often held the belief that many of their pressing water-related issues would see immediate resolution. Among the group, there were also anticipations of improved economic opportunities, particularly among youth participants. Their hope was tied to the expectation that the research outcomes would pave the way for increased employment prospects, providing a means to alleviate some of the economic challenges they face. These elevated expectations underscore the profound impact that PAR can have on community members. While it is a testament to the potential transformative power of such research, it also highlights the need for effective communication and transparency throughout the research process to manage and guide these expectations toward realistic and sustainable outcomes.

Workshops were conducted in both English and Xitsonga, depending on what the participants were comfortable with. The research was approved by Institutional Review Boards; the Human Research Ethics Committee at the Universities of the Witwatersrand (M1704155; M190222) in South Africa and Aberdeen (CERB/2017/14/1457; CERB2017/9/1518) in the UK and the Department of Health and Social Development (MP_201712_003) in Mpumalanga, (Appendix N).

CHAPTER 4: RESULTS

The results are presented in three sections reflecting the identified, constructed, and generated themes in relation to the research questions and findings: i) co-production of community evidence to address lack of water, (Figure 4.1), ii) institutionalization of community participation in the health and water sectors, and iii) multisectoral collaboration to address lack of water and implementation of a local action plan. Empirical findings are integrated with a narrative review on community participation in these sectors. The analysis is illustrated and supported with verbatim quotes from participants and visual data taken by participants.

4.1 Step 1: Engage/observe; Coproduction of Community Evidence

4.1.1 Problem definition: Lack of household water supply, access, and unregulated sources

Participants collectively developed a long list of topics to identify a priority health topic (Figure 4.2). Through facilitated workshop discussion, lack of safe water was voted as a priority health topic (Figure.4.1). Paper 1 documented how the community stakeholders developed rich narrative accounts of lack of household water supply from their own experience [101]. Water use in the study area was reported to be generally related to domestic activities (e.g., cooking, bathing, washing) and productive uses such as farming on modest, domestic scales. The main water sources reported were taps in the house, yard and street, trucks, cement and traditional wells and surface water (ponds, rivers, and dams). Participants reported repeated and prolonged periods when piped water was unavailable, which necessitated widespread use of informal and unregulated sources such as surface water (Figure 4.3 and 4.4). When the communal or household taps run dry, participants get water from alternative sources such as neighbouring villages, boreholes, mobile tanks, or rivers. Due to frequent piped water shortages, the municipality often resorts to delivering water in mobile trucks to villages (Figure 3.5).

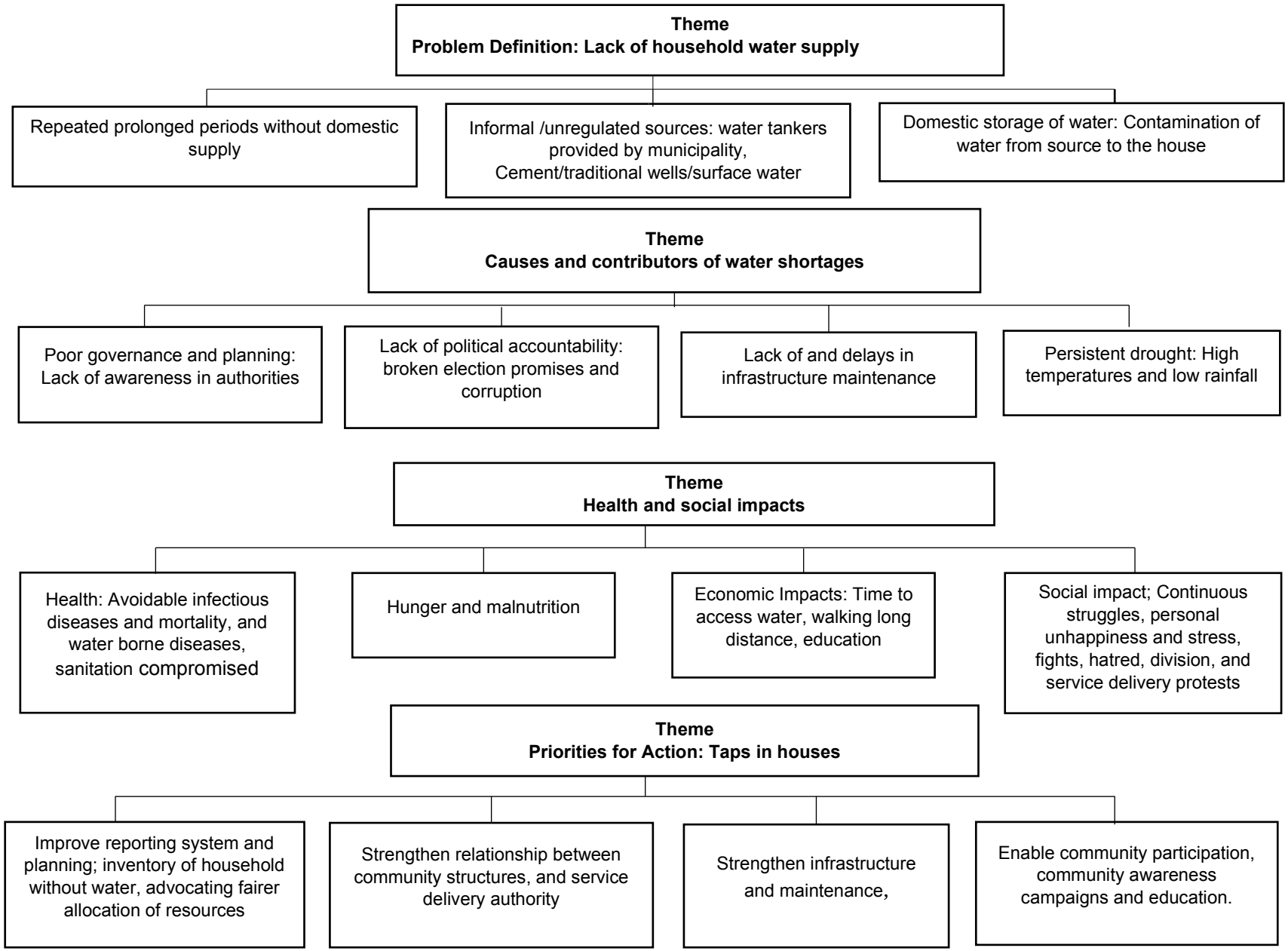


Figure 4.1 Thematic framework

Participants acknowledged that non-domestic water sources were less safe.

> *"… as we don't have water in our community, we get drinking water from other villages nearby if the water truck does not come, and for laundry, we go to the rivers."* [Community stakeholder]

Participants also narrated that mobile water trucks were an impediment to the provision of functional domestic taps. The community were concerned that if water continued to be delivered through trucks, meant to be a temporary solution, no attention would be paid to improve the water situation, with the few available communal taps having been running dry for some time. Meanwhile mobile trucks were reportedly not always available due to lack of fuel and were alleged to deliver dirty contaminated water. Corruption by some drivers was also reported whereby community members were forced to buy water from the mobile trucks.

> *"Another thing is that the drivers of the mobile truck are segregating because they don't give water to some people. They give an excuse that they don't have enough diesel to deliver water everywhere in the community"* [Community stakeholder]



Figure 4.2 Process photo; community stakeholders selecting priority topic from the list



Figure 4.3 Visual evidence; due to the lack of running water in communal standpipes, women and children were forced to do their laundry by the river side on rocks and wash dishes. Washing clothes by the river eliminated the need to carry water back to the household [106]. (Photo taken by participant)

Participants also reported getting water from boreholes. Households without boreholes in their yard fetched water from their neighbours. In the study site, there is extensive culturally reinforced sharing, offering protection to vulnerable households who cannot afford to sink a borehole. However, despite having no alternatives, borehole water was reported as a poor preference: it is saline, does not taste good and damages electrical equipment.

> *"I have a geyser [a domestic electric water heater] in my house, because of salt water, it does not last ….. even the electric kettle does the same…. salty water is not good*" [Community stakeholder]



Figure 4.4 Community member fetching dirty water at the river for household use. (Photo taken by community participant)

Participants without a tap in the yard reported carrying water using small buckets or domestic containers from source to home. Participants with water in the yard also fetched water in containers from neighbouring villages or other sources when water supply was cut or interrupted (Figure 4.4). The collected water was stored in containers while being used in the house, and the chance of contamination was high as one participant commented:

> *"…. even if the water is purified, sometimes before it reaches us, it gets contaminated on the way"* [Community stakeholder]

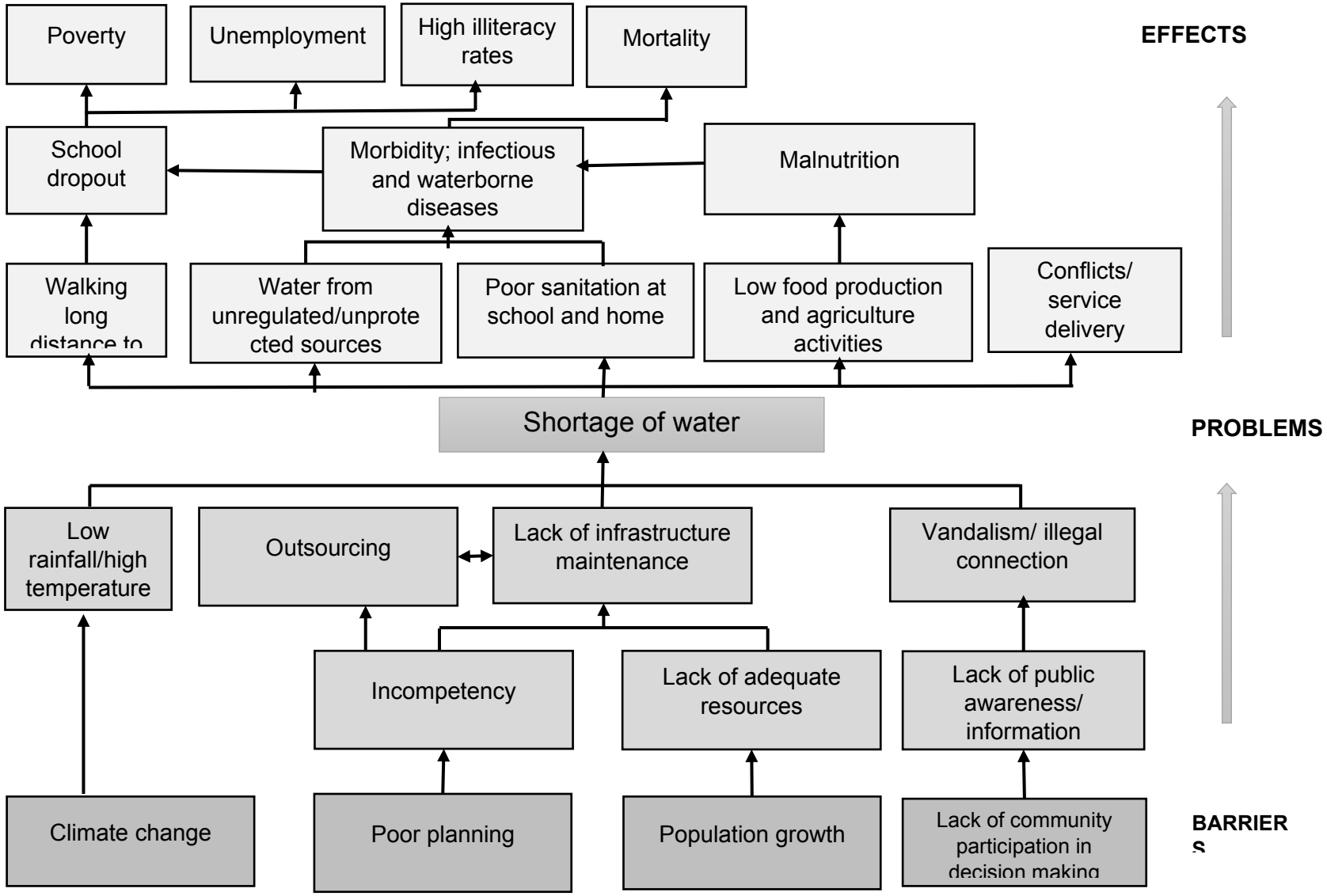


Figure 4.5 Problem tree developed by community stakeholders to understand and explore relationships between causes and effects of lack of water in Agincourt HDSS

4.1.1.2 Perceived causes and contributors of water shortages

Community members cited several factors that contribute to water shortages using a problem tree (Figure 4.5). Factors reported include poor planning and management by the water service authority, the municipality, and the water service providers. Furthermore, participants asserted that leaders did not know what is happening on the ground, they were out of touch with realities in the communities.

> *"… our government … does not know what is happening in our communities. Perhaps it is time for them to know about the problem of water shortage we have in this village"* [Community stakeholder]

The situation was reported to leave community members confused about the role of community leaders and external stakeholders regarding the water supply, and a clear lack of trust in leadership was reported with many accounts of 'them' and 'us' related to the community and the authorities. Many participants held views that community leaders lacked accountability and diligence to effectively respond to water challenges their communities faced, hence the participants lacked confidence in leadership. Corruption was believed to be common as other leaders were benefitting from lack of water by providing water through water trucks to the communities and charging the government exorbitantly. Some leaders were reported to make promises for political support which were not kept. Furthermore, it was reported that community bodies such as the water committees were not aware of the appropriate channels to address the issues. Water committees are community-based organizations or groups responsible for managing and overseeing water-related matters at the local level [107,108]. These committees play a crucial role in ensuring the provision of safe and reliable water services to communities, particularly in areas where access to clean and reliable water sources is limited. Participants collectively agreed that community bodies were not adequately accountable and lacked authority and motivation.

> *"The leaders are not working for us (community) because they are corrupt. If they see that what they are doing is wrong, they try to find ways of covering up to the department because they know that they did not do things right"* [Community stakeholder]

Participants acknowledged significant investments in water infrastructure to facilitate the provision of water for rural residents. These included boreholes, water treatment

works, pumps, and reservoirs. However, participants also recounted that much of the infrastructure functions inconsistently and was unreliable due to lack of attention and delays in maintenance, replacement, and repairs (Figure 4.6). In addition, the community reiterated common knowledge that the municipality didnot have information on infrastructure, working conditions and household water status, hence water service delivery was generally inadequate and inefficient as most of the available infrastructure was not maintained or used. Participants consistently held the view that the problems with infrastructure could be related to the poor planning by water authorities (described above).

> *"They put the borehole here (village), but the pump is broken" [*Community stakeholder*]*

The community also reported vandalism of the infrastructure and that this could be a result of limited sense of ownership of water infrastructure in the community. Water shortages were also reported to be exacerbated by persistent droughts and high temperatures which resulted in depletion of underground water, salinity, and evaporation of dams, which were reported as key water sources. Rivers were also reported to be intermittent owing to low annual rainfall.

> *"We will die because of having no water. In previous years, we had water in the rivers but now there is no water in the rivers…... If there was water in the rivers, we could wash our clothes there but now we cannot and we stay dirty"* [Community stakeholder]

4.1.1.3 Perceived health and social impacts

The health impacts of unclean water were clearly recognised. As one participant described "water is life" and the absence of clean water poses a significant threat to survival. A range of contaminants from unregulated sources were reported such as faecal matter, logs, and other pollutants. Participants noted significantly limited choices around using clean water. Sanitation and hygiene were also reported to be considerably lower when there was no water, and that people compromised, sacrificed, and recycle water.

> *"We also use water from streams if it rains when there is no water on taps, we can get Bilharzia in that way" [*Community stakeholder]

Beyond health, continuous shortage of water was described as an overwhelming impediment driving people into poverty. Participants reported hunger related to water shortages, as it became more difficult to prepare food without water, and lack of ability to grow plants.

> *"Poverty and hunger are also part of the effects, because if we don't have water in the community, we cannot cook, bath, clean our houses and neither do backyard vegetable gardens. We cannot afford to buy vegetables because they are expensive* [Community stakeholder]



Figure 4.6 Visual evidence; empty water tank in Agincourt HDSS area (photo taken by community participant).

As described above, it was also reported that, in dire circumstances, water was sold in the community by the truck drivers. With most of the population depending on government grants and high levels of unemployment, buying water for some households was unaffordable.

> *"Our finances are also affected because we use our money to buy water … we should use that money to buy other things*" [Community stakeholder]

The discussions recounted significant amounts of time spent fetching water as they walked long distances. In other instances, water was available at odd times, and this put the safety of women at risk. In this community, women and children bore the burden of collecting water limiting women's ability to access paid work and education

(which was the reason why the expanded group was nominated to comprise women aged 20-50). Collecting water at night or walking long distances put women and girls at risk of sexual violence and harassment, falling, traffic accidents and animal attacks. Children were reported to sometimes missed school to collect water and parents were deprived of the time to care for their families. Participants agreed that time spent collecting water could be used to do other income generating activities.

> *"We walk a long distance to get water"* [Community stakeholder]

> *"On the other side of the village, sometimes water comes back at night, and it is difficult for us women to go there and collect water because we fear criminals. We need men or other people to accompany us" [*Community stakeholder*]*

Water shortage was reported as a source of unhappiness and stress and several service delivery-protests in the community have happened because of inequality in service delivery. Life was reported to be difficult and a continuous struggle without water as women carried heavy water filled containers on their heads, used wheelbarrows, bicycles, and motor vehicles.

> *"…I am unable to push the wheelbarrow* (disabled participant, she has one hand)*. I am unable to carry the bucket of water on my head. I wish I could have a tap in my house, and it will make my life easier"* [Community stakeholder]

Furthermore, continuous water shortage was reported to affect relationships in families, with neighbours and the community at large, as mentioned above. Conflicts and tension arose over mobile water tanks, over who should get water first and how many litres per person so that everyone could get it. In addition, hatred and division was reported over access to borehole water. Despite being allowed access to water from boreholes by their neighbours, participants felt uneasy and ashamed to always ask for water from neighbours.

> *"…now we get water from another household with a borehole on his yard and it is not a good thing for the family. If we have water in our households, we will not disturb other families" [*Community stakeholder*]*

4.1.2 Priorities for action

At the community level, participants focussed on addressing lack of water during the workshops. Firstly, participants defined an overall goal, and it was unanimously agreed that taps in houses are required to bring an end to water distribution via mobile trucks. Using a Venn diagram, participants identified several stakeholders with influence and interest to improve access to clean water in the village (Figures 4.7 and 4.8).

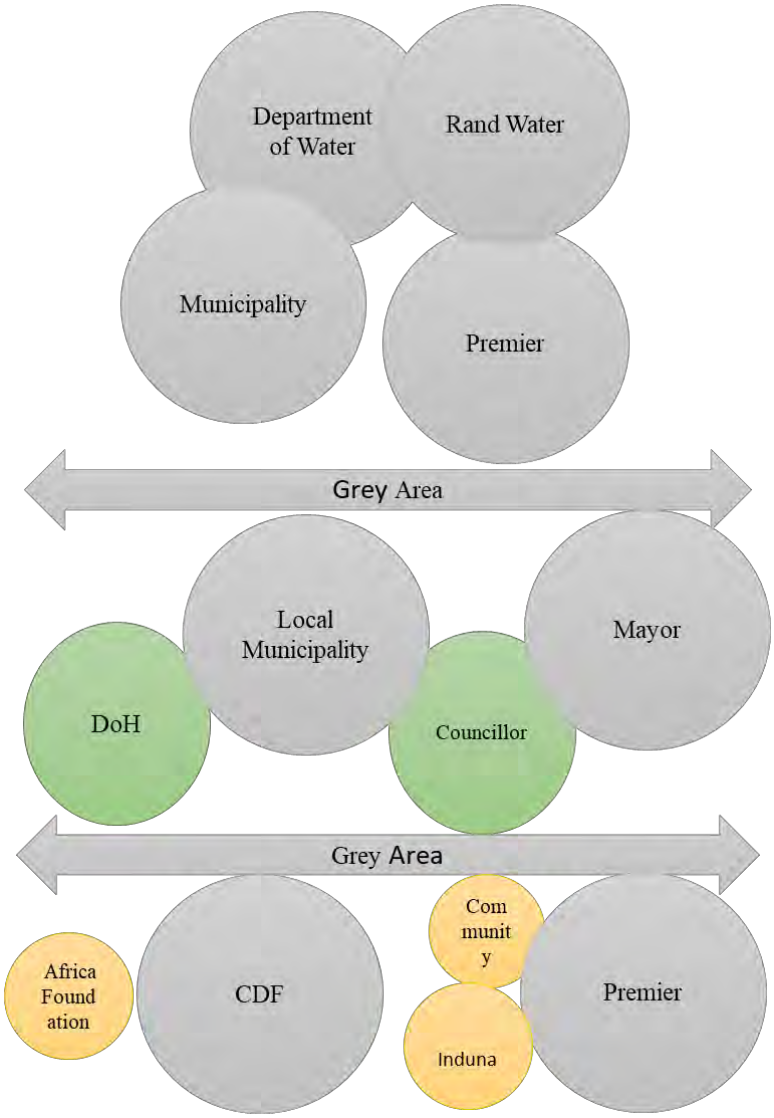


Figure 4.7 Venn diagram prepared by community stakeholders showing level of importance of actors and connection to the community.



Figure 4.8 Process photo; community stakeholder presenting a Venn diagram collectively produced to the group during workshop deliberations.

Participants reiterated that potential solutions to the problem of water shortage cannot be solely achieved by one organisation working in isolation. New inter-sectoral partnerships developed by community leaders with water and sanitation authorities, mayors, municipalities, councillors, community leaders, Department of Water and Sanitation and NGOs was cited as required to achieve water security. The lack of connection between the actors (community members, community leaders and services providers) was highlighted during this process with channels of communication at different levels of community structures and government departments described as ‘grey’ (Figure 4.7).

Existing channels of communication within the communities used to promote dialogue and information sharing were reported as not functional. Members of the community indicated that they do not participate in decision making processes at council level in the municipal integrated development plan (IDPs). Improving

interactions within the community councillors and members and with local government and the municipality was therefore regarded as important to strengthen working relationships.

> *"…we can't start at the top ranks … those people can't relate to the challenges that we face … we need to start with someone who knows our situation … how many tanks of water we have". [*Community stakeholder*]*

Several community structures were indicated as having important roles, but they failed to engage communities to identify local priorities. For example, the community development forum, a platform that identifies and addresses developmental issues in the community liaises with elected councillors and ward committees to incorporate community needs in the IDPs. Participants raised concerns that if these structures consider community needs, the communities would not be experiencing the problem of water shortages.

> *"…the problem is with the local level. Like now we have a dam nearby and the main pipelines cross here and goes to Thulamahashe but we don't have water here. Why don't we have water here"* [Community stakeholder]

A further specific task of multi-sectoral partnerships was identified as improved planning to inform infrastructure developments. These included: inventories of households without water detailed monitoring and reporting of water-related challenges in the community; fund-raising to support monitoring, planning and infrastructure development; and fairer allocation of resources through multi-sector deliberation and partnerships. Community awareness campaigns were collectively identified as a complementary route to impart knowledge and information around water access and safe water storage practices and protection of catchment areas and existing infrastructure. However due to water service delivery challenges, other participants preferred to pay for water if it would reduce water interruptions and improves service delivery.

> *"It will be much better if we get water that is using the water meter box. If I wash clothes, I will be careful, and I won't waste it because I will know that I pay for it"* [Community stakeholder]

4.2 Lessons learnt from participation in health and water governance in South Africa

Paper 2 is a critical component of the research, as it offers in depths analysis of community participation in the planning process for health and water governance structures. The primary objective of this literature review was to investigate whether communities are actively engaged in these processes before programs or interventions are initiated. This inquiry is of paramount importance as it the effectiveness, equity, and sustainability of health and water governance initiatives. The findings of the literature review shed light on the extent and dynamics of community participation. One of the key takeaways from the review is that, overall, community participation in both health and water governance structures is limited. This insight is significant, as meaningful community participation is often regarded as a cornerstone of successful public health and water management strategies. The findings from the literature review in Paper 2 have direct implications for the PAR process, it provided a critical foundation for understanding the challenges and limitations of community participation in both health and water sectors. When integrated into the PAR process, these findings guided the designing of more effective and contextually relevant local action plans.

The literature search yielded 21 eligible articles from both peer-reviewed and grey literature (Figure 4.9). Of the 21 articles, 11 articles discussed community participation in health committees [96-105]. Six of the eleven articles focused on the existence and role of health committees, while the remaining three highlighted training and challenges in establishing health policy, and the significance of community participation in health committees. Additionally, 10 studies in the 21 eligible articles outlined participatory practices of water governance in CMAs, CMFs, WUAs, and IBs. The assessment of the different forms and extents of community participation in health and water governance seeks to understand the level of involvement of communities in identifying problems, finding solutions, and implementing programmes. The parameters used to describe the forms and extents of community participation include coverage, roles and responsibilities, skills, and capacities (Figure 4.10).

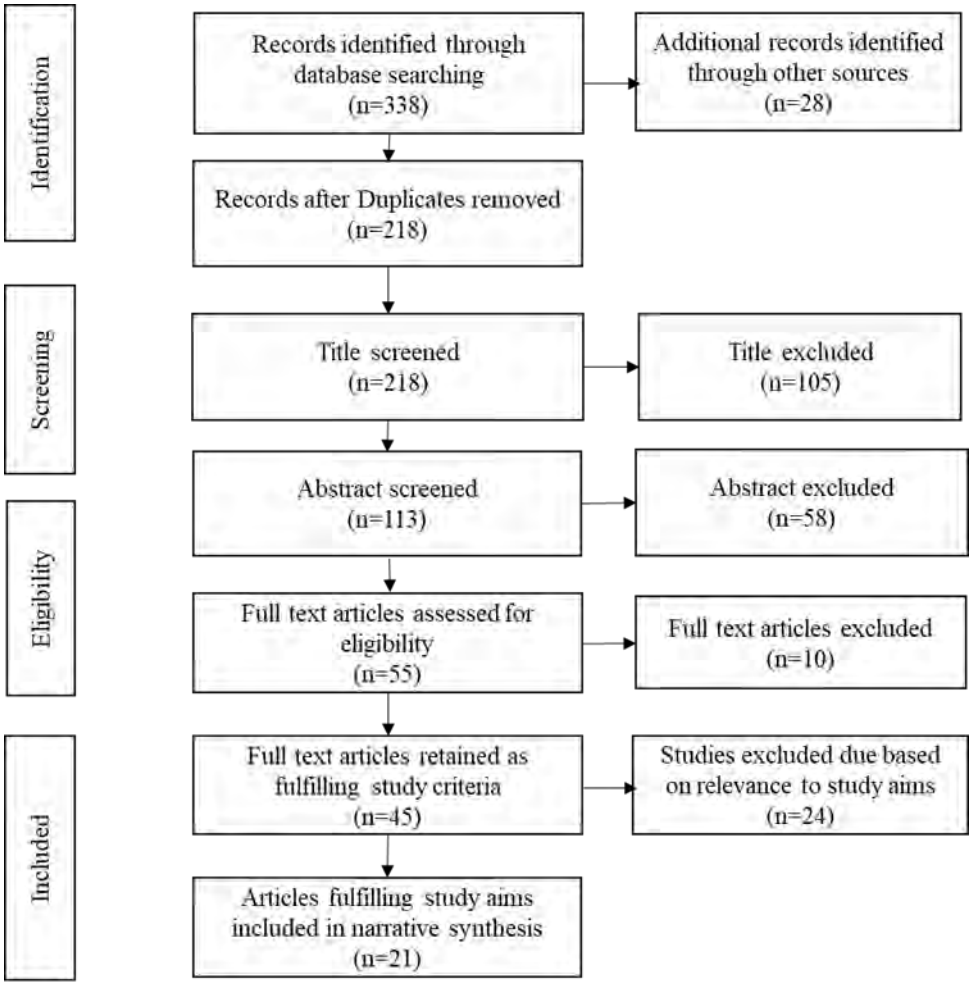


Figure 4.9 Literature Search flow chart, Hove et al.2022 [109]

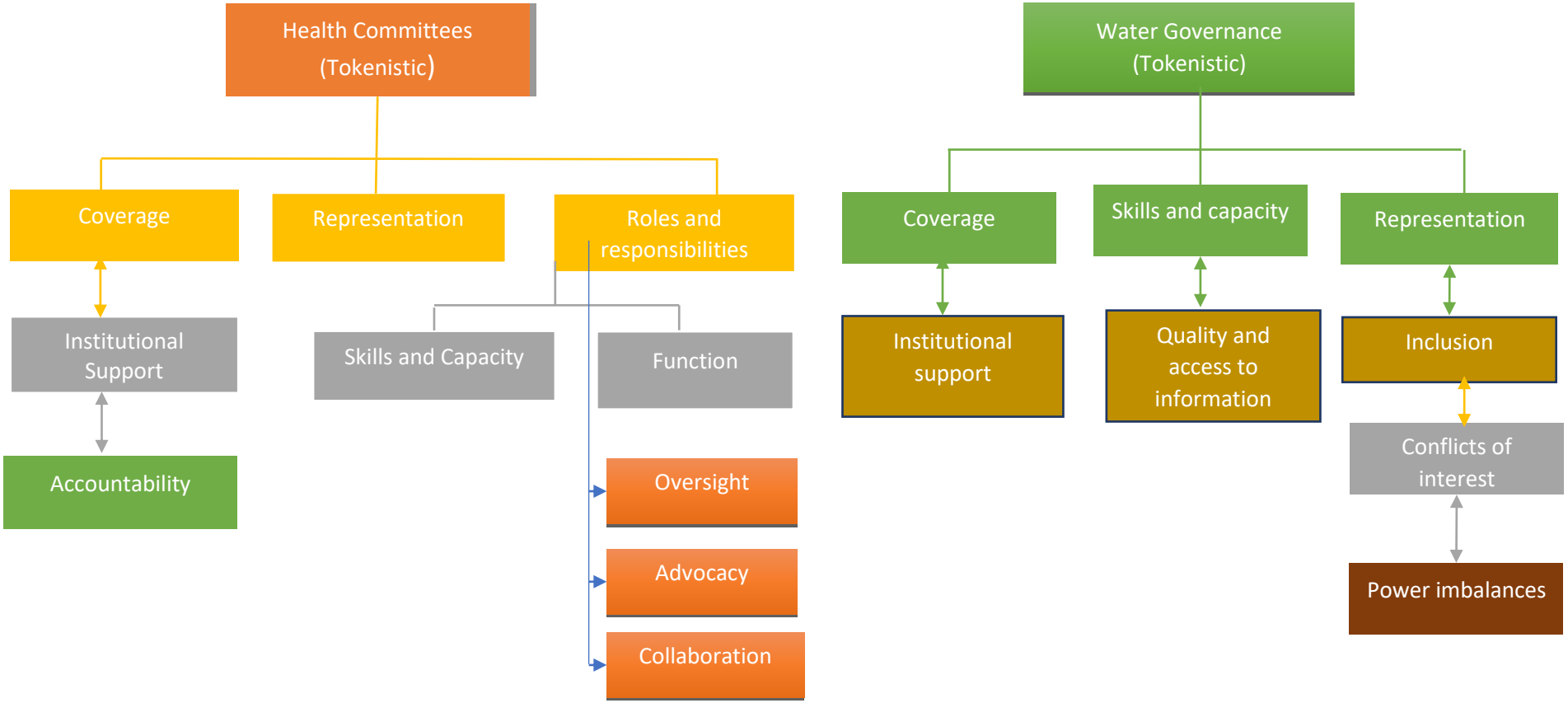


Figure 4.10 Participation in health and water governance

4.2.1: Community participation in health committees

The findings for paper 2 indicated that the implementation and coverage of health committees in clinics in five provinces have somewhat improved, rising from 60% in 2008 to 100% in 2019, as shown Table 4.1 [110]. Out of the eleven studies retrieved, seven (64%) were carried out in the Western Cape [111–119]. No published studies were found on health committees in the Limpopo, Mpumalanga, Free State, and Northern Cape provinces. Although the national government expressed its commitment, some provinces still struggle with coverage, and not all PHC facilities have a health committee in place [120] . Despite recent improvement in coverage, health committees examined in all the reviewed studies, exhibited limited participation to strengthen community participation and providing voice to the marginalised community members while improving responsiveness of the health system [85,111–118,121,122] .

Participation in health committees could be classified into various levels of tokenism by Arnstein's ladder of citizen participation [39,111–115,117,119]. Participation in health committees was reported to be limited and ineffective with regards to contribution towards health planning, decision making and service delivery. The lack of power was cited as a significant factor that undermines participation in health committees, where members had a voice but no influence. In all nine provinces, lack of power of health committees stems from poor adherence to existing policies and guidelines, limited capacity and skills, lack of clarity on their role and mandate, limited resources, limited institutional support and lack of integration with PHC facilities and the general negative attitude of PHC workers (Figure 4.1) [111,112,114,117,119,122–124].

According to eight out of 11 studies conducted between 2008-2019, health committees were found not to be functioning as required by the legislation [111,112,114,117–119,123–125]. In practice, the formally defined roles of governance are seldomly adhered to, because health committee members are often not aware of the policies that regulates them.

Table 4.1 Health committees per province, and their functions. Hove et al 2022 [109]

,

	Province								
	Eastern Cape	**Free state**	**Gauteng**	**KwaZulu Natal**	**Limpopo**	**Mpumalanga**	**Northern Cape**	**North West**	**Western Cape**
Number of Health Committee	696	139	1488	592	492	263	169	301	200
% Of clinics with health committees	95	46.3	100	100	100	83	100	100	46.7
Average members per committee	15	7	8	15	9	12	5	7	12
General roles and function of health committees	Oversee adherence and provision of PHC packages, identify health problems in community, monitor and report extent to which the PHC facility meets health indicators and targets, performance management, monitor how the PHC facility manage complaints submitted by patients and communities, hold management accountable for implementing decisions made during committee meetings, foster partnerships with other community stakeholders, fundraising for PHC activities, raise and manage Health committees funds, advocate for use of PHC facilities as the first point of entry of health care, provide a platform for the patients and community grievances, social mobilisation, be visible, build relationships with PHC staff.								
Composition	Community members, community representatives (for example representatives of certain sectors such as traditional health council, NGOs, women's group etc.), facility manager or clinic staff and local ward councillor. The national average for health committees is 10 members.								
Appointment	Election of community representatives vary across provinces, some are elected during community meetings, or volunteering, others are elected by the local councillors, or clinic committee chairperson or clinic staff.								
Finances	Health committees not much involved in planning and budgeting and expenditure processes, though they are required to raise funds to support their activities. They are expected to execute certain activities with no budget provided.								

Consequently, lack of clarity of their roles and responsibilities, for example in the Greater Cape Town Metropole, has undermined health committee members' involvement in decision making processes, agenda-setting, planning, and finding solutions to identified problems [114,116]. 4Health committees had limited information on how PHC facilities functions or are managed, leading to lack of understanding of health targets and local health trends. As a result, health committees cannot perform governance roles such as monitoring the PHC package to hold the PHC facility management accountable for delivering quality healthcare responsive to community needs [112,116,123]. In all studies reviewed, the roles of health committees were mainly supportive and involved menial tasks such as assisting with day-to-day activities like projects and health awareness, filing, managing queues, and dealing with conflicts and complaints [113,116,117,123].

In the five provinces with 100% coverage, health committees had an active role in advocacy, support of calendar health days and social mobilization [110,116,118,124]. Calendar health days are commemorations done at international, regional, and local level designed to raise awareness of the public on a particular public health issue, stimulating discussion of health risks and mobilize support for action [126]. There are many of these calendar health days observed throughout the year, for example, World TB Day and cervical cancer screening month. Even though the health committees were active in advocacy, and that is bringing health related problems from the community to the attention of PHC facilities, there was no feedback. This implies that the health committees did not know whether their effort resulted in action or no action from the facility to address challenges or issues identified in the community [109,114,116,124].

In a study conducted in Nelson Mandela Bay Municipality in 2006, more that 50% of the health committees were not functioning effectively [114]. The health committees reportedly lacked capacity and skills to produce reports as stipulated in their guidelines [111,114]. Health committees were meant to convene meetings quarterly to plan for their work, but some members were not active. Their legitimacy was undermined by a lack of clear linkage to the PHC facilities, yet they were expected to play a key role in improving service delivery [115,117,118]. Accountability to the

communities they serve was reported to be a challenge. They were poorly supported by the PHC facility, and they lacked clarity on how they should provide feedback to the community [122,123]. Many health committee members comprised of adults who did not complete schooling and struggled with literacy skills which made it difficult for them to perform their work efficiently [115,116]. Evidence from the Eastern Cape, Western Cape, and Gauteng, indicated that members had no training at all and in those trained, training was not adequate to perform any specific task [112,115,118,122,124].

In the Eastern Cape, representation undermined the way health committee should function [117,118]. Members were mainly composed of volunteers residing in the communities serviced by the PHC facility and were entitled to a monthly stipend [114,119,121,123]. In five out of 11 studies conducted from 2008-2019, it was reported that the stipends were hardly paid or paid very late, sometimes after three months [114,119,121,123]. Consequently, without incentives for their time, health committee member turnover was high, as they became reluctant to continue. Many members shunned their work for better opportunities. Health committees comprised mixed memberships, involving mainly community members, community representatives, local ward councillors and the PHC facility manager or clinic staff [111,125,127]. However, it was reported that a few health committees had full membership, with local ward councillors and PHC facility leaders absent from their legislated role [110,112,118]. In policy documents, health committees were supposed to provide a link between the community and service providers, but eight studies reviewed indicated that they had weak decision-making power in planning health service delivery targets and priority setting [114,123,125]. In three provinces, Eastern Cape, Western Cape, and Gauteng, where studies were available on how health committees' functions, lack of support from the health system and linkage with other sectors, lack of resources, and lack of political support have been reported as major obstacles to effective participation [114,117,123].

4.2.2 Community participation in water governance

In water governance, the 10 articles that met eligibility criteria, provided 14 case studies describing practices of participatory water governance of eight water bodies [109]. These comprised of Catchment Management Areas (CMAs), Catchment Management Forums (CMF), Water User Associations (WUAs) and Irrigation Bodies (IBs) in specified locations, presented in Figure 4.11 and Table 4.2. The following are the list of water governance bodies in this review, established in South Africa; Breede-Gourizt CMA, Inkomati-Usuthu CMA, Msunduzi River CMF, Great Letaba WUA, lower olifants WUA, Umlaas WUA, Vaalhart WUA, and Hereford IB. The following section provides a location based descriptive account of water governance participatory practices as observed in each catchment water governance bodies shown in Figure 3.9 below.

Table 4.2 Number of cases included per water governance body (CMA WUA/IBs and CMF)

	Participatory water governance Body	Number of Case Studies	Province	Dates	Sources
1	Inkomati-Usuthu CMA (IUCMA)	5	Mpumalanga	2016 2014 2012 2011 2004	[128] [129] [130] [131] [132]
2	Breede-Gourizt CMA (BGCMA)	1	Western Cape	2016	[133]
3	Msunduzi River Catchment	2	Kwazulu-Natal	2012 2012	[134] [135]
4	Lower Olifants WUA (LORWUA)	2	Western Cape	2004 2004	[136] [137]
5	Great Letaba WUA (LWUA)	1	Limpopo	2004	[136]
6	Vaalhart WUA (VHWUA)	1	Northwest/Northern Cape	2004	[136]
7	Umlaas IB/WUA (UIB/UWUA)	1	Kwazulu-Natal	2004	[132]
8	Hereford IB (HIB)	1	Mpumalanga	2004	[132]

4.2.2.1 Catchment Management Areas: Inkomati Usuthu and Breede-Gourizt

The National Water Act (NWA) of 1998 made a provision for the establishment of 19 CMAs. After evaluating the feasibility of 19 CMAs, they were reduced to nine in 2012 [138]. CMAs are water management areas at basin level with the responsibility of managing water resources in consultation with various stakeholders and interested individuals [139]. Only two out of the nine proposed have been established namely, the IUCMA and the BGCMA [109,139]. CMAs were seen as structures through which government would promote and drive the decentralisation process [109,139].

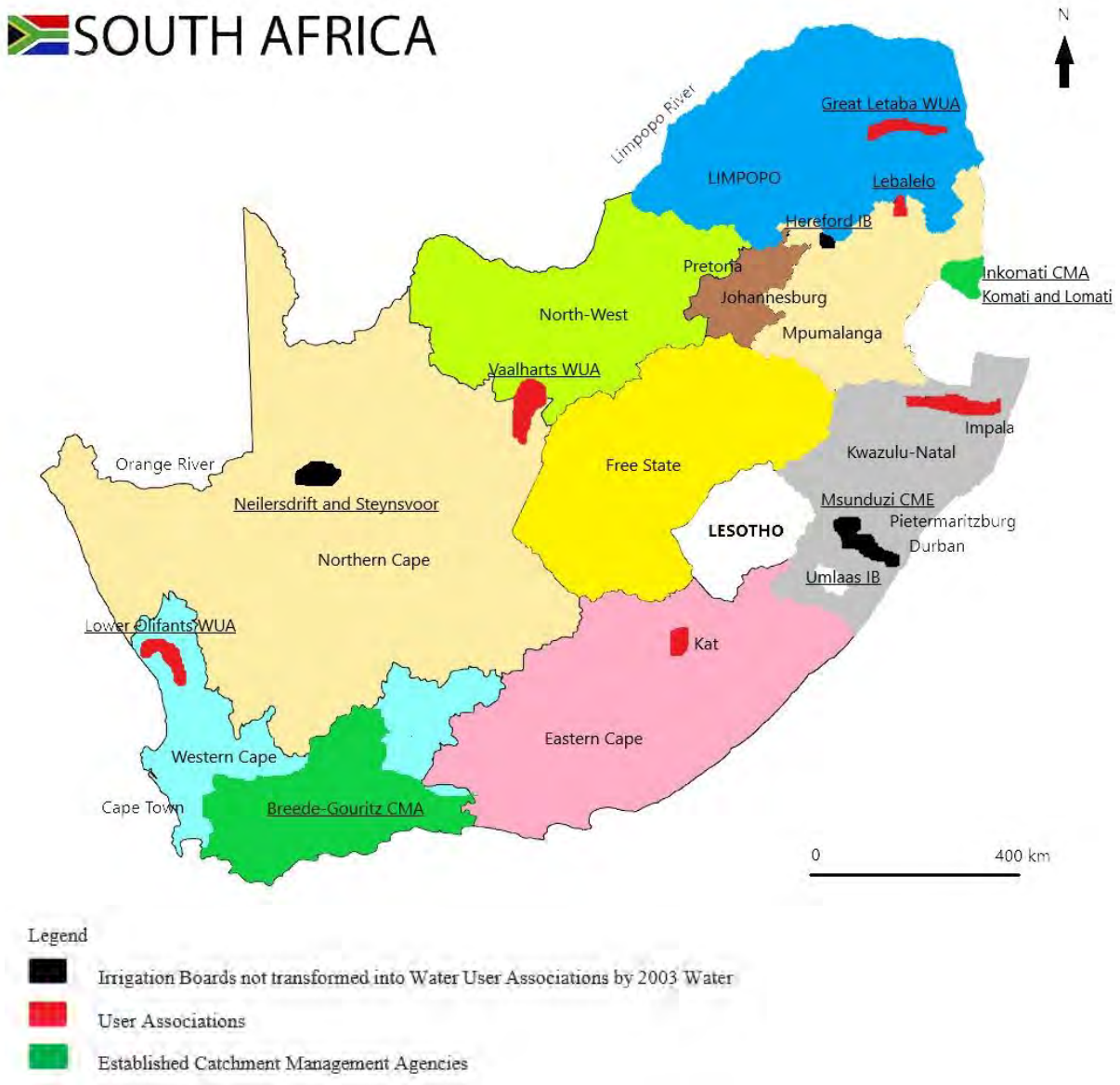


Figure 4.11 Map showing the locations of merged water governance bodies included in this study, Faysse N, et al 2004, Meissner R, et al 2016 [132,133].

Five case studies on the IUCMA were identified from ten articles included and reviewed, covering a period from 1994 to 2016. Participatory processes began in 1997 in Mpumalanga province and the enactment of the NWA (Act 36) of 1998 provided a mandatory basis for engaging all stakeholders to work together to ensure local participation towards equitable access and benefits [129]. The BGCMA, in Western Cape province was established in 2014 to promote community participation in water resource management among other duties. The findings in paper 2 indicated that participation in water governance had not reached intended levels, where incorporation of diverse views in decision making takes place [109].

Thus, the extent of community participation was inadequate and tokenistic, as per Arnstein's ladder of citizen participation [109]. The available literature on IUCMA and BGCMA indicated many factors that constrained the realisation of effective participation[139,140]. Given the diverse stakeholders involved in water management areas, with varying levels of education, skills, resources, and power relations, it was difficult to involve everyone in decision-making process [139,140]. In addition, there were administrative challenges, such as selecting appropriate venues for meetings, using suitable language, ensuring adequate representation, and human resources issues [109,139,140].

In paper 2, results on IUCMA and BGCMA revealed that enactment of the NWA facilitated early stakeholder engagement [109]. White farmers played a prominent role in the establishment of CMAs in order to maintain their power and influence in the management of basin water resources [109,130]. Prior to the introduction of the new constitution of the Republic of South Africa, 1993 (Act No. 200 of 1993), historically disadvantaged individuals (HIDs) were not granted voting rights in national elections due to apartheid policies [141]. In the case of IUCMA, white farmers were reluctant to include HDIs in water governance structures, fearing a loss of the shared vision and potential issues due to lack of knowledge and experience of HDIs in the NWA [128,130]. The pressure to stablish at least one CMA before the 2004 election resulted in renewed efforts by the Minister of Water and Sanitation, leading to a series of stakeholder engagement meetings mostly aimed at HDIs in the former homelands, at which the local language was used as the bridging language between HDIs and DWS officials [109,128].

The power to appoint CMAs board members lay with the minister. Successively, the nominated committee representatives were put forward to the minister as potential members of the CMA advisory committee. The advisory committee meetings were conducted in English without much regard for the comprehension and communication abilities of representatives from historically advantaged individuals (HDIs). These representatives played a crucial role in advocating for the interests of

HDIs in both the advisory and CMA meetings, as well as providing guidance and shaping the direction of the CMA [128,129].

The meeting venues were unsuitable and often located in high end hotels and resorts that were far away from the former homelands of HDIs. Additionally, there was little consideration given to the interests of HDIs, such as the opportunity cost of attending meetings and the potential loss of earnings [109,131]. The DWS employed consultants to facilitate stakeholder mobilisation and participatory meetings for the advisory committee. However, it was observed that there was conflict of interest regarding representation, with a preference for sectoral representation. As a result, the 14 member CMA governing board included only one seat for commercial farmers, despite them being the largest water consumers and expected to finance the CMA through water resource management payments. Discontented with the decision, commercial farmers decided to withhold payments, which were essential for maintaining the operations of the CMA [130,142–144]. This resulted in the IUCMA being faced with operational challenges only six months after establishment [128–131,143].

After conducting more in-depth examination of participatory water governance in IUCMA, several observations were made during and after the formation of the CMAs. The first observation was that the DWS staff lacked the necessary expertise and experience to ensure that proposals for CMA establishment were handled and reviewed in a timely manner [128,131,142]. The second observation was that HDIs lacked the capacity and competence to deal with water management affairs, and this was compounded by the inability to comprehend the concepts and technicalities of NWA, CMA reports and other materials [130]. Thirdly, there was an emergence of knowledge asymmetries between HDIs, and other stakeholders, as most HDIs had no knowledge or understanding of the NWA. Finally, representatives of HDIs avoided attending CMAs meetings as they believed that these meetings did not yield any meaningful outcomes that addressed their needs [143].

Furthermore, it was observed that the absence of communication from CMA representatives to the communities contributed to a lack of understanding of important discussions and processes related to CMAs, leading to a climate of

mistrust between the representatives and communities [131]. Some influential stakeholders were hesitant to participate in the activities and operations, such as the Nkomazi local authority, which was reluctant to join the WUA due to the concerns about increased water access costs [130]. The BGCMA board was found to be more accountable to the Minister in the water management sector, as evidenced by the Minister receiving regular reports from them [133]. Given the diverse range of stakeholders involved in water management, the CEO of the BGCMA held regular meetings with emerging farmers to collaborate with them [139,145]. Emerging farmers are black farmers who are supported and are willing to increase their agriculture production to operate on a commercial basis to attain improved profit than before [133].

4.2.2.2 Water User Associations: Lower Olifants, Great Letaba, Vaalhart, and Umlaas

The lower Olifants Water User Association, established in 2000 was the first successful WUA in South Africa and is situated in the Western Cape Province [146]. The Vredendal Irrigation board played a key role as a founding member of the Lower Olifants WUA during the transformation process towards participatory water governance. The management committee of the Lower Olifants WUA had a fair representation of all stakeholders, including HDIs and emerging farmers [109,136]. However, the participation of HDI representatives was limited, and community representatives reported that their voices were not being heard or considered in decision-making processes. The community was not consulted on the selection of representatives, nor were they involved in catchment water activities and processes [136]. Also, gender exclusion was identified as a significant issue that affected the participation of HDIs, particularly women, in water management [136]. The management committee was predominantly male, and gender concerns were not considered during meetings related to catchment water processes [136].

In the Great Letaba Water User Association, the water governance system was characterised by the exclusion and ultimate underrepresentation of stakeholders such as non-farming stakeholders, women water users, and farm workers in the management committee meetings, despite their expressed interest in participating in

water management processes and activities [109]. Other stakeholders, including municipalities and game reserve representatives, stopped attending the management committees' meetings, citing the lack of relevance to their operations, while workers unions were not considered in the initial public participation process. [109]. In addition, traditional leaders were not consulted in the decision-making process [136].

The Vaalhart WUA created a structure that guaranteed that all members had equal voting power of one vote per member, and there was gender balance. This resulted in an increase in women representatives and opportunities to participate in the management board from across the catchment [136]. In these spaces, both male and female members were treated the same. Thus, the board was highly considerate and intentional towards gender issues regarding meeting locations, schedules, and times compared to other WUAs [136]. However, limited involvement of some stakeholders was reported to result from the disconnect between farm workers and their representatives, owing to how the internal organisation of the farm-worker community was structured and managed [136].

The Umlaas Irrigation Board (IB) failed to transform into a Water User Association and was reported lacked representation of key catchment stakeholders, particularly HDIs and farm workers [132,136]. Forestry stakeholders were reluctant to participate in the WUA activities, citing the irrelevance of the discussions to their operations and local municipalities were not operational during the IB proposal formulation. Like other WUAs, the Umlaas IB lacked gender representation, and no advocates were present to address issues women's participation in water management. The Umlaas IB was reluctant to include members with prior experience, resulting in the HDI water users being the founding members [132]. The traditional structures were not utilized to maximise community engagement in water governance demonstrating a general disregard for the potential as a channel of participation [132,136].

In Lower Olifants and Greater Letaba WUAs, community representatives had difficulty understanding the language used in meetings, and over 70% of them were not aware of the NWA before attending meetings [136,147]. However, around 83%

of community representatives reported being aware of the NWA after attending meetings, with NGOs playing a critical role in disseminating information [137,147] The lack of knowledge and experience on commercial practices among HDIs was addressed through training and capacity building. While trainings were offered by the DWS, the Lower Olifants WUA had not lived up to its expectation of providing trainings and support to the majority of HDIs as per the WUA business plan [137].

4.2.2.3 Msunduzi CMF and Hereford IB

In Msunduzi CMF, participants reported that they lacked understanding of information presented in a participatory process due lack of skills, experience, and knowledge, hence meetings were dominated by commercial farmers. Their participation was limited as they could not meaningfully contribute to the process [134,135].

According to reports in Hereford Irrigation Board, emerging farmers were not represented in water management consultation though they expressed the desire to be involved in the future WUA and to be considered as equal partners in decision making processes [136]. Communication breakdown between farmers and Hereford IB resulted from ineffective dissemination of information to HDIs [136]. Hence HDIs were not aware of the NWA and standards required for the establishment of a WUA. Additionally, there was confusion over the amount of water received and the amount entitled, as well as uncertainty about who was responsible for paying for water on land emerging farmers were occupying [136,146].

4.3 Step 2: Analyse and Plan: Multisectoral collaboration:

4.3.1 Planning, and a developing local action plan to address lack of safe water

The objective of this programme went beyond co-production of local evidence. The programme attempted to empower communities to tackle the issue of lack of safe water, which was identified as a top health priority by the community through the creation and implementation of a local health plan. During the five multisectoral

workshops analysed for paper 3, stakeholders interpreted the community evidence and identified other stakeholders with influence to join the workshops [148]. An analysis of barriers to lack of water was undertaken to understand the problem (Figure 3.2). It was unanimously agreed by community, government, and NGO stakeholders that lack of clean water was caused by various complex obstacles at different levels in water governance. It was acknowledged that BBR like other municipalities predominantly serving rural communities faces many services delivery challenges.

BBR municipality, designated as a presidential nodal point, relies on conditional government grants, and has no capacity to generate its own revenue owing to high unemployment that leads also to extreme poverty. Stakeholders further identified inadequate accountability of water organizations and leaders, policies and strategies overlap or duplication, and insufficient dialogue between service providers and users as contextual challenges affecting service delivery. Dissatisfaction with municipal service delivery in the area has led to frequent service delivery protests which often turn out to be violent and disruptive, worsening the situation.

4.4: Step 3: Act /reflect: Approaches to the implementation process

In paper 4, insights and recommendations for action were jointly developed by stakeholders. Stakeholders recommended the municipalities to establish by laws and law enforcement strategies to address criminal activities such as illegal connections, vandalism, and violent protests. Furthermore, recommendations to establish additional funding policies to improve funding for infrastructure maintenance and generating own revenue were made, such as installing water meters to enhance revenue collection. Education and community awareness was highlighted as important with the potential to empower communities to understand water rights, and to exercise control and take ownership over decisions and actions affecting their health. Overall, the recommendations developed focused on an integration approach. Multisectoral integration of policy, and collaboration at all levels were agreed to reduce duplication of effort and to address the processes of exclusion.

A local action plan with seven local action items was jointly developed by all stakeholders with reference to key policies and strategies and embedded within the local context in which it was created (Table 4.3). A local context is a specific environment, in this study, the Agincourt HDSS, in which attention was paid to cultural social, organisational, and spatial conditions. Paper 4 of this thesis examined the implementation process of the developed action plan in the Agincourt HDSS over a period of four months. Over the implementation period, of the seven action items, three were achieved, one partially achieved and three not achieved. The action items that were achieved were river clean-up campaigns, awareness campaigns and building trust between communities and municipalities. River clean-up campaigns and awareness campaigns were led by IUCMA. All these action items required minimum additional resources with regards to finance and human resources. Annually, the IUCMA have four awareness and clean up campaigns, but they do not usually include other stakeholders and organizations. Community stakeholders, DoH and researchers joined the IUCMA clean campaigns as a result of the action plan. Follow up visit reports on both action items showed regular dialogue and meetings with various stakeholders during the implementation period. IUCMA provided the leadership required for the implementation of river clean-up and awareness campaigns.

Restoration and building of trusting relationship between the municipality and the community was achieved. This action was community-led, dialogue was initiated by the research team to bring the local municipalities closer to communities (service users). Workshops were organised, and regional managers connected with communities. The two local municipality managers shared information with communities on how the municipality functions, and challenges they face. The communities also narrated water related challenges they face. Interaction between municipality and communities enabled future plans for joint decision making and problem solving. It was agreed that the municipality and the community should meet regularly, giving an opportunity for communities to voice their concerns. Communities encouraged one another to take ownership of the water infrastructure in the community, to guard against vandalism and destructive service delivery protest.

Table 4.3 Progress towards local action plan

	Baseline	**Target**	**Implementation mechanisms**	**Outcome**
1. River clean-up campaign	Individual entities have clean-up campaigns, but other stakeholders are not involved	Involve all potential stakeholders	IUCMA volunteered to lead this action in partnership with other organizations. IUCMA had presence in the study site working in other villages. The research team, community representatives from the three villages we were working with joined the IUCMA stakeholder engagement team.	Achieved
2. Amplify CMA awareness campaigns.	Four awareness campaigns yearly in BBR supported by IUCMA. Event has been happening but does not include other stakeholders for example DoH, DSD.	Stakeholders around water use	Follow up visits indicated overwhelming support from the broader community and high attendance for the first quarter. IUCMA led the action item. There was connection and dialogue among IUCMA stakeholders, other government sectors such as Department of Agriculture, Land Reform and Rural Development and the community in the Agincourt HDSS. Communities from Agincourt study site, researchers joined the awareness campaign workshop held in Dumphries C village. During the workshop, information on water use licensing, water quantity and quality and compliance, illegal sand mining, and conservation (protection of wetlands and topsoil) was shared with all the participants. Other villages in the study site where this awareness campaigns were not happening, requested their villages to be considered.	Achieved
3. Build trust between Municipality and community	No dialogue	Activism campaign- we as South African: “LETS TALK ABOUT IT” to enable political tolerance	The research team created dialogue between communities and municipality. Contact was made with two local municipality managers to build relationships and create partnership. Municipalities (two) in the study site agreed to work with VAPAR to understand community needs. An official from one of the municipalities attended one of the workshops to respond to community issues. Through this we managed to create dialogue between communities and municipalities. The municipality reported that plans were underway to change to a bulky water system from Inyaka dam	Achieved
4. Advocate for a recycling centre	No recycling centre in the study site.	Engagement with relevant stakeholders with influence on the establishment of	This was a long-term action item; hence the initial steps were initiated, and consultation made with relevant stakeholders. Africa Foundation led this action. Follow up visits highlighted that there is a place to establish the centre. Africa Foundation is an NGO in BBR working in partnership with Sabi Sands reserve, which support it	Partially Achieved

		recycling stations in the community	financially. Africa foundation had the land and resources for a centre in Lilydale to cater for the villages in Agincourt HDSS. Community stakeholders did not attend meetings due to lack of resources.	
5. Water harvesting to attention of school and clinics.	Nothing was happening during the time of our process in Sep 2019 Some schools we're harvesting water but infrastructure not maintained and had stopped.	Increase awareness on water harvesting at schools and clinics	Led by DoE via Schools and DoH via clinic. Follow up visits indicated that stakeholders leading the process had multiple and competing priorities which hindered implementation of the action item. School governing bodies were meant to provide budget support and DoH had no budget. Resources which were donated to school were not maintained by the municipality. The researchers met with two local municipal managers to find out more about water service delivery at schools and clinics. It was reported that BBR is faced with water challenges and the municipality reported struggling to maintain some of the borehole system the communities are using.	Not Achieved
6. Advocate for water testing partnerships	Some water testing currently being done by DoH EHSs at some clinics. In the communities Africa Foundation test water for quality.	Identify group of potential role players and initiate deliberations with the local municipality	Africa foundation was nominated to lead they currently test borehole water. Africa Foundation advocated for collaboration between private/NGO partners to tests borehole and water tankers with support from Rand Water, municipality. Challenges were reported on clarity on roles and responsibilities on testing water during implementation follow up. Africa Foundation only test borehole water that they control. Africa foundation tried to bring municipalities on board but all the boreholes they have assigned to municipalities were not maintained.	Not achieved
7. Orient Executive Mayor to VAPAR	Mayor not familiar with the VAPAR research work	VAPAR reports with evidence and recommendations to be shared with the mayor.	The researchers found it hard to engage with the mayor. The mayor's office was busy preparing 2019 elections. The mayor confirmed availability in May 2019 after so many failed attempts from the beginning of the implementation period of Jan 2019-April 2018.	Not achieved

Advocating for a recycling centre was partially achieved. This was led by Africa Foundation, an NGO in the community with support from the community, municipality, and other stakeholders. Africa Foundation had resources available such as land and financial support, but the action item was partially achieved as this was a long-term action item which could not be completed within the four-month implementation period. Follow up visits revealed initial contacts and meetings were done with relevant stakeholders but not all stakeholders attended planning meetings. Owing to multiple competing priorities among other government stakeholders, this action item was left to the sole responsibility of Africa Foundation.

Of the seven action items, the three action items not achieved were water harvesting, water testing and orienting the mayor to the VAPAR programme (Table 4.3). That these three action items were not achieved highlights the complexity of bringing multi-sectoral stakeholders together during implementation. The action items developed involved re-organization of existing services, low cost, or no-cost behaviour change. Many barriers to implementation were reported. Some of the limiting factors to implementation reported by stakeholders included the implementation approach (meetings, communication, coordination, and decision making), resources (time committed as required by the process in relation to other work and finances), leadership, and program timing. On closer examination, the follow up visits revealed that despite stakeholders volunteering to progress the action items, no joint meetings were held with stakeholders as planned despite efforts by committed stakeholders to reach out and provide leadership. Stakeholders reported multiple competing interests and lack of ability to mobilise resources for implementation. The research team took the initiative to orient, provide and share information regarding the VAPAR project with the BBR executive mayor's office. The program's timing was wrong, the mayor's office was busy with the preparations for the 2019 municipal elections and priority was given to primary roles.

4.4.2 Community stakeholder reflections on the process

Participant involvement in identification of priority topic, problem definition, data collection, expansion of the participant base, interpretation of the data, planning of the local action plan and implementation was a new experience and well received

among community stakeholders. For community members, this has been the first time they engaged with service providers as equal partners on health issues. The process embodied and reinforced the principles of openness, transparency, respect, humility, equality in sharing of power and control of the process. No one was considered an expert, researchers and participants worked together to explore water challenges and jointly develop recommendations and solutions. In this study we used the term co-researchers interchangeably with participants referring to non-academic stakeholders who were part of this process and were treated as equal partners. Co-researchers included both community stakeholders (service users) who were affected by the issue identified, government and NGO stakeholders (service providers)

> *"Here we are all equal, there is no one who is smarter than the other. There is no wrong or right answer. VAPAR team allows everyone to speak their minds, we are not afraid to raise our issues…. Our views and opinions are considered and valued"* [Community stakeholder]

In this process, creation of knowledge and learning was realised through various participatory action research tools. The problem tree was used to build collective understanding of the health problem and was also used to build skills of working in a partnership. The problem tree was well understood and simple for all the participants. The Venn diagram was used to allow participants to develop the ability to map relevant actors, institutions, and inter-relationships. From this, we moved to more complicated tasks of learning, developing strategies for action (action pathways) drawing from outputs from the problem tree and Venn diagram. The action pathway was reported more challenging, although the recommendations developed into action plans. Overall, the participants reported that they were able to understand the process.

> *"Using the problem tree, Venn diagram and the other tools for planning action for the first time was not easy but now it is easier now. It shows that we are learning"* [Community stakeholder].

The participatory data collection tools such as photovoice were easily accessible and encouraged active participation. Even some of the participants who were illiterate

actively took part throughout the process and confidently shared and presented visual evidence. One of the participants, om interpreting her image to the group said:

> *"I took the photo next to the river. People were washing their laundry. There were both children and adults. The water that they were using is dirty. Dirty water makes white clothes off white. The place is also dangerous because there are snakes, wild animals and even crocodiles*". [Community stakeholder].

The actual implementation of the action plans leads to another level of learning. Participants reportedly developed skills while leading the action items and implementing them despite actions items not all being achieved. Continuous interactions with co-researchers within and outside their community from priority setting to implementation of the local action items supported learning from each other, understanding of their own value, confidence, self -esteem and development of interpersonal relationships.

> *"I am happy because being involved in this process helped me to understand things that I did not know before, like if there are problems related to water or alcohol abuse, we know where to go and what to do"* [Community stakeholder]

Experience of the VAPAR program created new ways of thinking for some participants. Others described how being part of the process provided a sense of solidarity and mutual understanding. Remarkable commitment was demonstrated throughout the process. Only participants who died or got new jobs or relocated to other provinces dropped out of the study. Despite normative support for participation, minimal relationships of communities with service providers such as the municipalities and local area NGOs before the VAPAR programme were reported. Participants expressed satisfaction with the level of participation, their priorities and views were considered and implemented. In their role as co-researchers, community participants developed collected capabilities to raise issues of local relevance, i.e. lack of water and alcohol and drug abuse (discussed somewhere else) [91]. Reflecting on their experience, participants mentioned of skill development as a result of their in involvement in a PAR programme, better networking and information

sharing between community and government and non-governmental stakeholders, and the formation of new and improved relationships built on trust between the municipality and the community.

At community level as highlighted above, the community unanimously agreed they require taps in every household as an overall long-term goal. This goal raised expectations regarding the possibility of improvements in water infrastructure and availability. This was beyond the scope of the programme due to limited resources. However, dialogue was initiated with municipality and relationships improved. Participants were dissatisfied with the level of reimbursement but the benefits of being in the program motivated them to continue with the programme.

4.3.3 Service provider reflections

Overall, the process created spaces for dialogue for various stakeholders from different government departments, NGOs, and other institutions, building shared understandings of the problem from community and service provider contexts. The process promoted integration of various actors to collectively plan and implement the local action plan. Participants highlighted the importance of mutual learning which the process offered through PAR tools. When they were recruited, new stakeholders, initially did not know what to expect and what the process would entail. For service providers, this has been the first time that they were engaged with community members as equal partners in finding health solutions to a community led process. Engaging with community stakeholders as co-researchers did not only help government stakeholders to understand lack of safe water in the local context but prompted a shift in power relations and collective responsibility. In practice this was rare, coordinating all stakeholders and organizing times and venues convenient to everyone is a logistical nightmare.

> *"This programme was important for me. I got insight on how other government sectors operate and working together with communities and other sectors was inspirational. I also learnt how to engage service users in decision making and planning"* [Government stakeholder]

Reflecting on the process, government stakeholders reported that their perception and attitude changed, as they began to value community knowledge and understand community voice. For many stakeholders, this process provided a new way of working, and underscored the benefits of collaborating with other sectors. These benefits included building relationships, forming new networks, and exchanging information and knowledge. The experience proved to be enlightening for many stakeholders. Overall, participants reported the process as instrumental in creating safe spaces for dialogue, raising community voice, and ensuring that interventions are aligned to local priorities. However, the stakeholders were also concerned with the sustainability of the process beyond project life. Some of the challenges included competing priorities, limited resources, leadership, and organizational support beyond the project life. Finally, participants remarked that the implementation period of four months was short, and it was premature to determine the impacts and contributions of the programme made.

CHAPTER 5: DISCUSSION

The aim of this thesis was to explore how a participatory process could facilitate the co-production of locally relevant evidence and learning in a rural area of northeast South Africa. In this section, I discuss substantial findings on lack of water as a community nominated health priority; health and water governance; and reflect on the acceptability and reproducibility of the method. Furthermore, I explore how evidence co-produced in partnerships with service users/ community, researchers and service providers can result in action to improve health.

5.1 Lack of clean water

Globally, gradual improvement has been made with 74% of the population gaining access to clean drinking water in 2020, compared to 70% in 2015 [149]. In South Africa, despite overall improvements in access to water, our results demonstrate a very different picture [101,150]. Findings in paper 1 show that life was a continuous struggle without access to clean water in the villages examined in this thesis [101]. Some people reported still having to fetch water from unregulated sources such as rivers, wells, and ponds [106]. Though our participants were not selected randomly, neither were they all recruited as individuals specifically experiencing water shortage. Importantly this indicates that national statistics on water access may not provide clear insights and accurately depicts the actual challenges and circumstances related to accessing water [101]. Through the PAR process, a local evidence base was co-produced, to understand the socio-economic and health consequences resulting from the absence of safe water.

The findings in paper 1 conform with the patterns, causes and challenges of water insecurity which have been reported in rural South Africa [72,101,151–153]. The National Water Act of 1998 supports inclusive stakeholder participation. Although participatory water governance has been supported in South Africa as a standard practice, unequal access to safe water continues to be a persistent issue [72,154]. Despite the BBR local municipality being a presidential nodal point, infrastructure is either poorly developed, not maintained or not existent [72,106] like other rural

communities, while urban areas have better developed infrastructure. The problem of lack of access to safe water sources is not limited to South Africa, many less developed countries (LDC) have challenges extending services to rural communities [149,155]. The COVID-19 pandemic further heightened and exposed the water crisis and challenges in many rural, poor marginalised communities.

Globally, the lack of safe water, sanitation and hygiene account for 3.1% of yearly deaths and 3.7% of the annual health burden [149]. As the world reaches the five-year mark of the Sustainable Development Goals (SDGs), little progress has been made towards achieving SDG6 “to ensure availability and sustainable management of water and sanitation for all”. Worldwide, particularly in LDC, lack of access to safe water increases vulnerability to infectious diseases including diarrhoea, cholera, typhoid, dysentery, polio, and schistosomiasis [149,156,157]. By nominating water as a health priority, (paper 1), communities recognised the linkage between water and health. They understand that improving water supply will enhance the realisation of greater benefits which include health, economic and social [149,158]. Progress towards SDG 6, for example, can lead to improvements in health and wellbeing (SGD3), which may also lead to poverty alleviation and reduction (SDG1), and zero hunger (SDG2) [159–162]. Globally, research evidence demonstrated linkages between SDG6 with other SDGs including SDG3 [160,161,163].

The findings of the first paper highlight significant challenges in inter-sectoral dialogue and collaboration. It is evident that there is insufficient communication across sectors, limited collaboration among service providers and a lack of integration of relevant departments during planning and development of programmes and interventions [101]. Despite the presence of policies supportive of community participation, the BBR local municipality struggles to effectively engage with communities. These findings corroborate with prior studies that underscores the marginalisation of rural communities in policy and decision-making processes [149,164–167].

In contrast, the findings in paper 3 shed light on a more positive aspect of the research. While the DOH had no direct statutory mandate toaddress lack of water, adjacent departments (DSD, COGTA, DWS etc) were successfully engaged in a

multisectoral learning platform. Through collaborative efforts, a local action plan was developed [148]. This demonstrates that the PAR process provided an opportunity for relevant service providers (stakeholders) to connect with communities and each other. They were able to respond to priorities outlined by communities through multisectoral collaboration, ultimately giving a voice to the marginalised members of the community. Furthermore, the experience highlighted the potential of context specific multi-sectoral collaboration in not only addressing critical issues but also in restoring relationships, building trust and renewing public confidence in government and public institutions [10,148].

In paper 3, connecting service providers and service users in an inclusive PAR process offered a more nuanced understanding of the underlying factors contributing to lack of safe water [148]. This approach was critical in co-production of locally relevant research evidence through collaborative efforts [148]. Situating dialogue in neutral settings, rather than formal government invented spaces, while developing local action plans to tackle water challenges was crucial. This approach not only ensured the voices of the marginalised were heard but also in facilitated mutual understanding, shared knowledge, and relationship building among various stakeholders [148]. According to Megdal et al [165], sustainable water governance requires shared knowledge systems. The findings in paper 3 showed that researchers engaging stakeholders within the provincial and district health system and outside the health system in a learning platform has the potential to promote knowledge transfer from the researchers to potential users (policy makers) and vice versa [6,148,165].

In practice, a disconnect often exists between research findings and policy implementation [168]. According to Owens [169], research evidence is hardly used in decision making and policy formulation. There are significant factors that hinder uptake of research evidence by potential users or policy makers [168–171]. While researchers may produce high quality evidence, there is often lack of collaboration between researchers and decision makers [6,169]. The evidence produced at times is not always accessible or understandable or may be misinterpreted by policy makers [168,170,171]. In addition, policy makers or decision makers may have different priorities and incentives than researchers or affected communities, which

can lead to the prioritisation of certain types of evidence and a lack of interest to use existing research evidence [168,170,171]. However, the PAR process (paper 3) promoted translation of research evidence into actionable policy recommendations and provided service providers with easy-to-use summaries of research findings in the form of research briefs.

In many LMICs, both implementation of policy and utilisation of research evidence in public health systems is weak as a result of political patronage, lack of political commitment, corruption, underinvestment, lack of community participation, poverty and inequalities [26,164,170]. This process, through inclusive stakeholder participation, sought to bridge the research practice gap. During the process, prioritising health issues communities regarded as important, jointly interpreting and analysing data, and collaborative planning for action, were key to addressing exclusion of the marginalised from decision making and enhanced the legitimacy of decisions made [148,171]. In line with findings from other studies, meaningful participation and long-lasting outcomes occur when people affected by and interested in the issue are involved in the process of driving change [89,92,172,173]. The process of identifying and bringing stakeholders to work collaboratively has the potential to influence change within the healthcare system.

Paper 4 findings provided a foundation on which to develop evidence-based solutions to enhance effective implementation of the action plans [148,174,175]. However, the feasibility of collaborative learning and sustainable outcomes depends on supportive leadership at higher levels and availability of resources. Even though collaborative action plans were developed and led by interested stakeholders and affected communities, implementation barriers were encountered [6,148]. The development of a local action plan involved reaching a consensus and included a feasibility assessment [148]. However, implementation barriers involved lack of resources, and lack of institutional support. Developing relationships, creating networks and safe spaces for dialogue was feasible and achievable, but sustaining linkages was difficult [148].

The participatory process encouraged co-learning through regular interaction with others, co-production, and interpretation of evidence to minimise power imbalances and promote equal partnership [6,148,176]. Adequate facilitation was provided to neutralise powerful and dominant stakeholders [148,177]. Working with DoH as equal partners alongside communities and non-governmental stakeholders promoted sharing of power and responsibilities. However, changing the stakeholders' level of power and interest was more challenging due to political and historical backgrounds [57,148]. For example, IUCMA was able to command the resources to advance the action, while rural community stakeholders had less ability to strategically do so [9,148]. In future application of these methods, more time is needed to build sustainable relationships and develop capacity, and greater attention must be paid to power dynamics and to how marginalised communities participate. Emerging evidence indicates that sharing of power and responsibilities in participatory spaces has the potential to improve problem-solving capacities, strengthen collective action and generate more legitimate solutions acceptable to the wider population [12,37,178–180]. The findings from this study underscore the importance of considering participation as a dynamic and evolving process within a large socio-political landscape, manifesting at multiple levels and across various landscape.

5.2 Institutionalisation of community participation

Globally, community participation has been progressively institutionalised [5,7,109]. In South Africa, institutionalisation of community participation in health and water governance was implemented to promote efficiency and effectiveness of programmes while contributing to processes of democratisation and empowerment [123,179,181]. It is argued that involving people in planning and decision making on projects and programmes results in better project outcomes, enhances capacity of marginalised communities, improves social learning, public trust, relationships, legitimacy, and increases acceptance of decisions made [7,37,165,166,180,182–184]. The findings in paper 2 highlights that institutionalisation of participatory processes was central to health and water reforms aiming to promote inclusive and meaningful participation at the local level. This was a crucial process in South Africa post-apartheid, which aimed to redress structural inequalities and enable

communities to make decisions affecting service delivery in their areas [109]. Institutionalisation of community participation was expected to solve complex local problems and address exclusion from decision making [109]. Findings in paper 2, both in health and water governance structures, many challenges and limitations were encountered resulting in participation being mostly tokenistic [109].PAR is context-specific, the narrative review has the potential to help researchers to adapt their PAR process to address the unique challenges and dynamics of participation in health and water governance structures.

In water governance, from 1996-2016, created spaces were functional, well-funded, autonomous, and better structured than in health [109]. However, progress with implementation of participatory process was undermined in later years due to failure to maintain momentum and draw on expertise from multi-stakeholders. There was also little progress made eliciting the voice of the marginalised, including practical experience of those working and living in the local communities. In contrast, embedding community participation during the design and implementation of water supply projects led to increased satisfaction with the project in Indonesia, India, and Sri-Lanka [37,185–187]. In Ethiopia, community participation with Water Aid work resulted in highly motivated communities, development of locally relevant solutions, and responsive and accountable systems [187,188]. However, Osmani [189] cautions against endogeneity problems, where a community's decision to engage in a process depends on the process's success.

Cleaver and de Koning [190] ascertained that institutions developed to promote participation in water governance often involve complex, non-linear interactions, and are interwoven and shaped by everyday dynamics and historical backgrounds [190]. In South Africa, only two CMAs out of the nine planned have been established due to the complexity of bringing together diverse stakeholders [140,191,192]. The complexity was attributed to various factors, including time, cost, representativeness, accountability, and power relations [134,140,191,192]. This thesis revealed notable gaps in policy implementation, underlining the fact relying solely on institutionalising community participation is not a panacea for achieving effective governance [109]. The findings indicate that meaningful participation is more than mere creation of structures. Institutionalisation of participatory process should be about engaging

disadvantaged and marginalised communities in decision making to reduce inequities while establishing trusting relationships [54,109]. These findings in paper 2 reflect the need to create functional and sustainable institutions with a focus on improving power relationships, representation, resources, and accountability for effective and meaningful participation [109]. In addition, institutionalisation of participation in the health sector via health committees was mostly tokenistic in all provinces, despite the mandate to foster inclusive decision making at local level.

In paper 2, the role of local communities in health committees was limited, due to various issues of power imbalances, inadequate representation, lack of capacity and skills [109,129,140,143,191]. Participation was tokenistic, the communities' expectations were not met and their capacity to bring about change, facilitate legitimate learning platforms and empower proved minimal [109]. Paper 2 results support findings by Rollason [193], which highlighted that created spaces in integrated catchment management agencies were often dominated and led by experts, with limited local control of the intervention. In this context participatory processes were embedded within convectional policies and practices that follow a hierarchical structure, supporting decision-making led by experts perpetuating unequal power dynamics between the service providers and the communities [8,193]. While formalised governance spaces have great potential to be highly effective in establishing legitimate institutions improve efficiency and equity, the evidence presented in this thesis suggest that realising this potential is often difficult in practice [8,37,109,193].

Osmani identified three gaps that inhibit effective participation: 'capacity gap', 'incentive gap' and 'power gap' [189]. These gaps were also noted in this thesis and influenced who participated and how they participated in these created spaces [109]. In WUAs, for example in the Great Letaba WUA, the association was not organised to nominate a representative to the management committee and the governing board of the ICMA [109,192]. According to Popay et al [11], facilitating effective participation requires supporting disadvantaged and marginalised communities by providing capacity building initiatives. This can be achieved through good mechanisms of participation that are transparent, that enable a learning process and transfer of knowledge to take place while accepting local or alternative knowledge as

credible [11,193]. While formal participatory spaces in the water sector were established more systematically and were highly inclusive, effective participation was hindered by the inability to comprehend technical information, inability to work in a team and failure to access information by historically disadvantaged individuals and community organisations [109,132,192,194]. These problems of lack of capacity and empowerment among marginalised individuals, and local level governance structures are not limited to South Africa, and they have constrained participatory process's potential to promote efficiency and equity in practice [37,165,174,190,193–195]. Professionalisation and empowerment of participants through capacity building would remove the barrier to effective participation [193,196,197].

Paper 2 findings illustrate the challenges in achieving good mechanisms of community participation and high levels of citizen empowerment in water resource management were difficult to achieve despite provision of guidance in legislative instruments and policy [109,144]. In South Africa, the CMF and the WUA paid little attention to the needs and priorities of historically disadvantaged individuals while the interest of powerful stakeholders (white commercial farmers) dominated the local decision-making processes [109,139,174,192]. Despite involving stakeholders in the water sector at an early stage in the planning of the establishments of two CMAs, access to water for the emerging farmers remained a challenge [109,139]. However due to a broad consultation process, fatigue was reported, and participation waned as stakeholders did not see any tangible / potential benefits to continue investing time and effort [139,174,198]. In Mexico, for example, the participatory space for water governance were adaptive and context sensitive [199]. Furthermore, the farmers played an active role in the planning and decision-making processes because the majority of them were benefitting from the outcomes of commercial farming [199].

Despite improved coverage, findings in paper 2 also indicated that although there was an increase in health committees established between 2008-19, they still faced challenges of functionality and sustainability problems [109]. Additionally, the level of participation in health committees was limited to the lower rungs of Arnstein's ladder, suggesting that there was limited transfer of decision-making power in the process [200]. The role of health committees was often supportive, with no collaboration nor

linkages to other decision-making structures. The lack of adequate support, no clear mandate, and inadequate training made it difficult for the health committees to perform governance roles [123,200,201]. Moreover, lack of payment and recognition of the services they provide hampered the ability of the health committees to meaningful participate [184,202]. Similarly, a sub-Saharan Africa review that examined the impact of committees established in the region found that they had limited effectiveness in holding PHC accountable on service delivery and voicing the needs and priorities of communities they served [201]. This was primarily due to lack of legitimacy and capacity within the committees, as well as the hijacking of participatory spaces by powerful service providers [201].

Despite institutionally embedding stakeholder participation, paper 2 findings indicated that lack of support from the DWS to address power imbalances among stakeholders in CMAs and WUAs hampered meaningful participation [109,139,198]. The results presented in paper 2 align with existing literature, which suggests that collective decision-making without due consideration of the interests of smallholder farmers can reinforce rather than reduce inequalities [109,174,193]. In Sweden, asymmetrical power relations in participatory water governance spaces exacerbated marginalisation, where powerful stakeholders in government were unwilling to involve the Sami groups (Sweden Indigenous people) in the review of hydropower licences [203]. The literature reflected the need for addressing power imbalances and community empowerment in participatory spaces through capacity building to level the playing field [11,12,174]. According to Reed's [10] review, the key principles for promoting effective participation are rooted in a philosophy that prioritizes 'empowerment', 'equity', 'trust' and 'learning'. Why learning opportunities? These spaces can be trusted and valued by all stakeholders and are economically sustainable, governable, adaptable, stable, and responsive. We integrated the findings from the narrative review into the PAR process to guide the designing of a more effective, contextually relevant, and responsive local action plan. In addition, the barriers to participation identified in the narrative review can serve as evidence to advocate for policy changes that promote greater community engagement in both health and water sector.

5.3 Methodological reflections

The MRC/Wits-Agincourt Research Centre, hosting the Agincourt HDSS, facilitated the creation of safe spaces in which to engage otherwise disconnected actors in a collaborative learning process across various government departments. The results in paper 4 indicate that the local action plan was partly achieved. Citizen control was promoted through prioritising the preferences and interests of service users (community members) [6,39,148]. A review of literature shows that when participatory processes are designed as a learning process, barriers to effective participation such as power imbalance, trust, representation, and legitimacy would be minimised [10,16,174,201,204]. Moving away from being tokenistic, our process was designed in a way that allowed transfer of knowledge and learning. In recognition of this, the process was non-linear and iterative through a series of participatory learning activities that built upon each other, fostering collective decision making, shared learning and mutual understanding of lack of safe water.

This thesis recognises that lack of access to safe water required action both within and outside the water sector. The importance of connecting different actors to co-design and co-produce evidence, create dialogue and promote learning as well as to develop and implement a local action plan, was essential for meaningful collaboration to tackle lack of safe water. The participatory process was adaptive, different sources of information were integrated, and evidence produced was relevant and context specific. Communities in this thesis provided rich narratives and visual evidence of lack of safe water. Though this thesis was conceptualised and designed to facilitate learning, Wyborn [175] underscores the ability of stakeholders to 'connect knowledge with action', looking at how individual characteristics such as leadership skills, resources, and time intersect with institutional factors. Connecting knowledge with action is influenced by the legitimacy of networks and relationships created and the power they have to influence decisions [175]. Literature suggests that in participatory processes, power plays an important role in knowledge production and the ability to act on evidence and the sustainability of relationships and networks [205]. According to Foucault [206] p.93, *power is 'everywhere, because it comes from everywhere*'. Moon [207] identified a power typology in health governance, that takes cognisance of the unique form of power each actor has or

may be available to them to act on evidence. For example, in this study, IUCMA was able to progress the action item, but community stakeholders had less economic power to do so. In future application of this method, careful attention to power structures needs consideration during implementation.

From this thesis and literature reviewed, it can be concluded that participation in participatory processes can be influenced by multiple factors as depicted in Figure 5.1. The nature of space in which participatory processes take place can influence participation in several ways, including the level of comfort and trust that people have in the space, the perceived legitimacy of the process and the accessibility of the space for those who wish to participate. In general, spaces that are perceived as safe, inclusive, and accessible are more likely to encourage participation while spaces that are perceived as exclusive, intimidating or difficult to access are likely to deter participation.

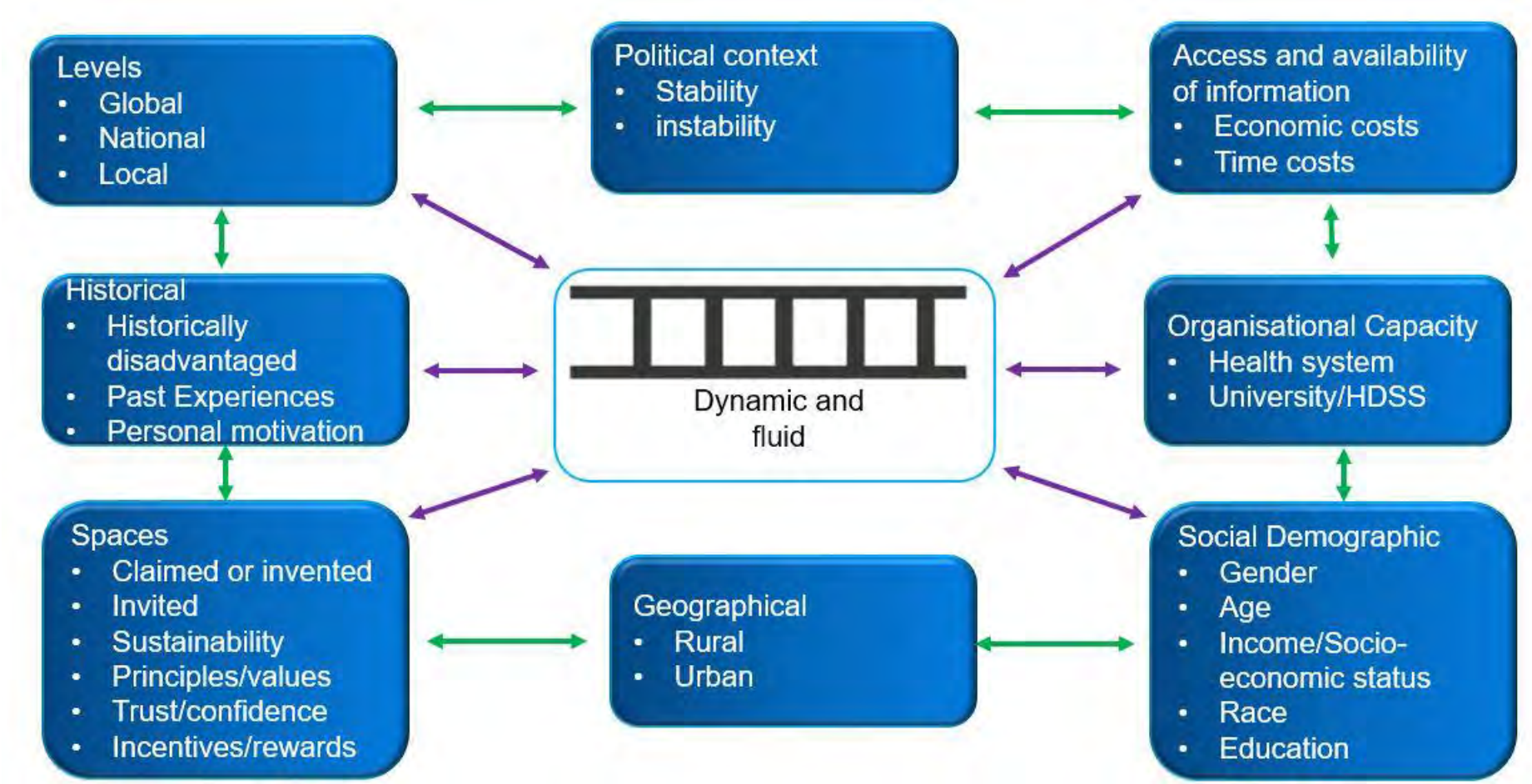


Figure 5.1 Factors that affect participation in a participatory action research process, adapted from Arnstein 1969 [39]

5.4 Strengths and limitations

In this study, the participatory process created spaces to connect different actors from the community, government, and local NGOs, who would not usually come together to jointly address lack of safe water. The long-standing relationship of the Agincourt HDSS played a crucial role in facilitating short-notice engagement, highlighting the benefits of sustained collaboration in participatory research. In these created spaces, dialogue was supported, trust established, and learning was achieved through continuous interactions. The co-design process, which involved the community in such activities as prioritisation and reaching out to potential participants, fostered shared responsibility right from the very beginning. The process demonstrated the embodiment and reinforcement of participatory principles such as respect of others and collective decision-making considering the highly heterogeneous participants with people of different demographic characteristics and educational background. This process was committed to capacity building through reflection and learning through action. Existing literature shows that relationships, learning, and empowerment in participatory processes can be achieved when participants have adequate time to interact through iterative engagement processes [6,10]. In this study, repeated activities over a series of workshops promoted learning and knowledge transfer among and between service providers, communities, and researchers. In his study on HIV education and empowerment titled “Stepping Stones”, Kesby [208] determined that participation is a type of power because both learning and action components are embedded in the process and outcome of the research. Empowered participants were provided an opportunity to ‘occupy decision-making space’ [209].

PAR principles are to co-design the research with the community right from the beginning, and throughout the process. In this study, community participants identified lack of safe water as their priority health issue which was not one of the DoH’s priorities although it is a social determinant of health. However, to refrain from violating PAR principles, the priority topic was progressed to allow ownership and benefits of the research process to often marginalised community stakeholders. The research respects local knowledge priorities.

In PAR, problems of power are pervasive however, in this study, the approach remains resilient to elite capture as it was informed by community needs and priorities. In addition, photo voice stimulated active participation inclusive of illiterate stakeholders who confidently presented visual images. Highly skilled and adaptive facilitation to deal with divergences, conflicts and complex challenges of unequal power was useful. Different participatory methods and tools (group model building, problem tree, rich picture, photovoice) were employed at different stages dealing with increasing complexity of the process while ensuring explicit inclusion.

The process required time and commitment to build and sustain relationships and could not be covered as an additional item on the already full agendas of some stakeholders in full-time employment. In addition, the implementation of the local action plan was dependent on institutional and community resources, and without funding from the study, the process may be difficult to sustain beyond project life. The study's findings are context-specific to the Agincourt HDSS, in where the research was conducted and may not easily generalisable to other settings. However, the model has the potential for applicability, particularly within the context of other HDSS in South Africa. This potential is noteworthy given the increasing prevalence of HDSSs across the country and beyond.

Ensuring meaningful contributions from all participants was challenging due to the heterogeneity of the group, particularly community participants without prior experience. Despite being informed by community needs and priorities, power imbalances still existed within the process. Nonetheless, the potential impact was recognised. This study was central to support the development of collective capabilities, generating locally relevant evidence with direct applicability to real-world contexts and informing subsequent cycles of the PAR process.

CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

This research process was designed to work with community and service provider stakeholders as equal partners to address water challenges, a community nominated health priority. The process reflected core commitment and willingness to collectively generate local knowledge on water challenges and develop action locally relevant among service providers and communities. Including community members in the design, planning and implementation of the local action plan allowed for greater participation and provided opportunities for diverse perspectives to be incorporated into the solutions. Furthermore, the empowered participants took an active role in the decision-making process.

The participatory approach supported the building of relationships and facilitated mutual learning, providing a foundation for improved capacity and meaningful engagement among participants throughout the process. In collaboration with stakeholders, the process was context-sensitive considering political, cultural, historical, and economic factors. The reflective action-learning process facilitated the provision of safe spaces for building partnerships and enhancing dialogue between community stakeholders and service providers regarding lack of safe water. Establishing participatory spaces in rural communities has the potential to not only increase awareness of local health concerns but also foster mutual accountability.

With respect to empowerment, the created spaces were flexible, transparent, and responsive to the community health priority, potentially building capacity for stakeholders to meaningfully participate in decision-making and increase local control and shared responsibility. Despite partial achievement of the action items, the Agincourt study area within which this work was embedded, provided neutral and mediating spaces for engagement that brought stakeholders together to address the complex challenges of local water scarcity. In addition, the space was perceived as safe, inclusive and accessible to both marginalised communities and service providers where change was expected to happen.

The implementation of the local action plan relied on both institutional and community resources, and without funding from the study, maintaining the process beyond the project's lifespan may prove challenging. Financial resources are usually needed to strengthen the capacity of community stakeholders to empower them to act. Successful participatory processes require long term engagement, and support, as well as sustained connection with higher levels. However, the PAR process holds the potential for sustainability beyond the initial project phase within a HDSS. This potential stems from the active community engagement, the development of local capacity, and the establishment of mechanisms to secure ongoing support.

Based on my experience and findings through my PhD research, I propose the following recommendations in planning a PAR process:

- Ensure that careful consideration of historical, cultural, political, and economic factors is central to the design of participatory processes, in order to foster meaningful participation and achieve sustainable outcomes with active involvement of all stakeholders.
- Encourage transparent and inclusive decision-making from the start to foster fairness and accountability in the process.
- Ensure equitable influence over the production of knowledge, interpretation, analysis, and dissemination of research outcomes among all stakeholders.
- Foster a sense of co-ownership in the research process by allowing for mutual exchange of expertise and power between researchers and participants. For example, in this study, the expertise of other stakeholders was sought: the Department of Water Affairs and other stakeholders interested in and with influence on water supply were included in the process and analysis of the problem.
- Embrace self-reflexivity as a key component in the participatory process to enhance effectiveness and impact of the intervention.
- Implement skilled and sensitive facilitation that fosters inclusive participation and meaningful dialogue, incorporating both PAR methods for data collection and analysis (e.g., problem trees and photovoice), as well as indigenous or traditional approaches such as storytelling and songs.

- Despite the pervasiveness of power, the participatory process should be rooted in a philosophy that prioritises learning and empowerment to ensure inclusive and equitable outcomes.
- Ethical PAR should look beyond immediate research goals. It should consider the long-term impact on participants and communities, striving for positive, sustainable change that respects their rights and interests.

REFERENCES

[1] Achoki T, Sartorius B, Watkins D, Glenn SD, Kengne AP, Oni T, et al. Health trends, inequalities and opportunities in South Africa's provinces, 1990–2019: findings from the Global Burden of Disease 2019 Study. J Epidemiol Community Health (1978). 2022;76:471–481.

[2] Mayosi BM, Lawn JE, Niekerk A Van, Bradshaw D, Karim SSA, Coovadia HM, et al. Health in South Africa : changes and challenges since 2009. The Lancet. 2015;380:2029–2043.

[3] Obuaku-Igwe CC. Health Inequality in South Africa : A Systematic Review. African Journals Online. 2015;19.

[4] WHO and UNICEF. Declaration of Astana. GlobalConference on Primary Health Care. WHO. 2018.

[5] WORLD HEALTH ORGANIZATION (WHO). Handbook on Social Participation for Universal Health Coverage. 2021.

[6] D'Ambruoso L, Mabetha D, Twine R, Merwe M Van Der, Hove J, Goosen G, et al. PLOS GLOBAL PUBLIC HEALTH ' Voice needs teeth to have bite '! Expanding to address alcohol and drug abuse in rural South Africa. 2022;1–28.

[7] McEvoy R, Tierney E, MacFarlane A. 'Participation is integral': understanding the levers and barriers to the implementation of community participation in primary healthcare: a qualitative study using normalisation process theory. BMC Health Serv Res. 2019;19:1–14.

[8] Shunglu R, Köpke S, Kanoi L, Nissanka TS, Withanachchi CR, Gamage DU, et al. Barriers in Participative Water Governance : A Critical Analysis of Community Development Approaches. 2022;

[9] McDonald B. Professional Power Struggles in Participatory Research. J Particip Res Methods. 2021;2:1–7.

[10] Reed MS. Stakeholder participation for environmental management: A literature review. Biol Conserv. 2008;141:2417–2431.

[11] Popay J, Whitehead M, Ponsford R, Egan M, Mead R. Power , control , communities and health inequalities I : theories , concepts and analytical frameworks. Health Promot Int. 2020;1–11.

[12] Egid BR, Roura M, Aktar B, Amegee Quach J, Chumo I, Dias S, et al. You want to deal with power while riding on power': Global perspectives on power in participatory health research and co-production approaches. BMJ Glob Health. 2021;6:1–15.

[13] Haldane V, Chuah FLH, Srivastava A, Singh SR, Koh GCH, Seng CK, et al. Community participation in health services development, implementation, and evaluation: A systematic review of empowerment, health, community, and process outcomes. PLoS One. 2019;14:1–25.

[14] George AS, Mehra V, Scott K, Sriram V. Community participation in health systems research: A systematic review assessing the state of research, the nature of

interventions involved and the features of engagement with communities. PLoS One. 2015;10:1–25.

[15] WHO Regional Office for Europe. Rural poverty and health systems in the WHO European Region. World Health Organization. 2010;40.

[16] Kenny A, Farmer J, Dickson-Swift V, Hyett N. Community participation for rural health: A review of challenges. Health Expectations. 2015;18:1906–1917.

[17] Reinholz DL, Andrews TC. Change theory and theory of change: what's the difference anyway? Int J STEM Educ. 2020;7.

[18] Oberlack C, Schneider F, Herweg K, Messerli P, Tribaldos T, Breu T, et al. Theories of change in sustainability science: Understanding how change happens. GAIA - Ecological Perspectives for Science and Society. 2019;28:106–111.

[19] Keystone. Developing a Theory of Change: A Framework for Accountability and Learning for Social Change. Keystone. 2009;24.

[20] Alberts RC, Retief FP, Cilliers DP, Roos C, Hauptfleisch M. Environmental impact assessment (EIA) effectiveness in protected areas. Impact Assessment and Project Appraisal. 2021;39:290–303.

[21] Coovadia H, Jewkes R, Barron P, Sanders D, McIntyre D. The health and health system of South Africa: historical roots of current public health challenges. The Lancet. 2009;374:817–834.

[22] Bradshaw D, Nannan N, Pillay-Van Wyk V, Laubscher R, Groenewald P, Dorrington RE. Burden of disease in South Africa: Protracted transitions driven by social pathologies. South African Medical Journal. 2019;109:69–76.

[23] World Health Organization. Country Cooperation Strategy: South Africa. Who. 2018.

[24] Whitty CJM, MacEwen C, Goddard A, Alderson D, Marshall M, Calderwood C, et al. Rising to the challenge of multimorbidity. The BMJ. 2020;368:1–2.

[25] WORLD HEALTH ORGANIZATION (WHO). World Health Statistics 2021. Monitoring health for the SDGc. 2021.

[26] Benziger CP, Roth GA, Moran AE. The Global Burden of Disease Study and the Preventable Burden of NCD. Glob Heart. 2016;11:393–397.

[27] Atkinson K, Mabey D. The health of low- and middle-income countries today. 2019;1–35.

[28] Murray CJL, Lopez AD. Global Burden of Disease and Injur Y Series the Global Burden of Disease. Oms. 1996.

[29] Naghavi M, Abajobir AA, Abbafati C, Abbas KM, Abd-Allah F, Abera SF, et al. Global, regional, and national age-sex specifc mortality for 264 causes of death, 1980-2016: A systematic analysis for the Global Burden of Disease Study 2016. The Lancet. 2017;390:1151–1210.

[30] Bollyky TJ, Templin T, Cohen M, Dieleman JL. Lower-income countries that face the most rapid shift in noncommunicable disease burden are also the least prepared. Health Aff. 2017;36:1866–1875.

[31] Kumar S, Preetha GS. Health promotion: An effective tool for global health. Indian Journal of Community Medicine. 2012;37:5–12.

[32] WORLD HEALTH ORGANIZATION (WHO). Closing the gap in a generation . Health equity through action on social determinants of health. 2008.

[33] World Health Organisation and United nations Children's Fund (WHO/UNICEF). ALMA-ATA Primary Health Care. International Conference on Primary Health Care. 1978;63.

[34] Loewenson R, Laurell AC, Hogstedt C, Ambruoso LD, Shroff Z. Participatory Action Research in health systems. A methods Reader. TARSC, AHPSR, WHO, IDRC Canada, EQUINET, Harare ISBN:; 2014.

[35] Imms C, Adair B, Keen D, Ullenhag A, Rosenbaum P, Granlund M. "Participation": A systematic review of language, definitions, and constructs used in intervention research with children with disabilities. Dev Med Child Neurol. 2016;58:29–38.

[36] Rifkin SB. Lessons from community participation in health programmes: a review of the post Alma-Ata experience. Int Health. 2009;1:31–36.

[37] van Buuren A, van Meerkerk I, Tortajada C. Understanding emergent participation practices in water governance. Int J Water Resour Dev. 2019;35:367–382.

[38] Rifkin SB. Paradigms Lost: Toward a new understanding of community participation in health programmes. Acta Trop. 1996;61:79–92.

[39] Arnstein SR. A Ladder Of Citizen Participation. Journal of the American Planning Association. 1969;35:216–224.

[40] Rifkin SB. Lessons from community participation in health programmes. Health Policy Plan. 1986;1:240–249.

[41] Cornwall A. Unpacking "Participation" Models, meanings and practices. Community Dev J. 2008;43:269–283.

[42] Cornwall A, Scoones I. Putting the Last First: Reflections on the Work of Robert Chambers. Revolutionizing Development: Reflections on the Work of Robert Chambers. 2022.

[43] Chambers R. Rural Development: Putting the last first. Rural Development: Putting the last first. 2014.

[44] Ganz M. ' Framework PEOPLE , POWER AND CHANGE. Hauser Center, Harvard Kennedy School, 79 JFK Street, Cambridge, MA 02138. 2008.

[45] White SC. Depoliticising development: The uses and abuses of participation. Dev Pract. 1996;6:6.

[46] Tritter JQ, McCallum A. The snakes and ladders of user involvement: Moving beyond Arnstein. Health Policy (New York). 2006;76:156–168.

[47] Cornwall A. Unpacking "Participation" Models, meanings and practices. Community Dev J. 2008;43:269–283.

[48] Tritter JQ, McCallum A. The snakes and ladders of user involvement: Moving beyond Arnstein. Health Policy (New York). 2006;76:156–168.

[49] Burgess HK, DeBey LB, Froehlich HE, Schmidt N, Theobald EJ, Ettinger AK, et al. The science of citizen science: Exploring barriers to use as a primary research tool. Biol Conserv. 2017;208:113–120.

[50] Crenshaw K. Demarginalizing the Intersection of Race and Sex: A Black Feminist Critique of Antidiscrimination Doctrine, Feminist Theory and Antiracist Politics Recommended Citation Crenshaw, Kimberle () "Demarginalizing the Intersection of Race and Sex: A Black Feminist Critique of Antidiscrimination Doctrine, Feminist Theory and Antiracist Politics [Internet]. University of Chicago Legal Forum. Available from: http://chicagounbound.uchicago.edu/uclfhttp://chicagounbound.uchicago.edu/uclf/vol1989/iss1/8.

[51] McMurry N. Applying human rights to enable participation. International Journal of Human Rights. 2019;23:1049–1073.

[52] Cornwall A. Beneficiary, Consumer, Citizen:Perspective on Partipation for Poverty Reduction. Stockholm, Sweden; 2000.

[53] Taylor-smith E. Participation spaces. Edinburgh Napier University, 10 Colinton Road, Edinburgh, EH10 5DT; 2015.

[54] Bisong A. Invented, invited and instrumentalised spaces: conceptualising non-state actor engagement in regional migration governance in West Africa. J Ethn Migr Stud. 2021;0:1–19.

[55] Tollman SM, Pick WM. Roots, shoots, but too little fruit: Assessing the contribution of COPC in South Africa. Am J Public Health. 2002;92:1725–1728.

[56] Kark S, Kark E. Promoting Community Health: From Pholela to Jerusalem. Bmj. 2000;321:838.

[57] Delobelle P. The Health Sytem in South Africa. Historical Perpectives and Current Challenges In South Africa in Focus: Economic, Political and Social Issues I. © 2013 Nova Science Publishers, Inc; 2013.

[58] Mash B, Ray S, Essuman A, Burgueño E. Community-orientated primary care: a scoping review of different models, and their effectiveness and feasibility in sub-Saharan Africa. BMJ Glob Health. 2019;4:e001489.

[59] Harrison D. The National Health Services Commission, 1942-1944 - Its origins and outcome. South African Medical Journal. 1993;83:679–684.

[60] Schneider H, Besada D, Sanders D, Daviaud E, Rohde S. Ward-based primary health care outreach teams in South Africa: developments, challenges and future directions. S Afr Health Rev. 2018;Chapter 7:59–65.

[61] Republic of South Africa. Department of Health. White paper for the transformation of the health system in South Africa. Icassp. 1997;21:295–316.

[62] National Department of Health. National Health Act, No. 61 of 2003. Government Gazette. 2004.

[63] Schneider H, Sanders D, Besada D, Daviaud E, Rohde S. Ward-based primary health care outreach teams in South Africa: developments, challenges and future directions. Sahr. 2018;59–66.

[64] Fusheini A, Eyles J. Achieving universal health coverage in South Africa through a district health system approach: conflicting ideologies of health care provision. BMC Health Serv Res. 2016;16:1–11.

[65] Harris M. Integrating primary care and public health:learning from the Brazilian way. London J Prim Care (Abingdon). 2012;4:126–132.

[66] Schneider H, Lehmann U. From community health workers to community health systems: Time to widen the horizon? Health Syst Reform. 2016;2:112–118.

[67] Khuzwayo LS, Moshabela M. The perceived role of ward-based primary healthcare outreach teams in rural KwaZulu-Natal, South Africa. Afr J Prim Health Care Fam Med. 2017;9:1–5.

[68] Moosa S, Derese A, Peersman W. Insights of health district managers on the implementation of primary health care outreach teams in Johannesburg, South Africa: A descriptive study with focus group discussions. Hum Resour Health. 2017;15:1–9.

[69] Glassman M, Erdem G. Participatory Action Research and Its Meanings : Vivencia ,. 2014;

[70] Witter S, van der Merwe M, Twine R, Mabetha D, Hove J, Goosen G, et al. Verbal autopsy with participatory action research (VAPAR) programme in Mpumalanga, South Africa: protocol for evaluation. BMJ Open. 2020;

[71] Kahn K, Collinson MA, Gomez-Olive FX, Obed M, Mee P, Afolabi SA, et al. Profile : Agincourt Health and Socio-demographic Surveillance System. 2012;988–1001.

[72] Beyers LJE, Shuttle NE. Guidelines for Improving Infrastructure Development in the Rural Communities of Bushbuckridge Limpopo Province. Studies of Tribes and Tribals. 2018;16:33–39.

[73] Wariri O, Ngobeni S, Der M Van, Spies B. Initiating a participatory action research process in the Agincourt health and socio – demographic surveillance site. global Health. 2017;7.

[74] Masindi TK, Gyedu-Ababio T, Mpenyana-Monyatsi L. Pollution of Sand River by Wastewater Treatment Works in the Bushbuckridge Local Municipality, South Africa. Pollutants. 2022;2:510–530.

[75] Republic of South Africa. Water Services Act. Government Gazette. 1997;390:36.

[76] Statistics South Africa. General Household Survey 2019. 2021.

[77] Kabudula CW, Houle B, Collinson MA, Kahn K, Tollman S, Clark S. Assessing Changes in Household Socioeconomic Status in Rural South Africa, 2001–2013: A Distributional Analysis Using Household Asset Indicators. Soc Indic Res. 2017;133:1047–1073.

[78] Statistics South Africa (Stats SA). Mid-Year population estimates 2021 (Embargoe. 2021;35.

[79] Mathebula RL, Maimela E, Ntuli NS. The prevalence of selected non- communicable disease risk factors among HIV patients on anti-retroviral therapy in Bushbuckridge sub-district , Mpumalanga province. 2020;1–10.

[80] Oni T, Youngblood E, Boulle A, McGrath N, Wilkinson RJ, Levitt NS. Patterns of HIV, TB, and non-communicable disease multi-morbidity in peri-urban South Africa- a cross sectional study. BMC Infect Dis. 2015;15:1–8.

[81] Divala OH, Amberbir A, Ismail Z, Beyene T, Garone D, Pfaff C, et al. The burden of hypertension, diabetes mellitus, and cardiovascular risk factors among adult Malawians in HIV care: consequences for integrated services. BMC Public Health. 2016;16:1–11.

[82] Baum F, MacDougall C, Smith D. Participatory action research. J Epidemiol Community Health (1978). 2006;60:854–857.

[83] Mason K. Participatory Action Research : Coproduction , Governance and Care. 2015;9:497–507.

[84] Abimbola S, Negin J, Jan S, Martiniuk A. Towards people-centred health systems: a multi-level framework for analysing primary health care governance in low-and middle-income countries. Health Policy Plan. 2014;29:ii29--ii39.

[85] Loewenson R, Machingura F, Kaim B T and RSC (TARSC) RI (CWGH) (2014). 'Health centre committees as a vehicle for social participation in health systems in east and southern Africa' EQUINET discussion paper 101, TARSC with CWGH and Medico, EQUINET: Harare. 2014. p. 0–26.

[86] Loewenson R, Beznec P, Coelho V, D'ambruoso L, Dorras J, Dudding R, et al. Building social power and participation in local health systems: Learning from practice. Harare: Training and Research Support Centre; 2017.

[87] Loewenson R, Colvin CJ, Szabzon F, Das S, Khanna R, Coelho VSP, et al. Beyond command and control: A rapid review of meaningful community-engaged responses to COVID-19. Glob Public Health. 2021;16:1439–1453.

[88] Glassman M, Erdem G. Participatory Action Research and Its Meanings : Vivencia ,. 2014;

[89] D'Ambruoso L, Merwe M Van Der, Wariri O, Byass P, Goosen G, Kahn K, et al. Rethinking collaboration : developing a learning platform to address under-five mortality in Mpumalanga province , South Africa. Health Policy Plan. 2019;34:418–429.

[90] D'Ambruoso L. Verbal Autopsy with Participatory Action Research (VAPAR): expanding the knowledge base through partnerships for action on health equity (Protocol). 201AD.

[91] Oladeinde O, Mabetha D, Twine R, Hove J, Van Der Merwe M, Byass P, et al. Building cooperative learning to address alcohol and other drug abuse in Mpumalanga , South Africa : a participatory action research process. Glob Health Action. 2020;13:1–15.

[92] Merwe MS Van Der, D'Ambruoso L, Witter S, Twine R, Mabetha D, Hove J, et al. Collective reflections on the first cycle of a collaborative learning platform to strengthen rural primary health care in Mpumalanga, South Africa. Health Res Policy Syst. 2021;19:1–13.

[93] Loewenson R, Laurell AC, Hogstedt C, Ambruoso LD, Shroff Z. Participatory Action Research in health systems. A methods Reader. TARSC, AHPSR, WHO, IDRC Canada, EQUINET, Harare ISBN:; 2014.

[94] Wang C, Burris MA. Photovoice: Concept, Methodology, and Use for Participatory Needs Assessment. Health Education and Behavior. 1997;24:369–387.

[95] Siokou C, Morgan R, Shiell A. Group model building : a participatory approach to understanding and acting on systems. Public Health Res Pract. 2014;25:1–4.

[96] Conte KP, Davidson S. Using a ' rich picture ' to facilitate systems thinking in research coproduction. Health Res Policy Syst. 2020;2:1–14.

[97] Merriam SB, Johnson-Bailey J, Lee M-Y, Kee Y, Ntseane G, Muhamad M. Power and positionality: negotiating insider/outsider status within and across cultures. International Journal of Lifelong Education. 2001;20:405–416.

[98] Holmes AGD. Researcher positionality: a consideration of its influence and place in qualitative research. Shanlax International Journal of Education. 2020;8:1–10.

[99] Ozano K, Khatri R. Reflexivity, positionality and power in cross-cultural participatory action research with research assistants in rural Cambodia. Educ Action Res. 2018;26:190–204.

[100] Kahn K, Collinson MA, Xavier Gómez-olivé F, Mokoena O, Twine R, Mee P, et al. Profile: Agincourt health and socio-demographic surveillance system. Int J Epidemiol. 2012;41:988–1001.

[101] Hove J, D'Ambruoso L, Mabetha D, Van Der Merwe M, Byass P, Kahn K, et al. "Water is life": Developing community participation for clean water in rural South Africa. BMJ Glob Health. 2019;4:1–13.

[102] Mahlangu P, Vearey J, Thomas L, Goudge J. Implementing a multi-sectoral response to HIV: A case study of aids councils in the mpumalanga province, South Africa. Glob Health Action. 2017;10.

[103] Glandon D, Meghani A, Jessani N, Qiu M, Bennett S. Identifying health policy and systems research priorities on multisectoral collaboration for health in low-income and middle-income countries. BMJ Glob Health. 2018;3:1–14.

[104] Dentoni D, Bitzer V. The role(s) of universities in dealing with global wicked problems through multi-stakeholder initiatives. J Clean Prod. 2015;106:68–78.

[105] Cahill C. Defying gravity? raising consciousness through collective research. Child Geogr. 2004;2:273–286.

[106] Hove J, D'Ambruoso L, Mabetha D, Van Der Merwe M, Byass P, Kahn K, et al. "Water is life": Developing community participation for clean water in rural South Africa. BMJ Glob Health. 2019;4:1–13.

[107] Bushbuckridge Local Municipality. Bushbuckridge Local Municipality 2020/21 Final IWMP. 2020; Available from: https://www.cogta.gov.za/cgta_2016/wp-content/uploads/2021/02/Bushbuckridge-Municipality.pdf.

[108] Mescht J van der, Jaarsveld M van. Addressing Operations and Maintenance Challenges in Smaller Municipalities. Safe Design and Operation of Process Vents and Emission Control Systems. 2012;

[109] Hove J, D'Ambruoso L, Kahn K, Witter S, van der Merwe M, Mabetha D, et al. Lessons from community participation in primary health care and water resource governance in South Africa: a narrative review. Glob Health Action. 2022;15.

[110] Spotlight. Provinces not on same page regarding clinic committees. 2019.

[111] Meier BM, Pardue C, London L. Implementing community participation through legislative reform : a study of the policy framework for community participation in the Western Cape province of South Africa. BMC Int Health Hum Rights. 2012;12:1.

[112] Haricharan HJ. Rapid appraisal of health committee policies in South Africa. Learning Network for Health and Human Rights, School of Public Health and Family Medicine, University of Cape Town. 2015.

[113] Haricharan H, Boulle T, London L. Health Committees as Vehicles for Community Participation : A National Colloquium on Health Committees in South Africa Report of a National Colloquium on Health Committees in South Africa. University of Cape Town, Cape Town; 2014.

[114] Boulle T. A Review of the Functioning of Health Committees in Nelson Mandela Bay Health District – with particular emphasis on Identifying Key Challenges. School of Public Health and Family Medicine at University of Cape Town. 2013.

[115] Zwama G, Stuttaford MC, Haricharan HJ, Douglas J. Rights-Based Training Enhancing Engagement of Health Providers With Communities , Cape Metropole , South Africa. Frontiers in Sociology. 2019;4:1–12.

[116] Esau N, English R, Shung-king M. An assessment of a ' training-of-trainers programme for clinic committees ' in a South African district : a qualitative exploratory study. BMC Health Serv Res. 2020;20:1–16.

[117] Padarath AP. The Status of Clinic Committees in Primary Level Clinics in Three Provinces of South Africa. School of Public Health , Faculty of Community and Health Sciences, University of the Western Cape; 2009.

[118] Mulumba Moses, London Leslie, Nantaba Juliana. Using Health Committees to Promote Community Participation as a Social Determinant of the Right to Health : Lessons from Uganda and South Africa. Health and Human Rights Journal HHR. 2018;20:11–18.

[119] Paradath A, Friedman I. The status of clinic committees in primary level public health sector facilities in South Africa. Durban: Health Systems Trust. 2008.

[120] Republic of South Africa. National Health Amendment Act [12 of 2013]. Cape Town: Government Gazette No 36702: 24 July 2013, p.1–89. URL: http://www.gov.za/documents/download. php?f=195193.

[121] Harricharan H. Extending Participation : Challenges of Health Committees as Meaningful Structures for Community Participation Extending participation. Human Rights Division, School of Public Health, University of Cape Town. 2011.

[122] McKenzie A, Schneider H, Schaay N, Scott V, Sanders D. Primary health care systems (PRIMASYS). School of Public Health , University of the Western Cape: Geneva: World Health Organization; 2017.

[123] Haricharan HJ, Stuttaford M, London L. The role of community participation in primary health care: Practices of South African health committees. Prim Health Care Res Dev. 2021;22:1–10.

[124] Cleary S, Schaay N, Botes E, Figlan N, Lehmann U, Gilson L. Re-imagining community participation at the district level: lessons from the DIALHS collaboration. S Afr Health Rev. 2015;4:1–18.

[125] Western Cape Department of Health. Draft Policy Framework for Community Participation/Governance Structures in Health. 2008.

[126] Purtle J, Roman LA. Health awareness days: Sufficient evidence to support the craze? Am J Public Health. 2015;105:1061–1065.

[127] Eastern Cape Department of Health. Eastern Cape Provincial Health Act, No.10 of 1999.Eastern Cape;2000. 2000.

[128] Denby K, Movik S, Mehta L, van Koppen B. The “trickle down” of IWRM: A case study of local-level realities in the Inkomati Water Management Area, South Africa. Water Alternatives. 2016;9:473–492.

[129] Brown J. Evaluating participatory initiativesin south africa: Not just processesbut outcomes too. Sage Open. 2014;

[130] Chibwe T, Bourblanc M, Kirsten J, Mutondo J, Farolfi S, Dinar A. Reform process and performance analysis in water governance and management: A case of study of Inkomati Water Management Area in South Africa. Water Research Commission of South Africa (Project K5/1969) and the World Bank (S-000441); 2012.

[131] Brown J. Assuming too much ? Participatory water resource governance in South Africa. 2011;177:171–185.

[132] Faysse N, Gumbo J. The Transformation of Irrigation Boards into Water User Associations in South Africa : Case Studies of the Umlaas , Komati , Lomati and Hereford Irrigation Boards. International Water Management Institute (IWMI); 2004. p. 1–65.

[133] Meissner R, Funke N, Nortje K. The politics of establishing catchment management agencies in South Africa: The case of the Breede-Overberg Catchment Management Agency. Ecology and Society. 2016;21.

[134] Boakye MK, Akpor OB. Stakeholders’ Participation in Water Management: A Case Study of the Msunduzi Catchment Management Forum of KwaZulu-Natal, South Africa. J Sustain Dev. 2012;5:104–111.

[135] Boakye MK, Akpor OB. Community Participation in Water Resources Management in South Africa. International Journal of Environmental Science and Development,. 2012;3:511–516.

[136] Seshoka J, de Lange W, Fayss N. The Transformation of Irrigation Boards into Water User Associations in South Africa: Case Studies of the Lower Olifants, Great Letaba and Vaalharts Water User Associations. Working Paper 72. International Water Management Institute. 2004;72:1–21.

[137] DWS. Department of Water Affairs and Forestry. Integrated Water Resources Management in South Africa Synthesis of findings from an evaluation in three WMAs

Key issues to consider in order to ensure the effective participation of marginalized groups in IWRM in. Pretoria, South Africa; 2004.

[138] Republic of South Africa. National Water Act, Act 36 of 1998. Government Gazette 1998 p. 1–200.

[139] Meissner R, Funke N, Nortje K. The politics of establishing catchment management agencies in South Africa: The case of the Breede-Overberg Catchment Management Agency. Ecology and Society. 2016;21.

[140] Stuart-Hill SI, Meissner R. Lessons Learnt from the Establishment of Catchment Management Agencies in South Africa. Water Research Commission, Pretoria, RSA, WRC Report No.2320/1/18. Pp. 172. 2018.

[141] Republic of South Africa. Constitution of the Republic of South Africa, Act 200 of 1993. 1993;1–149.

[142] Mehta L, Alba R, Bolding A, Denby K, Derman B, Hove T, et al. The politics of IWRM in Southern Africa. Int J Water Resour Dev. 2014;30:528–542.

[143] Brown J. Can Participation Change the Geography of Water? Lessons from South Africa. Annals of the Association of American Geographers. 2013;103:271–279.

[144] Faysse N. CHALLENGES FOR FRUITFUL PARTICIPATION OF SMALLHOLDERS IN LARGE-SCALE WATER RESOURCE MANAGEMENT ORGANISATIONS : SELECTED CASE STUDIES IN SOUTH AFRICA. Agrekon. 2004;43:52–73.

[145] BGCMA. Breede-Gouritz Annual report 2018/19. 2019;

[146] Faysse N. An assessment of small-scale users' inclusion in large-scale water user associations of South Africa. International Water Management Institute. 2004.

[147] Danida. Integrated Water Resources Management in South Africa Synthesis of findings from an evaluation in three WMAs Key issues to consider in order to ensure the effective participation of marginalized groups in IWRM in South Africa. 2004;

[148] Hove J, D'Ambruoso L, Twine R, Mabetha D, van der Merwe M, Mtungwa I, et al. Developing stakeholder participation to address lack of safe water as a community health concern in a rural province in South Africa. Glob Health Action. 2021;14.

[149] WHO/UNICEF/JMP. FIVE YEARS INTO THE SDGs PROGRESS ON HOUSEHOLD DRINKING WATER, SANITATION AND HYGIENE. Launch version July 12 Main report Progress on Drinking Water , Sanitation and Hygiene. 2020.

[150] Kaziboni A. EXPLORING HYDROPOLITICS AND EXPRESSIONS OF CITIZENSHIP: THREE COMMUNITIES IN MADIBENG, SOUTH AFRICA. (Doctoral Thesis / Master's Dissertation). Johannesburg: University of Johannesburg.2022. Available from: http://hdl.handle.net/102000/0002.

[151] Majuru B, Jagals P, Hunter PR. Assessing rural small community water supply in Limpopo, South Africa: Water service benchmarks and reliability. Science of the Total Environment. 2012;435–436:479–486.

[152] Nefale AD, Kamika I, Obi CL, Momba MNB. The limpopo non-metropolitan drinking water supplier response to a diagnostic tool for technical compliance. Int J Environ Res Public Health. 2017;14.

[153] Geere J, Hunter P, Jagals P. Domestic water carrying and its implications for health: a review and mixed methods pilot study in Limpopo Province, South Africa. Environ Health. 2010;9:52.

[154] Hove J, Ambruoso LD, Mabetha D, Merwe M Van Der, Byass P, Kahn K, et al. ‘ Water is life ’: developing community participation for clean water in rural South Africa. BMJ Glob Health. 2019;4:1–13.

[155] Huttinger A, Dreibelbis R, Kayigamba F, Ngabo F, Mfura L, Merryweather B, et al. Water, sanitation and hygiene infrastructure and quality in rural healthcare facilities in Rwanda. BMC Health Serv Res. 2017;17:1–11.

[156] UNICEF & WHO. Progress on household drinking water, sanitation and hygiene, 2000-2017. 2019;140.

[157] Obi CL, Onabolu B, Momba MNB, Igumbor JO, Ramalivahna J, Bessong PO. The interesting cross-paths of HIV / AIDS and water in Southern Africa with special reference to South Africa. 2006;32:323–343.

[158] Ebi KL, Hess JJ, Watkiss P. Health Risks and Costs of Climate Variability and Change. Disease Control Priorities, Third Edition (Volume 7): Injury Prevention and Environmental Health. 2017;153–169.

[159] Devnarain B, Matthias CR. Poor access to water and sanitation: Consequences for girls at a rural school. Agenda. 2011;25:27–34.

[160] Coenen J, Glass LM, Sanderink L. Two degrees and the SDGs: a network analysis of the interlinkages between transnational climate actions and the Sustainable Development Goals. Sustain Sci. 2022;17:1489–1510.

[161] Carbonell L, Hofmann P, Srikissoon N, Campos LC, Mbatha S, Lakhanpaul M, et al. Localisation of links between sanitation and the Sustainable Development Goals to inform municipal policy in eThekwini Municipality , South Africa. World Development Sustainability. 2022;100038.

[162] Bailey IW, Archer L. The impact of the introduction of treated water on aspects of community health in a rural community in Kwazulu-Natal, South Africa. Water Science and Technology. 2004;50:105–110.

[163] Waage J, Yap C, Bell S, Levy C, Mace G, Pegram T, et al. Governing the UN sustainable development goals: Interactions, infrastructures, and institutions. Lancet Glob Health. 2015;3:e251–e252.

[164] WHO & UNICEF. Progress on Household Drinking Water, Sanitation and Hygiene 2000-2020. UNICEF journal. 2021.

[165] Megdal SB, Eden S, Shamir E. Water governance, stakeholder engagement, and sustainable water resources management. Water (Switzerland). 2017;9:1–7.

[166] Bäckstrand K. Multi-Stakeholder Partnerships for Sustainable Development : Rethinking and Effectiveness. European Environment. 2006;16:290–306.

[167] Scott K, Jessani N, Qiu M, Bennett S. Developing more participatory and accountable institutions for health: Identifying health system research priorities for the Sustainable Development Goal-era. Health Policy Plan. 2018;33:975–987.

[168] McKee M. Bridging the gap between research and policy and practice: Comment on “CIHR health system impact fellows: Reflections on ‘driving change’ within the health system.” Int J Health Policy Manag. 2019;8:557–559.

[169] Owens S. Making a difference? Some perspectives on environmental research and policy. Transactions of the Institute of British Geographers. 2005;30:287–292.

[170] Shroff ZC, Javadi D, Gilson L, Kang R, Ghaffar A. Institutional capacity to generate and use evidence in LMICs: Current state and opportunities for HPSR. Health Res Policy Syst. 2017;15:1–11.

[171] Erismann S, Pesantes MA, Beran D, Leuenberger A, Farnham A, Berger Gonzalez de White M, et al. How to bring research evidence into policy? Synthesizing strategies of five research projects in low-and middle-income countries. Health Res Policy Syst. 2021;19:1–13.

[172] Biswas AK. Integrated water resources management: Is it working? Int J Water Resour Dev. 2008. p. 5–22.

[173] Ssemugabo C, Halage AA, Namata C, Musoke D, Ssempebwa JC. Research Paper A socio-ecological perspective of the facilitators and barriers to uptake of water , sanitation and hygiene interventions in a slum setting in Kampala , Uganda : a qualitative study. Journal of Water, Sanitation and Hygiene for Development. 2020;227–237.

[174] Aleu RB, Methner N. Participation and marginalization in water governance: probing the agency of powerholders - VERSION 2. Ecology & Society. 2021;13003:1–23.

[175] Wyborn CA. Connecting knowledge with action through coproductive capacities: Adaptive governance and connectivity conservation. Ecology and Society. 2015;20.

[176] Edwards LJ, Moisés A, Nzaramba M, Cassimo A, Silva L, Mauricio J, et al. Implementation of a health management mentoring program: year-1 evaluation of its impact on health system strengthening in Zambézia Province, Mozambique. Int J Health Policy Manag. 2015;4:353–361.

[177] Hove J, D’Ambruoso L, Mabetha D, Van Der Merwe M, Byass P, Kahn K, et al. “Water is life”: Developing community participation for clean water in rural South Africa. BMJ Glob Health. 2019;4:1–13.

[178] Akhmouch A, Clavreul D. Stakeholder Engagement for Inclusive Water Governance: “Practicing WhatWe Preach” with the OECD Water Governance Initiative. Water (Switzerland). 2016;8.

[179] Warner JF. Stakeholder Participation in South Africa : Power to the People ? :1–17.

[180] Sinner J, Newton M, Duncan R, Cornelisen C. Representation and legitimacy in collaborative freshwater planning: Stakeholder perspectives on a canterbury zone committee. 2015;

[181] Haricharan HJ, Stuttaford M, London L. Effective and meaningful participation or limited participation? A study of South African health committee legislation. Prim Health Care Res Dev. 2021;22:1–8.

[182] Grassini L. Participatory water governance between theories and practices : learning from a community-based initiative in India practices : learning from a community-based initiative in India. Int J Water Resour Dev. 2017;0627:1–26.

[183] Cleaver F. PARADOXES OF PARTICIPATION : QUESTIONING PARTICIPATORY APPROACHES TO DEVELOPMENT. J Int Dev. 1999;612:597–612.

[184] Scott K, George AS, Harvey SA, Mondal S, Patel G, Ved R, et al. Beyond form and functioning: Understanding how contextual factors influence village health committees in northern India. PLoS One. 2017;12:1–17.

[185] Isham, J. and Kähkönen S. “Institutional Determinants of the Impact of Community - Based Water Services: Evidence from Sri Lanka and India.” Economic Development and Cultural Change, 50(3). 2000;50:2000.

[186] Isham, J. and Kähkönen S. “How Do Participation and Social Capital Affect Community - Based Water Projects? Evidence from Central Java, Indonesia”, in C. Grootaert, and T. van Batselaer (eds.), The Role of Social Capital in Development: An Empir.

[187] Nelson S, Drabarek D, Jenkins A, Negin J, Abimbola S. How community engagement in water and sanitation interventions impacts human health, infrastructure and service longevity in low- and middle-income countries: a realist review. 2020;1–18.

[188] WaterAid. WaterAid Ethiopia Quartely Newsletter. Our eork in Ethiopia. 2022;4.

[189] Osmani SR. Participatory Governance : An Overview of Issues and Evidence. In Partcipatory Governance and the Millenium Development Goals(pp. 1-45). United Nations Department for Economic and Social Afrairs. 2008;

[190] Cleaver, Frances. de Koning J. Furthering critical institutionalism. Int J Commons. 2015;9:1–18.

[191] Meissner, R., Stuart-Hill, S.I. and Nakhooda Z. The establishment of catchment management agencies in South Africa with reference to the Flussgebietsgemeinschaft Elbe: Some practical considerations. Freshwater Governance for the 21st Century. Heidelberg: Springer. 2017.

[192] Faysse N. Troubles on the way : An analysis of the challenges faced by multi-stakeholder platforms. 2006;30:219–229.

[193] Rollason E, Bracken LJ, Hardy RJ, Large ARG. Evaluating the success of public participation in integrated catchment management. J Environ Manage. 2018;228:267–278.

[194] Adom RK, Simatele MD. The role of stakeholder engagement in sustainable water resource management in South Africa. Nat Resour Forum. 2022;410–427.

[195] Akhmouch A, Clavreul D, Glas P. Introducing the OECD Principles on Water Governance. Water Int. 2018;43:5–12.

[196] Thompson J, Bissell P, Cooper C, Armitage CJ, Barber R. Credibility and the ‘ professionalized ’ lay expert : Reflections on the dilemmas and opportunities of public involvement in health research. Health N Hav. 2012;16:602–618.

[197] Akhmouch A, Clavreul D. Introduction: A Call for More Inclusive Water Governance. In: Karar E, editor. Freshwater Governance for the 21st Century, Global Issues in Water Policy 6. 2017. p. 29–49.

[198] Sadiki A, Ncube B. Challenges of accessing water for agricultural use in the Breede-Gouritz Catchment Management Agency, South Africa. Water Alternatives. 2020;13:324–346.

[199] Wester P, Burton M, Mestre-Rodriguez E. Managing the Water Transition in the Lerma-Chapala Basin, Mexico. Intersectoral Management of River Basins: Integrated Water Management in Water-Stressed River Basins in Developing Countries: Strategies for Poverty Alleviation and Agricultural Growth. 2000;161–181.

[200] McCoy DC, Hall JA, Ridge M. A systematic review of the literature for evidence on health facility committees in low- and middle-income countries. Health Policy Plan. 2012;27:449–466.

[201] Karuga R, Kok M, Luitjens M, Mbindyo P, Broerse JEW, Dieleman M. Participation in primary health care through community-level health committees in Sub-Saharan Africa: a qualitative synthesis. BMC Public Health. 2022;22:1–17.

[202] O'Meara WP, Tsofa B, Molyneux S, Goodman C, McKenzie FE. Community and facility-level engagement in planning and budgeting for the government health sector - A district perspective from Kenya. Health Policy (New York). 2011;99:234–243.

[203] Larsen RK, Raitio K. Implementing the state duty to consult in land and resource decisions: Perspectives from sami communities and Swedish state officials. Arctic Review on Law and Politics. 2019;10:4–23.

[204] Howard Z, Somerville MM. A comparative study of two design charrettes: Implications for codesign and participatory action research. CoDesign. 2014;10:46–62.

[205] Lake D, Wendland J. Practical, epistemological, and ethical challenges of participatory action research: A cross-disciplinary review of the literature. J High Educ Outreach Engagem. 2018;22:11–42.

[206] Foucault M. The history of sexuality Volume I, The will to knowledge'. Foucault's "History of Sexuality Volume I, The Will to Knowledge." 1976.

[207] Moon S. Power in global governance: an expanded typology from global health. Global Health. 2019;15:1–9.

[208] Kesby M. Retheorizing empowerment-through-participation as a performance in space: Beyond Tyranny to transformation. Signs (Chic). 2005;30:2037–2065.

[209] Crawley Heaven. "Living Up to the Empowerment Claim? The Potential of PRA." In The Myth of Community: Gender Issues in Participatory Development, ed. Irene Guijt and Meera Kaul Shah, 24–34. London: Intermediate Technology. 1998.

APPENDICES

Appendix A: Workshop 1 Topic Guide ;Agreeing topics and expansion

Introducing the aims and process. Agreeing topics and expansion
Participants should bring signed informed consent sheets. Blank copies should also be available. The workshop should be 1.5 -2 hours, including refreshments. Take written permission to audio-record. Photovoice: Distribute cameras to groups A1, C1 with explanation of basics of photography and need for release-permissions, provide stocks of release permission forms.

1. PURPOSE AND AIMS

- Study has support from Wits/Agincourt HDSS, DOH, and Universities in Scotland UK.
- To build community knowledge and action around the social and structural determinants of health.
- To build trust and find solutions in partnership with the health and local authorities.
- Introduce principle of 'homogenous group' – as a group with shared conditions (two types in VAPAR).
- Introduce principle of 'subjective perspectives' – we want to understand people's individual experiences.
- Introduce principle of 'collective validation' – only those issues that the group recognises are registered.
- Introduce principle of 'no delegation' – those dealing with the issue are the primary researchers.
- Researchers from outside community play facilitative role. Together we are a joint research team.
- Non-threatening, no-blame and relaxed environment.
- Record queries or comments in **Activity 1a**

2. PROCESS AND ACTIVITIES

- We would like to meet once per week for 8 weeks (Aug–Sept 2017) in workshops of 1.5 hours.
- Time and travel costs will be refunded, refreshments will be provided.
- People can leave at any time and for any reason.
- We will ask about people's experiences and opinions on the topic nominated.
- From this we will develop collective understandings and actions to address the issues identified.
- We will take the outputs of the process, with discussion group representatives, to engage with health systems stakeholders to analyse, plan and act on the information that we generate. We will bring village representatives to these engagements with the health authority at provincial and district levels.
- We will repeat the process in 2018/19 and 2020 to reflect on, and learn from, any actions taken.

- When would the workshops be most convenient?
- What about the activities? Should any changes be made?
- Introduce ethical principles and procedures (see Appendix 1.1 from detailed operational protocol)
- Who might benefit from this process? Who owns and controls it?
- What will the reporting look like? Who should control and own this?
- What are the potential benefits and risks from participating in the longer term?
- Discuss and agree on roles and ethics - record in **Activity 1a**

3. CHOOSING THE HEALTH TOPIC 30 mins

- 8 weekly workshops talking about health topics that community groups will nominate.
- We have discussed these health conditions in the past (HIV, violence, Under-5 mortality, stroke, epilepsy).
- In these discussions we were informed about issues (water, housing, poverty, confidentiality, traditional beliefs).
- Which health topic should be examined? Invite feedback and record in **Activity 1b**

4. EXPANDING THE PROCESS 3

- Does this group represent this community?
- Define community as people who share defined conditions, here in the village, a geographical location
- We would like to work with another group in this village that represents a certain group of people who are socially disadvantaged, E.g. young single mothers? What is your advice on this?
- Discuss and agree inclusion criteria for new group - record in **Activity 1a**

5. PHOTOVOICE (GROUPS A1 AND C1 SEPERATELY)

- Photovoice (Groups A1, C1): loan cameras to photograph local areas to inform the discussions.
- Photovoice (Group A1): explanation of basics of photography and need for release-permissions, provide stocks of release permission forms **Activity 1c**

6. FINAL QUESTIONS AND FEEDBACK - DATE/TIME FOR NEXT Workshop

Appendix B: Workshop 2 Topic Guide; understanding causes of the topic

- *Develop an understanding of the impact of topic*
- *Identify needs and desired outcomes for [health topic]*

The workshop should be 1.5 hours, including refreshments. Take permission to audio-record. Facilitators take digital images of discussion and participants (with permissions audio recorded). Photovoice (Groups A1, C1): collate digital images and permission releases at beginning of workshop.

1. INTRODUCTION + AIMS (Groups 1 and 2 together)

- Ground rules: Our environment is non-threatening, no-blame and democratic participation.
- Everyone here is an official member and a partner in research.
- Re-cap discussion and agreement of [topic].
- Introduce/reinforce principle of 'homogenous group' – as a group with shared conditions (two types in VAPAR).
- Introduce/reinforce principle of 'subjective perspectives' – we want to understand people's individual experiences.
- Introduce/reinforce principle of 'collective validation' – only those issues that the group recognises are registered.
- Introduce/reinforce principle of 'no delegation' – those dealing with the issue are the primary researchers.
- Researchers from outside community play facilitative role. Together we are a joint research team.
- Today we want to build our understanding of [topic]. We are going to talk about our experience, and collectively organise by looking for patterns, trends and validating the experiences.

Divide participatns by groups 1 and 2. This division is important since some health needs are gender or age-specific, for example, women may want easier access to clean water or young people may want a soccer field, and so on. It is important to identify these different priorities for wider discussion later on.

2. UNDERSTANDING + COLLECTING EXPERIENCES (Group 1 and 2 separate) Activity 2a

- Photovoice Groups A1 and C1: participants are invited to share any photograph they wish to as illustrations
- Facilitator encourages inputs from all participants. Reinforce principle of subjective perspectives
- Participants asked to draw on their knowledge and experience of the topic in this activity
- What is known about [topic] and its causes around here?
- What are the experiences of people in this group with this?
- What are the positives/negatives words used to describe it?
- What are the symptoms, usual therapies? How do services respond?
- Is there a shared definition? [Reinforce principle of Validation by consensus]
- How has this topic had an impact in this group? (Note this is preliminary and will be developed in future workshops)
- What are the main features, need and desired outcomes around this topic? (Note this is preliminary and will be developed in future workshops)

3. ORGANISING THE MAJOR CAUSES OF TOPIC (Group 1 and 2 separate) Activity 2b

- Thinking about the experiences, views that we have discussed and recorded, we will now organise this.

- What do communities think are the major causes of [health topic]?
- Work though Activity 2b. [Reinforce principle of Validation by consensus]

Bring both groups back together in plenary and discuss the findings of both groups.

4. SUMMARY AND REFLECTIONS ON PROCESS (Group 1 and 2 together)

- Now we have finished the discussion, Mr/s [NAME]1 will tell the review to the group, to make sure we didn't miss anything. Is this an accurate summary? Did we miss anything?
- What about the activities? Should any changes be made? What works? What doesn't work?
- Who benefits from this process? How? Who controls the process? How?

5. FINAL QUESTIONS AND FEEDBACK - DATE/TIME FOR NEXT WORKSHOP

6. PHOTOVOICE (GROUP A2) (GROUP A2 ONLY) Activity 2c

- Group A2: Distribute cameras to pax. with explanation of basics of photography and need for release-permissions, provide stocks of release permission forms. Group A1 pax. to facilitate and share learning.

Appendix C: Workshop 3; Impacts, gaps/strengths, addressing the issues

- **Understand impact of [health topic]**
- **Identify priority gaps/weaknesses to be addressed or strengths to be reinforced to address the issues**
- **Identify services (health and other) for addressing needs for [health topic]**
- **Identify how services perform in relation to desired outcomes, access, uptake**

The workshop should be 1.5 hours, including refreshments. Take permission to audio-record. Facilitators take digital images of discussion and participants (with permissions audio recorded). Photovoice (Groups A1, A2, C1): collate digital images and permission releases at beginning of workshop.

7. INTRODUCTION + AIMS (Groups 1 and 2 together)

- Ground rules: Our environment is non-threatening, no-blame and democratic participation.
- Everyone here is an official member and a partner in research.
- Reinforce principle of 'homogenous group' – as a group with shared conditions (two types in VAPAR).
- Reinforce principle of 'subjective perspectives' – we want to understand people's individual experiences.
- Reinforce principle of 'collective validation' – only those issues that the group recognises are registered.
- Reinforce principle of 'no delegation' – those dealing with the issue are the primary researchers.
- Researchers from outside community play facilitative role. Together we are a joint research team.

Divide participants by groups 1 and 2. This division is important since some health needs are gender or age-specific, for example, women may want easier access to clean water or young people may want a soccer field, and so on. It is important to identify these different priorities for wider discussion later on.

8. IMPACT OF [HEALTH TOPIC] AND NEEDS (Group 1 and 2 separate) Activity 3a

- [Facilitator displays the problem tree for this group, from workshop 2]
- We have developed a collective account of the [health topic]. Today we want to build our understanding of [topic].
- We will think about the impact of the [health topic] here.
- We will also ask about the gaps, stakeholders and services related to [health topic].
- What is known about the impact of [health topic] here?
- Who is affected? Does [health topic] affect different groups in different ways? How?
- Identify priority gaps/weaknesses to be addressed or strengths to be reinforced to address the issues.
- [Photovoice: participants are invited to share any photograph they wish to as illustrations]
- [Facilitator encourages inputs from all participants]
- Share results from Agincourt HDSS census on [TOPIC]. We gained this information by talking to people (usually family members) about what happened when their relatives were ill.
- What are the main features, needs and desired outcomes around [topic]?

9. ADDRESSING THE ISSUES DISCUSSED (Groups 1 and 2 separate) Activity 3b

- How can these issues be addressed? What are the services (health and other) for addressing those needs?
- How do services perform in relation to desired outcomes, access and uptake?

Bring both groups back together in plenary and discuss the findings of both groups.

10. SUMMARY AND REFLECTIONS ON PROCESS (Groups 1 and 2 together)

- Now we have finished the discussion, Mr/s [NAME]2 will tell the review (impacts, gaps/strengths/services) to the group, to make sure we didn't miss anything. Is this an accurate summary? Did we miss anything?
- What about the activities? Should any changes be made? What works? What doesn't work?
- Who benefits from this process? How? Who controls the process? How?

11. **FINAL QUESTIONS AND FEEDBACK - DATE/TIME FOR NEXT WORKSHOP (Groups 1 and 2 together)**

[2] If it is appropriate as the workshops progress, consider appointing a participant as a workshop secretary to complete a shared public account of the discussion. Otherwise, the workshop facilitator adopts this role.

Appendix D: Workshop 4; Change pathways & action plan

The workshop should be 2-2.5 hours, including refreshments. Take permission to audio-record. Facilitators take digital images of discussion and participants (with permissions audio recorded). Photovoice (Groups A1, A2, C1): collate digital images and permission releases at beginning of workshop. Take details of taxis and costs from participants.

12. INTRODUCTION + AIMS (Groups together)

- Ground rules: Our environment is non-threatening, no-blame and democratic participation.
- Reinforce principles of PAR.
- Everyone here is an official member and a partner in research.
- Researchers from outside community play facilitative role. Together we are a joint research team.
- Photovoice (A1, A2, C1): invite participants to share and describe any images they wish to.

Divide participants by groups 1 and 2. This division is important since some health needs are gender or age-specific, for example, women may want easier access to clean water or young people may want a soccer field, and so on. It is important to identify these different priorities for wider discussion later on.

13. CHANGE PATHWAYS (Groups 1 and 2 separate)

- [Facilitator puts Venn on the table, problem tree on wall, and recaps discussions].
- We will now develop a change pathway and action plan from this group to address the issues identified.
- The action plan we will take (with community representatives) to provincial government.
- Work through **Activity 4**

Bring both groups back together in plenary and discuss the findings of both groups. It is important to identify similarities and differences for wider discussion later on in the workshopss 5, 6, 7 and 8.

14. SUMMARY AND REFLECTIONS ON PROCESS (Groups together)

Summary

- Now we have finished the discussion, Mr/s [NAME]3 will tell the change pathway/action plan to the group, to make sure we didn't miss anything.
- Is this an accurate summary? Did we miss anything?
- Discuss similarities and differences between the different groups' diagrams

Process

- What about the activities? Should any changes be made? What works? What doesn't work?
- Who benefits from this process? How? Who controls the process? How?

15. SETTING THE WIDER GROUP DISCUSSIONS (Groups together)

[3] If it is appropriate as the workshops progress, consider appointing a participant as a workshop secretary to complete a shared public account of the discussion. Otherwise, the workshop facilitator adopts this role.

- For the next workshops, the groups will come together to share findings (problem tree, venns, action plans)
- We will work with (2 other villages) to come up with broader accounts of the problem, actors, and actions.
- We want to take this account to the health authority.
- Can we nominate representatives from this village to be involved in this process?

16. FINAL QUESTIONS AND FEEDBACK - DATE/TIME FOR NEXT WORKSHOP (Groups 1 and 2 together)

Appendix E: Workshop 5; Developing shared understandings of the topic

- Develop a shared understanding of the topic
- Identify shared needs and desired outcomes for [health topic]

The Workshop should be 3-3.5 hours, including refreshments. Take permission to audio-record. Facilitators take digital images of discussion and participants (with permissions audio recorded). Photovoice (Groups A1, A2, C1): collate digital images and permission releases at beginning of workshop.

17. INTRODUCTION + AIMS (All 6 groups together)

- Ground rules: Our environment is non-threatening, no-blame and democratic participation.
- Everyone here is an official member and a partner in research.
- We have brought together groups from 3 villages in Agincourt to build shared understandings of [health topic]
- Reinforce principle of 'homogenous group' – as a group with shared conditions (two types in VAPAR).
- Reinforce principle of 'subjective perspectives' – we want to understand people's individual experiences.
- Reinforce principle of 'collective validation' – only those issues that the group recognises are registered.
- Reinforce principle of 'no delegation' – those dealing with the issue are the primary researchers.
- Researchers from outside community play facilitative role. Together we are a joint research team.
- Invite feedback on the process. What do people think about participation?

Divide participants by groups: A1/B1, A2/B2, C1/C2 (3 groups). This division is important since some health needs are gender or age-specific, for example, women may want easier access to clean water or young people may want a soccer field, and so on. It is important to identify these different priorities for wider discussion later on.

- **UNDERSTANDING + COLLECTING EXPERIENCES (Groups A1/B1, A2/B2, C1/C2 separately) Activity 5a**
- Photovoice Groups A1, A2 and C1: participants are invited to share any photograph they wish to as illustrations
- Facilitator encourages inputs from all participants. Reinforce principle of subjective perspectives
- Participants asked to recall the previous discussion
- Participants asked to draw on their knowledge and experience of the topic in this activity
- What is known about [topic] and its causes around here? What are the experiences of people in this group with this?
- What are positive/negative words to describe it? What are symptoms, usual therapies? How do services respond?
- Is there a shared definition? [Reinforce principle of Validation by consensus]
- How has this topic had an impact in this group? (Note this is preliminary and will be developed in future workshops)
- What are the main features, needs and desired outcomes around this topic? (Note this is preliminary and will be developed in future workshops)

18. ORGANISING THE MAJOR CAUSES OF TOPIC (Groups A1/B1, A2/B2, C1/C2 separately) Activity 5b

- We have developed these collective accounts of [health topic] in [villages A, B and C] [present problem trees, from each discussion group, with participants from each village talking about the problem in their setting].
- Thinking about the experiences, views that we have discussed and recorded, we will now organise this.
- What do communities think are the major causes of [health topic]?
- Work though Activity 5b. [Reinforce principle of Validation by consensus]

BREAK 30 mins

19. BRINGING IT ALL TOGETHER – SUMMARY, REFLECTIONS ON PROCESS (All 6 groups together) Activity 5c

- Now we have finished the discussion, Mr/s [NAME]4 will tell the review to the group from each of the three groups, to make sure we didn't miss anything. Is this an accurate summary? Did we miss anything?
- What issues are common between our discussion groups? What is different?
- What does this mean for who and how [health topic] is experienced?
- What does this mean for health planning, services and health workers?
- What about the activities? Should any changes be made? What works? What doesn't work?
- Who benefits from this process? How? Who controls the process? How?

20. FINAL QUESTIONS AND FEEDBACK - DATE/TIME FOR NEXT WORKSHOP(All 6 groups together)

[4] If it is appropriate as the workshopss progress, consider appointing a participant as a workshop secretary to complete a shared public account of the discussion. Otherwise, the workshop facilitator adopts this role.

Appendix F: Workshop 6: Addressing the issues

- Understand impact of [health topic]
- Identify services (health and other) for addressing needs for [health topic]

The workshop should be 2-2.5 hours, including refreshments. Take permission to audio-record. Facilitators take digital images of discussion and participants (with permissions audio recorded). Photovoice (Groups A1, A2, C1): collate digital images and permission releases at beginning of meeting.

21. INTRODUCTION + AIMS (All 6 groups together)

- Ground rules: Our environment is non-threatening, no-blame and democratic participation.
- Everyone here is an official member and a partner in research.
- Reinforce principle of 'homogenous group' – as a group with shared conditions (two types in VAPAR).
- Reinforce principle of 'subjective perspectives' – we want to understand people's individual experiences.
- Reinforce principle of 'collective validation' – only those issues that the group recognises are registered.
- Reinforce principle of 'no delegation' – those dealing with the issue are the primary researchers.
- Researchers from outside community play facilitative role. Together we are a joint research team.
- Invite feedback on the process. What do people think about participation?

Divide participants by groups: A1/B1, A2/B2, C1/C2 (3 groups). This division is important since some health needs are gender or age-specific, for example, women may want easier access to clean water or young people may want a soccer field, and so on. It is important to identify these different priorities for wider discussion later on.

22. ADDRESSING THE ISSUES (Groups A1/B1, A2/B2, C1/C2 separately) Activity 6

- [Facilitator displays the Venn diagrams for these groups, from Meeting 3, from groups 1 and 2].
- Build a shared Venn diagram.
- How can these issues be addressed? What are the services (health and other) for addressing those needs?
- How do services perform in relation to desired outcomes, access and uptake?

Bring both groups back together in plenary and discuss the findings of both groups.

23. BRINGING IT ALL TOGETHER - SUMMARY AND REFLECTIONS ON PROCESS (Groups 1 and 2 together)

- Now we have finished the discussion, Mr/s [NAME][5] will tell the review (impacts, gaps/strengths/services) to the group, to make sure we didn't miss anything. Is this an accurate summary? Did we miss anything?
- What issues are common between our discussion groups? What is different?
- What does this mean for who and how [health topic] is experienced?
- What does this mean for health planning, services and health workers?
- What about the activities? Should any changes be made? What works? What doesn't work?
- Who benefits from this process? How? Who controls the process? How?

[5] If it is appropriate as the meetings progress, consider appointing a participant as a meeting secretary to complete a shared public account of the discussion. Otherwise the meeting facilitator adopts this role.

24. **FINAL QUESTIONS AND FEEDBACK - DATE/TIME FOR NEXT MEETING (Groups 1 and 2 together)**

Appendix G: Workshop 7; Change pathways & action plan

The workshop should be 2-2.5 hours, including refreshments. Take permission to audio-record. Facilitators take digital images of discussion and participants (with permissions audio recorded). Photovoice (Groups A1, A2, C1): collate digital images and permission releases at beginning of workshop. Take details of taxis and costs from participants.

25. INTRODUCTION + AIMS (All groups)

- Ground rules: Our environment is non-threatening, no-blame and democratic participation.
- Reinforce principles of PAR.
- Everyone here is an official member and a partner in research.
- Researchers from outside community play facilitative role. Together we are a joint research team.
- Photovoice (A1, A2, C1): invite participants to share and describe any images they wish to.
- Facilitators distribute VA results –data collected by Agincourt routinely, we will consider these in our discussion

Divide participants by groups: A1/B1, A2/B2, C1/C2 (3 groups). This division is important since some health needs are gender or age-specific, for example, women may want easier access to clean water or young people may want a soccer field, and so on. It is important to identify these different priorities for wider discussion later on.

26. CHANGE PATHWAYS (Groups A1/A2, B1/B2, C1/C2 separately)

- [Facilitator shares outputs of prior process displaying on the wall and table - shared Venn (week 6), shared problem tree (week 5), action plans for both groups (week 4) and recaps discussions].
- We will now develop a shared change pathway and action plan from this village to address the issues identified
- The action plan we will take (with community representatives) to provincial government.
- Work through **Activity 7 [**Facilitator reinforces principle of validation by consensus]
- [Facilitator encourages participants to consider the VA data during this discussion]
- [Facilitator encourages participants to think about action at three overall levels]
    - Actions that can happen locally (in this village immediately/short term)
    - Actions that can happen in the health system (at different levels, community, clinic, facility, district, province)
    - Action that can happen at high levels of government

Bring both groups back together in plenary and discuss the findings of both groups.

27. BRINGING IT ALL TOGETHER – SUMMARY, REFLECTIONS ON PROCESS (All groups)

Summary

- Now we have finished the discussion, Mr/s [NAME]6 will tell the review to the group from each of the three groups, to make sure we didn't miss anything. Is this an accurate summary? Did we miss anything?
- Discuss similarities and differences between the different groups' change pathways/actions plans
- What issues are common between our discussion groups? What is different?
- What does this mean for who and how [health topic] is experienced?
- What does this mean for health planning, services and health workers?

Process

- What about the activities? Should any changes be made? What works? What doesn't work?
- Who benefits from this process? How? Who controls the process? How?

[6] If it is appropriate as the workshops progress, consider appointing a participant as a workshop secretary to complete a shared public account of the discussion. Otherwise the WORKSHOP facilitator adopts this role.

28. FINAL QUESTIONS AND FEEDBACK - DATE/TIME FOR NEXT WORKSHOP (All groups)

Appendix H: Workshop 8; Reflect on and finalise analysis/process, next steps

The workshop should be 2-2.5 hours, including refreshments. Take permission to audio-record. Facilitators take digital images of discussion and participants (with permissions audio recorded). Photovoice (Groups A1, A2, C1): collate digital images and permission releases at beginning of workshop.

29. INTRODUCTION + AIMS (All groups)

- Ground rules: Our environment is non-threatening, no-blame and democratic participation.
- Reinforce principles of PAR. Everyone here is an official member and a partner in research.
- Researchers from outside community play facilitative role. Together we are a joint research team.
- Photovoice (A1, A2, C1): invite participants to share and describe any images they wish to.

Divide participants by groups: A1/A2, B1/B2, C1/C2 (3 groups).

30. RESULTS, NEXT STEPS AND FEEDBACK ON PROCESS (Groups A1/A2, B1/B2, C1/C2 separately) Activity 8

Results and Next steps

- [Facilitator displays problems tree, Venn and action plan for each village-based group and re-caps]
- [3 outputs are collectively validated] [Facilitator records discussion points on the flipchart]
- [Facilitator outlines next steps – province and district engagement, and dates, starting Jan 2018]
- We plan to have representatives from the village-based discussion groups join us in this process
- How should we nominate individuals? What will be their role?
- We will now develop a report based on all the data we have collected over the last 8 weeks. Including the VA data that we have shared in the fact sheets from Wits/Agincourt.
- To help us with this, what is the most important information you think needs to be conveyed in province in district? [Refer to the newsletter, is this an accurate summary?]

Feedback on process

- [Facilitator recaps purpose of VAPAR, has a general discussion on process, drawing on prompts below.]
- [Facilitator records discussion points on the flipchart]
- Who benefits from this process? How? Who controls the process? How?
- What are the risks, what are the benefits?
- What about the activities? Should any changes be made? What works? What doesn't work?
- Did you feel your voice was heard? In the small groups of 8 and the big groups of 16 and 48?
- How should we distribute the cameras next round?
- Invite feedback on 3 methods [tree/venn/action planning], which was easiest/hardest? Why?
- Did and how did the methods [tree/venn/action planning] allow everyone's opinions to be heard?

Bring both groups back together in plenary and discuss the findings of both groups. Ensure there is at least 30 mins for this discussion, in the style of seminar Q+A.

31. BRINGING IT ALL TOGETHER – SUMMARY, REFLECTIONS ON PROCESS (All groups together)

Summary

- Now we have finished the discussion, Mr/s [NAME]7 will tell the review (results and next steps) to the group, to make sure we didn't miss anything. Is this an accurate summary? Did we miss anything? [For each village-group]
- Discuss similarities and differences between the village-based groups' outputs
- What issues are common between our discussion groups? What is different?
- What does this mean for who and how [health topic] is experienced?
- What does this mean for health planning, services and health workers?

Process

- Now we have finished the discussion, Mr/s [NAME]1 will tell the review (feedback on the process) to the group, to make sure we didn't miss anything. Is this an accurate summary? Did we miss anything? [For each village-group]
- Discuss similarities and differences between the village-based groups' outputs
- Who benefits from this process? How? Who controls the process? How?
- What issues are common between our discussion groups? What is different?
- What does this mean for how we do this process next time? Should changes be made? What works? What doesn't?
- What does this mean for health planning, services and health workers?

32. **FINAL QUESTIONS AND FEEDBACK - (Groups together)**

Appendix I: Department of Health research brief

vapar

DEPARTMENT OF HEALTH **RESEARCH BRIEF**

Verbal Autopsy with Participatory Action Research (VAPAR)
Expanding the knowledge base through partnerships for action on health equity
Series 1, Number 3, January 2018

'Water is life': working with communities to develop local knowledge for action to address water shortage

Lack of access to safe water poses significant risks to health and wellbeing. We worked with local communities in the MRC Wits/Agincourt Health and Socio-Demographic Surveillance System (HDSS) to develop routine surveillance data with local knowledge for action on priority health issues. In 2017, lack of water was nominated by communities as a priority topic. We held a series of community discussions on the drivers, impacts and needs around lack of water, and developed visual evidence on this topic.

Water sources and shortages

Water sources include taps in the house, yard and street, mobile tanks, cement and traditional wells and surface water (ponds, rivers and dams). Water is also sought from boreholes. However, borehole water was reported as a poor preference: it is saline, does not taste good and damages electrical equipment. Repeated and prolonged periods when piped water was unavailable were reported, as was the need to resort to unregulated sources known to be less safe.



Mobile water truck

Reasons for water shortages

- ***Infrastructure:*** was reported to be unreliable, service delivery inadequate, and reservoirs empty due to malfunctioning pumps. Delays in maintenance and vandalism of infrastructure also reported, the latter due to limited community ownership.
- ***Poor governance and planning***: Participants related the infrastructure problems to the poor planning by water authorities the municipality and the water service provider (Department of Water Affairs). Furthermore, the community asserted that leaders do not know what is happening on the ground.
- ***Mobile tanks***: were reported as a hindrance to provision of functioning taps. Mobile tanks are not always available due to lack of fuel, corruption by some drivers, and the water can be contaminated.
- ***Droughts***: Water shortages exacerbated by droughts which result in depletion of underground water and evaporation of dams. Rivers were also reported to be intermittent owing to low annual rainfall.

Health and social impacts

- ***Poverty and hunger***: Continuous shortages of water were reported as an overwhelming impediment that drives people into poverty. Participants reported hunger related to water shortage: it becomes difficult to prepare food without water, lack of ability to grow plants, work and effects on children's education. It was also reported that, in dire circumstances, water is sold by mobile truck drivers in the community. With many households depending on government grants and high unemployment, buying water is often unaffordable.
- ***Avoidable illness***: The absence of clean water poses multiple and significant threats to survival (*see panel overleaf*). Participants described significantly limited choices around using clean water.

- ***Sanitation and hygiene*:** reported to be considerably lower when there is no water, and that people compromise, sacrifice, and recycle water.
- ***Stress and conflict***: Life was reported to be a continuous struggle without a reliable source of clean water, affecting relationships and leading to conflict, tension and division. Service delivery protests were described.
- ***Educational and economic impacts***: The discussions recounted significant amounts of time spent fetching water. In this community, women and children bear the burden of collecting water.

Actions

- ***Develop new partnerships led by community leadership***: The community identified the following stakeholders as important in solving the water problem through coordinated partnerships: Dept. of Water and Sanitation, Premier, Mayor, Municipality, councillors, community leaders (CPF, CDF, induna, chief), Rand Water, NGOs
- ***Infrastructure*:** Building dams and advancing technologies were identified as important. Participants recommended stopping mobile tanks and investing in household taps. People are healthier with water in each household, contamination of water from source to point of use is eliminated. Mortality and morbidity is reduced and people become more productive lifting themselves out of poverty, and burden of disease is reduced. Families can use the time spend to collect water on income generating activities and food security improves as a result
- ***Planning:*** community based participants also recommended better planning to inform developments to infrastructure. Several suggestions were made including: inventories of households without water in the house or yard, detailed monitoring and reporting of water-related challenges in the community; fund raising to support the monitoring, planning and infrastructure development; fairer allocation of resources through multi-sector deliberation and partnerships; awareness campaigns and education around water access and water safety.

Visual evidence



Empty water tank



Laundry done in rivers

MRC/Wits Agincourt HDSS Surveillance Data 2014-15

Causes of all deaths

Infection	568
Non- communicable	573
Injury	107
Children <1 month	22
Maternal	20
Unknown	234
TOTAL	1524

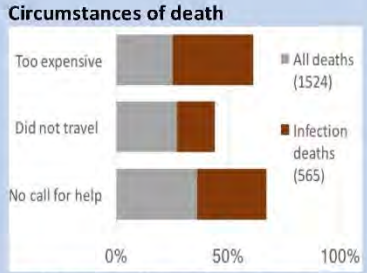
Deaths with possible link to water shortage

Acute respiratory, Incl. pneumonia	213	**
HIV/AIDS related	185	*
TB	104	**
Diarrhoea	19	***
Other infection	8	**
Child <1 mo. sepsis	2	***
Sepsis (non-obstetric)	1	*

* May be related to water shortage ** Likely to be related *** Very likely to be related

- 1,524 deaths in the study area 2014-15.
- Over 500 may have been due to, or influenced by, lack of clean, safe water

Circumstances of death



- All deaths: No call for help, not going to facility & health care too expensive 25-35% of circumstances reported.
- Deaths due to infections: No call for help, & health care too expensive over 30% of circumstances reported.

Verbal Autopsy with Participatory Action Research (VAPAR) is a programme of partnerships research funded the Health Systems Research Initiative from Department for International Development (DFID)/Medical Research Council (MRC)/Wellcome Trust/Economic and Social Research Council (ESRC) (MR/N005597/1) and MR/P014844/1).
Image credits: © VAPAR 2017 Permissions have been secured for the reproduction of images.

Appendix J: Local action plan; record of action

Lack of clean, safe water

Guideline: This proforma should be used to capture both stated and unanticipated/ad hoc actions arising from the VAPAR process. For the former, complete the action in the table below verbatim from the local action plan (LAP). For the latter, strikethrough the LAP excerpt table and complete sections 1-5

LAP Excerpt

Action	**Actors**	**When**	**Measure**	**Baseline**	**Target**	**Notes**
To be completed with the Local Action Plan entry as developed in the prior Step 3 Analyse/Plan consensus building						

Action report

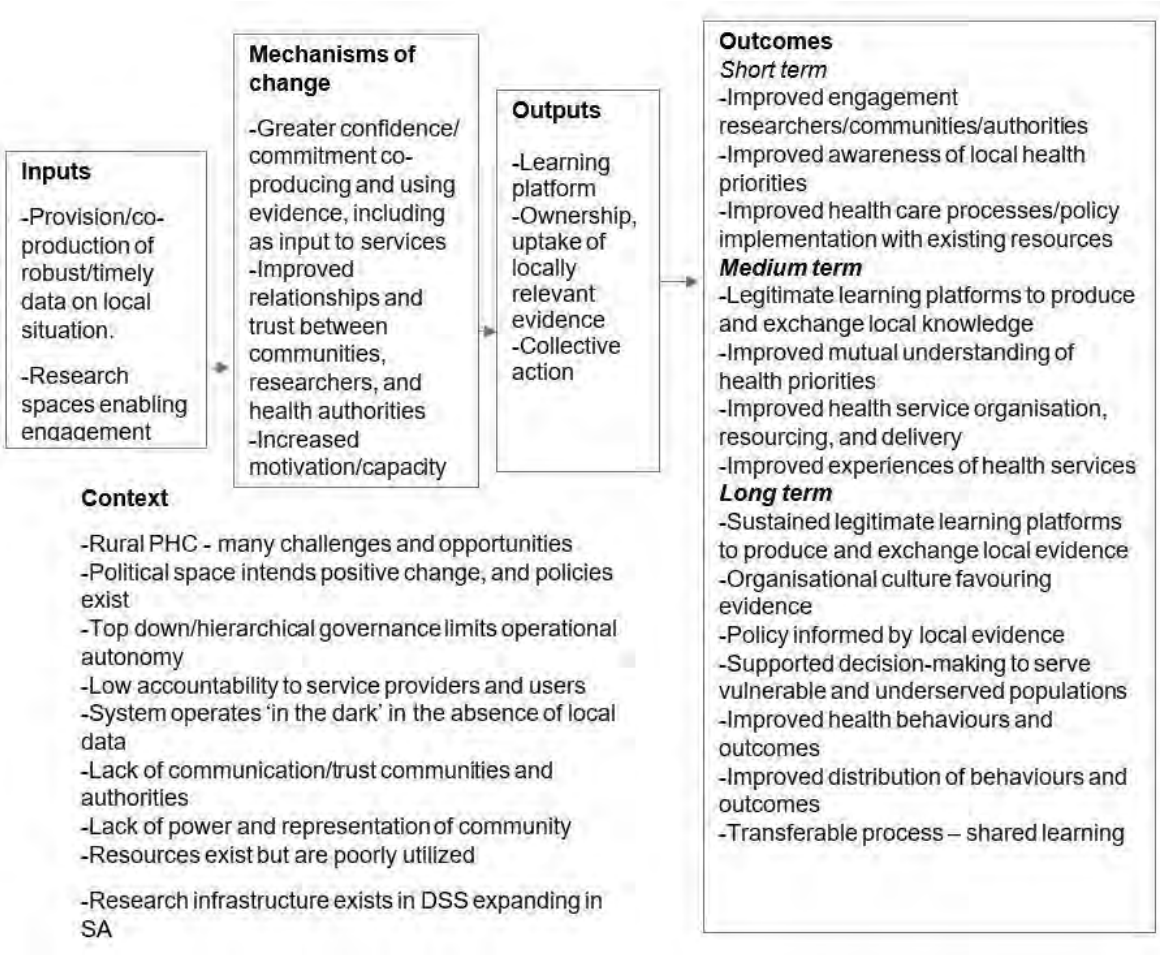
1 Action:	[Number, topic, stated/ad hoc]
2 Date:	
3 Update (may not be necessary for ad hoc actions):	[Joint account Wits/Stakeholder - enter max 200 words, agreed with Stakeholder]
4 Supporting evidence (including any follow up):	[Joint account Wits/Stakeholder - enter max 200 words, agreed with Stakeholder] …….. Stakeholder …….. Wits

5 Notes	[Wits account - enter max. 300 words on (a) interaction with stakeholder (b) substantive observations on action progression (c) learning e.g. roles and functions of groups/individuals]

Appendix K: Search Terms

Search criteria involved the use of key words, utilizing synonyms and variation of terms of topic	
Health	**Water Governance**
Health committees	Water security
Clinic health committees	Water policy
Clinic committees	Water access
Health facility committees	Water resources
Governance structures	Water resource management
Community mobilization	Water shortages
Primary health care facilities	Water governance
Community participation	Catchment management Agency
Participatory approaches	Catchment Management Forum
Stakeholder engagement	Water User Association
Community engagement	Irrigation board
Community empowerment	Community empowerment
	Participatory approaches
	South Africa

Appendix L: VAPAR Theory of change



Appendix M: Informed consent, information sheet with photo voice.

PARTICIPANT INFORMATION SHEET

Study Title: Verbal Autopsy with Participatory Action Research (VAPAR) Cycle 1. Version 1 05.04.2017

Introduction: Hello, my name is_____. I'm from the MRC/Wits Agincourt Unit. We are members of a research team working with the Wits University in Johannesburg, and Universities in Sweden and Scotland, UK.

Background: We worked in the area in 2015 to learn about what people know about different health conditions and what kind of health services can help to respond to the needs of this community. We want to continue and extend these partnerships to support this community to become more involved in activities and decisions that affect health and health services here. To do this, we are forming a Village-Based Discussion Group in this village. The group will be made up of 8 community members (e.g. village health workers, traditional healers, women of reproductive age, family members, village leaders etc.). We would like to invite you to be a member of the group for this village for Cycle 1, Stage 1. There will be 3 cycles and we would like to return to this village in the future cycle sin 2018, 2019 and 2020.

Involvement: Group members will be invited to a series of 8 meetings (1 every week) for 8 weeks (August-September 2017). The meetings will each take about 1.5 hours and will be held in this village. At the meetings we will talk about health conditions that are relevant here. We will talk about why people died and how, what it is like to have specific health problems in this community. We will also identify what kind of health services could help with the health needs of people here. This will be useful information for community members and help the Department of Health to improve community and health services, and for village based discussion groups to reflect on and learn from the process relative to any actions taken on the basis of it by the health authority or other groups.

Voluntariness, Benefits & Risks: Whether you choose to be in the study is up to you. There will be no effect on you or your family. We anticipate that your input will help decisions to be made about how health services are delivered in the future. There is no risk to your health from being in the study. Talking about illness, death and loss can be difficult and personal. We understand that it might make you feel sad or uncomfortable to talk about these things. If the discussions are upsetting or we can stop the discussion or meeting at any time. If you agree to participate, you will also be free to leave the study at any point and for any reason.

Remuneration & Transport Costs: You will be reimbursed for your travel for coming to the meetings. We will also provide refreshments during the discussions. Participants also receive a certificate of participation at the end (or when you decide to leave the study- if you choose to).

Confidentiality and anonymity: In the study reports we may quote parts of the discussion to describe the community's views. Because of this, we cannot guarantee that the conversations will be kept confidential. However, we can guarantee that all the discussions will be private and we will make sure that no-one can be identified in any documents. In the meetings, we will invite you to talk about your opinions and experiences. The information you give is up to you and the meetings will be private. Only those people who are doing the study will know whether you are in the study. Your identity will not be told to any unauthorized persons; and the discussions will only be shared with people on the study. Because the interview will be in a group, we are not able to ensure the confidentiality of the focus group discussions, but will encourage other focus group participants not to share the identities of other participants with those outside the focus group. Any information on your identity will be

removed before we prepare the research reports. We will request your permission to audio record the meeting discussions. Your last name will not be used in the transcripts of the recording, and any information that could identify you (name, address etc.) will not be recorded.

This study adheres to the guidelines described in the Declaration of Helsinki Ethical Principles for Medical Research Involving Human Subjects.

PARTICIPANT INFORMATION SHEET WITH PHOTOVOICE

Study Title: Verbal Autopsy with Participatory Action Research (VAPAR) Cycle 1. Version 1 05.04.2017

Introduction: Hello, my name is_____. I'm from the MRC/Wits Agincourt Unit. We are members of a research team working with the Wits University in Johannesburg, and Universities in Sweden and Scotland, UK.

Background: We worked in the area in 2015 to learn about what people know about different health conditions and what kind of health services can help to respond to the needs of this community. We want to continue and extend these partnerships to support this community to become more involved in activities and decisions that affect health and health services here. To do this, we are forming a Village-Based Discussion group in this village. The group will be made up of 8 community members (e.g. village health workers, traditional healers, women of reproductive age, family members, village leaders etc.). We would like to invite you to be a member of the group for this village for Cycle 1, Stage 1. There will be 3 cycles and we would like to return to this village in the future cycle sin 2018, 2019 and 2020.

Involvement: Group members will be invited to a series of 8 meetings (1 every week) for 8 weeks (August-September 2017). The meetings will each take about 1.5 hours and will be held in this village. At the meetings we will talk about health conditions that are relevant here. We will talk about why people died and how, what it is like to have specific health problems in this community. We will also identify what kind of health services could help with the health needs of people here. This will be useful information for community members and help the Department of Health to improve community and health services, and for village based discussion groups to reflect on and learn from the process relative to any actions taken on the basis of it by the health authority or other groups. We will also provide digital cameras for participates to photograph local areas to inform the discussions and illustrate the issues.

Voluntariness, Benefits & Risks: Whether you choose to be in the study is up to you. There will be no effect on you or your family. We anticipate that your input will help decisions to be made about how health services are delivered in the future. There is no risk to your health from being in the study. Talking about illness, death and loss can be difficult and personal. We understand that it might make you feel sad or uncomfortable to talk about these things. If the discussions are upsetting or we can stop the discussion or meeting at any time. If you agree to participate, you will also be free to leave the study at any point and for any reason.

Remuneration & Transport Costs: You will be reimbursed for your travel for coming to the meetings. We will also provide refreshments during the discussions. Participants also receive a certificate of participation at the end (or when you decide to leave the study- if you choose to).

Confidentiality and anonymity: In the study reports we may quote parts of the discussion to describe the community's views. Because of this, we cannot guarantee that the conversations will be kept confidential. However, we can guarantee that all the discussions will be private, and we will make sure that no-one can be identified in any documents. In the meetings, we will invite you to talk about your opinions and experiences. The information you give is up to you and the meetings will be private. Only those people who are doing the study will know whether you are in the study. Your identity will not be told to any unauthorized persons; and the discussions will only be shared with people on the study. Because the interview will be in a group, we are not able to ensure the confidentiality of the focus group discussions but will encourage other focus group participants not to share the identities of other participants with those outside the focus group. Any information on your identity will be removed before we prepare the research reports. We will request your permission to audio record the meeting

discussions. Your last name will not be used in the transcripts of the recording, and any information that could identify you (name, address etc.) will not be recorded.

This study adheres to the guidelines described in the Declaration of Helsinki Ethical Principles for Medical Research Involving Human Subjects.

A copy of this agreement is to be provided to the participant, with the information sheet

I_____(name), being above the age 18, have agreed to participate in the Verbal Autopsy with Participatory Action Research (VAPAR) study Cycle 1, Stage 1 in 2017. I fully understand the aims of the study that have been explained to me in a language that I understand. I have been allowed to ask questions and these have been answered.

☐ Yes ☐ No

I consent to participating as a member of the Verbal Autopsy with Participatory Action Research (VAPAR) study Cycle 1, Stage 1.

Participant's signature _____Date_____

If unable to sign, please indicate consent with your fingerprint in box.

I also know that I'm free to withdraw from the study at any given time without any conditions

Participant's signature _____Date_____

If unable to sign, please indicate consent with your fingerprint in box.

Fieldworker's name _____

Fieldworker's signature _____Date_____

Any questions?

In case of further questions in the future, you may contact the following person who will be glad to provide you with the information you will require Mrs Rhian Twine MRC /Wits Agincourt Health and Population Unit Telephone: (013) 795 5076.

If you have any questions related to the ethics of this study please contact: Professor Cleaton-Jones Chairperson of the University of the Witwatersrand, Human Research Ethics Committee (HREC), which is an independent committee established to help protect the rights of research participants at (011) 717 1234 or (011) 717 2301.

This study adheres to the guidelines described in the Declaration of Helsinki Ethical Principles for Medical Research Involving Human Subjects

AUDIO RECORDING CONSENT FORM

Study Title: Verbal Autopsy with Participatory Action Research (VAPAR) Cycle 1, Stage 1. Version 1 05.04.2017

A copy of this agreement is to be provided to the participant, with the information sheet and signed consent form

Please sign below to confirm that you consent to having the discussion audio recorded. The recordings will be transcribed and analysed. Sections of the text will be used in the reports used by the Department of Health to develop action plans, in final publication of this research and in presentations of this research to colleagues and at academic conferences. The recordings will be stored in the University for a minimum of 10 years.

☐ Yes ☐ No

I consent to having the focus group discussion tape recorded to ensure that the information that we discuss is accurately recorded.

Participant's signature _____Date_____

If unable to sign, please indicate consent with your fingerprint in box.

Fieldworker's name _____

Fieldworker's signature _____Date_____

Any questions?

In case of further questions in the future, you may contact the following person who will be glad to provide you with the information you will require Mrs Rhian Twine MRC /Wits Agincourt Health and Population Unit Telephone: (013) 795 5076.

If you have any questions related to the ethics of this study please contact: Professor Cleaton-Jones Chairperson of the University of the Witwatersrand, Human Research Ethics Committee (HREC), which is an independent committee established to help protect the rights of research participants at (011) 717 1234 or (011) 717 2301.

This study adheres to the guidelines described in the Declaration of Helsinki Ethical Principles for Medical Research Involving Human Subjects.

Appendix N: Ethics certificates

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

R14/49 Mrs Jennifer Hove

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

CLEARANCE CERTIFICATE NO. M190222

NAME: (Principal Investigator)	Mrs Jennifer Hove
DEPARTMENT:	Public Health Agincourt
PROJECT TITLE:	The role of community participation in improving health in a rural area of North-East South Africa
DATE CONSIDERED:	22/02/2019
DECISION:	Approved Unconditionally
CONDITIONS:	
SUPERVISOR:	Rhian Twine and Kathleen Kahn
APPROVED BY:	Doctor CB Penny, Chairperson, HREC (Medical)
DATE OF APPROVAL:	27/06/2019

This clearance certificate is valid for 5 years from date of approval. Extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Research Office Secretary on the Third Floor, Faculty of Health Sciences, Phillip Tobias Building, 29 Princess of Wales Terrace, Parktown, 2193, University of the Witwatersrand. I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to resubmit the application to the Committee. **I agree to submit a yearly progress report**. The date for annual re-certification will be one year after the date of convened meeting where the study was initially reviewed. In this case, the study was initially reviewed in **February** and will therefore be due in the month of **February** each year. Unreported changes to the application may invalidate the clearance given by the HREC (Medical).

Principal Investigator Signature _____ Date _____

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

health
MPUMALANGA PROVINCE
REPUBLIC OF SOUTH AFRICA

MPUMALANGA
THE PLACE OF THE RISING SUN

No.3, Government Boulevard, Riverside Park, Ext. 2, Mbombela, 1200, Mpumalanga Province
Private Bag X11285, Mbombela, 1200, Mpumalanga Province
Tel I: +27 (13) 766 3429, Fax: +27 (13) 766 3458

Lifiko Letemphilo | Departement van Gesondheid | UmNyango WezeMpilo

Letter of Support Signed by Chief Director (CD)/CEO/District Manager (DM)/Programme Manager (PM)

1. Name & contact no. of Applicant	Lucia D'Ambruoso		
2. Title of Study:	Verbal Autopsy with Participatory Action Research (VAPAR): expanding the knowledge base through partnerships for action on health equity		
3. Aim and population target:	i) Develop inclusive knowledge partnerships to strengthen health systems & 2) evaluate changes in health, health equity & empowerment. Targeted population is the public in the Agincourt DSS, but will be expanded		
4. Period to undertake the study	From: 1/4/2017 to: 31/3/2022		
5. Resources Required from Facility/Sub-district/Community			
5.1: Facility Staff Required to assist with the Study	Yes – Clinic Managers will attend meetings How many: every year. Probably 2 meetings. Nurses: 9 clinic managers Doctors: Other, please specify: District staff will also attend 2/3 mtgs a year		NO
5.2: Patient Records/Files	Yes		(NO)
5.3: Interviewing Patient at Facilities	Yes		(NO)
5.4: Interviewing ~~Patients at Home~~ service users in villages.	(Yes) Groups of 8-10 service users will have eight groups every 16 months		NO
5.5: Resource Flow (Are there benefits to Patients/community)	(Yes) Please list: Health system development		NO
5.6: Resource Flow (Are there benefits to Facility/District)	(Yes) Please list: Health systems development		NO
6. Availability of Required Clearance			
6.1: Ethical Clearance	Yes Clearance Number:	(Pending)	NO
6.2: Clinical Trial	Yes Clearance Number:	Pending	(NO)
6.3: Vaccine Trial	Yes Clearance Number:	Pending	(NO)
6.4: Budget	(Yes) Source of fund: UK MRC		NO

Declaration by Applicant: I Mr/Ms/Dr/Prof/Adv. _____ agree to submit/present the result of this study back to the CEO/Institution/District.

Comment by CEO/DM/PM: Result of study to be made available to mp DoH.

Supported / ~~Not Supported~~

Signature of CEO/CD/DM/PM

Name: D Mdluli

Stamp/Date: 30/03/2017

DEPARTMENT OF HEALTH
EHLANZENI DISTRICT
2017 -03- 30
PRIVATE BAG X 11278
66 ANDERSON STREET NELSPRUIT 1200
MPUMALANGA PROV GOVERNMENT

Please email completed form to: JerryS@mpuhealth.gov.za or Thembam@mpuhealth.gov.za

Please note that this letter is not an approval to undertake a study, but a support letter from identified facility/district i.e. the CEO/District Manager acknowledges to have been consulted on the study

UNIVERSITY OF ABERDEEN

College Ethics Review Board

You're logged in as s02ld3 . (Logout)

New Application | Associated Projects | Home Page | Blank Form | Contact Us

Application Overview

CERB/2017/4/1457 Hide

Verbal Autopsy with Participatory Action Research (VAPAR): Expanding knowledge base through partnerships for action on health equity | Study Protocol: Cycle 1, Stage 1 2017-18

Version - 1 Created On :

Submitted By:	Lucia D'Ambruoso	Email :	lucia.dambruoso@abdn.ac.uk
Principal Investigator :	Dr Lucia D'Ambruoso	Email :	lucia.dambruoso@abdn.ac.uk
PI Submitted on:	11/04/2017	Current Status :	Application Approved. (Locked)
Proposed Start Date :	01/08/2017	Proposed End Date :	30/03/2018
Peer Reviewed:	True	Peer Review Type:	Internal

Interventions : ☐ Measurements : ☐ Questionnaires : ☐ InterViews : ☐ Samples : ☐

Background

Hide

BACKGROUND: This protocol presents plans for a community-based research study as part of a broader 5-year programme of health policy and systems research. The title of the overall programme is: Verbal Autopsy with Participatory Action Research (VAPAR): expanding the knowledge base through partnerships for action on health equity. AIMS AND OBJECTIVES: The overall aim of the programme is to embed a system of knowledge production and exchange through a partnerships approach for health systems strengthening. STUDY POPULATION/METHODS: We propose to apply data from Verbal Autopsy (VA) and Participatory Action Research (PAR) in a series of reflection-and-action cycles based on a continuous quality improvement process for health systems strengthening. VA is a method to determine levels and causes of death for people who die outside facilities or without registration, and PAR is a process in which communities organise evidence for action. The method has been progressed with a Development Grant from the UK MRC Health Systems Research Initiative (Call 2). The plans are to extend the process into a cycle to act and re-evaluate action based on the knowledge generated and is supported by the Health Systems Research Initiative (Call 3). This proposal presents plans for the first primary data collection element of the first cycle of the quality improvement process, the PAR element of Cycle 1, Stage 1 in which data will be generated on health needs and priorities using PAR with local communities in an established health and socio-demographic surveillance site in rural northeast South Africa in a series of facilitated group discussions. ANALYSIS: Narrative and visual data will be thematically analysed to complement the collective analyses performed by participants in the village-based discussions. The work is planned from August 2017 – March 2018.

Main Aim

Hide

The aims are to progress and expand the PAR process initiated in the prior VAPAR development work 2015-16 with communities in an established health and socio-demographic surveillance site (HDSS) and produce evidence of practical relevance

Sub Aim

Hide

The objectives are to engage communities to examine VA data from Agincourt HDSS, develop an account of local knowledge around these data, set priorities for local services, and reflect on the process adapting where necessary to facilitate community ownership.

Project Key Words

Hide

Community, International, Poverty, Primary care

Associated Contacts

Hide

Other Staff

External Investigators

rhian.twine@wits.ac.za
SWitter@qmu.ac.uk
MariaV@mpuhealth.gov.za
BarryS@mpuhealth.gov.za
kathleen.kahn@wits.ac.za
stephen.tollman@wits.ac.za
peter.byass@umu.se

Attachments

Hide

File(s) Uploaded
Protocol
Peer Review 1
Peer Review 2
Peer Review 3
Information Sheets, Consent Forms, Topic Guides and MRC/Wits Agincourt Psychological Distress SOP

Download All attachments

Online Application View Application Report (printable)

Application Maintenance - Principal Investigator

Submit Application to CERB Edit Online Application Lock Online Application Print Notes

Reviewer Notes

Your Last Reply

[No comments recorded]

Administrator

Application No. CERB/2017/4/1437
Title: Verbal Autopsy with Participatory Action Research (VAPAR): Expanding knowledge base through partnerships for action on health equity | Study Protocol: Cycle 1, Stage 1 2017-18
Author: Lucia D'Ambrosio

Dear Lucia D'Ambrosio

Thank you for submitting the revisions to your application. These have now been considered by myself and the reviewers, and we find them satisfactory. I am happy to grant ethical approval for this project on behalf of the committee.

https://uoa.abdn.ac.uk/[illegible]

Kind regards,

Gordon Walter
Deputy Chair CERB

COMMENTS -

Reviewer 1

Application Approved.

Approval : Verbal Autopsy with Participatory Action Research (VAPAR): Expanding knowledge base through partnerships for action on health equity | Study Protocol: Cycle 1, Stage 1 2017-18 : Unconditional Acceptance (No changes required)

Reviewer 2

Application Approved.

Approval : Verbal Autopsy with Participatory Action Research (VAPAR): Expanding knowledge base through partnerships for action on health equity | Study Protocol: Cycle 1, Stage 1 2017-18 : Unconditional Acceptance (No changes required)

Reviewer 3

Application Approved.

Approval : Verbal Autopsy with Participatory Action Research (VAPAR): Expanding knowledge base through partnerships for action on health equity | Study Protocol: Cycle 1, Stage 1 2017-18 : Unconditional Acceptance (No changes required)

Reviewer 4

[No comments recorded]

Reviewer 5

[No comments recorded]

From: do-not-reply@abdn.ac.uk [mailto:do-not-reply@abdn.ac.uk]
Sent: 08 May 2017 13:18
To: D'Ambruoso, Lucia <lucia.dambruoso@abdn.ac.uk>
Subject: Application Verbal Autopsy with Participatory Action Research (VAPAR): Expanding knowledge base through partnerships for action on health equity | Study Protocol: Cycle 1, Stage 1 2017-18 (CERB/2017/4/1457): Approved

Application No. CERB/2017/4/1457
Title: Verbal Autopsy with Participatory Action Research (VAPAR): Expanding knowledge base through partnerships for action on health equity | Study Protocol: Cycle 1, Stage 1 2017-18 Authors Lucia D'Ambruoso

Dear Lucia D'Ambruoso

Thank you for submitting the revisions to your application. These have now been considered by myself and the reviewers, and we find them satisfactory. I am happy to grant ethical approval for this project on behalf of the committee.

https://w3.abdn.ac.uk//clsm/cerb/Admin/ApplicationAdmin.aspx?AppID=1457&LockID=jEH9j4b9Sv2yGShfCl5cGBUgM6VWtYZYvVzWL%2feQtKo%3d

Kind regards,

Gordon Waiter
Deputy Chair CERB

UNIVERSITY OF ABERDEEN

College Ethics Review Board

You're logged in as s02ld3 . (Logout)

New Application | Associated Projects | Home Page | Blank Form | Contact Us

Application Overview

CERB/2017/9/1518 Hide

Verbal Autopsy with Participatory Action Research (VAPAR): Expanding knowledge base through partnerships for action on health equity | Study Protocol: Cycle 1, Stage 2
Version - 1 Created On :

Submitted By:	Lucia D'Ambruoso	Email :	lucia.dambruoso@abdn.ac.uk
Principal Investigator :	Dr Lucia D'Ambruoso	Email :	lucia.dambruoso@abdn.ac.uk
PI Submitted on:	29/09/2017	Current Status :	Application Approved. (Locked)
Proposed Start Date :	15/01/2018	Proposed End Date :	30/06/2018
Peer Reviewed:	True	Peer Review Type:	Internal

Interventions : Measurements : Questionnaires : InterViews : Samples :

Background

Hide

BACKGROUND: South Africa has a burden of disease disproportionately borne by disadvantaged groups and a public health system characterised by chronic underinvestment, human resource crises, and deteriorating infrastructure. There is a need for evidence on health inequalities that focusses on whole systems that is employed to inform organisation of resources. The aims are to understand processes involved in developing responses to locally-defined health priorities, the role of evidence in this process, and to develop an adaptive, locally-owned knowledge partnership. STUDY POPULATION: This protocol presents plans to convene stakeholders working in different departments and levels to participate in a series of workshops analysing and interpreting evidence drawn from routine surveillance and developed with rural communities on locally-defined priorities. METHODS: academic and practitioner investigators together with a stakeholder panel will work as co-researchers in a series of workshops reviewing evidence and developing recommendations for policy and planning. Stakeholder panels of 12-16 participants will be convened, and a series of 3 participatory workshops will be held. Participants will appraise, analyse and interpret evidence developed in the VAPAR (Verbal Autopsy with Participatory Action Research) programme. In the workshops, group model building, pathways analysis will be used to develop recommendations for action. The discussions will appraise actions identified, and consider the utility of the method as a collaborative learning process in the province. ANALYSIS: Several data sources will be analysed: presentations, registers, minutes, observational notes and reflective journal data to develop accounts of inter-sectoral responses, stakeholder perspectives on evidence, and on how the process and information can inform policy, planning and management. The analysis will be based on a combined inductive/deductive approach. OUTPUTS: Recommendations for district level on local health priorities, for the method, and an account of health systems stakeholders' views on complex systems evidence and coproduction.

Main Aim

Hide

The overall aims are to understand the processes involved in developing responses to locally-defined health priorities, the role of evidence in this process, and to develop an adaptive, locally-owned knowledge partnership in a rural province in South Africa for this purpose

Sub Aim

Hide

a) Engage policy-makers and planners to analyse and interpret VAPAR evidence; b) Develop and appraise recommendations for district level planning (subsequent stage) to address issues identified. c) Reflect on process as a sustainable means of knowledge production and exchange, make necessary adaptations to facilitate relevance and ownership.

Project Key Words

Hide

Community, International, Poverty, Primary care, Evidence based practice

Associated Contacts

Hide

Other Staff

External Investigators

MariaV@mpuhealth.gov.za
Rhian.Twine@wits.ac.za
switter@qmu.ac.uk

BarryS@mpuhealth.gov.za
Kathleen.Kahn@wits.ac.za
stephen.tollman@wits.ac.za
peter.byass@umu.se

Attachments

Hide

File(s) Uploaded
Protocol
Peer review
Response to peer review
Information sheet, consent form, workshop guides

Download All attachments

Online Application View Application Report (printable)

Application Maintenance - Principal Investigator

Submit Application to CERB | Edit Online Application | Lock Online Application | Print Notes

Reviewer Notes

Your Last Reply

[No comments recorded]

Administrator

Application No. CERB/2017/9/1518
Title: Verbal Autopsy with Participatory Action Research (VAPAR): Expanding knowledge base through partnerships for action on health equity | Study Protocol: Cycle 1, Stage 2
Authors Lucia D'Ambruoso

Dear Lucia D'Ambruoso

Thank you for submitting the revisions to your application. These have now been considered by myself and the administrator/myself and the reviewers, and we find them satisfactory. I am happy to grant ethical approval for this

Reviewer 1

Application Approved.

Approval : Verbal Autopsy with Participatory Action Research (VAPAR): Expanding knowledge base through partnerships for action on health equity | Study Protocol: Cycle 1, Stage 2 : Unconditional Acceptance (No changes required)

Reviewer 2

Application Approved.

Approval : Verbal Autopsy with Participatory Action Research (VAPAR): Expanding knowledge base through partnerships for action on health equity | Study Protocol: Cycle 1, Stage 2 : Unconditional Acceptance (No changes required)

Reviewer 3

Application Approved.

Approval : Verbal Autopsy with Participatory Action Research (VAPAR): Expanding knowledge base through partnerships for action on health equity | Study Protocol: Cycle 1, Stage 2 : Unconditional Acceptance (No changes required)

Reviewer 4

Under Review.

Reviewer 5

[No comments recorded]

Appendix M: published papers

Paper 1

BMJ Global Health

'Water is life': developing community participation for clean water in rural South Africa

Jennifer Hove,[1] Lucia D'Ambruoso,[2] Denny Mabetha,[1] Maria van der Merwe,[3] Peter Byass,[4] Kathleen Kahn,[1] Sonto Khosa,[5] Sophie Witter,[6] Rhian Twine[1]

To cite: Hove J, D'Ambruoso L, Mabetha D, *et al*. 'Water is life': developing community participation for clean water in rural South Africa. *BMJ Global Health* 2019;**4**:e001377. doi:10.1136/bmjgh-2018-001377

Handling editor Seye Abimbola

Received 21 December 2018
Revised 6 May 2019
Accepted 11 May 2019

Check for updates

© Author(s) (or their employer(s)) 2019. Re-use permitted under CC BY. Published by BMJ.

[1]MRC/Wits Rural Public Health and Health Transitions Research Unit (Agincourt), School of Public Health, Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, South Africa
[2]Institute of Applied Health Sciences, School of Medicine, Medical Sciences and Nutrition, University of Aberdeen, Aberdeen, Scotland, UK
[3]Centre for Global Development, School of Education, University of Aberdeen, Aberdeen, Scotland, UK
[4]Department of Epidemiology and Global Health, Umeå University, Umeå, Sweden
[5]Department of Health, Mpumalanga Provincial Government, Mbombela, South Africa
[6]Institute for Global Health and Development, Queen Margaret University Edinburgh, Musselburgh, Scotland, UK

Correspondence to
Dr Lucia D'Ambruoso;
lucia.dambruoso@abdn.ac.uk

ABSTRACT

Background South Africa is a semiarid country where 5 million people, mainly in rural areas, lack access to water. Despite legislative and policy commitments to the right to water, cooperative governance and public participation, many authorities lack the means to engage with and respond to community needs. The objectives were to develop local knowledge on health priorities in a rural province as part of a programme developing community evidence for policy and planning.

Methods We engaged 24 participants across three villages in the Agincourt Health and Socio-Demographic Surveillance System and codesigned the study. This paper reports on lack of clean, safe water, which was nominated in one village (n=8 participants) and in which women of reproductive age were nominated as a group whose voices are excluded from attention to the issue. On this basis, additional participants were recruited (n=8). We then held a series of consensus-building workshops to develop accounts of the problem and actions to address it using Photovoice to document lived realities. Thematic analysis of narrative and visual data was performed.

Results Repeated and prolonged periods when piped water is unavailable were reported, as was unreliable infrastructure, inadequate service delivery, empty reservoirs and poor supply exacerbated by droughts. Interconnected social, behavioural and health impacts were documented combined with lack of understanding, cooperation and trust between communities and authorities. There was unanimity among participants for taps in houses as an overarching goal and strategies to build an evidence base for planning and advocacy were developed.

Conclusion In this setting, there is willingness among community stakeholders to improve water security and there are existing community assemblies to support this. Health and Socio-Demographic Surveillance Systems provide important opportunities to routinely connect communities to resource management and service delivery. Developing learning platforms with government and non-government organisations may offer a means to enable more effective public participation in decentralised water governance.

Key questions

What is already known?

- While the South African government recognises water as a basic human right and mandates participatory water governance, authorities lack the means to authentically engage communities and the capacities to use community-generated evidence in resource allocation.

What are the new findings?

- Continuous water shortages are an overwhelming impediment driving people into poverty, illness and social unrest. Lack of understanding between communities and authorities entrenches the situation.
- The process was an acceptable means of capturing the multidimensional nature of the problem as a first step towards using this information in planning and advocacy.

What do the new findings imply?

- Routine community-led accountability and awareness raising engaged with authority bodies may help to develop interfaces, trust, more effective monitoring and improved service provision.
- Demographic surveillance provides opportunities to develop fuller, routine forms of participatory deliberation and decision making.

BACKGROUND

In rural communities around the world, lack of clean water and sanitation are major contributors to avoidable death and disease. Lack of clean water increases vulnerability to conditions including diarrhoea, malnutrition, malaria, lymphatic filariasis, intestinal nematode infections, trachoma and schistosomiasis.[1] In 2012, 742 000 diarrhoea-related deaths were caused by lack of access to water and sanitation.[2] The impact of diarrhoea is most acute in children under 5 years and is a leading cause of death in this age group.[3]

The importance of water was emphasised in the Millennium Development Goals during which time access expanded considerably. The target for safe drinking water was achieved in 2010 ahead of the 2015 deadline with 91% of the world population accessing safe drinking water, compared with 76% in

BMJ Glob Health: first published as 10.1136/bmjgh-2018-001377 on 11 June 2019. Downloaded from http://gh.bmj.com/ on October 7, 2022 by guest. Protected by copyright.

1990.[4] An estimated 663 million people still lacked access in 2015, however, and the target on improved sanitation was not met.[5] The Sustainable Development Goals 2015–2030 commit to the unfinished water agenda, aiming to ensure available and sustainable management of water and sanitation for all.[6]

In postapartheid South Africa, the government enshrined water as a basic human right in the 1996 constitution, 14 years before the 2010 UN declaration.[7 8] The National Water Act of 1998 and the Water Services Act of 1997 were among a series of legislative and policy shifts to redress discrimination, promote equitable access and support municipalities to provide services, in which cooperative governance and public participation were centralised.[9–11] Between 1994 and 2004, the government invested 15 billion ZAR (US$3 billion) in infrastructure.[12] From 1990 to 2015, access increased 98%–100% and 66%–81% in urban and rural areas, respectively.[13]

While initially driven centrally, in 2003 and 2006, service provision and water supply were devolved to local governments and municipalities, respectively.[12 14] Ambitious decentralisation and developmental agendas relocated a range of responsibilities to local levels, where multiple constraints were faced. These included: financial distress, debt, inability to raise revenue, serious administrative and financial mismanagement, neo-patrimonialism, tendering corruption and manipulation of public procurement.[15 16] Municipalities were also unable to account for large amounts of complex technical information, with no monitoring systems for household usage in most rural areas.[17]

Community-based water management was assigned to Catchment Management Agencies (CMAs) promoting public participation and Water User Associations (WUAs) as user cooperatives.[18] There were challenges with capacity and clarity, however, with overlapping and ill-defined mandates, and links to community-based structures were limited.[19] While CMAs and WUAs were '*meant to increase participation of stakeholders including communities in the management of water resources… efforts have not translated into effective participation… there is no link between the national water quality management frameworks and community-based development structures*'.[20] Of the 19 CMAs established nationally, only two were operational in 2015.[21]

As well as advancing nation-building, the government embraced the international Integrated Water Resource Management (IWRM) paradigm.[21] Over time, IWRM came to be seen as overly complex and technocratic, however, limiting the state's role, with insufficient attention to context, integration and overlooking poverty alleviation.[22] This was followed by calls for a renewed focus on context in policy, strategic intervention and resource mobilisation with community participation as a unifying concept.[23 24] The second National Water Resource Strategy acknowledges the role of water in social and economic development and commits to infrastructure, services and equity as a policy goals.[25]

Despite visionary policy, legislation and investment in infrastructure, maintenance backlogs have become a systemic challenge. In 2012, costs for outstanding maintenance reached US$1,4 billion, and there are high proportions of households (78% in Mpumalanga and 70% in Limpopo) without basic services and interrupted supply due to non-functioning, poorly maintained infrastructure and empty or insufficiently supplied reservoirs.[12 26] Today, around 5 million South Africans, mainly in rural areas, do not have reliable access to drinking water.[27]

The human and societal costs are extensive. In addition to avoidable mortality, studies have identified risks of physical disability due to water carrying, a burden borne disproportionately by women and children.[28 29] Shame and emotional distress have been related to lack of water as has the erosion of social cohesion and capacity for community participation.[30 31] Service delivery protests have also increased drastically, associated with violent masculinities and a crisis of representation in local government.[32–34]

Despite normative support for participatory water governance, authorities lack the means to effectively consult communities and the capacities to use community-generated data and evidence in water resource management and service delivery. Innovations in community interfaces with health and water authorities are therefore urgently required.

Aims and objectives

The aims were to elicit local knowledge on health priorities in a rural province in South Africa as part of a wider process developing community evidence for policy and planning. This paper reports on the first element, developing community-generated evidence for action. The objectives were to elicit local insights into community-nominated priorities and develop actions to address the issues identified.

METHODS

The research was based at the Agincourt Health and Socio-Demographic Surveillance System (HDSS) in Mpumalanga, northeast South Africa (figure 1). The HDSS is one of Africa's largest population-based cohorts conducting annual updates on vital events including births, deaths, migration and socioeconomic status and has led efforts to develop HDSS infrastructure nationally. The area is densely populated with 116 000 people in 18 500 households in 31 villages covering 420 square kilometres and 30% of the population comprises former Mozambican refugees.[35] There is little formal sanitation, and electricity is available but affordable to a minority.[36] There is high unemployment and a limited economic base resulting in labour migration and significant reliance on social grants. While socioeconomic status has improved 2001–2013, it has been slower for poor households.[37]

BMJ Glob Health: first published as 10.1136/bmjgh-2018-001377 on 11 June 2019. Downloaded from http://gh.bmj.com/ on October 7, 2022 by guest. Protected by copyright.

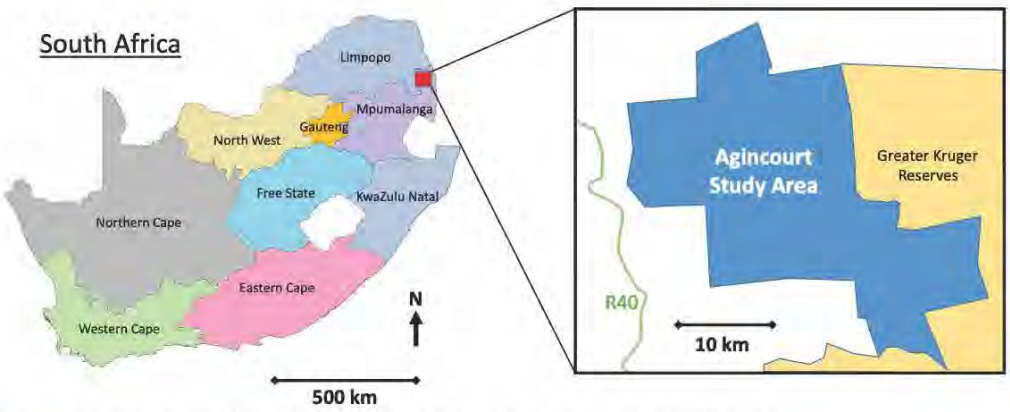


Figure 1 Map of Agincourt Health and Socio-Demographic Surveillance System research area

We adopted a participatory action research (PAR) process with community stakeholders in the Agincourt HDSS area. PAR is an approach focused on inclusion and social action through mutual transfer of expertise, power and ownership towards those most directly affected by the issues under investigation. PAR has a cyclical nature with repeated rounds of collective analysis, taking and evaluating action and learning from action.[38] This paper reports on PAR with community stakeholders as part of a wider programme developing community evidence for policy and planning (www.vapar.org). To our knowledge, this work is the first to develop participatory decision making to improve access to clean, safe water in a demographic surveillance platform.

We began by attempting to re-engage 22 participants involved in earlier participatory research across three villages in the Agincourt HDSS.[39–41] (The term 'participants' refers to people engaged in the PAR process as coresearchers rather than passive research subjects. We use the term synonymously with 'community stakeholders'.) In the earlier work, villages were selected to vary by distance to health facilities and levels of child-headed households. In each village, participants had been selected to represent service users and providers. Individuals were contacted by telephone and/or approached in their localities. From the 22 original participants, 13 agreed to be involved (nine were unable due to moving away, work commitments and one had passed away). Where it was not possible to find or re-engage those involved in the earlier work, 11 individuals with similar characteristics were approached and recruited using the same approach.

In each village, we held an initial workshop where we introduced the present study. We invited participants to codesign the process by nominating the health issues to examine and by expanding the participant base. Lack of water was a priority issue identified in one group (n=8 participants) and alcohol and other drug (AOD) abuse was nominated in the other two (n=16 participants). This paper focuses on water, the findings on AOD abuse are presented elsewhere.[42] Women of reproductive age (WRA) were nominated as a group affected by, and with important knowledge on, lack of water, and new participants (n=8) were nominated by participants and recruited by the research team (new participants were also recruited in the two groups nominating AOD abuse). Table 1 provide details of the original and new participants in the group nominating water and for the three groups overall.

Following the introductory workshop (workshop 1), we held a series of workshops that were structured and sequenced to systematise subjective perspectives into shared forms of knowledge on the nature of the problem and build consensus on actions to address the issues identified. The sequence progressed as follows:

- In workshop 2, participants deliberated over water shortages using a 'problem tree' to identify cause-and-effect relationships at various levels, building shared accounts, identifying and relating relevant social, behavioural and health factors.
- In workshop 3, using the problem tree, 'Venn diagrams' were developed to build shared understandings of the relationships between key actors and institutions.
- In workshop 4 with reference to the problem tree and Venn diagrams, 'action plans' were developed using stepwise pathways specifying actors, actions and outputs to achieve agreed goals.

Following workshops 1–4, we held additional workshops in which participants across all villages came together to revisit and cross-validate each other's findings and to reflect on the experience and how the process could be carried forward with government and non-governmental organisations (NGOs). In these workshops, participants

BMJ Glob Health: first published as 10.1136/bmjgh-2018-001377 on 11 June 2019. Downloaded from http://gh.bmj.com/ on October 7, 2022 by guest. Protected by copyright.

Table 1 Composition of discussion groups

Village 'A' nominating water (original and new participants denoted as A1 and A2, respectively)			
Selection criteria/role in community	**Original participants (A1)**	**New participants (A2)**	**Total**
Traditional healers	1		1
Community health volunteers	1		1
Community officials	2		2
Family members	3	3	6
Women of reproductive age	1	5	6
Total number of participants	8	8	16
Proportion female (%)	63	100	81
Villages 'A', 'B' and 'C' (original and new participants denoted as A1, B1, C1 and A2, B2 and C2, respectively)			
Selection criteria/role in community	**Original participants (A1, B1 and C1)**	**New participants (A2, B2 and C2)**	**Total**
Traditional healers	3		3
Religious leaders	1		1
Community health volunteers	3		3
Community officials	5		5
Family members	7	3	10
Women of reproductive age	5	5	10
Youth		16	16
Total number of participants	24	24	48
Proportion female (%)	75	92	83

All participants were 18 years or older. Participants were acknowledged as having multiple roles at home and in the community and a primary role was identified with participants for the purposes of recruitment.

were encouraged to adopt roles as cofacilitators in the deliberations. We employed a visual method (Photovoice) as a further input to the discussions (table 2).[43] Participants were provided with digital cameras to record lived realities of water insecurity. In workshops 3–8, participants presented and discussed images and developed captions to describe what the images conveyed. In each workshop, there was also discussion and reflection on PAR principles of representation, lived experience, ownership and collective knowledge (table 3).

Workshops were held in the common local language xiTsonga, with some content in English. Topic guides in xiTsonga were used to structure discussions, which were facilitated by a researcher familiar with the area (DM). Discussions were recorded on prepared flip charts to display a collective record (DM, JH, RT and LD), allowing for checking and rechecking of consensus views. Researchers cofacilitated the meetings, provided general assistance and took observational notes (JH, RT and LD). With separate permissions, workshops were audio-recorded, transcribed verbatim and translated into English. A 10% sample was back-translated for quality assurance. Data were stored in audio recordings, Microsoft Word and image files. Data were managed by researchers and stored on secure University servers.

Analysis was performed during the workshops by participants. Findings were collectively validated, with outputs recorded and appraised. During and after data collection, thematic analysis of narrative and visual data was performed to document and disseminate the community stakeholders' analyses. One researcher (JH) reviewed the transcripts in detail to identify recurring patterns with regular checking and cross-checking (LD and RT). A combined inductive/deductive approach was adopted.[44] Deductive categories were drawn from the process of understanding and articulating the problem to developing solutions and inductive themes were generally, although not exclusively, arranged according to this sequence. Thematic codes were developed and organised until no new themes emerged. Visual data were also reviewed and assigned codes (JH, DM and LD).[45] The following section presents the results of the analysis.

Specific ethical considerations applied to the PAR. PAR is founded on a position in which realities are subjective, contested, multiple and social and where knowledge is concerned with transferring power towards those most directly affected. Ethical conduct is therefore considered in terms of power dynamics by those intended to benefit from the process. During data collection and analysis, there was regular attention to power dynamics with time spent in each workshop, and in a dedicated workshop at the end of sequence, reflecting on these categories. Participants using visual methods received basic training in photography and on how to secure release permissions from the subjects of images.

BMJ Glob Health: first published as 10.1136/bmjgh-2018-001377 on 11 June 2019. Downloaded from http://gh.bmj.com/ on October 7, 2022 by guest. Protected by copyright.

Table 2 Schedule of community stakeholder workshops for village A*

Work-shop	Villages	Weekly meeting topics	Tool/technique	Description
1	A1	Topic selection	Ranking and voting	To identify priority health topic of relevance to the community. A list of health priorities was developed during the discussion, after which participants voted for the topics of highest relevance using adhesive stickers. The voting progressed through two rounds with discussion and agreement at the end.
2	A1, A2	Problems and causes	Problem tree	To unpack/understand nominated topics from different perspectives. Through facilitated discussions using a tree diagram visible to all, participants identified cause-and-effect relationships at various levels from root (tree roots) to intermediary causes (trunk and branches) and consequences and other effects (tree pods) building subjective perspectives into shared accounts through consensus.
3	A1, A2	Actors and impacts	Venn diagrams	To understand impacts and actors. Collective account developed with Venn diagram made from cardboard circles of different sizes and colours to indicate relationships and interactions between various actors and institutions, identifying internal and external organisations active in the topic and how they related to one another in terms of contact and collaboration.
4	A1, A2	Action agendas	Action pathways	To articulate overall goal(s) to address issues identified and visualise and depict stepwise actions and actors to achieve these. The action pathway was collectively developed to represent moving towards a desired goal via a series of interconnected events.
5	ABC	Problems and causes	Problem tree	As per workshop 2.
6	ABC	Actors and impacts	Venn diagrams	As per workshop 3.
7	ABC	Action agendas	Action pathways	As per workshop 4.
8	ABC	Reflections and next steps	Facilitated discussion	To reflect on experiences, outputs and how the process should be carried forward to engage government and non-governmental organisations. Participants discussed differences and similarities between the workshop outputs through facilitated discussions, cross-verified each other's outputs and reflected on the process and future development.
1–8	ABC	Lived experience	Photovoice	To visually convey lived expereince. Participants given basic training in photography, research ethics and digital cameras to take photographs illustrating the topic or condition as it existed in the physical environment. Photographs presented and discussed in meetings and captions developed to describe what images conveyed.

A1: original participants village 'A'; A2: new participants village 'A'; ABC, three villages combined.
*The table presents the process for village 'A', nominating water. All village-based discussion groups 'A', 'B' and 'C' progressed through this sequence independently, coming together for workshops 5–8 to further build consensus, verify outputs and reflect on process and next steps.

Otherwise participants were informed about the nature of the research, its aims, procedures and outcomes before agreeing to be involved and were assured anonymity in the reporting of identifiable information with an option to opt-out. Participants were reimbursed for time spent in the process via subsistence and travel expenses (200 ZAR, US$13 per participant). Refreshments were also provided in the workshops. Participants were free to leave the study at any time and for any reason. Preliminary results were fed back to, and verified with, participants before being disseminated more widely.

Patient and public involvement

The research was developed to address health priorities identified by community stakeholders. We did not work with patients directly but with people living in rural villages who were involved in study design in terms of nominating focus topics and expanding the

BMJ Glob Health: first published as 10.1136/bmjgh-2018-001377 on 11 June 2019. Downloaded from http://gh.bmj.com/ on October 7, 2022 by guest. Protected by copyright.

Table 3 PAR principles reinforced in each community stakeholder workshop

Principle	Description
No delegation	Participants are those directly affected and are the primary researchers taking lead roles forming teams to identify problems, define, analyse and develop solutions.
Homogeneous group	A social group with shared conditions to discuss, deliberate and reach consensus on the nature of the problem and actions to address the issues identified.
Subjective perspectives	People's individual experiences are central to the process and are the foundation on which collective knowledge is developed, respecting each other's opinion, as opposed to imposing ideas/opinions on others.
Collective validation	Recording observations that all participants identify as important. Does not negate differences in perceptions and experiences, but encourages the group to reach consensus on collective findings through corroboration of information and experiences.

Loewenson *et al* 2014.[39]
PAR, participatory action research.

participant base. Community stakeholders were integral to the process of systematising subjective perspectives into collective forms of knowledge as a basis to leverage action and learning from action. The results of the study will be used as the basis of subsequent engagements with government organisations and NGOs, and in which community stakeholders will be centrally involved.

RESULTS

The analysis of narrative and visual data is presented below, and in table 4 and figures 2–5.

Problem definition: lack of household supply, alternative and unregulated sources

Repeated and prolonged periods without piped water were recorded as was widespread use of informal and unregulated sources, several of which were known to be contaminated: '*There is no water…we are using dirty water that we get in the rivers*' (family member, workshop 2). Participants described regularly collecting water from neighbouring villages, boreholes or rivers, cement and traditional wells and surface sources (figure 2), which were distant from households and in which water was often contaminated or unavailable: '*I have a geyser [domestic electric water heater] in my house, because of salt water, it does not last…the electric kettle does the same. Salty water is not good*' (community official, workshop 2). Domestic storage was also known to carry a high likelihood of contamination.

There were many reports of mobile water tankers delivering water to households provided by the municipality due to frequent interruptions in piped supply (figure 3). These were seen as a major problem. The mobile trucks were not always available due to lack of fuel, delivered contaminated water and corruption among drivers was common: '*… drivers of mobile trucks are segregating…they don't give water to some people*' (family member, workshop 2). Participants also reported that although tankers appear to relieve the problem, politicians take advantage of the situation by selling water to villages exorbitantly. There were concerns that water provision through tankers deters efforts to improve the situation and impedes provision of domestic taps.

Causes and contributors of water shortages

Participants overwhelmingly related lack of water to poor planning by water authorities, municipality and service providers asserting that these groups are out of touch with realities on the ground: '*our Government … does not know what is happening in our communities…it is time for them to know about the water shortage problems*' (family member, workshop 2). There was consensus that community leaders are unaccountable and lack authority and motivation. Local leaders were also reported to make election promises that were not honoured. '*We have been promised that we will get water … it's been two years now and there is no water in those taps*' (WRA, workshop 2). Corruption was a common concern: '*the leaders are not working for us…they are corrupt. If they see that what they are doing is wrong, they try to find ways of covering it up*' (family member, workshop 2). The situation was reported to leave community members confused about the roles of community leaders and the authorities, and widespread lack of mutual understanding and trust was evident.

While many forms of infrastructure were described, boreholes, pumps and storages tanks, functionality was described as inconsistent and unreliable due to lack of maintenance. Taps were reported to run dry and break down, and reservoirs were reported to be empty due to malfunctioning pumps: '*They put the borehole here, but the pump is broken*' (family member, workshop 3). Delays in maintenance, replacement and repairs were described, as was vandalism and limited community ownership related to frustration and disillusionment. Shortages were also reported to be exacerbated by high temperatures, persistent droughts and low rainfall resulting in depletion, salinisation and evaporation of dams and rivers: '*There is not enough rain, if it rains, we wouldn't have serious issues*' (WRA, workshop 2).

BMJ Glob Health: first published as 10.1136/bmjgh-2018-001377 on 11 June 2019. Downloaded from http://gh.bmj.com/ on October 7, 2022 by guest. Protected by copyright.

Table 4 Thematic framework

Theme	Subtheme
Problem definition: lack of household supply, alternative and unregulated sources	► Repeated/prolonged periods without domestic supply. ► Informal/unregulated sources – water tankers provided by municipality. ► Informal/unregulated sources – cement/traditional wells/boreholes/surface water. ► Inconvenience of collection from informal/unregulated sources. ► Domestic storage of water from informal/unregulated sources, contamination and damaging equipment. ► Lack of political attention to the problem.
Causes and contributors of water shortages	► Poor governance and planning and lack of awareness in authorities. ► Lack of political accountability ('broken election promises') and corruption. ► Lack of awareness of accountability mechanisms among community leaders (CPF, CDF, Induna, councillors and ward committees). ► Lack of infrastructure maintenance and delays in maintenance. ► Vandalism and limited community ownership. ► Persistent droughts, high temperatures and low rainfall.
Health and social impacts	► Avoidable infectious disease and mortality, waterborne diseases: schistosomiasis, cholera, typhoid and other intestinal infectious conditions. ► Sanitation compromised without clean water. ► Hunger and malnutrition: diminished possibilities to grow/prepare food. ► Economic impacts: time costs to access water and necessary to buy water from tankers. ► Safety concerns: women collecting water at night and early morning. ► Familial/educational impacts: parents/children walking long distances to collect water. ► Personal and social impacts: continuous struggle, personal unhappiness and stress, neighbourhood fights, hatred and division and violent community protests.
Priorities for action	► Ensure household provision of water via taps in households (overall goal). ► Improve reporting systems on extent of problem for planning and advocacy: – Inventories of households without water. – Detailed monitoring of water-related challenges in the community. – Fund-raising for monitoring, planning and infrastructure development. – Fairer allocation of resources, multisectoral deliberation and partnerships. ► Strengthen relationships between community structures (community leaders and ward committees) and water management and service delivery authorities. ► Enable community participation with local government/municipalities in water supply. ► Strengthen infrastructure and maintenance and advance technologies. ► Encourage collective responsibility in communities: protection of catchment areas and protect water from contamination. Community awareness campaigns and education.
Reflections on the process	► Collective experience to understand complex topic. ► Shared benefit and exchange of understanding. ► Benefit of principle of respect and valuing participants. ► Expectations raised for future action. ► Dissatisfaction over level of reimbursement.

Community Police Forum (CPF): a group from communities representing police who meet to discuss safety in communities. They aim to ensure police accountability, transparency and effectiveness. CPFs are established in terms of section 19(1) of the SAPS Act, Act 68 of 1995 (Source: RSA. No. 68 of 95 South African Police Service Act. Pretoria: Republic of South Africa, 1995. Available at: https://www.saps.gov.za/legislation/acts/act68of1995.pdf accessed 09.04.2019).

Health and social impacts

There was consensus that the absence of clean water poses significant threats to well-being and survival. Avoidable infectious disease and mortality, waterborne diseases including schistosomiasis, cholera, typhoid and other intestinal infectious conditions were linked to lack of water. A range of contaminants in drinking water were reported including animal and human faecal matter, plastics and other pollutants. Sanitation and hygiene were reported to be lower when there is no water and that people are forced to compromise, sacrifice and recycle water. People were acutely aware of the health impacts of lack of a reliable clean water supply: '*we will die because of having no water. In previous years, we had water in the rivers but now there is no water…If there was water in the rivers, we could wash our clothes there but now we cannot, and we stay dirty*' (family member, workshop 2).

Continuous water shortages were described as an overwhelming impediment driving people into poverty and hunger, as it becomes more difficult to prepare food without water, wash, do laundry, grow plants and work (figure 4): '*Poverty and hunger are also part of the effects… if we don't have water…we cannot cook, bathe, clean our houses or do backyard vegetable gardens*' (family member, workshop

BMJ Glob Health: first published as 10.1136/bmjgh-2018-001377 on 11 June 2019. Downloaded from http://gh.bmj.com/ on October 7, 2022 by guest. Protected by copyright.



Figure 2 A man fetches water at the river for household use. Community stakeholder description: this picture illustrates the circumstances that people face every day. Despite the risks of using dirty water, people are left with no option but to use dirty water to which they have access.

5). Serious economic impacts were also acknowledged. Buying water from tanker drivers is unaffordable in areas of high unemployment and welfare dependence: '*our finances are also affected because we use our money to buy water… we should use that money to buy other things*' (WRA, workshop 2). Life was described as an ongoing struggle without water especially for vulnerable community members: '*I am unable to push the wheelbarrow [disabled participant with one hand]. I am unable to carry the bucket of water on my head. I wish I could have a tap in my house… it will make my life easier*' (family member, workshop 2).

The burden of collecting water was documented as primarily borne by women and children. Significant



Figure 3 A tanker that supplies villages with water due to intermittent supply. Community stakeholder description: the community see this as an impediment to provision of domestic taps, deterring attention from efforts to improve the water situation. Furthermore, mobile tankers are not always available due to lack of fuel and are alleged to deliver contaminated water.



Figure 4 Women accompanied by children doing laundry by the river. Community stakeholder description: laundry is done on 'washing rocks' or in dishes because there is no running water in the communal taps. Doing laundry by the river saves carrying water to households.

amounts of time were described walking long distances to collect and carry water. It was also reported that water is often only available for collection at night and early



Figure 5 Female community member fetching water alongside a string of water containers. Community stakeholder description: the containers are left in the queue to be filled when the water returns. People spend large amounts of time waiting for water at unreliable sources.

BMJ Glob Health: first published as 10.1136/bmjgh-2018-001377 on 11 June 2019. Downloaded from http://gh.bmj.com/ on October 7, 2022 by guest. Protected by copyright.

morning, which introduces safety risks (figure 5): '*at night it is difficult for us women to go there and collect water because we fear criminals. We need men or other people to accompany us*' (WRA, workshop 2). There was agreement that time spent collecting water could be used for income generating and educational activities. Children were also noted to miss school and parents have less time to care for families due to the need to collect water: '*Education is affected… children won't do their homework because they will have to go fetch water after school*' (family member, workshop 5).

Water shortages were also considered as a significant source of personal unhappiness, stress and division in families and communities. Participants reported finding it embarrassing and disruptive to continually collect water, and conflicts and tensions were reported to arise between households over mobile water tankers, who gets water first and how much, with disputes about access with boreholes: '*they do provide us with mobile water tanks sometimes, but they are not helping except causing more fights and hatred among community members*' (family member, workshop 4). Deficiencies in resource management and service delivery were also reported to result in frequent community protests, which often become violent.

Some aspects were conveyed differently between men and women. Several WRA participants described how women and girls have major roles in water collection, limiting participation in waged work and education and increasing risks of injury and violence. While there was relatively low male representation in the group in which water was nominated as the priority topic (approximately 20%), male participants spoke of causes, contributors and impacts related to poverty, poor infrastructure, unemployment, neighbourhood tensions and disconnection from the authorities. These perspectives were confirmed when all groups came together at the end of the process, although here the proportion of males was similar.

Priorities for action

There was unanimity that taps in houses are urgently required as an overall goal: '*We do not want mobile water trucks but taps in each and every household*' (WRA, workshop 4). To achieve this, actions were developed around improving reporting systems on the extent of the problem as a basis from which to advocate for fairer resource allocation. Participants identified improved planning to include: inventories of households without water; detailed monitoring and reporting of water-related challenges; fund-raising to support monitoring, planning and infrastructure development; and fairer allocation of resources through multisectoral deliberation and partnerships for infrastructure development and maintenance.

The lack of connection between communities and authorities was confirmed during this process, with lines of communication between different governing levels and sections described as 'grey' (figure 6). The importance of closer working links with local government and municipalities was therefore seen as necessary before engaging higher level stakeholders: '*we can't start at the top ranks… those people can't relate to the challenges that we face… we need to start with someone who knows our situation*' (traditional healer, workshop 4). The need to improve knowledge of who to approach for broken pumps, leakages and illegal connections was also emphasised.



Figure 6 Venn diagram indicates lines of obscure communication ('grey areas') between different levels and sections responsible for water resource management and service delivery.

To this end, participants delineated the roles of existing community assemblies. Several community structures were described from which ward committees and community leaders (including village heads and

BMJ Glob Health: first published as 10.1136/bmjgh-2018-001377 on 11 June 2019. Downloaded from http://gh.bmj.com/ on October 7, 2022 by guest. Protected by copyright.

Indunas with authority over several households in line with customary law) were identified as having important roles. Ward committees are able to raise priorities with the Community Development Forum (CDF), a group that addresses developmental issues in villages. The CDFs prioritise community needs by liaising with elected councillors, and the ward plan is then taken by the councillor to be amalgamated with priorities from other wards in the municipality to form an Integrated Development Plan: '*the Ward Committee is the structure that refers grievances to higher structures and authorities*' (family member, workshop 4).

Strengthening infrastructure and maintenance and advancing technologies to bring an end to water distribution via mobile trucks were identified as critical. Participants also stressed that they need to be involved in all stages planning, implementation and management of water supply. Community awareness was identified as a complementary route to educate the community on the value of water, conservation and best practices such as waste disposal to avoid pollution and land degradation as well as the need to develop collective responsibility to protect catchment areas and existing infrastructure: '*we should be responsible when using* water' (family member, workshop 2).

Reflections on the process

The process created spaces for colearning, understanding others and facilitated new linkages. Participants were oriented to consensus-building techniques, which enhanced team work, took active roles during the weekly workshops, were keen to learn new skills and were generally enthusiastic about the approach (figures 7–8). Participants reported feeling valued and respected when they recognised that their contributions, voices and ideas were captured: '*we are happy because our views were considered*' (family member, workshop 8). Attendance was high



Figure 7 Participants from all villages convene to discuss and build consensus on nominated topics in session cofacilitated by community stakeholders.



Figure 8 Development of action pathways based on workshop outputs detailing: problems, causes, impacts, actors and institutions.

in all meetings; there were no drop outs other than one participant who relocated to Johannesburg.

Challenges were encountered in terms of expectations around action, with some participants anticipating improvements in water supply at the end of the eight weeks. There was also some dissatisfaction expressed round the level of reimbursement and indications that it should be higher. We regularly reviewed and rationalised expectations, resource availability and reflected on and revised the design, outputs and next steps while moving the work forward towards development of action plans with government and non-government actors: '*I think everything was good and we learnt a lot in our discussion. We will be happy if we achieve what we want to achieve. We will dance and ululate (loud sounds to express joy) for that like never before*' (WRA, workshop 8).

DISCUSSION

In this section, we reflect on the findings, consider acceptability and reproducibility of the method, and outline learning and next steps engaging government and other agencies to incorporate community-generated evidence into resource management and service delivery.

Substantive findings

Despite overall improvements in access reported in national data, our data suggest a very different picture. Everyday life was reported to be a continuous struggle without water, entrenching poverty, illness, hunger, stress and social unrest. While our participants were not a random sample, they were also not selected as a group with whom water shortages were pervasive. This suggests that aggregate statistics may not fully represent the reality of water access and associated challenges. The findings are consistent with other research on water security in rural South Africa, although on specific health and social impacts in isolation and that acknowledge the reality of water insecurity and benefits of interventions are likely

BMJ Glob Health: first published as 10.1136/bmjgh-2018-001377 on 11 June 2019. Downloaded from http://gh.bmj.com/ on October 7, 2022 by guest. Protected by copyright.

to be underestimated.[46–48] PAR yielded rich renditions of interconnected social, behavioural and health impacts, allowing fuller understandings of the true burden to be recorded.

PAR was adopted to understand and enable interfaces between communities and public authorities. As a first step, articulating needs and priorities among community stakeholders, there was unanimity that water provision can only be of benefit with taps in households. Recent research in the area has associated piped water provision with an eightfold reduction in child schistosomiasis, suggesting this recommendation may have transformative potential.[48] Steps towards the goal were chosen to improve trust between communities and local planning, management, maintenance and surveillance. The plans were pragmatic and incremental, focused on existing community structures and generating evidence for planning, advocacy and resource allocation. Rural communities have effectively monitored water quality with new technologies elsewhere in South Africa suggesting there may be important roles for communities to support authorities in surveillance and monitoring.[20] There was also willingness to develop awareness campaigns and education around water access and safety.

It was recognised that solutions cannot be achieved by organisations working in isolation. Multisectoral collaboration was seen as necessary to sustainably improve access through collective and coordinated efforts to understand demand, supply and equity issues and promote innovation in the face of climate change. International debates set out that multisectoral governance requires accountable institutions, clear roles and responsibilities and effective coordination. Challenges lie in complex mechanisms, coordination problems and conflicts of interest, resulting in failures to mediate differences between diverse actors.[49] This is of critical importance in South Africa where community-based water governance has been significantly undermined by social and political power asymmetries accumulated over generations.[50] As the process develops, there is a need to understand whether shifts in power relationships can occur, through which processes, in which contexts and with which outcomes.[19 51] To this end, we reflect on the methodology and consider next steps below.

Methodological reflections

According to Cook *et al*, PAR has an impact on the quality of research design when participants are actively involved in designing and directing the process.[52] Participant involvement in key design elements (nomination of topics and expansion of participant base) embedded shared responsibility and ownership from the outset. Some participants were illiterate but participated actively in the process. While we adopted a predetermined sequence, the process embodied and reinforced principles of openness and respect for others, and skills to listen, observe, analyse and interpret throughout, which were well-received among community stakeholders.

The discussions were structured and sequenced to build collective understandings of key priorities faced in rural villages in a self-directed process. The problem tree was a simple, relatable framework that allowed an initial systemising of perspectives. From this, we progressed to more complicated tasks developing strategies for action. Venn diagramming was effective in encouraging participation to map relevant actors, institutions and inter-relationships. The action pathways were a demanding aspect given the extent of challenges identified. Drawing on the prior outputs of the problem tree and Venn diagram, however, it was possible to articulate shared goals and identify stepwise actions towards these.

Transformational learning happens when researchers and participants have sufficient time to interact. Participants and researchers engaged over a series of eight workshops. Repeated engagements supported development of rapport and relationships, as a foundation to progress through a sequence of increasing complexity. The approach also allowed principles of collaborative action and knowledge production to be examined and re-examined. Photovoice was accessible and stimulated active participation, participants confidently presented vivid visual evidence with pride and satisfaction. The final meetings were sufficiently familiar in process and principles for community stakeholders to adopt roles as cofacilitators (figure 7).

There were several challenges. There was some dissatisfaction with the level of reimbursement and expectations were raised around the likelihood of improvements in water security. We invested time rationalising expectations, were consistent and transparent in information on resources, next steps engaging with the authorities and the extent of community representation and ongoing communication in these. Despite these challenges, there was high and consistent engagement and generally positive feedback. While direct citizen action was not within the scope of the workshops, the process provided an acceptable means of capturing the multidimensional nature of the problem and developing community assemblies as a first step towards the provision of this information in the wider research programme.

Next steps

The next steps are to engage decision makers to leverage action based on local needs. Overall, the programme aims to bring state and non-state actors together to address community-nominated priorities in a collaborative learning platform promoting knowledge transfer between scientific, policy and local communities. Diverse stakeholders and interests will inevitably introduce risks of reproducing social and political power asymmetries, and so sensitivity to power relations will be critical. As stated by Brown[50] on the inherent and potentially limiting assumptions around participatory governance: '*creating new multi-stakeholder spaces is the easy part*'. Wider informal norms, trust and authenticity do not change

BMJ Glob Health: first published as 10.1136/bmjgh-2018-001377 on 11 June 2019. Downloaded from http://gh.bmj.com/ on October 7, 2022 by guest. Protected by copyright.

rapidly, and there is a potential to recreate inequalities and power asymmetries.

Sensitivity to context and evaluation of the process, outcomes and limits of participation are therefore required as the process expands. In terms of process, attention to issues such as extent of codesign, loss of earnings, travel costs and suitability of venues, countervailing the power of dominant individuals and groups and to often bureaucratic and corrupt service and statutory contexts will be necessary. Measurement of outcomes to understand whether tangible changes are taking place, and whether and how they can be attributed to the process, will also be required to understand whether true shifts in power relationships and distribution of benefits are possible.[51 53]

The research environment is of critical importance in this regard. Neutral research spaces can provide a basis to reconcile diverse viewpoints, needs and goals. HDSSs offer important opportunities to build meaningful relationships and trust between communities and authorities, as well as provide timely and robust data for monitoring and evaluation. To our knowledge, this work is the first to develop deliberative decision making in water services through a demographic surveillance platform. Demographic surveillance system infrastructure is expanding in South Africa where there is recognition of their value in national planning and development.[54] There may therefore be significant potential to improve interfaces and relationships between communities and authorities to mobilise and take up water monitoring activiues through participatory research embedded in HDSS.

CONCLUSION

Access to clean water requires effective governance under demanding conditions. Community participation can contribute evidence on the true scale of the problem and on how it can be resolved. While theoretically appealing, participation in water governance is neither widely conducted nor generally effective. HDSS research environments offer important opportunities to enable innovations in participatory governance, resolving gaps in planning and informing resource allocation. The outputs of the PAR process will form the basis of new engagements with government and NGOs engaging in adaptive learning processes to further explore community-led governance for water security. Sensitivity to multiple interests and actors, process and power dynamics, social, political institutional and cultural contexts, and outcomes will be necessary in the next stages.

Acknowledgements We would like to thank the study participants for agreeing to be part of the process, sharing their time and perspectives and the Verbal Autopsy with Participatory Action Research (VAPAR) staff of the Medical Research Council (MRC)/Wits Rural Public Health and Health Transitions Research Unit (Agincourt). We also thank the three peer reviewers for insightful comments that improved the paper. Permissions have been secured for the reproduction of all images.

Contributors JH led the thematic analysis and drafted the manuscript with LD and RT. DM led the data collection with inputs from LD, RT and JH. LD, RT, MV, PB, SW, SK and KK conceived of the study and made inputs to the collection and interpretation of data. LD, JH and RT revised the manuscript critically. All authors have given approval for the version to be published and agreed to be accountable for the work.

Funding This study was funded by the Joint Health Systems Research Initiative from Department for International Development/MRC/Welcome Trust/Economic and Social Research Council (MR/N005597/1 and MR/P014844/1). This work was nested within the MRC/Wits Rural Public Health and Health Transitions Research Unit (Agincourt), supported by the University of the Witwatersrand and Medical Research Council, South Africa.

Disclaimer The content is solely the responsibility of the authors.

Competing interests None declared.

Patient consent for publication Not required.

Ethics approval The study protocol was approved by research ethics committees in the Universities of the Witwatersrand and Aberdeen and the Provincial Health Research Committee gave permission for the study.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement Data are available on reasonable request.

Open access This is an open access article distributed in accordance with the Creative Commons Attribution 4.0 Unported (CC BY 4.0) license, which permits others to copy, redistribute, remix, transform and build upon this work for any purpose, provided the original work is properly cited, a link to the licence is given, and indication of whether changes were made. See: https://creativecommons.org/licenses/by/4.0/.

REFERENCES

1. Prüss-Ustün A, Bos R, Gore F, *et al*. *Better Health : Costs, Benefits and*. Geneva: Sustainability of Interventions to Protect and Promote Health, 2008. (Accessed April 5, 2019).
2. Prüss-Ustün A, Bartram J, Clasen T, *et al*. Burden of disease from inadequate water, sanitation and hygiene in low- and middle-income settings: a retrospective analysis of data from 145 countries. *Trop Med Int Health* 2014;19:894–905.
3. UNICEF. Thirsting for a future water and children in a changing climate. New York, 2017. Available: www.unicef.org/wash/waterandclimate [Accessed 5 Apr 2019].
4. SSA. Millennium Development goals 7: ensure environmental sustainability. Pretoria, 2015. Available: http://www.statssa.gov.za/MDG/MDG_Goal7_report_2015_.pdf [Accessed 17 Decr 2018].
5. UNICEF, WHO. Progress on sanitation and drinking water: 2015 update and mdg assessment. New York/Geneva, 2015. Available: www.wssinfo.org [Accessed 5 Apr 2019].
6. UN. Sustainable development goal 6 synthesis report on water and sanitation 2018. New York, 2018. Available: https://sustainabledevelopment.un.org/content/documents/19901SDG6_SR2018_web_3.pdf [Accessed 5 Apr 2019].
7. RSA. Constitution of the Republic of South Africa 1996. Republic of South Africa, 1996. Available: https://www.gov.za/documents/constitution-republic-south-africa-1996 [Accessed 5 Apr 2019].
8. UNGA. 4/292. The human right to water and sanitation. New York, 2010. Available: https://www.un.org/en/ga/search/view_doc.asp?symbol=A/RES/64/292
9. RSA. RSA. National water act 1998. Republic of South Africa, 1998. Available: http://www.dwa.gov.za/Documents/Legislature/nw_act/NWA.pdf [Accessed 5 Apr 2019].
10. RSA. Water services act 1997. Republic of South Africa, 1997. Available: http://portal.unesco.org/en/files/47386/12670896091Water_Services_Act_1997.pdf/Water%2BServices%2BAct%2B1997.pdf [Accessed 5 Apr 2019].
11. Beck T, Rodina L, Luker E, *et al*. *Program on water governance report: institutional and policy mapping of the water sector in south africa overview the urban water landscape of south africa institutional and policy mapping of the water sector in South Africa*, 2016. Available: www.edges.ubc.ca [Accessed 3 Apr 2019].
12. van Koppen B, Schreiner B. Moving beyond integrated water resource management: developmental water management in South Africa. *Int J Water Resour Dev* 2014;30:543–58.
13. SSA. Millennium Development goals country report 2015. Pretoria, 2015. Available: http://www.statssa.gov.za/MDG/MDG_Country Report_Final30Sep2015.pdf [Accessed 17 Dec 2018].
14. WSP. Water supply and sanitation in South Africa: turning finance into services for 2015 and beyond, 2011. Available: www.amcow.net [Accessed 5 Apr 2019].

BMJ Glob Health: first published as 10.1136/bmjgh-2018-001377 on 11 June 2019. Downloaded from http://gh.bmj.com/ on October 7, 2022 by guest. Protected by copyright.

15. Beresford A. Power, patronage, and gatekeeper politics in South Africa. *Afr Aff* 2015;114:226–48.
16. Van Der Mescht J, Van Jaarsveld M. Addressing operations and maintenance challenges in smaller municipalities. Port Elizabeth; 2012, 2012. Available: http://www.infrastructurene.ws/wp-content/uploads/sites/4/2016/04/Addressing-operations-and-maintenance-challenges-in-smaller-municipalities-Johan-van-der-Mescht-Vela-VKE.pdf [Accessed 5 Apr 2019].
17. Kanyane M. Exploring Challenges of Municipal Service Delivery in South Africa (1994 - 2013). *APSDPR* 2014;2.
18. Karodia H, Weston DR. Intersectoral Management of River Basins South Africa's New Water Policy and Law, 2001. Available: http://publications.iwmi.org/pdf/H029111.pdf [Accessed 3 Apr 2019].
19. Denby K, Movik S, Mehta L. *The "Trickle Down" of IWRM: A Case Study of Local-Level Realities in the Inkomati Water Management Area*, South Africa. Available: www.water-alternatives.org [Accessed 5 Apr 2019].
20. Nare L, Odiyo JO, Francis J, *et al*. Framework for effective community participation in water quality management in Luvuvhu catchment of South Africa. *Physics and Chemistry of the Earth, Parts A/B/C* 2011;36:1063–70.
21. Movik S, Mehta L, Van Koppen B, *et al*. Interpretations and translations of IWRM in South Africa. *Water Altern* 2016;9:456–72.
22. Volenzo TE, Odiyo J. Ecological public health and participatory planning and assessment dilemmas: the case of water resources management. *Int J Environ Res Public Health* 2018;15. doi:10.3390/ijerph15081635
23. Merrey DJ. Is normative integrated water resources management implementable? charting a practical course with lessons from southern Africa. *Physics and Chemistry of the Earth, Parts A/B/C* 2008;33:899–905.
24. Casazza A, Regional U, Advisor S. Aligning the sustainable development goals (SDGs) to the national development plan (NDP): towards domestication of the SDGs in South Africa, 2016. Available: http://www.statssa.gov.za/MDG/MDG_Country Report_Final30Sep2015.pdf [Accessed 17 Dec 2018].
25. DWA. National water resource strategy: water for an equitable and sustainable future. Pretoria, 2013. Available: http://www.dwa.gov.za/documents/Other/Strategic Plan/NWRS2-Final-email-version.pdf [Accessed 11 Dec 2018].
26. Sershen S, Rodda N, Stenström TA, *et al*. Water security in South Africa: perceptions on public expectations and municipal obligations, governance and water re-use. *Water SA* 2016;42:456–65.
27. SSA. GHS series volume VIII water and sanitation: in-depth analysis of the general Household Survey 2002–2015 and community survey 2016 data. Pretoria, 2016. Available: www.statssa.gov.za [Accessed 5 Apr 2019].
28. Geere J-A, Bartram J, Bates L, *et al*. Carrying water may be a major contributor to disability from musculoskeletal disorders in low income countries: a cross-sectional survey in South Africa, Ghana and Vietnam. *J Glob Health* 2018;8.
29. Bisung E, Elliott SJ. Psychosocial impacts of the lack of access to water and sanitation in low- and middle-income countries: a scoping review. *J Water Health* 2017;15:17–30.
30. Bulled N. The effects of water insecurity and emotional distress on civic action for improved water infrastructure in rural South Africa. *Med Anthropol Q* 2017;31:133–54.
31. Harris LM, Kleiber D, Rodina L, *et al*. Water Materialities and citizen engagement: testing the implications of water access and quality for community engagement in Ghana and South Africa. *Soc Nat Resour* 2018;31:89–105.
32. Chikulo BC. "The Smoke That Calls": A Review of Service Delivery Protests in South Africa 2005 -2014. *J Hum Ecol* 2016;55:51–60.
33. Twala C. The causes and socio-political impact of the service delivery protests to the South African Citizenry: a real public discourse. *Journal of Social Sciences* 2014;39:159–67.
34. Langa M, Kiguwa P. Violent masculinities and service delivery protests in post-apartheid South Africa: a case study of two communities in Mpumalanga. *Agenda* 2013;27:20–31.
35. Kahn K, Collinson MA, Gómez-Olivé FX, *et al*. Profile: Agincourt health and socio-demographic surveillance system. *Int J Epidemiol* 2012;41:988–1001.
36. Kahn K, Tollman SM, Collinson MA, *et al*. Research into health, population and social transitions in rural South Africa: data and methods of the Agincourt health and demographic surveillance System1. *Scand J Public Health* 2007;35(69_suppl):8–20.
37. Kabudula CW, Houle B, Collinson MA, *et al*. Assessing changes in household socioeconomic status in rural South Africa, 2001-2013: a Distributional analysis using household asset indicators. *Soc Indic Res* 2017;133:1047–73.
38. Loewenson R, Laurell A, Hogstedt C, *et al*. *Participatory Action Research in Health Systems A Methods Reader*. Harare: TARSC, AHPSR, WHO, IDRC Canada, EQUINET, 2014.
39. Hullur N, D'Ambruoso L, Edin K, *et al*. Community perspectives on HIV, violence and health surveillance in rural South Africa: a participatory pilot study. *J Glob Health* 2016;6.
40. Wariri O, D'Ambruoso L, Twine R, *et al*. Initiating a participatory action research process in the Agincourt health and socio-demographic surveillance site. *J Glob Health* 2017;7.
41. Brooks C, D'Ambruoso L, Kazimierczak K, *et al*. Introducing visual participatory methods to develop local knowledge on HIV in rural South Africa. *BMJ Glob Health* 2017;2.
42. Mabetha D. RSTMH, hsr 5th global symposium on health system research, 'It destroys families and communities': alcohol and drug abuse in rural South Africa, 2018. Available: http://healthsystemsresearchhealthsystemsresearch.org/hsr2018/photovoice/it-destroys-families-and-communities-alcohol-and-drug-abuse-in-rural-south-africa/ [Accessed 21 May 2019].
43. Catalani C, Minkler M. Photovoice: a review of the literature in health and public health. *Health Educ Behav* 2010;37:424–51.
44. Pope C, Ziebland S, Mays N. Qualitative research in health care. analysing qualitative data. *BMJ* 2000;320:114–6.
45. Newbury D. *Making arguments with images: visual scholarship and academic publishing. In: The SAGE handbook of visual research methods*. 1 Oliver's Yard, 55 City Road, London EC1Y 1SP United Kingdom: SAGE Publications Ltd: 651–64.
46. Trevett AF, Carter RC, Tyrrel SF. The importance of domestic water quality management in the context of faecal-oral disease transmission. *J Water Health* 2005;3:259–70.
47. Geere J-AL, Hunter PR, Jagals P. Domestic water carrying and its implications for health: a review and mixed methods pilot study in Limpopo Province, South Africa. *Environ Health* 2010;9.
48. Tanser F, Azongo DK, Vandormael A, *et al*. Impact of the scale-up of piped water on urogenital schistosomiasis infection in rural South Africa. *eLife* 2018;7.
49. Rasanathan K, Bennett S, Atkins V, *et al*. Governing multisectoral action for health in low- and middle-income countries. *PLoS Med* 2017;14:e1002285.
50. Brown J. Assuming too much? participatory water resource governance in South Africa. *Geogr J* 2011;177:171–85.
51. Megdal S, Eden S, Shamir E. Water governance, Stakeholder engagement, and sustainable water resources management. *Water* 2017;9.
52. Cook T, Boote J, Buckley N, *et al*. Accessing participatory research impact and legacy: developing the evidence base for participatory approaches in health research. *Educational Action Research* 2017;25:473–88.
53. Brown J. Evaluating participatory initiatives in South Africa. *SAGE Open* 2014;4.
54. DST. South African research infrastructure road map. Pretoria, 2016. Available: www.dst.gov.za [Accessed 16 Jan 2019].

BMJ Glob Health: first published as 10.1136/bmjgh-2018-001377 on 11 June 2019. Downloaded from http://gh.bmj.com/ on October 7, 2022 by guest. Protected by copyright.

Paper 2

GLOBAL HEALTH ACTION
2022, VOL. 15, 2004730
https://doi.org/10.1080/16549716.2021.2004730

Taylor & Francis
Taylor & Francis Group

REVIEW ARTICLE

OPEN ACCESS Check for updates

Lessons from community participation in primary health care and water resource governance in South Africa: a narrative review

Jennifer Hove[a,b], Lucia D'Ambruoso[a,b,c,d], Kathleen Kahn[a,c,e], Sophie Witter[f], Maria van der Merwe[a,b,g], Denny Mabetha[a,b], Kingsley Tembo[h] and Rhian Twine[a]

[a]MRC/Wits Rural Public Health and Health Transitions Research Unit (Agincourt), School of Public Health, Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, South Africa; [b]Aberdeen Centre for Health Data Science (Achds) Institute of Applied Health Sciences, School of Medicine, Medical Sciences and Nutrition, University of Aberdeen, Scotland, UK; [c]Department of Epidemiology and Global Health, Umeå University, Umeå, Sweden; [d]Public Health/Health Protection, National Health Service (NHS) Grampian, Scotland, UK; [e]International Network for the Demographic Evaluation of Populations and Their Health (Indepth), Accra, Ghana; [f]Institute for Global Health and Development, Queen Margaret University, Edinburgh, UK; [g]Independent Consultant, White river, South Africa; [h]Arthur Davison Children's Hospital, Ndola, Zambia

ABSTRACT

Background: In South Africa, community participation has been embraced through the development of progressive policies to address past inequities. However, limited information is available to understand community involvement in priority setting, planning and decision-making in the development and implementation of public services.

Objective: This narrative review aims to provide evidence on forms, extents, contexts and dynamics of community participation in primary health care (PHC) and water governance in South Africa and draw cross-cutting lessons. This paper focuses on health and water governance structures, such as health committees, Catchment Management Agencies (CMA), Water User Associations (WUAs), Irrigation Boards (IBs) and Community Management Forums (CMFs).

Methods: Articles were sourced from Medline (Ovid), EMBASE, Google Scholar, Web of Science, WHO Global Health Library, Global Health and Science Citation Index between 1994 and 2020 reporting on community participation in health and water governance in South Africa. Databases were searched using key terms to identify relevant research articles and grey literature. Twenty-one articles were included and analysed thematically.

Results: There is limited evidence on how health committees are functioning in all provinces in South Africa. Existing evidence shows that health committees are not functioning effectively due to lack of clarity on roles, autonomy, power, support, and capacity. There was slow progress in establishment of water governance structures, although these are autonomous and have mechanisms for democratic control, unlike health committees. Participation in CMAs/WUAs/IBs/CMFs is also not effective due to manipulation of spaces by elites, lack of capacity of previously disadvantaged individuals, inadequate incentives, and low commitment to the process by stakeholders.

Conclusion: Power and authority in decision-making, resources and accountability are key for effective community participation of marginalized people. Practical guidance is urgently required on how mandated participatory governance structures can be sustained and linked to wider governance systems to improve service delivery.

ARTICLE HISTORY
Received 3 June 2021
Accepted 5 November 2021

RESPONSIBLE EDITOR
Maria Emmelin

KEYWORDS
Community participation; primary health care; water governance; health committees; catchment management agencies

Background

Globally, community participation continues to be recognised as key in development, implementation and evaluation of programmes and interventions in health and other sectors. Dating back to 1978, the Alma-Ata Declaration on Primary Health Care (PHC) identified that 'people have the right to participate individually and collectively in the planning and implementation of their health care' [1]. In low- and middle-income countries (LMICs), community participation has been instrumental as a way of addressing barriers in health care service utilisation [2]. Community participation through collaborative action is thought to be critical in sustainability of programmes, importantly in low resource settings. Many LMICs have implemented community health worker (CHW) programs to address various health issues and to link marginalized communities with health systems [2–5].

In South Africa, community participation has been mooted as essential in addressing challenges of inequality, access, and poverty and in achieving health for all. Attempting to redress racial and class

CONTACT Jennifer Hove jennifer.hove@wits.ac.za School of Public Health, University of Witwatersrand, 27 St. Andrew's Road, Parktown, Johannesburg, South Africa, 2193

Supplemental data for this article can be accessed here

© 2021 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.
This is an Open Access article distributed under the terms of the Creative Commons Attribution License (http://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

inequities, the Bill of Rights in section 27 of the Constitution of South Africa (1996) states that access to health care is a basic human right [6,7]. Since democracy in 1994, major changes in policy and legislation were made to improve access to quality health care and delivery of health services across the country, decentralise the district health systems, and promulgate participation in health service governance [8].

The National Health Act of 2003 sought to institutionalize community participation in PHC by advocating the establishment of health committees, hospital boards, and district health councils as health governance structures [8]. Provinces were given responsibility to establish health committees for PHC facilities and community health centres [8]. Seven of the nine provinces have legislation in place that permits the establishment of health committees by 2019 [7,8]. Implementation of health committees varies substantially across the nine provinces as provinces have the autonomy to apply different provincial policies or guidelines [9]. Even though post-apartheid development policies showed commitment to restructure public health services and embraced community participation, there are challenges in implementation [10].

Water is a social determinant of health, and is a major driver of health inequalities faced by people globally [11]. Communities are well aware of the link between access to safe water and health, as evidenced in earlier research in rural South Africa where community members nominated lack of safe water as their key health priority [12]. Access to safe water is also critical for health and well-being [13]. Despite mixed progress, South Africa has led the way in global water policy discourse: in 1996 the Right to Water was enacted as a constitutional right for all South Africans, 14 years before the United Nations 2010 declaration of water as a Basic Human Right [7]. This was followed by, *inter alia*, the 1997 National Water Policy White paper, Water Services Act (Act 108 of 1997) and National Water Act (Act 36 of 1998), considered among the most progressive water policies in the world [14–16].

As such, policies aimed at providing a robust national water resource management framework emphasised decentralization of water management, protection of water resources and stakeholder consultation and participation in governance [17,18]. Despite progressive health and water policies and a supportive legal framework, South Africa still suffers from poverty-related illness and severe shortages of safe water across the country [10,13]. In addition, considerable uncertainty remains on the forms, extents and contextual factors that influence the added value of community participation in development and implementation of policies and equitable provision of services.

Key to progressive policies in both PHC and water governance is the transformation of institutions and promotion of people-centred services through community participation. Implementation of community participation has proved difficult and is not well understood [19,20]. There is no universal definition of community participation, though there are various forms, levels and interpretations of participatory approaches in PHC and water governance [21]. In general terms, community participation refers to involvement or engagement of people affected, or those who can affect decisions [22]. Community participation in both PHC and water governance, as mandated in formal policy and legislative frameworks, is of great importance for the realisation of universal health coverage (UHC), and the National Health Insurance (NHI), and national water security, and calls for an urgent reassessment of participatory practices in South Africa. Understanding the form, extent, context and dynamics of community participation and implementation is a critical gap in the evidence base in South Africa.

This paper sought to review evidence on community participation in PHC and water governance in South Africa. The main aim was to provide a narrative account of community participation in both sectors, based on existing literature, to help understand the realities and dynamics, and promote cross-sectoral learning to improve implementation. This paper explores why the concept of community participation, reflected so well in policies, is difficult to realize in practice, and what needs to be done to strengthen and support it. In literature, health and water are addressed separately, but it is important to consider both together for cross-sectoral learning.

METHODS

Search strategy

A narrative review was conducted to understand and describe how community participation through health committees, CMAs, WUAs, IBs and CMFs was implemented. Furthermore, an in-depth interpretation and critical reflection on the forms, extents, contexts and dynamics of participation were performed to understand how participants were involved in planning and decision-making responsibilities through such governance structures as health committees CMAs, WUAs, IBs and CMFs [23]. Governance refers to the processes applied to careful management of the wellbeing of population in a given system*** [24,25].

We did not follow a structured protocol for search, but we searched for articles reporting on community

participation. In addition, there was no assessment of quality of individual studies. Peer-reviewed literature was found by searching databases using key search terms: community participation, community involvement, community activism, community engagement, PHC, health committees, water, CMAs, WUAs, IBs and CMFs. Other keywords were used based on synonyms and variations of terms of our topic (Supplementary materials 1). The databases included were Medline (Ovid), EMBASE, Google Scholar, Web of Science, WHO Global Health Library, Global Health and Science Citation Index.

A grey literature search was also conducted by searching libraries and websites of key water management and PHC-related institutions for additional material. Grey literature was important in this review to contribute to data not found in scientific/academic literature, fostering a more balanced picture of the evidence, while reducing publication bias [26–28]. These included grey literature from; the Department of Water and Sanitation, Department of Agriculture, Rural Development, Land, and Environmental Affairs, Department of Health, Health Systems Trust, World Health Organization (WHO), United Nations Children's Fund (UNICEF), The Water Project, Life Water International, and International Water Resources Association. Additional relevant material was obtained by hand-searching and screening bibliographies of included studies, searching for key authors and experts in the field in South Africa.

Search terms were applied in different combinations depending on the source, using Boolean operators 'AND', 'OR' and 'NOT'. Titles and abstracts were screened for relevance followed by full-text screening for relevant content. Both qualitative and quantitative studies were included. Mendeley reference management software was used to manage and store the literature.

Eligibility criteria

All studies that involved the community, households, service users, public and their representatives in the planning, implementation, and monitoring of PHC and water services, or interventions in South Africa from January 1994 to June 2020 were included, dates coinciding with the post-apartheid era. In the domain of PHC, these included studies that involved the community in disease prevention, health promotion, healthy living, and/or health service delivery.

In participatory approaches to water governance, these included studies that involved community in water supply decisions, sanitation programmes, irrigation services and flood risk measures. Studies were excluded that involved individuals making decisions regarding personal service delivery outside health committees, CMAs, WUAs, IBs, CMFs, governance structures in PHC or water.

Language was restricted to English, and no restrictions were based on the study design. Due to heterogeneity of studies, in terms of study population, locations, participants and variations in measures of participation, results were thematically analysed. A narrative synthesis was then generated by developing a preliminary thematic synthesis of findings of included studies according to the analytical framework, described below.

Analytical framework

Three conceptual frameworks of community participation were synthesised to identify and map existing literature on how participants were involved in the process of policy-making, decision-making and implementation in PHC and water governance in South Africa (Table 1) [22,24,29].

Firstly, Arnstein's (1969) classic framework of citizen participation is fundamentally based on the involvement of citizens and their power to make decisions [28]. According to this framework, participation can range from meaningless or marginal participation, to empowerment, where citizens develop power to contribute to solving challenges affecting their communities [28]. Secondly, Cornwall (2008) extends Arnstein to go beyond simplistic dichotomisation of community participation as applications that can be described as 'good' (empowerment) or "bad' (tokenism) and encourages consideration of the contexts and dynamics of participation [29].

Finally, Rifkin (1986) derived four lessons from review of participatory health programmes, and developed a framework to respond to the dynamic process of community participation [21]. In doing so, she focused on three questions to consider when planning community participation programmes which are: Why participation? Who participates? And how do people participate [21]? We used Arnstein's concepts of 'forms and extents and Cornwall and Rifkin's concepts of 'contexts and dynamics' as the lens for our review (Table 1). Underpinned by these analytical categories, the thematic analysis developed a grounded understanding of how participation has been implemented in practice. The contents of included articles were then compared.

Data extraction and synthesis

Data extraction was guided by how communities participated in decisions about programs, and activities in the sectors of health and water since 1994 in South Africa. A systematic descriptive summary of

Table 1. Analytical framework: combined frameworks of community participation.

Framework	Description and limitations	Framework Constructs	Constructs
Arnstein, 1969: Ladder of citizen participation	The framework, one of the best known, comprises eight rungs on a ladder, which relate to the forms and extents to which citizens are involved and have obtained decision making power. The bottom of the ladder, referred to as non-participation, include two rungs: manipulation and therapy. The third, fourth and fifth rungs which are informing, consultation and placation are described as tokenism. Under this category, participation may fail to affect outcomes and the status quo may remain. At the top of the ladder are three rungs, partnerships, delegated power, and citizen control, collectively referred to as degree of citizen power. At this level, participation is meaningful, and citizens have power in decision making and can affect change.	Manipulation, Therapy, Informing, Consultation, Placation, Partnership, Delegated power, Citizen control	Forms and extents
Cornwall, 2008: Participation meaning and practices	Cornwall argues that all forms and meanings of participation could be found in a single project or process at different stages depending on the context and dynamics of participation. Cornwall proposed that the following influence both participation and the outcomes: the intentions of those who initiated participation, claimed spaces, or invited spaces, who participates, who is excluded or who excluded themselves, influence, what activities people participate in, and at which stage in the process.	Context, Dynamics, created spaces, invited spaces	Contexts and dynamics
Rifkin,1986: Lessons of community participation	Rifkin reviewed more than 200 participatory health programmes and developed a planning framework to improve community participation with four lessons. Firstly, it is practically impossible to have a universally acceptable definition of community participation given the complexity and dynamics of the process. Secondly, sustainable community participation processes cannot be established through health programmes alone, but require an integrated approach open to community priorities that may not be related to health. Thirdly, the political environment influences community participation. The fourth lesson is that it is not realistic to have a universal model for community participation programmes considering its context dependency. These lessons assisted in the development of three questions which are: Why participation? Who participates? And how do they participate? When answered, the questions would help address the dynamic process of community participation and assist clarifying and implementing programme objectives	Context, Dynamics	Contexts, Dynamics
Limitations of the frameworks	First, there are always power relations and inequalities at play. Those with authority in many cases find it hard to let go of power and recognize the voice of the marginalised. However, increasing participation is a crucial way in which capacity and authority can be acquired. The other limitation is that not everyone is willing to participate, and participation requires dedicated citizens. One cannot assume that participation might have a single outcome, unexpected delays might arise trying to reconcile conflicts and consensus processes might not adequately respect differences. Meaningful participation relies on adequate resources and quality information.		

included studies was performed by tabulating details about the study design, characteristics, context, process, and outcomes in Microsoft Excel.

Only literature reporting on health committees (also known as clinic committees and health facility committees) in PHC, and CMAs, WUAs, IBs and CMFs in water governance as formal structures for community participation were included for analysis. Only health committees were included in the health sector as they are relatively universal across all nine provinces in South Africa and are formal structures at the community level. Four different structures CMAs, WUAs, IBs, CMFs were included since they are intricately linked, and all include community-level stakeholders. These governance structures were spaces that facilitated communities to provide input, insight and feedback in the planning and organisation of services.

The articles and documents were read in detail. During extraction, the review team met biweekly to discuss the content of articles and themes emerging from both sectors and resolve inconsistencies in data extraction or interpretation of the studies. After extraction, data were collated and synthesised into themes derived from the analytical framework. A narrative synthesis was then developed to summarize the findings of different studies in relation to design, settings, contexts, processes, and outcomes reported. A preliminary synthesis was performed, translating data into themes. The results were discussed taking note of emerging patterns, then grouped into emerging themes on forms and extent, and contexts and dynamics of community participation in both sectors.

RESULTS

In this section, we review how communities participated in these structures: health committees, CMAs, WUAs, IBs, CMFs in health and water sectors. Figure 1 provides a summary of the search process,

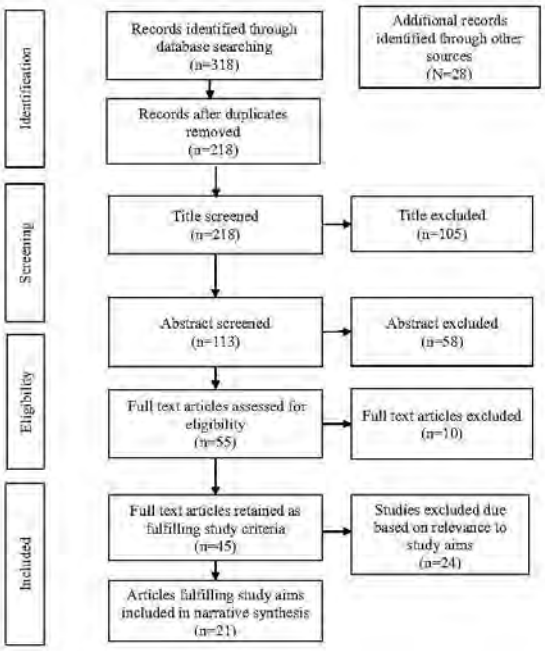


Figure 1. Literature search flow chart.

including articles and documents. A total of 344 articles were identified, of which 218 remained once duplicates were removed (Figure 1). These were first screened by title, and the 113 left were then screened by abstract to ensure that they address community participation in PHC and water governance structures. The articles were further reduced to 45 after applying inclusion criteria. After screening for relevance to study aims and objectives, 21 articles met the eligibility criteria (Figure 1).

Of these, 11 discussed health committees as formal structures for community participation in PHC (Table 2). Generally, there was a dearth of information on health committees. Out of these eleven, six articles/documents focused on the existence and roles of health committees, while the other three discussed training, and two focused on challenges in developing health policy and value of community participation through health committees.

In water governance, the 10 articles reviewed provided 14 case studies describing practices of participatory water governance of eight water governance bodies, comprising CMAs or WUAs/IBs in specified locations (mapped in Table 3 and Figure 2). The eight water governance bodies established in South Africa were Inkomati-Usuthu CMA, Breede-Gourizt CMA, Msunduzi River CMF, Lower Olifants WUA, Great Letaba WUA, Vaalhart WUA, Umlaas WUA and Hereford IB. The narrative review is presented according to key constructs from the analytical framework: forms, extents, contexts, and dynamics of participation.

Forms and extents of community participation: The form and extent of community participation in health and water governance explored the degree and level of involvement in identifying and defining problems facing their communities, identifying solutions to address the problems, and implementation of programs. In this review, the forms and extent of community participation were described in terms of coverage, roles and responsibilities, skills, and capacities.

Coverage

A total of seven (64%) out eleven of the retrieved studies on health were conducted in the Western Cape [9,30–35], though the Eastern Cape was the first to have a policy in place for health committees in 1999 [36]. The Western Cape draft policy to establish health committees was developed in 2008, but there were implementation challenges, and not all PHC facilities in the province had a health committee by 2014 [7,30]. With regards to coverage, in 2008, 60% of PHC facilities in the country reported having a health committee [37].

Table 2. Community participation through the establishment of health committees in Primary Health Care facilities across South Africa.

Discussed by	Province	Study Design	Sample	Description
Padarath and Friedman, 2008	KwaZulu-Natal, Eastern Cape, Free State, Gauteng, Limpopo, Mpumalanga, North West, Northern Cape, Western Cape	Mixed methods: Cross-sectional survey Focus group discussions (FGDs)	Interviews conducted with facility managers in all nine provinces. 3 Focus group discussions with clinic committee members	The study investigates the existence and functions of health committees. Data was collected on the number of health (clinic) committees associated with public primary health facilities, composition, membership, and scope of activities. Data for 2003 and 2008 was compared to determine progress in health committees.
Meier et al, 2012	Western Cape	Qualitative: Policy analysis	Semi-structured interviews with key informants and stakeholder discussions	The study investigates the challenges in developing health policy for health committees in Western Cape. Documentary policy analysis and semi-structured interviews on the evolution of South African community participation policy.
Boulle et al, 2013	Western Cape	Mixed Methods Survey Qualitative	A survey held with 94 health committee members. Focus group discussions with clinic committee members were conducted with 14 clinics.	The study was conducted in Nelson Mandela district across 49 PHC facilities to understand the role of health committees and the challenges they face.
Haricharan, et al 2021	Western Cape	Qualitative	Interviews with key stakeholders; FGD with health committees	The study investigates the distribution and allocation of health committees, understand their functioning, and factors that influence functioning, training needs and recommendations to strengthen them. Health committees were identified through information from Cape Metro health forum eight subdistricts' fora and speaking with PHC facility managers at individual clinics. Interviews were also done with key stakeholders and focus group discussions with three health committees.
McKenzie et al, 2017	South Africa	Case study	N/A	A case study in South Africa of Primary Health Care System Profiles and Performance (PRIMASYS) that aims to advance the science of PHC to support efforts to strengthen PHC systems and improve implementation, effectiveness, and efficiency of PHC interventions.
Haricharan et al 2014	Western Cape	Mixed Method: Survey Qualitative	Participant observation. In-depth interviews with key-stakeholders, FGDs and survey conducted with clinic committee members	The work was done to better understand the roles and functions of health committees in a re-engineered PHC system and the best institutional and the legal framework to maximise the contribution of health committees to a responsive health care.
Cleary et al, 2015	Western Cape	Qualitative	A series of reflective multi- stakeholders' workshops including clinic committee members	The work was done at Mitchells Plain sub-district health system. A set of engagements were conducted to bring multiple stakeholders into conversation with each other. Community profiling and local action groups (LAGs) were developed for continuous engagement to strengthen the district health system through community participation. LAGs comprised mainly health committee members.
Mulumba et al, 2018	Eastern Cape and Western Cape	Intervention study	405 and 202 committee members in Western Cape and Eastern Cape respectively	Training intervention to enhance the potential of health committees. A training guide and an instructor manual was developed, and training was conducted with health committee members. Specific training activities included capacity building for health committee members, engaging with health officials and policy makers, building civil society networks, producing, and distributing educational materials.
Zwama et al, 2019	Western Cape	Qualitative	34 Health care providers from City of Cape Town health sub-districts	Evaluated a right-based, interactive training of health providers with health committee on relationship building, and governance, health provider authority and influence as well as how power imbalances affect health committee functioning. Health provider training aimed to establish and strengthen health provider's relationships with health committees.
Esau et al, 2020	Western Cape	Qualitative	11 Managers and health facility supervisors; 7 participated in 2 FGDs and 4 in key informant interviews.	Explored the experiences of the training of the facilitator (ToF) learning programme in one district whether training was done according to the intention of ToF learning programme and whether selected trainers understood and were able to apply the training to the health committee.
Haricharan, 2015	South Africa	Qualitative	Telephonic interviews conducted with representatives of all nine provincial health departments	Reported the status of provincial health committees' policies, draft policies or guidelines and support available to health committees.



Figure 2. Map showing the location of water governance bodies included in this study.
Source: Merged impression of water governance bodies as presented by Faysse, 2004 and Meissner, 2016.

Free State Province reported having the highest coverage, at 78%, followed by the Eastern Cape with 73%, while the lowest percentage, 31%, of facilities having health committees, was reported in Mpumalanga [37]. More recently in 2019, the situation seems to have improved with 100% of clinics having health committee in 5 provinces (Table 4) [38].

In 1999, the country was divided into 19 Water Management Areas according to river catchment systems, not administrative boundaries, referred to as Catchment Management Agencies (CMA). These 19 CMAs were reduced to 9 in 2012 for logistical reasons [19,39]. Besides CMAs, community-based structures were formed such as Water User Associations (WUAs) and Catchment Management Forums (CMFs) [20,21]. Some pre-apartheid Irrigation Boards (IBs) were transformed into WUAs. Decentralization of water resource management to catchment level was to ensure incorporation and participation of all stakeholders (farming, non-farming, water licensed and non-licensed water users alike), especially historically disadvantaged individuals.[1]

Roles and responsibilities

8/11 (73%) studies from 2008 to 2020 indicated that health committees lacked understanding of roles and function [31–34,37,40,41]. In provinces, according to policy frameworks, health committees were established to promote community participation through their roles and functions of governance, oversight, advocacy, collaboration, social mobilization and representation of community needs [42]. In all nine provinces in South Africa, studies conducted in different years from 2008 to 2019, found that some established health committees were not fully functional and committee member turnover was high [32,38,40,43]. Committee members often left for better opportunities or relocated to other provinces, due to lack of stipend [31,32,42,44].

Even though the Eastern Cape had the most detailed draft policy on roles and functions of a health committee, the literature indicated challenges with implementation [36]. Reviews of health committees in Nelson Mandela Bay health district and in the greater Cape Town Metropole in 2013, found that health committee members were

[1]A South African citizen due to apartheid policy that had in place, had no voting rights in national elections prior to the introduction of the constitution of the Republic of South Africa, 1993 (Act No. 200 of 1993).

Table 3. Participatory water governance bodies: Catchment Management Agency (CMA); Water User Association (WUA); Irrigation Board (IB) and Catchment Management Forum (CMF) included in this review.

Discussed by	IB/WUA/ICMA	Province	Description
Boakye et al. 2012	Msunduzi CMF	KwaZulu-Natal	Exploring the involvement of previously disadvantaged and marginalised communities in Catchment Management Forums (CMF).
Boakye et al, 2012			Investigating the extent of participation of previously disadvantaged in water management.
Chibwe et al, 2012	Inkomati - Usuthu CMA	Mpumalanga	Understanding water reform process and factors behind outcome of decentralization process of Inkomati Usuthu CMA.
Brown, 2012			Exploring the potential of participation to change geography of water.
Brown, 2011			Exploring the institutionalization of participatory water resource management in post post-apartheid South Africa.
Denby et al, 2016			Examining how the efforts at implementing Integrated Water Resource Management translate into practice and the interpretations, challenges and outcomes surrounding the implementation are understood and affect people.
Brown, 2014			Assessing what can and cannot be expected from participation through comparisons and differences between processes and outcomes.
Seshoka et al, 2004	Lower Olifants WUA	Western Cape	Lower Olifants WUA and historically disadvantaged individual needs, degree of decentralization, transformation process and Integrated Water Resource Management practices.
Seshoka et al, 2004	Great Letaba WUA	Limpopo	Establishment of Letaba WUA, water management issues, water users, waterworks, and management practices of the Letaba WUA.
Seshoka et al, 2004	Vaalhart WUA	Northern Cape and North west	Transformation and degree of involvement of historically disadvantaged individuals.
Fayse et al, 2004	Umlaas WUA	KwaZulu-Natal	The extent to which the need for historically disadvantaged individuals could be satisfied by the WUA. Establishment of the Irrigation Board into a WUA and current and future involvement of historically disadvantaged individuals.
Fayse et al, 2004	Hereford IB	Mpumalanga	Management of Hereford IB and involvement of the historically disadvantaged individuals in the Hereford IB.
Meissner et al, 2016	Breede Gouriz CMA	Western Cape	The establishment of Breede-Overberg now known as the Breede-Gouriz CMA, the politics and strategies involved in its establishment

unaware of the policy (Western Cape Draft Policy) hence there was a gap between policy and practice [32,45]. In addition, PHC facility managers did not understand their own roles, as most of them did not produce mandated reports to the committees [32].

In all nine provinces, health committee services were reported to exist on the periphery of the health system, hence not effectively fulfilling their mandate to enhance community participation. The health committees in all studies reviewed could be classified by Arnstein's ladder as having a variety of 'degrees of tokenism' [9,30,32–35,37,40,41,44,46]. In all nine provinces, health committees had limited participation regarding contributions towards clinic planning and delivery of health services [7,30,38,47]. Health committees as formal structures for community participation lacked authority to function properly, for example in addressing health issues in the community or monitoring service delivery and quality, as they were not fully integrated into the health system [36,48].

In particular, reported evidence in the greater Cape Town Metropole indicated that health committees had limited participation as they were not involved in decision-making processes, setting the agenda, identifying problems, or finding solutions [44]. Their roles were mainly supportive and focussed on providing service to the clinics, e.g. assisting clinics in day-to-day running, projects and health awareness [44]. It appeared that not only health committees lacked clarity of their roles and responsibilities, but service providers were also not aware of the mandate of the health committees [44]. Lack of clarity on roles and responsibilities caused health committees to feel inadequate and members reported that they consider their role in decision-making limited regarding service delivery in PHC facilities [31,32].

Five case studies on the Inkomati-Usuthu CMA were from 10 articles covering the period from 1994 to 2016. Participatory processes began in 1997 in Mpumalanga province, with the NWA providing a mandatory basis to engage all stakeholders to work together to ensure equitable access to, and distribution of, water basin resources [47]. The findings showed that participatory water governance is limited nationally. The forms and extents of community participation were reported to be based on inclusion and engagement of historically disadvantaged individuals in planning, comprehension and articulation capacity of stakeholders and decision-making power. Despite this, in all 14 case studies reviewed, the role and involvement of various stakeholders was not

Table 4. Number of health committees per province, and their responsibilities.

	Province								
	Eastern Cape	Free state	Gauteng	KwaZulu Natal	Limpopo	Mpumalanga	Northern Cape	North West	Western Cape
Number of Health Committees	696	139	1488	592	492	263	169	301	200
% of clinics with health committees	95	46.3	100	100	100	83	100	100	46.7
Average members per committee	15	7	8	15	9	12	5	7	12
General roles and function of health committees	Oversee adherence and provision of PHC packages, identify health problems in community, monitor and report extent to which the PHC facility meets health indicators and targets, performance management, monitor how the PHC facility manage complaints submitted by patients and communities, hold management accountable for implementing decisions made during committee meetings, foster partnerships with other community stakeholders, fundraising for PHC activities, raise and manage Health committees funds, advocate for use of PHC facilities as the first point of entry of health care, provide a platform for the patients and community grievances, social mobilisation, be visible, build relationships with PHC staff.								
Composition	Community members, community representatives (for example representatives of certain sectors such as traditional health council, NGOs, women's group etc.), facility manager or clinic staff and local ward councillor. The national average for health committees is 10 members.								
Appointment	Election of community representatives vary across provinces, some are elected during community meetings, or volunteering, others are elected by the local councillors, or health committee chairperson or clinic staff.								
Finances	Health committees not much involved in planning and budgeting and expenditure processes, though they are required to raise funds to support their activities. They are expected to execute certain activities with no budget provided.								

a straightforward process, and it was not always feasible to include all stakeholders in the establishment of CMAs [18,47,49–56]. The difficulty was not only in managing conflicts of interests, power imbalances and time from various stakeholders but also the administrative issues such as finances, human resources, language used, and venues of meetings [18,47,50,51,53–56]. Participation in water governance was also tokenistic according to Arnstein's ladder of participation.

Skills and Capacity

One study in this review indicated that more than 50% of health committees were not functioning in Nelson Mandela Bay Municipality in 2006 [32]. The health committees were not producing reports as they should have since they lacked understanding of health targets and indicators and monitoring of the PHC package was seen as an insurmountable task. Limited skills and capacity inhibited effective functioning as committees could not perform governance functions, although they were active in advocacy, bringing health-related problems from local communities to the attention of PHC facilities [36,37], and social mobilisation [9,32,42].

In seven (64%) out the 11 studies conducted in different years from 2008–2019, health committees were reported active in support of calendar health days, mobilising communities to participate [36,37]. Calendar health days are international, regional, and local health awareness events, e.g. World AIDS day and anti-tobacco week. Fundraising was a key challenge, as most did not know how to fundraise, even though it was their role, and they lacked clarity on whether they should raise funds for their own functions or to support PHC services [38].

Regarding being accountable to the community and local organisations, the feedback process was reported to be informal as they lacked clarity on how it should be conducted. The Western Cape lagged behind in implementing the legislation [45]. Even though health committees were supposed to provide a link between the community and the health system, eight studies reviewed indicated that their influence in decision-making, prioritization and implementing health services specific to their community were limited [31,32,34,40,41].

In Lower Olifants WUA, lack of knowledge and experience in commercial farming practices among historically disadvantaged individuals was planned to be mitigated by capability building. However, by 2003 training and support to the majority of historically disadvantaged individuals was not enacted as per the WUA business plan [53]. Additionally, historically disadvantaged individuals lacked capacity and competence in dealing with water management affairs, compounded by the inability to understand the concepts and technicalities of the NWA, CMA reports and other materials [18]. Further, a majority of water users, especially historically disadvantaged individual small scale and emerging farmers, did not receive the amount of water that they were entitled to and had paid for, resulting in mistrust between the Letaba WUA and stakeholders [50].

Contexts and dynamics of community participation: This explored the contextual factors' influence on participation and how this in turn affected success or failure of programmes or interventions. Context and dynamics of participation are presented under the following sub-themes: representation, institutional support, quality of information, and access to information and accountability.

Representation

In the Eastern Cape, representation affected the way a health committee should function. Members were mainly composed of volunteers who were entitled to a monthly stipend. In seven (64%) out of the 11 articles conducted from 2008–2019, it was reported that stipends were not forthcoming, and health committee members became tired of volunteering. Interestingly, few health committees had local government councillors and PHC facility staff as members, as required by legislation [30]. Within the PHC facilities, health committee members highlighted the need to be formally recognised, and requested name tags [32].

Literature on the Inkomati-Usuthu and Breede-Gouritz CMAs indicated that enactment of the NWA created space for early stakeholder engagement, in 1997 but that mainly white farmers took an active role in establishing the CMAs and transforming the WUAs [18], severely limiting space for diverse participation [48]. In the Letaba WUA, participatory water governance was characterised by the exclusion and eventual misrepresentation of stakeholders such as farm workers and non-farming industries in the management committee meetings, despite their expressed desire to participate [50].

Gender exclusion was another key issue identified affecting participation in historically disadvantaged individuals, especially women [50]. Management committees were 60% male dominated and 90% of stakeholders reported that gender issues were not a consideration in management committee meetings [53]. In addition, stakeholders in Letaba WUA such as municipalities and representatives of game reserves stopped attending management committee meetings due to deliberation lacking relevance to their line of work, while others, such as worker's unions, were not even considered in the initial public participation process [50]. Reluctance of some key stakeholders to

participate in the activities and operations was a barrier to participation. The Nkomazi local municipal authority was unwilling to participate because joining the WUA would raise the cost of accessing water [18].

The management committee in Lower Olifants WUA was reported to have good representation of all stakeholders, including historically disadvantaged individuals and small-scale farmers [50]. The Vaalhart WUA created a constitution that ensured all members had equal voting power of one vote per member, and that gender representation was addressed. This resulted in an increase in women representatives on the management committee hence, this WUA was highly considerate towards gender issues regarding meeting locations, schedules and times compared to other WUAs [50].

The venues for Inkomati-Usuthu CMA meetings were also potentially inappropriate and included 'high end' hotels and resorts far from former rural homelands and in most cases no consideration of the interests of historically disadvantaged individuals, cost of attending meetings and potential loss of earnings [49]. Conflicts of interest over representation were reported among stakeholders and this resulted in the Inkomati-Usuthu CMA and WUAs experiencing operational challenges six months after establishment [18,20,21,42,46]. Additionally, some relevant stakeholders did not continuously attend meetings due to fatigue after being asked to commit to the same process over and over without seeing change.

Institutional support

Despite wide coverage, there were no studies available on how health committees' function in provinces other than Eastern Cape, Western Cape and Gauteng. Nevertheless, these described limited participation due to lack of political commitment, lack of support from the health system, lack of resources and limited participation by facility managers and local government councillors [8,35]. Without support, health committees cannot do their jobs properly.

Located in the Western Cape, the Lower Olifants WUA was the first WUA to be successfully established in South Africa in 2000 [56]. An account of participatory water governance from Lower Olifants WUA shows the early participation of the Vredendal IB, which acted as a founding member of the Lower Olifants WUA during the IB transformation process. Accounts of participatory water governance from Msunduzi CMF disclosed the presence of conducive social spaces that facilitated social cohesion, learning by doing and opportunities for knowledge transfer among participants [54]. It was reported that participants commended the Department of Water and Sanitation on the public participatory techniques used to engage and disseminate information to stakeholders in the meetings. Each meeting had agenda items to which stakeholders were at liberty to add concerns or other items before meetings began. Additionally, stakeholders were free to interact with the chairperson [54].

Quality of information and access to information

The literature on water governance revealed that, while a great effort was made to empower communities and historically disadvantaged individuals, no consideration was made to make the process sufficiently transparent to stimulate meaningful participation. For example, Some stakeholders in CMAs purposefully concealed information for their gain, [55,57,58]. In four WUAs and two CMAs, the language of communication was not an issue as most marginalized community representatives were able to communicate efficiently in Afrikaans, which was used as the bridging language, together with English [44,45,49].

Moreover, feedback was often poor, and stakeholders were dissatisfied with access to information before meetings [50,56]. Firstly, there was the lack of expertise and experience of the Department of Water and Sanitation staff to ensure that CMA establishment proposals were handled and reviewed within reasonable time-frames [48,49,54]. Secondly, lack of feedback to communities from CMA representatives was noted, resulting in the lack of awareness of key catchment water discussions and processes which perpetuated an environment of mistrust among representatives and communities [49].

Accountability

Our review identified that though health committees are statutory structures, they had no power to enforce decisions arrived at in meetings. On the other hand, they lacked capacity in financial resources and administrative skills as a result they failed to meet their responsibilities [7,38]. Therefore, institutional inertia and capacity limitations affected the willingness of committee members to continue as they did not see the legitimacy of being involved. Lack of accountability and consideration to deal with these matters cripple meaningful participation in health committees.

In Breede-Gourizt CMA, the principles of respect, integrity reliability and accountability were supposed to influence decisions and actions of this CMA employees and board members [48]. In this view, this CMA was accountable to the Minister and stakeholders although the accountability was skewed towards the Minister [48]. The Minister received regular reports compared to other stakeholders [50,51]. In Msunduzi CMF, participants reported challenges in consensus decision making due to emerging farmers lacking skills, knowledge, resources and experience, hence they were dominated by commercial farmers [50,51]. Also in Lower Olifants

WUA, community representatives reported that the voices of their communities were not being heard and included in the decision-making processes [50]. Upon further analysis of participatory water governance in Inkomati, several observations during and after the formation of the CMAs and WUAs were made. There was influence of partisan political leaders, who pressured the Department of Water Affairs and Forestry (now Department of Water and Sanitation) to ensure one CMA was established before the 2004 elections [59].

The absence of systems and mechanisms to ensure transparency and accountability of water management institutions and Community-Based Organisations was shown by the immediate disbandment of the Inkomati-Usuthu CMA Advisory Committee after recommendations had been drawn, resulting in a lack of accountability, as the board could not be held accountable [18,49]. In Vaalhhart WUA, limited participation and engagement of some stakeholders (farm workers) in basin processes, was reported to arise from the disconnect between farm workers and their representatives, due to lack of internal organisation of the farm-worker community [50].

DISCUSSION

Community participation is assumed to contribute to a: 'process of democratization and empowerment' [60]. This review highlights, during the early years (from 1994), significant policy recognition and support for community participation. Constitutional, legislative mandates and policy directives supported institutionalization of community participation in both water and health. This was an important process in South Africa to redress structural inequalities linking service delivery to communities. Despite this, however, as policies became established, interrelated structural and implementation barriers to effective and meaningful participation were seen.

In water governance, from 1996–2016, mandated spaces were autonomous, well-funded and better structured than in the health sector. However, progress with implementation was undermined in later years, owing to problems with representation, power imbalances, and low capacity and skills. These resulted in participation being mostly tokenistic, and the ability to influence change and empower proved minimal.

During implementation from 2008–19, health committees had *both* structural and implementation challenges including lack of power and authority to influence decision-making, lack of recognition by the health system, and lack of skills and capacity. Consequently, health committees ultimately departed from the original mandate to represent and advocate for community priorities and needs.

Formalised governance spaces have the potential to promote strong legitimacy, better-informed stakeholders, confident, committed, and skilled staff, and stakeholders [61]. Our review identified significant policy/implementation gaps, demonstrating that community participation is not just about creating structures but functionally and sustainably transferring power and authority to marginalized people. These findings reflect the need for sustained processes focussing on improving authority, representation, and resources for effective and meaningful participation.

The results are consistent with other work from South Africa on challenges of sustainability and functionality of health committees [62,63]. These issues are also not limited to South Africa, existing internationally, with participation via health committees described as mostly tokenistic, departing significantly from original mandates in all the provinces [19,64–66]. Moreover, to date only two provincial CMAs (of a total nine) have been established in South Africa. Stuart-Hill *et al.* observed that this is due to the complexity of engaging diverse stakeholders, even though highly inclusive and learning-orientated [67]. Good mechanisms for community participation are hard to establish and co-production takes time [63,64].

Although formal spaces were established more systematically in the water sector, they were often open to 'elite capture', lobbying and tension among diverse stakeholders. The findings demonstrate that inclusion and representation do not always equal participation or engagement. They can present opportunities for more powerful stakeholders to take advantage and mould structures and processes of deliberations to serve their own interests, consolidating positions of power and control over those with less autonomy, agency, and representation.

The findings also indicated that participatory processes are not always transparent. In this scenario, participation may do more harm than good when they are 'equivocal' and 'disorderly' [68,69]. Popay et al. (2020) argued that for community participation to achieve its potential and reduce inequities, there is need to support disadvantaged communities through capacity building to exercise greater control over decisions and actions [70]. This can be achieved when the 'empowerment process actively engage[s] with power dynamics operating in community settings' for sustainability' [70].

The findings demonstrated that health committees established from 2008–19 were, in many instances, involved to a limited degree in planning and decision-making due to structural and implementation barriers. Health committees lacked substantial voice

within the health system. Lack of clarity on roles and responsibility has been a challenge in other countries [62,71–73]. The literature reflected the importance of community empowerment through capacity building and access to information [64,70,74,75].

These results support findings by Meier *et al.* (2012), who identified that communities are often required to participate in highly structured activities, without sufficient knowledge of the health systems, nor the skills to challenge powerful stakeholders and institutional processes on board and make their voice heard [9]. Under such circumstances, participants cannot take advantage of opportunities to impact decision-making, central to the success of community participation programmes [30,70,71].

Morrison and Dearden (2013) caution that community participation can be 'compromised by the very contexts in which are meant to empower' such as who initiates participation, who benefits, who participates, what influences they have, and which activities and at which stage in the process they participate [24,70,75]. Structures to support community participation often achieve less in practice than intended [70,76,77].

In our review, stakeholders in water governance were involved early in planning phase to co-produce, design and implement water delivery services. In PHC, health committees were involved in decision-making at the implementation stage, where they were involved in supportive roles with limited influence on service delivery and monitoring. Nevertheless, as described above, there remained a clear gap between policy and practice with little guidance on how to effectively implement sustain and expand participation over time. A literature review on stakeholder participation in environmental governance found that effective participation is hindered by involving communities in decision-making late, during implementation and not in the earlier identification and preparation phases [78].

Another review by Haldane *et al.* (2019), highlighted that exploring participation *as a process* is key, and could influence better health outcomes while dealing with issues of power or control, representation, resources and sustainability [10]. Early engagement and incentives may also help in promoting participation to ensure ownership and inclusive representation [78,79]. In Mexico, for example, farmers were actively involved in decision making for water governance because the majority were generating wealth from commercial farming [79].

The findings demonstrate limited insights into best practices for implementation, indicating how high degrees of citizen power were difficult to achieve and sustain. Creation of more conducive 'invited' spaces (i.e. within formal governance and planning) with careful consideration of the needs of stakeholders, and empowerment, would facilitate key relationships, processes, learning, networking and appropriate use of power to sustain participation. Thompson *et al.* (2012) substantiates the need for professionalization of community participants through capacity building to increase ability and power to meaningfully participate [80]. Capacity building has the potential to increase the control the communities could have over decision-making to become equal partners [70].

Finally, globally, the COVID-19 pandemic highlights the need for community participation to ensure realistic and appropriate responses to the needs of every community [81,82,83]. Community participation has not yet been well utilised in South Africa, however, with discrepancies between policy and reality compromising the roles of health committees as platforms for community participation, and linkages between communities and health system [9].

Limitations

The literature was not exhaustive and was limited to community participation in health committees, CMA, WUAs, IBs and CMFs, health and water governance structures and gives a broad overview of community participation. We did not follow a predefined protocol for searching articles. Articles reporting on community participation outside these structures were excluded. Grey literature/unpublished reports were included in this review but an exhaustive grey literature review on the internet is probably not possible. Therefore, it is likely that some articles could have been missed. In addition, there were few articles reporting on community participation in health communities' governance structures in some provinces. Many of the studies identified were from the Western Cape. In addition, there were few current studies reporting on the status of health committees in the country. The strength of our review is that it draws on multiple data sources and the first review on community participation in both health and water governance to be conducted in South Africa.

CONCLUSIONS

The review demonstrates multiple threats to community participation. Even with clear policy mandates, risks remain. In both health and water governance, the establishment of participatory governance structures aimed to enhance participation and meet the needs of communities and previously disadvantaged individuals. Despite CMAs being better structured, better financed and engaging diverse stakeholders, they have not met the needs of communities and previously disadvantaged individuals in South

Africa. On the other hand, health committees have limited participation, and focus on supporting clinics rather than representing community needs and priorities.

The study therefore recommends that those with power should 'let go' when they must. This includes recognising and valuing local knowledge. Community participation also needs power and authority of marginalized people for co-production of knowledge, ideas, and collective action and decision-making. Additionally, responsibility should come with capacity to be accountable. Hence issues of authority in decision-making, trust, resources, and capacity need to be addressed for effective participation and sustainability. The establishment of structures and mechanisms for enhanced participation should be seen as a gradual process which takes time and iteration to achieve its goals. Practical guidance is urgently required on how to put policy mandates into practice, sustaining and linking mandatory participation governance structures to wider governance systems to improve service delivery.

Author contributions

KT and JH wrote the first draft of this paper. KT, JH, RT and LD led data extraction and interpretation. Supervision was provided by LD, RT, SW and KK. All authors read the final draft, reviewed, edited, and provided suggestions and comments throughout the process of drafting the final version of the manuscript. All authors have given final approval of the version to be published and agreed to be accountable for the work.

Disclosure statement

The content is solely the responsibility of the authors.

Funding information

This review was funded by the Joint Health Systems Research Initiative from Department for International Development/MRC/Welcome Trust/Economic and Social Research Council [MR/N005597/1 and MR/P014844/1].

Paper context

In South Africa, health, and water policies support community participation. Community participation that is inclusive of marginalized groups and context specific is fundamental to equitable provision of health and water services. Implementation of community participation is deeply challenged in both water and health sectors in different but overlapping ways in South Africa. Institutionalization of community participation requires communities to be provided with adequate responsibility and authority while accountable to the results they produce to be effective.

ORCID

Jennifer Hove http://orcid.org/0000-0002-5392-8537
Lucia D'Ambruoso http://orcid.org/0000-0002-8505-3368
Kathleen Kahn http://orcid.org/0000-0003-3339-3931
Sophie Witter http://orcid.org/0000-0002-7656-6188
Maria van der Merwe http://orcid.org/0000-0003-4174-2994
Rhian Twine http://orcid.org/0000-0002-0766-6556

References

[1] World Health Organisation and United nations Children's Fund (WHO/UNICEF). ALMA-ATA primary health care. int conf prim heal care [Internet]. 1978;63. [Cited 2020 Dec 18]. Available from: https://www.unicef.org/about/history/files/Alma_Ata_conference_1978_report.pdf.
[2] Pilkington G, Panday S, Khatib MN, et al. The effectiveness of community engagement and participation approaches in low and middle income countries: a review of systematic reviews with particular reference to the countries of South Asia. [Internet]. EPPI Center, Social Science Unit, Institute of Education, University London; 2017.
[3] Krieger MGM, Wenham C, Nacif Pimenta D, et al. How do community health workers institutionalise: an analysis of Brazil's CHW programme. Glob Public Health [Internet]. 2021: 1–18.
[4] Schneider H, Lehmann U. From community health workers to community health systems: time to widen the horizon? Health Systems & Reform. 2016;2:112–118.
[5] Schneider H, Okello D, Lehmann U. The global pendulum swing towards community health workers in low- and middle-income countries: a scoping review of trends, geographical distribution and programmatic orientations, 2005 to 2014. Hum Resour Health [Internet]. 2016;14:1–12. Available from.
[6] Stuckler D, Basu S, Mckee M. Health care capacity and allocations Among South Africa ' s Provinces: infrastructure – inequality Traps After the End of Apartheid. Res Pract [Internet]. 2011;101:165–172.
[7] Republic of South Africa. CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA no. 108 of 1996 [Internet]. 1999 cited 2020 Dec 18. Available from: https://www.gov.za/sites/default/files/images/a10.
[8] Republic of South Africa. National Health Amendment Act [12 of 2013]. Cape Town: government Gazette No 36702: 24 July 2013, p.1–89 [cited 2020 Dec 18]. http://www.gov.za/documents/download.php?f=195193.
[9] Meier BM, Pardue C, London L. Implementing community participation through legislative reform: a study of the policy framework for community participation in the western cape province of South Africa. BMC International Health and Human Rights. 2012;12:1.
[10] Haldane V, Chuah FLH, Srivastava A, et al. Community participation in health services development, implementation, and evaluation: a systematic review of empowerment, health, community, and process outcomes. PLoS One. 2019;14:1–25.
[11] Donkin A, Goldblatt P, Allen J, et al. Global action on the social determinants of health. BMJ Glob Heal. 2017;3:1–8.

[12] Hove J, D'Ambruoso L, Mabetha D, et al. "Water is life": developing community participation for clean water in rural South Africa. BMJ Glob [Internet]. 2019;4:1–13.

[13] UNICEF, World Health Organisation (WHO). Progress on household drinking water, sanitation and hygiene 2000-2017: special focus on inequalities [Internet]. Launch version July 12 Main Rep. Prog. Drink. Water, Sanit. Hyg. 2019. Available from: https://washdata.org/reports.

[14] Intergrated Water CM. Resource Management in South Africa. International Journal of Water Governance. 2013;1:323–328.

[15] Republic of South Africa. National Water Act, Act 36 of 1998 [Internet]. Gov. Gaz. 1998 p. 1–200 cited 2020 Dec 18. Available from: available: http://www.dwa.gov.za/Documents/Legislature/nw_act/%0ANWA.pdf

[16] Republic of South Africa. Water Services Act, Gov Gaz [Internet]. 1997;390:36 cited 2020 Dec 18. Available from: http://www.saflii.org/za/legis/num_act/wsa1997175.pdf.

[17] Mehta L, Alba R, Bolding A, et al. The politics of IWRM in Southern Africa. International Journal of Water Resources Development. 2014;30:528–542.

[18] Chibwe T, Bourblanc M, Kirsten J, et al. Reform process and performance analysis in water governance and management: a case of study of Inkomati Water Management Area in South Africa [Internet]. Water Research Commission of South Africa (Project K5/1969) and the World Bank (S-000441); 2012. [Cited 2020 Oct 20]. Available from: http://agritrop.cirad.fr/570496/1/document_570496.pdf.

[19] Scott K, George AS, Harvey SA, et al. Beyond form and functioning: understanding how contextual factors influence village health committees in northern India. PLoS One. 2017;12:1–17.

[20] Participation NF, Revolution P. The reproduction of neoliberal water governance mechanisms in Durban, South Africa. Antipode. 2013;45:101–120.

[21] Rifkin SB. Lessons from community participation in health programmes. Health Policy Plan. 1986;1:240–249.

[22] van Buuren A, van Meerkerk I, Tortajada C. Understanding emergent participation practices in water governance. International Journal of Water Resources Development. 2019;35:367–382.

[23] Greenhalgh T, Thorne S, Malterud K. Time to challenge the spurious hierarchy of systematic over narrative reviews? Eur J Clin Invest. 2018;48:1–6.

[24] Sheikh K, Sriram V, Rouffy B, et al. Governance roles and capacities of ministries of health: a multidimensional framework. Int J Heal Policy Manag. 2021;10:237–243.

[25] Paez A. Gray literature: an important resource in systematic reviews. Evid Based Med. 2017;10:233–240.

[26] Mcauley L, Pham B, Tugwell P, et al. Does the inclusion of grey literature influence estimates of intervention effectiveness reported in meta-analyses? Lancet. 2000;356:1228–1231.

[27] Benzies KM, Premji S, Ep RN, et al. Advantages and Challenges of Including Grey Literature. Worldviews on Evidence-Based Nursing. 2006;3:55–61.

[28] Arnstein SR. A Ladder Of Citizen Participation. J Am Plan Assoc. 1969;35:216–224.

[29] Unpacking CA. "Participation" Models, meanings and practices. Community Dev J. 2008;43:269–283.

[30] Haricharan HJ. Rapid appraisal of health committee policies in South Africa. Cape Town: Learning Network for Health and Human Rights, School of Public Health and Family Medicine, University of Cape Town; 2015.

[31] Haricharan H, Boulle T, London L. Health committees as vehicles for community participation: a national colloquium on health committees in South Africa report of a national colloquium on health committees in South Africa. University of Cape Town, Cape Town; 2014.

[32] Boulle T A review of the functioning of health committees in Nelson Mandela bay health district - with particular emphasis on identifying key challenges. School of Public Health and Family Medicine at University of Cape Town. [Internet]. 2013. [Cited 2021 Mar 15]. Available from: http://www.salearningnetwork.uct.ac.za/sites/default/files/image_tool/images/386/publications/other_reports/20131027.

[33] Vinet L, Zhedanov AA "missing" family of classical orthogonal polynomials. J. Phys. A Math. Theor. School of Public Health,University of the Western Cape; 2011.

[34] Zwama G, Stuttaford MC, Haricharan HJ, et al. Enhancing engagement of health providers with communities, cape metropole, South Africa. Front Sociol. 2019;4:1–12.

[35] Esau N, English R, Shung-king M. An assessment of a 'training-of-trainers programme for clinic committees' in a South African district: a qualitative exploratory study. BMC Health Serv Res. 2020;20:1–16.

[36] Eastern Cape Department of Health. Eastern Cape Provincial Health Act, No. 10 of 1999.Eastern Cape;2000 [Internet]. 2000 cited 2020 Dec 18. Available from: https://rhap.org.za/wp-content/uploads/2014/05/EC-Health-Act.pdf.

[37] Paradath A, Friedman I The status of clinic committees in primary level public health sector facilities in South Africa [Internet]. Durban Heal. Syst. Trust. 2008.

[38] Spotlight. Provinces not on same page regarding clinic committees [Internet]. 2019 cited 2020 Dec 18. Available from: https://www.spotlightnsp.co.za/2019/10/17/provinces-not-on-same-page-regarding-clinic-committees/.

[39] Mayosi BM, Lawn JE, Van NA, et al. Health in South Africa: changes and challenges since 2009. Lancet. 2012;380:2029–2043.

[40] Padarath AP The status of clinic committees in primary level clinics in three provinces of South Africa [Internet]. School of Public Health, Faculty of Community and Health Sciences, University of the Western Cape; 2009.

[41] Mulumba M, London L, Nantaba J. Using health committees to promote community participation as a social determinant of the right to health: lessons from Uganda and South Africa. Heal Hum Rights J HHR. 2018;20:11–18.

[42] Loewenson R, Machingura F, Kaim BT and RSC (TARSC) RI (CWGH) (2014). 'Health centre committees as a vehicle for social participation in health systems in east and Southern Africa' EQUINET discussion paper 101, TARSC with CWGH and Medico, EQUINET: harare. 2014. p. 0–26.

[43] Department of Water Affairs. Water for an Equitable and Sustainable Future. Natl Water Resour Strateg [Internet]. 2013;NWRS2:201 cited 2020 Dec 18. Available from: http://www.dwa.gov.za/nwrs/

LinkClick.aspx?fileticket=CIwWyptzLRk=&tabid=918&mid=496.
[44] Harricharan H Extending Participation: challenges of health committees as meaningful structures for community participation extending participation. Human Rights Division, School of Public Health, University of Cape Town. [Internet]. 2011. [cited 2021 Mar 15]. Available from: https://salearningnetwork.weebly.com/uploads/6/5/0/1/6501954/hanne_report_on_health_committees.pdf.
[45] Western Cape Department of Health. Draft Policy Framework for Community Participation/Governance Structures in Health. [Internet]. 2008 cited 2020 Dec 18. Available from: http://www.salearningnetwork.uct.ac.za/sites/default/files/image_tool/images/386/publications/book_chapters/health_committee_submission_on_health_facilities_board_act.pdf.
[46] McKenzie A, Schneider H, Schaay N, et al. Primary health care systems (PRIMASYS). School of Public Health, University of the Western Cape: Geneva: World Health Organization; 2017.
[47] Brown J. Evaluating participatory initiatives in South Africa: not just processes but outcomes too. SAGE Open. 2014;4:1–16.
[48] Meissner R, Funke N, Nortje K. The politics of establishing catchment management agencies in South Africa: the case of the Breede Overberg Catchment Management Agency. Ecol Soc. 2016;3:21.
[49] Brown J. Assuming too much? Partic Water Resou Gov South Afr. 2011;177:171–185.
[50] Seshoka J, de Lange W, Fayss N the transformation of irrigation boards into water user associations in South Africa: Case studies of the lower olifants, great letaba and vaalharts water user associations. Working Paper 72. Int Water Manag Inst. 2004;72:1–21.
[51] Faysse N, Gumbo J. The transformation of irrigation boards into water user associations in south africa: case studies of the umlaas, komati, lomati and hereford irrigation boards. Volume 2. Working paper 72 International water management institute (IWMI). 2004. p. 1–65; cited 2020 Dec 18. Available from https://www.researchgate.net/publication/254426128
[52] Can Participation BJ. Change the geography of water? lessons from South Africa. Ann Assoc Am Geogr. 2013;103:271–279.
[53] Department of Water Affairs and Forestry. Integrated Water Resources Management in South Africa Synthesis of findings from an evaluation in three WMAs Key issues to consider in order to ensure the effective participation of marginalized groups in IWRM. Pretoria, South Africa; 2004 cited 2020 Dec 18. Available from: https://www.gov.za/sites/default/files/gcis_document/201409/dwafanrep0304.pdf
[54] Boakye MK, Akpor OB. Community participation in water resources management in South Africa. Int J Environ Sci Dev. 2012;3:511–516.
[55] Boakye MK, Akpor OB. Stakeholders' participation in water management: a case study of the msunduzi catchment management forum of kwazulu-natal, South Africa. J Sustain Dev. 2012;5:104–111.
[56] Faysse N An assessment of small-scale users' inclusion in large-scale water user associations of South Africa [Internet]. Int. Water Manag. Inst. 2004. [cited 2020 Dec 18]. Available from: https://agritrop.cirad.fr/533039/#:~:text=https%3A//agritrop.cirad.fr/533039.
[57] Meissner R, Stuart-Hill SI, Nakhooda Z. The establishment of catchment management agencies in South Africa with reference to the Flussgebietsgemeinschaft Elbe: some practical considerations. In: Centre for Water Research Resource, University of KwaZulu-Natal, editors. Freshwater Governance for the 21st Century. Heidelberg: Springer; 2017. p. 1–15.
[58] Faysse N. CHALLENGES FOR FRUITFUL PARTICIPATION OF SMALLHOLDERS IN LARGE-SCALE WATER RESOURCE MANAGEMENT ORGANISATIONS: SELECTED CASE STUDIES IN SOUTH AFRICA. Agrekon. 2004;43:52–73.
[59] Denby K, Movik S, Mehta L, et al. The "trickle down" of IWRM: a case study of local-level realities in the inkomati water management Area, South Africa. Water Altern. 2016;9:473–492.
[60] Cleaver F. PARADOXES OF PARTICIPATION: QUESTIONING PARTICIPATORY APPROACHES TO DEVELOPMENT. J Int Dev. 1999;11:597–612.
[61] Akhmouch A, Clavreul D. Introduction: a call for more inclusive water governance. In: Karar E, and Gov F, editors, 21st century, global issues water policy 6 [Internet]. Paris: OECD Publishing; 2017. p. 29–49.
[62] Haricharan HJ, Stuttaford M, London L. The role of community participation in primary health care: practices of South African health committees. Prim Heal Care Res Dev. 2021;22:1–10.
[63] Haricharan HJ, Stuttaford M, London L. Effective and meaningful participation or limited participation? A study of South African health committee legislation. Prim Heal Care Res Dev. 2021;22:1–8.
[64] Maluka SO, Bukagile G. Community participation in the decentralised district health systems in Tanzania: why do some health committees perform better than others? Int J Health Plann Manage. 2016;31:E86–E104.
[65] Falisse JB, Ntakarutimana L. When information is not power: community-elected health facility committees and health facility performance indicators. Soc Sci Med. 2020;265:1–18.
[66] Falisse JB, Meessen B, Ndayishimiye J, et al. Community participation and voice mechanisms under performance-based financing schemes in Burundi. Trop Med Int Heal. 2012;17:674–682.
[67] Stuart-Hill SI, Meer R Lessons learnt from the establishment of catchment management agencies in South Africa. Water Research Commission, Pretoria, RSA, WRC Report No. 2320/1/18. Pp. 172. 2018.
[68] Reconfiguring Agency FJ. Reconfiguring agency and responsibility in the governance of social housing in Scotland. Urban Stud. 2004;41:151–172.
[69] Clarke J. Governing the Local? A Response to Kevin Stenson. Soc Work Soc. 2008;6:9–11.
[70] Popay J, Whitehead M, Ponsford R, et al. Power, control, communities and health inequalities I: theories, concepts and analytical frameworks. Health Promotion International. 2020. p. 1–11.
[71] Renedo A, Miles S, Chakravorty S, et al. Not being heard: barriers to high quality unplanned hospital care during young people ' s transition to adult services – evidence from ' this sickle cell life ' research. BMC Health Serv Res. 2019;19:1–12.
[72] Kinyata GS, Abiodun NL. The impact of community participation on projects success in Africa: a bottom up approach. Int J Res Sociol Anthropol. 2020;6:1–8.
[73] Loewenson R, Beznec P, Coelho V, et al. Building social power and participation in local health

systems: learning from practice. Harare: Training and Research Support Centre; 2017.
[74] George AS, Mehra V, Scott K, et al. Community participation in health systems research: a systematic review assessing the state of research, the nature of interventions involved and the features of engagement with communities. PLoS One. 2015;10:1–25.
[75] Morrison C, Dearden A. Beyond tokenistic participation: using representational artefacts to enable meaningful public participation in health service design. Health Policy (New York) [Internet]. 2013;112:179–186.
[76] Haldane V, Singh SR, Srivastava A, et al. Community involvement in the development and implementation of chronic condition programmes across the continuum of care in high- and upper-middle income countries: a systematic review. Health Policy (New York). 2020;124:419–437.
[77] Questa K, Das M, King R, Everitt M, Rassi C, Cartwright C, et al. Community engagement interventions for communicable disease control in low- and lower- middle-income countries: evidence from a review of systematic reviews. Int J Equity Health. 2020;19:1–20.
[78] Reed MS. Stakeholder participation for environmental management: a literature review. Biol Conserv. 2008;141:2417–2431.
[79] Wester P, Burton M, Mestre-Rodriguez E. Managing the water transition in the lerma-chapala basin, Mexico. In: Intersectoral manag river basins integr water manag water-stressed river basins dev ctries strateg poverty alleviation agric growth. Mexico City, Mexico; 2000. p. 161–181.
[80] Thompson J, Bissell P, Cooper C, et al. Credibility and the 'professionalized' lay expert: reflections on the dilemmas and opportunities of public involvement in health research. Health (Irvine Calif). 2012;16:602–618.
[81] Marston C, Renedo A, Miles S. Community participation is crucial in a pandemic. Lancet. 2020;395:1676–1678.
[82] Loewenson R, Colvin CJ, Szabzon F, et al. Beyond command and control: a rapid review of meaningful community-engaged responses to COVID-19. Global Public Health. 2021;16:1439–1453.

GLOBAL HEALTH ACTION
2021, VOL. 14, 1973715
https://doi.org/10.1080/16549716.2021.1973715

Taylor & Francis
Taylor & Francis Group

ORIGINAL ARTICLE

OPEN ACCESS Check for updates

Developing stakeholder participation to address lack of safe water as a community health concern in a rural province in South Africa

Jennifer Hove [a,b], Lucia D'Ambruoso [a,b,c,d], Rhian Twine [a], Denny Mabetha [a,b], Maria van der Merwe [a,b,e], Ishmael Mtungwa [f], Sonto Khoza [f], Kathleen Kahn [a,c,g] and Sophie Witter [h]

[a]MRC/Wits Rural Public Health and Health Transitions Research Unit (Agincourt), School of Public Health, Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, South Africa; [b]Aberdeen Centre for Health Data Science (Achds) Institute of Applied Health Sciences, School of Medicine, Medical Sciences and Nutrition, University of Aberdeen, Scotland, UK; [c]Department of Epidemiology and Global Health, Umeå University, Umeå, Sweden; [d]National Health Service (NHS) Grampian, Scotland, UK; [e]Independent Consultant, South Africa; [f]Department of Health, Mpumalanga Provincial Government, Mbombela, South Africa; [g]International Network for the Demographic Evaluation of Populations and Their Health (Indepth), Accra, Ghana; [h]Institute for Global Health and Development, Queen Margaret University, Scotland, UK

ABSTRACT

Background: Despite legislative and policy commitments to participatory water governance in South Africa, and some remarkable achievements, there has been limited progress to improve the water infrastructure servicing in marginalized rural communities. Around five million South Africans still do not have access to safe water.

Objective: This paper seeks to understand and advance processes to engage multisectoral stakeholders to respond to lack of safe water as a community-nominated health priority in rural South Africa.

Method: We engaged representatives from Mpumalanga Department of Health (MDoH), rural communities, other government departments and non-governmental organisations (NGOs) to cooperatively generate, interpret and act on evidence addressing community-nominated priorities. A series of participatory workshops were conducted where stakeholders worked together as co-researchers to develop shared accounts of the problem, and recommendations to address it. Consensus on the problem, mapping existing planning and policy landscapes, and initiating constructive dialogue was facilitated through group discussions in a collective learning process.

Results: Community stakeholders nominated lack of safe water as a local priority public health issue and generated evidence on causes and contributors, and health and social impacts. Together with government and NGO stakeholders, this evidence was corroborated. Stakeholders developed a local action plan through consensus and feasibility appraisal. Actions committed to behavioural change and reorganization of existing services, were relevant to the needs of the local community and were developed with consideration of current policies and strategies. A positive, collective reflection was made on the process. The greatest gain reported was the development of dialogue in 'safe spaces' through which mutual understanding, insights into the functioning of other sectors and learning by doing were achieved.

Conclusion: Our process reflected willingness and commitment among stakeholders to work together collectively addressing local water challenges. Location in an established public health observatory helped to create neutral, mediated spaces for participation.

ARTICLE HISTORY
Received 22 June 2021
Accepted 24 August 2021

RESPONSIBLE EDITOR
Stig Wall

KEYWORDS
Participatory water governance; multisectoral stakeholders; community evidence; local action plan; water challenges

Background

Diseases related to lack of water, sanitation and hygiene pose significant risks to health, and higher mortality and morbidity in marginalized communities globally [1–3]. In South Africa, the leading causes of under-5 mortality and morbidity are pneumonia and diarrhoea [4–6]. It is a public health concern that many under-5 deaths could be prevented through improved access to clean water [5,7]. Increasing access to clean water and sanitation services are essential in preventing and protecting health in normal times and during disease outbreaks, including the current COVID-19 pandemic, which has further amplified the impacts of water inequities [8].

Access to safe water is recognized as a fundamental right and is enshrined in the South African constitution [9]. While remarkable progress has been made, with approximately 90% of South Africans having access to piped water in 2016 [10], more than two decades since the end of apartheid, rural areas do not have continuous supply [11]. There are substantial differences in water access across provinces, with rural provinces lagging behind [10,12]. From 2002 to 2019, access to water

CONTACT Jennifer Hove jennifer.hove@wits.ac.za; jenniferhove79@gmail.com School of Public Health, University of Witwatersrand, 27 St. Andrew's Road, Parktown, Johannesburg 2193, South Africa

© 2021 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.
This is an Open Access article distributed under the terms of the Creative Commons Attribution License (http://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

declined in five provinces with the largest decline in Mpumalanga [12]. Today, around 5 million South Africans do not have reliable access to clean drinking water, connected to apartheid legacy, poor public sector accountability and low-average annual rainfall [10,13]. Due to climate change, South Africa faces extreme weather conditions with increasing frequency of drought, heat waves and floods [14]. In addition, poor performance of municipalities has also given rise to increase in service delivery protests, which are often violent and destructive [15–17].

In South Africa, participatory water governance has been embraced as a key enabling mechanism supporting water resource management. The South African 1997 Water Service Act (WSA) and National Water Act (NWA) of 1998 were framed around the concept of Integrated Water Resource Management (IWRM) [9,18,19]. While there is legislation and strong support in theory, policy and principle for community and stakeholder participation in water resource management, engagement has not been effective [20]. Lack of effective participatory water governance remains a challenge, particularly the involvement of stakeholders in priority setting, planning, decision-making and implementation.

The South African government also supports stakeholder participation in health, as an underpinning principle of primary health care (PHC) enshrined in the Alma Ata Declaration of PHC in 1978 [21–24]. Stakeholder's participation is furthermore key to recent shifts towards National Health Insurance and revival of the district health system, with PHC re-engineering and Ward-Based Primary Health Care Outreach Teams (WBPHCOTs) as key service delivery mechanisms bringing services closer to people [25,26]. There is recognition that decision-making should be a collaborative and inclusive process to address gaps in health system delivery. However, health policy and strategy has not yielded intended results in equity, sustainability and efficiency in health service delivery [23,27].

Understanding of the theoretical benefits of stakeholder participation exist, however, getting it right in practice is the challenge [11,18,28]. There is widespread normative support for stakeholder participation, but there remains limited understanding of how to operationalise the concept in practice. This paper seeks to understand and advance a process of multisectoral stakeholder participation in response to lack of safe water as a community-nominated public health priority in a rural sub-district in Mpumalanga, South Africa. The objective was to engage multisectoral stakeholders to build evidence and dialogue to respond to lack of safe water as a community-nominated public health priority.

There is inconsistency in use of the terms, 'participation', 'involvement' and 'engagement', further complicated by how those involved are named e.g. communities, service users, providers, decision makers, and researchers. In this paper, we use the term 'participation', and refer to community members, service providers, professionals, and researchers as 'stakeholders'. The premise is that real expertise lies among those for whom health priorities are most directly relevant, hence we adopted the definition of stakeholder participation to include community stakeholders as equals.

Methods

Study setting

The study was progressed in Mpumalanga, a rural province with high unemployment (31%) and low economic activity: approximately 23% of households have no regular source of income [29]. While health service delivery has improved since 1994, the lack of income leads to exclusion from access [30]. The study area was the Agincourt (HDSS), located in Bushbuckridge local municipality [30]. The Agincourt HDSS was established in 1992 to better understand population health in rapidly transitioning societies [30]. The HDSS consists of 120,000 people living in 31 villages in 21,500 households [30]. Xitsonga Tsonga is the most commonly spoken language in the area [30]. The Agincourt HDSS provides data for health population planning for the district from marginalized communities. The HDSS, a stable public health observatory, enabled the development of a dialogue process with different levels and sections in the health systems, adjacent government departments, NGOs and rural communities. The study was part of a wider programme, Verbal Autopsy with Participatory Action Research (VAPAR) (www.vapar.org), which aims to expand the knowledge base through partnership for action on health equity [31]. Verbal autopsy (VA) is a method to understand levels and causes of deaths in otherwise unregistered populations. Participatory Action Research (PAR) is a non-linear community-based process that systemizes local evidence for action with iterative learning cycles following a stepwise approach [32]. The study protocol was developed together with co-researchers based on pilot work in 2015–2018 [33–35].

Generating community knowledge and combining with routine mortality data

We engaged community stakeholders to work as co-researchers to generate evidence on local priorities. We progressed a PAR process with community stakeholders in three villages in the Agincourt HDSS who had participated in the pilot phase of the VAPAR programme from 2015 to 2016 (Table 1) [34]. In the pilot work, participants were purposively

Table 1. Composition of workshop.

	Generating community evidence*	Analyzing and interpreting community evidence			Collectively planning local action	
		Workshops				
Participants**	1–8	1	2	3	1	2
Religious leader	1	-	-			
Traditional leader	3	-	-			
Community official	5	-	-	1	1	1
Community Health Worker	3	-	-	1	1	
Family member	11	-	-	1	1	
Women of reproductive age	9	-	-			
Youth	16	-	-			1
Department of Health-Province		12	6	2	4	2
Department of Health-District		1	3	3	5	5
Department of Cooperative Governance and Traditional Affairs		-	1	1	-	1
Department of Social Development - Province		-	1	2	2	1
Department of Home Affairs		-	1	-	-	-
Department of Basic Education		-	1	1	-	-
Department of Water and Sanitation		-	-	2	1	-
Department of Culture, Sports and Recreation		-	-	1	1	-
Inkomati Usuthu Catchment Management Agency (IUCMA)		-	-	-	-	1
Ward counsellor		-	-	-		1
Ward committee member		-	-	-	-	1
Africa Foundation		-	-	-	-	1
Researchers	4	5	4	3	3	5
Total	52***	18	17	18	19	20

*Results presented elsewhere [36,37]. All participants were 18 years or older. Participants** were acknowledged as having multiple roles at home and in the community and a primary role was identified with participants for the purposes of recruitment. The total of 52*** include 32 participants from the other 2 villages that nominated a different priority, reported elsewhere [36].

recruited to understand the subjective reality and experiences of health using a maximum variation sampling technique. Participants represented a cross-section of the community including community and religious leaders, community health workers, clinic committee members, traditional healers and family members. The research team telephonically contacted participants from the pilot phase for recruitment, described the study, activities and intended outputs.

During this phase, eight workshops of 2–3 hours each were held once a week from June to September 2017. In each village, an initial workshop was held with eight participants, then the study was introduced, and the process was co-designed. Photovoice was also used to capture lived realities of water insecurity. All eight participants were provided with digital cameras and were trained how to use them. 'Lack of safe water' was nominated by community stakeholders in one village as a local priority health concern. Participants identified women of reproductive age as people affected by, and with knowledge on lack of safe water, and eight additional participants were recruited to bring in perspective otherwise excluded from the village that nominated water.

A further seven workshops were then held with 16 community stakeholders using PAR methods to develop and verify a collective understanding of the problem and actions to address it. PAR principles guided the workshops, i.e. homogeneous group (shared condition), subjective perspective (individual experiences), collective validation (issues recognized by the group as important) and no delegation (those dealing with the issue are primary researchers). Additionally, VA data from the Agincourt HDSS were collated and presented to demonstrate the health impacts of lack of water in communities. Workshop facilitation was a shared responsibility between the VAPAR research team and community participants, increasingly shifting to community led discussions over a series of engagements. All the workshop outputs and transcripts were back translated for quality control. Results from this stage, published elsewhere [36,37], were organised into a research brief, which was subsequently used in engaging government and NGO stakeholders.

Analysing and interpreting community evidence with multisectoral stakeholders

We then held three multisectoral workshops to analyse and interpret the VA and PAR data with community, government and NGO stakeholders from January to March 2018. The first workshop convened MDoH officials from the provincial and district structures at MDoH offices in the city of Mbombela (Table 1). The research brief was discussed, and PAR techniques: group model building, and rich pictures, were used to build consensus around and shared accounts of the issue. Group model building engages different stakeholders in a process for developing shared understanding and addressing complex problems [38]. Rich pictures are detailed, visual hand-drawn representations of discussions used as a tool for learning about complex, ill-defined problems [39]. Stakeholders also considered in detail the regulatory, policy and programmatic contexts in which interventions could be introduced.

The second and third analysis workshops were co-designed in the first workshop. This included identification of stakeholders, logistics and recruitment processes. In the second analysis workshop, recommendations for action were collectively developed, with a focus on local implementation contexts. The final workshop included representatives from various sectors and community stakeholders. Stakeholders

adopted active roles in developing and presenting the group model building, rich pictures, and action recommendations. Open discussion was facilitated, which ratified recommendations and identified challenges, opportunities, and strategies to address lack of safe water, within local, operational contexts through a consensus-building process.

Collectively planning local action

In the final stage, two planning workshops were held at district level in Agincourt HDSS field offices to develop a local action plan from September to October 2018. Attendees comprised district, sub-district and local MDoH stakeholders, and adjacent governmental department district level stakeholders (Table 1). In the first workshop the topic was revised to accommodate priorities of both community and MDoH stakeholders; lack of safe water and its effect on child health. Facilitated discussions were held to identify and appraise actions. For each action, actors, feasibility, specific change expected, completion date, resources available or needed and communication channels were discussed, agreed and noted. Local implementation contexts were also mapped. Complex interrelationships were mapped, formal and informal spheres of action identified, and potential leverage points to influence systems change were identified.

In all workshops, stakeholders collectively analysed evidence and progressed reflective dialogue to reach consensus, reviewing workshop outputs to ascertain that overarching questions were answered. At the end of each step, collective reflections were made, and reports generated and shared. All workshops were discursive, with facilitators ensuring that discussions were focused, substantive, inclusive and respectful, using facilitation guides.

Data management and analysis

Data comprised the workshop outputs, including group models, rich pictures, reports, observational notes, attendance registers and researchers' reflective journals. We used thematic analysis to develop understandings of how evidence is created with reference to stakeholder perspectives, how the process could be used to influence provincial and district-level planning, and to develop shared agendas, action plans and partnerships. Analysis was guided by the overall VAPAR theory of change (ToC) developed based on continuous engagement with multiple stakeholders [31,40] to explore the context, role of evidence, mechanisms that lead to change, actors and how they learn from each other (Figure 1).Community evidence was co-produced, stakeholders shared knowledge on their own situations, and dialogue was built and collective action developed, reflecting on and learning the process with the authorities. Data familiarization and generation of initial codes was performed by DM, RT, LD and JH to verify whether the content reflected the most important concepts. Codes were then grouped into themes using combined inductive (emerging themes) and deductive (ToC) generation until thematic saturation. Data was stored on secure servers at the University of Aberdeen and Agincourt HDSS.

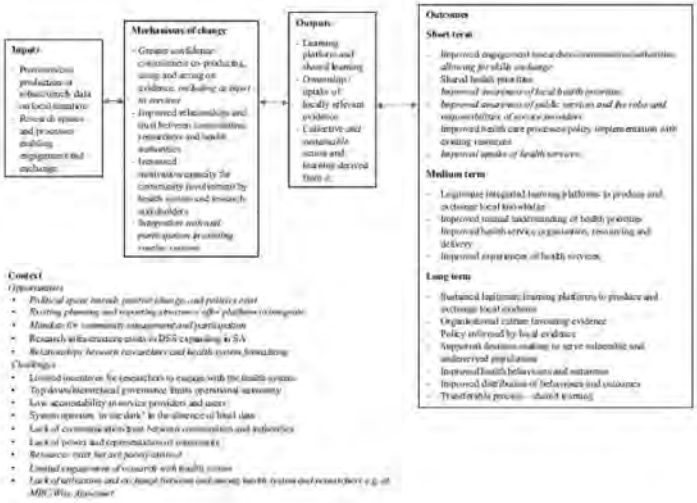


Figure 1. VAPAR Programme theory of change; *Source* [31,40].

Results

Community knowledge and routine mortality data

In the PAR element, community stakeholders developed sophisticated, multi-level accounts of the local water situation, narrating repeated, and prolonged periods without piped water, surface water sources (such as rivers and dams), unreliable infrastructure, inadequate service delivery, empty reservoirs and various health and social impacts. Stakeholders overwhelmingly attributed lack of safe water to poor planning by water authorities and service providers. Community stakeholders collectively developed potential strategies and solutions to address lack of clean water. Analysis of VA data revealed that approximately 34% of the deaths recorded in the Agincourt HDSS (2014/15) could reasonably be attributed to lack of clean water. A research brief presenting the VA and PAR data was developed.

Analyzing data with multisectoral stakeholders

In the subsequent multisectoral stakeholder workshops, government actors validated the community and statistical evidence on causes and contributors, health, and social impacts of lack of safe water and potential actions to address water shortages (Table 2). MDoH stakeholders developed consensus with and verified community stakeholders' accounts that lack of clean water was a result of complex barriers faced by water services providers and authorities. Rich situated accounts of system, and structural drivers of the problem were developed throughout the process (Figure 2).

Stakeholders agreed that municipalities are crippled with lack of sufficient resources to sustain activities, despite their willingness to provide water services to the people. Discussions revealed that municipalities generate revenue through rates and taxes, but the Bushbuckridge municipality mostly relied on conditional government grants and cannot generate their own revenue. This is due to it being deeply rural and a former homeland area with no rates collection system, unlike urban municipalities.

Stakeholders also acknowledged the complexity of water resource management, including lack of household water usage monitoring, resulting in lack of power to control water levels, monitor usage and leakage and recover cost. Low accountability of water authorities to service providers and users, and lack of communication with communities were identified as further contextual challenges outlined in the ToC, which the VAPAR programme seeks to address. The situation was verified, and arguably worsened, by frequent violent destructive service delivery protests, seen to be on the rise. Equitable collaboration which our process facilitated, enhanced the feeling of joint ownership, buy in and acceptability and stakeholders recognized the importance of meaningful community dialogue to build mutual understanding and trust instead of protesting.

The workshop discussions focused in detail on accountability while it was agreed that water is a social determinant of health, MDoH stakeholders reported no direct statutory mandate to be involved in addressing the issue. However, MDoH stakeholders expressed obligations to respect and honour community priorities by engaging in multisectoral learning and developing action with adjacent departments. MDoH stakeholders acknowledged that the actions to address these were required at different levels in the health system, and in collaboration with others. They also repeatedly acknowledged the benefits of understanding the roles, functions and policies of other departments, as they pertained to health protection and disease prevention.

As part of understanding the local policy and strategy contexts, two main policies related to access to safe water were discussed with multisectoral stakeholders. First, the NWA of 1998 was described as providing guidelines on how South Africa manages water resources, copes with climate change, and plans for the growing population. Second, the WSA was identified which regulates municipal water supply and sanitation services (Appendix 1). A strong policy context notwithstanding, stakeholders further identified 'policy noise' as a barrier to effective service delivery, with policies, strategies and programmes frequently revised before being fully implemented.

The National Water Resource Strategy (NWRS), introduced in 2004 through the NWA of 1998, requires the Minister to deliver a National Water Resources Strategy (NWRS) plan every 5 years, providing information on how much water is available in the country and how much is utilised. Stakeholders were concerned that the information provided by the NWRS is not reliable as it does not consider all sectors, though it intends positive changes. In developing recommendations for action, stakeholders focused on lack of multi sectoral integration of policy and implementation. These deliberations highlighted lack of community dialogue and trusting relationships that are currently lacking and which are needed to improve relationships between communities, researchers, and the authorities (Figure 3).

A significant policy implementation divide was thus identified and substantiated by stakeholders' analysis of community and statistical evidence, with recourse to policy, strategies and tactics, and lived experience of implementation among government officials. A recommendation was made for urgent collaboration between sectors to reduce duplication of effort and increase multi-agency cooperation. Stakeholders reiterated that water is a shared resource, hence decisions for water management are

Table 2. Barriers, solutions and existing policy related to lack of safe water developed by stakeholders analyzing evidence from the community.

Issue	Activities
Problem definition: Barriers	• Illegal water connections, vandalism of infrastructure • Poor infrastructure- lack of maintenance • Poor planning and financial mismanagement • Incompetency of local Government officials/ high staff turnover • Outsourcing – inflate cost and potential to collude. • Contamination of catchment areas/deterioration in wastewater treatment • Lack of data and information on water management due to lack of monitoring system • Drought • Policy fragmentation
Solutions	• Community participation to facilitate ownership and accountability, reporting of water leakages and vandalism. • Health education at household level through Ward-Based Primary Health Care Outreach Teams (WBPHCOTs), community health workers, ward committee and community meetings, at facility by clinicians and at school by school health teams. • Provide water infrastructure and maintenance of existing infrastructure. • Capacity building of officials • Monitor implementations of plans • Supervision and mentoring • Life skills orientation • Integration of services • Awareness campaign through community mass meetings
Existing Policies	• National Water Resource strategy (NWRS) • aims to improve water demand management, water conservation and capacity building and skills development. • Water and sanitation forums • Capacity building among communities and their municipality leaders • 2020 vision for water and sanitation education programme • Councilor development program with South Africa Local Government Association (SALGA) and. Cooperative Governance and Traditional Affairs (COGTA) • To educate and empower community councilors about water related issues. • Integrated Development Plan (IDP) • A 5-year plan that prioritizes community needs by allowing members to identify need and be part of the implementation plan. It has bulk municipal infrastructure grants and plays as a link for community engagement
Insights and recommendations	
• Municipal legislation: Municipalities to develop bylaws and provide law enforcers to deal with criminal acts such as illegal connections and vandalism. • Revenue: The funding for infrastructure maintenance should be adequate. Secondly Bushbuckridge municipality relies on government grants, and this need be to be addressed for municipalities to sustainably function. Municipality officials should account for the use of funds and their activities to the community. Water reading meters should be installed to improve revenue collection. • Community awareness and education: Communal standpipes did not have continuous supply, communities need to know their water rights, take ownership, and be involved in decision making. Need to protect water infrastructure. Education perhaps may empower the community to shift their mindset towards the perception that government services should be provided free of charge. • Integration approach: There is need for integration of policies and collaboration across various government departments. Participants mentioned the need to review the Integrated Development Plan (IDP) annually because at times priorities are overwritten by emergent issues that may have to be addressed immediately. Policies should be understood, information collated, and managed and MRC/Wits Agincourt monitored diligently.	

made by multiple parties. However, it was agreed that this requires leaders who are committed to create and facilitate partnerships and that the current leadership in the different water management institutions lack shared vision, and that this results in lack of coordination of the multiple perspectives.

Planning local action

The process culminated in a series of action items, collectively developed by stakeholders, and appraised for feasibility, and recorded in a local action plan to address lack of safe water (Table 3). Based on the realization that complex challenges in water management requires effective, joint leadership from various government stakeholders, stakeholders agreed on a series of shared local actions. Different perspectives were aligned through assessing key dimensions; financial, human resources, time, and sustainability. The action items which were developed, and committed to, involved a range of commitments from immediate low-cost or no-cost behaviour change, to those related to re-organisation of existing services. Through the deliberative process, the local action plan was constructed with reference to, and embedded within, the local context, current key policies and strategies.

Community stakeholders committed to lead two items on the local action plan i.e. river clean up campaigns and advocating for a recycling centre. The Department of Basic Education committed to lead an awareness drive for water harvesting in schools and clinics. Various stakeholders committed to amplifying Inkomati-Usuthu Catchment Management Agency (IUCMA) awareness campaigns on changing behaviour and perception on water consumption and lifestyle habits through community programmes and water and sanitation forums. Stakeholders suggested that educating the community and leaders may help address challenges of accountability to a point where communities would report leakages, service delivery



Figure 2. Rich picture exploring barriers to lack of safe water in rural communities.

breakdowns, vandalism, illegal connections, and possibly shift in mind-sets regarding paying for services.

The communication gap between the municipality and community regarding lack of knowledge on how the municipality functions prompted discussion on trust issues. Rebuilding a trusting relationship between the community and the municipality was discussed as essential. Stakeholders suggested that municipalities should introduce bylaws, strengthen existing laws and punitive measures (enforcers) to deal with illegal water connections, and address the current dependency on social grants through facilitating dialogue and involving the communities in decision making.

Maintenance of infrastructure in schools, clinics and villages was also cited as a mechanism to rebuild trust with communities. In addition, stakeholders cited that the current billing system is obsolete and needs reform, aligning it to the right to water. Municipalities use a flat rate and there are no meters installed on properties to measure actual water consumption. Moreover, revenue is only collected from schools, businesses and hospitals, and residents in the study area get water free of charge which is different from urban or metro municipality.

The municipality and Bushbuckridge Water Board led an action to initiate and advocate for collaboration between private and NGO partners to test for water quality. The final item on the local action plan was for researchers to raise awareness of the VAPAR programme with the Bushbuckridge mayor, to engage, build networks and make evidence accessible to policy makers. This work is part of the wider VAPAR process that involves progressing, monitoring, and reflecting on and learning from the process of implementing the action plan. The VAPAR programme progressed a process of implementing and evaluating the local action plan, which is reported elsewhere [40].

Collective reflections on the process

Throughout, participants reflected on the process and the programme ToC was revised [31,40]. Overall, stakeholders reflected positively. There was a high level of attendance and active involvement in all five workshops. The VAPAR process created a platform where power imbalances were mitigated. We co-designed a process to build community capabilities to generate and act on knowledge on their situations. This was combined with statistical evidence from Agincourt HDSS as a basis for engagement with multi-stakeholders to develop collective action to respond to lack of safe water. Community stakeholders felt empowered and reported increased confidence to collectively act on evidence leading to implementation of some of the action items on the local action plan. Involving stakeholders as partners in analyzing and interpreting community evidence brought about changes of attitude and increased ownership by both community and government stakeholders. Community stakeholders reported improved awareness of public services and the roles and responsibilities of service providers. Community stakeholders were initially negative and blaming towards authorities, but with continuous engagement, followed by sensitive facilitated dialogue with the authorities, developed more constructive collaborative mindsets. Group model building, rich pictures and action recommendations facilitated open discussion and built shared understandings of the problem.

Through the process, positionality of the researchers was a critical component. Choices on how the process should progress was negotiated by researchers and stakeholders. For example, dates, time, duration of the meeting, new stakeholder recruitment and inclusion of voices typically excluded were mutually agreed to be suitable and not intrusive or disruptive of other commitments and were specifically designed to share power, and control and enable co-ownership. Collaboration between various stakeholders was also key in developing local action plans, creating learning platforms, and shared learning. MDoH stakeholders stated that the process offered an opportunity to meet with, learn about and link with other stakeholders outside the health system. For some, this was the greatest gain. The process raised awareness on the need for collective planning and action monitoring. Power asymmetries were managed through facilitating the workshops sensitively, creating safe spaces in which we had open and transparent discussion. Some government stakeholders felt that they

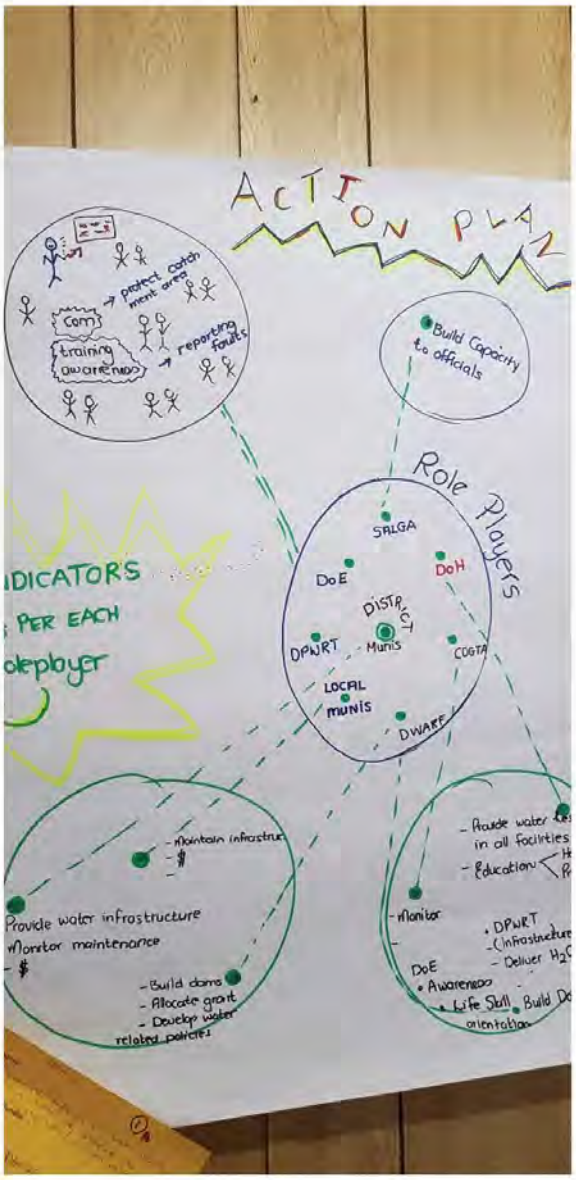


Figure 3. Action recommendations.

learnt to respect the opinions of others, including community stakeholders, through shared intellectual constructs and co-developing knowledge.

The biggest challenge mentioned was sustaining continuous stakeholder engagement with busy stakeholders. Participants suggested more time for deliberations, more meetings with affected communities, involvement of more communities, consistent availability of participants and direct involvement of all stakeholders so that actions do not end on paper but are implemented and evaluated to determine their effectiveness and efficacy.

Discussion

It is now more than two decades since the enactment of the 1997 WSA and 1998 NWA, in which stakeholder participation is enshrined. Despite this, deep

Table 3. Local action plan.

Action	Actors	Measure	Baseline	Target
Community level				
Develop clean-up campaigns	Led by community stakeholders with support from: MTPA, Africa Foundation, EHP, DARDLEA and IUCMA	Partnerships with potential stakeholders developed	Number of clean up campaigns done	Involve all potential stakeholders in two IUCMA cleaning campaigns
Advocate for recycling centres	Community, Game Reserves, EHP, DARDLEA SANPARKs – Kruger IUCMA, SSW, MPTA	Campaigns hosted	Nothing	Engagement with possible stakeholders on establishment of recycling stations in the community
Government level				
Improve water harvesting	Led by DoBE via schools, DoH – school health nurses, Africa Foundation	Clear understanding of the feasibility of water harvesting	Nothing – some schools had it but infrastructure not maintained	Increased awareness on water harvesting at schools and clinics
Amplify IUCMA awareness campaigns	Led by IUCMA, supported Municipal health services, EPH, Rand Water, WBPHCOTs, ward councillors	Four awareness campaigns supported in BBR by IUCMA and four by SSW	Events have been happening already but not including DoH, DSD and other stakeholders	Stakeholders around water use
Rebuild trust between communities and municipality	Municipality, Ward Councillors, and researchers	Waiting period for municipality to respond to community's need and community reports on vandalism and other water related challenges	Nothing	Activism campaign – we as South Africans coming together: 'LET'S TALK ABOUT IT' to enable political tolerance.
Test water quality- water storage tanks, boreholes, and tankers	Rand Water (BBR Water Board) to work in collaboration with private/ NGO partners	Clarity on roles and responsibilities on testing water	Some water testing currently being done by DoH, EHPs at some clinics	Group of potential role-players identified. Discussions initiated with municipality
Raise awareness of VAPAR with BBR Executive Mayor	Led by Wits, Ward Councillor and VAPAR team members	Project information and findings shared with Exec Mayor. Records of shared information, activities and dialogue	Nothing	Information report given with our evidence and some recommendations

MTPA: Mpumalanga Tourism and Parks Agency, EHP: Environmental Health Practitioner, DARDLEA: Department of Agriculture Development, Land and Environmental Affairs, IUCMA: Inkomati-Usuthu Catchment Management Agency, SANPARKS: South African National Parks, SSW: Sibanye Stillwater Ltd, DoBE: Department of Basic Education, BBR: Bushbuckridge.

challenges of inequities in access to clean water remain in South Africa [10]. Our data suggest limited cross-sectoral dialogue, limited engagement between the authorities and communities, and integration of different departments in the production of strategies and programmes. The local municipality in the Agincourt HDSS struggles to continuously supply safe water; a common phenomenon in rural municipalities across South Africa [41,42]. This finding is consistent with other studies. Rural municipalities predominately face a number of challenges in providing services to the communities as per their constitutional mandate [43]. A study in Makana Local Municipality in the Eastern Province of South Africa identified similar problems to those in Bushbuckridge i.e. high unemployment and poverty rates [10], and poor billing systems resulting in many residents not affording to pay for water services [44]. This hampered the Makana local municipality in supporting staff to operate and maintain infrastructure [44,45]. Our findings are furthermore consistent with other research that lack of safe water has multiple, complex determinants which are systemic and cannot be solved by simple solutions, requiring effective multisectoral collaboration [20,46–49]. Therefore, if authorities work with communities and are responsive to community issues through participatory multi-sectoral collaboration, problems of lack of safe water could be improved, relationships and trust between communities, and researchers and authorities will be restored.

A process of inclusive stakeholder participation confirmed this and allowed us to understand the contextual drivers of lack of safe water through prioritizing local health issues, generating locally relevant evidence and interpreting, analyzing, and planning for action. Local knowledge and statistical data were integrated and formalized the process into co-owned commitments to integrated action. Situating the discussions in neutral spaces reflecting implementation contexts, not formal government spaces, in addressing lack of clean water and developing local action plans was critical not only in amplifying the voice of the community but also in developing mutual understanding and building relationships among different stakeholders who could possibly influence change. Despite water being a social determinant of health, the MDoH had less direct influence, but what was key in our process was building relationships and networks. This reflects the need for multisectoral stakeholder processes, which have the potential to support co-production of knowledge, creating learning platforms and collective action. The results are thus consistent with evidence that suggests effective

participation and sustainable outcomes take place when multiple stakeholders, including services users, are part of the process leading to change [40,47,50–52]. It is argued that plans for collaborative action are best developed by people affected by the problem [53,54], and has the potential to inform service delivery and policy [40,49].

Past research has shown that stakeholder participation has not been successful in changing institutions and practices due to the lack of collaboration in designing and planning, resulting in unnecessary policy implementation delays from competing economic, political and social priorities [18,20,50,55–57]. Our process provided a platform for multisectoral collaboration, showing that equitable collaboration between researchers, service providers and service users is possible. The ethics of consensus decision-making was instilled and commitment to equity and transformation was made. Engaging stakeholders from provincial and district health systems with researchers in a learning platform may promote co-production of locally relevant research evidence to address local health priorities. Our findings are consistent with other studies; for knowledge to be used in policies, there is need for it not only to be embedded in relationships, but also to be linked within priorities and contexts of organizations [33,58–62]. Meessen *et al* [63] found that the feasibility of collaborative learning could be hampered by lack of supportive leadership at higher levels [63]. Transforming organizational cultures will be difficult without support at a high level to institutionalize new-learning processes [64,65]. Our process emphasizes the need to consider contextual issues such as accountability, supportive policy, and earlier engagement of diverse stakeholders with a local evidence base.

Our findings are consistent with previous research that though complementary policies and strategies exist within different sectors, multi-sectoral collaboration is surrounded by structural, cultural and cognitive challenges [48,53,63]. However, our process recognize that contributors to lack of access to safe water are multi-faceted, and as such require a cross-sectoral dialogue and integrated approach in planning, designing and implementation. Gaining understanding on the functions and realities of each other's operations and context is essential for successful collaboration [48,58]. Situated within a stable public health observatory with a long-term presence in rural communities, the VAPAR programme connected different stakeholders from various sectors to tackle lack of safe water at multiple levels and develop local action plans to be implemented in the next step of this research project. As the process continues, the focus will be on sustaining partnerships, transferability of this process to other HDSSs, and evaluation of action.

Strengths and limitations

Stakeholders co produced research evidence and created spaces and opportunities for government, and NGO stakeholders to interact with community stakeholders, who experience health inequities deeply. In addition, the process facilitated co-learning across sectors, through doing and reflecting, gaining mutual understanding and knowledge, sharing of information, improved relationships. Building collective capabilities to produce and act on evidence of local relevance was an integral part of the VAPAR programme. For some stakeholders, the process improved stakeholder's confidence in their problem-solving abilities, and there was increased ownership of the process signified by commitment to act on evidence. The importance of controlling and owning the process was recognized as key to sustainability of programmes and future collaboration.

While involving community stakeholders is key in production of locally relevant evidence, participation in these platforms may be hindered by powerful stakeholders. However, the multi-sectoral stakeholder participation was directed by the community priority, therefore elite capture was less of a concern. Our process within the Agincourt HDSS provided a platform for multisectoral collaboration, without blame, where all stakeholders had equal speaking rights and consensus decision making was encouraged. In addition, sensitive and careful facilitation ensuring inclusive participation and constructive dialogue was helpful. The iterative, adaptative process revealed opportunities to address the topic through development of local action plans. However, how to progress and transfer this process in practice outside the Agincourt HDSS is less straightforward. Maintenance and continuation of participation beyond the project life may not be guaranteed due to the nature of the research. In South Africa, more HDSSs are being established, and they may serve as platforms to roll out this work.

Conclusions

In this study, bringing diverse stakeholders together was crucial and showed the potential to pool knowledge, experience, expertise and generative collective knowledge and action for locally relevant and acceptable action progressed collectively with various stakeholders. The VAPAR cooperative learning process, based within a stable HDSS setting, provided a conducive environment to produce local research evidence, learn and connect community members, service providers and researchers to tackle challenges in service delivery. When people affected are involved in planning, designing, and developing action, actions are perceived to be socially embedded and culturally

acceptable, and may reduce the gap between evidence and practice. On this foundation, the subsequent steps in the process, implementing on and learning from action, will help us to understand how learning and local research evidence can translate into action.

Acknowledgments

The authors would like to thank all community stakeholder study participants for agreeing to be part of the process. Thanks also to the Verbal Autopsy with Participatory Action Research (VAPAR) team and staff of the Medical Research Council (MRC)/Wits Rural Public Health and Health Transitions Research Unit (Agincourt).

Author contributions

JH led the thematic analysis and drafted the manuscript with LD, KK and RT. DM led the data collection with inputs from LD, RT, MV, IM and SK. LD, RT, MV, SW, and KK conceived of the study and made inputs to the collection and interpretation of data. All authors revised the manuscript critically. All authors have given approval for the version to be published and agreed to be accountable for the work.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Ethics and consent

Ethical conduct was considered in terms of control over the process, and a high degree of responsibility was placed on the research participants. All participants gave written informed consent anonymity and confidentiality were provided for all. Mutual respect for opinions, language and values were assured and participants were free to withdraw from the study anytime. Participants were provided refreshments and reimbursed ZAR300 for transport costs per participant per workshop. Ethical approval was obtained from the University of Aberdeen (CERB/2017/04/1457) and Wits Human Research Ethics Committees (M190222), and permission given by the Mpumalanga DoH Research Committee (MP_2017_12_003).

Funding information

This study was funded by the Joint Health Systems Research Initiative from Department for International Development/MRC/Welcome Trust/Economic and Social Research Council (MR/N005597/1 and MR/P014844/1). This work was nested within the MRC/Wits Rural Public Health and Health Transitions Research Unit (Agincourt), supported by the University of the Witwatersrand and Medical Research Council, South Africa.

Paper context

Community participation can improve service delivery and health outcomes. Involving multisectoral stakeholders to interpret and analyse participatory action research evidence from the community and develop local action is not only critical in amplifying the voice of the community but also in developing mutual understanding, trust and building relationships among different stakeholders who could possibly influence change. Situating discussions in implementation contexts in addressing lack of safe water were key in facilitating cross sectoral dialogue and integration and engagement of communities, authorities, and researchers.

Data availability

Data are available on reasonable request to the corresponding author.

ORCID

Jennifer Hove http://orcid.org/0000-0002-5392-8537
Lucia D'Ambruoso http://orcid.org/0000-0002-8505-3368
Rhian Twine http://orcid.org/0000-0002-0766-6556
Maria van der Merwe http://orcid.org/0000-0003-4174-2994
Kathleen Kahn http://orcid.org/0000-0003-3339-3931
Sophie Witter http://orcid.org/0000-0002-7656-6188

References

[1] UNICEF. United Nations Inter-agency Group for Child Mortality Estimation (UN IGME), 'Levels & Trends in Child Mortality. Report 2020', United Nations Children's Fund, New York. 2020 [cited 2021 Jun 15]. Available from: https://data.unicef.org/wp-content/uploads/2020/09/Levels-and-trends-in-child-mortality-IGME-English_2020.pdf
[2] Chao F, You D, Pedersen J, et al. National and regional under-5 mortality rate by economic status for low-income and middle-income countries : a systematic assessment. Lancet Glob Heal. 2018;6: e535–e547.
[3] Hughes JM, Koplan JP. Saving lives through global safe water. Emerg Infect Dis. 2005;11:1636–1637.
[4] Wyk VP, Msemburi W, Laubscher R, et al. Mortality trends and diff erentials in South Africa from 1997 to 2012 : second national burden of disease study. Lancet Glob Heal. 2012;4:e642–e653.
[5] UNICEF/WHO. Diarrhoea: why children are still dying and what can be done. 2009. [cited 2020 Dec 15]. https://www.who.int/maternal_child_adolescent/documents/9789241598415/en/
[6] Bamford LJ, McKerrow NH, Barron P, et al. Child mortality in South Africa: fewer deaths, but better data are needed. S Afr Med J. 2018;108:25.
[7] Prüss-Ustün A, Bartram J, Clasen T, et al. Burden of disease from inadequate water, sanitation and hygiene in low- and middle-income settings: a retrospective analysis of data from 145 countries. Trop Med Int Heal. 2014;19:894–905.
[8] Bhowmick GD, Dhar D. Coronavirus disease 2019 (COVID-19) outbreak : some serious consequences with urban and rural water cycle. Npj Clean Water. 2019.
[9] Republic of South Africa. National Water Act, Act 36 of 1998 [Internet]. Gov. Gaz. 1998 p. 1–200. [cited 2020 Dec 15]. Available from: http://www.dwa.gov.za/Documents/Legislature/nw_act/%0ANWA.pdf

[10] Statistics South Africa. Water and Sanitation, in depth analysis of the General Household Survey2002–2015 and Community Survey 2016 data; GHS Series Report Volume VIII. [cited 2020 Oct 15]. Available from: http://www.statssa.gov.za/publications/03-18-07/03-18-072015.pdf.
[11] Bulled N. Conceptualizing biopolitics: citizen-state interactions in securing of water services in South Africa. Med Anthr. 2016;34: 533–550.
[12] Statistics South Africa. General Household Survey 2019 [Internet]. 2021. [cited 2020 Oct 15]. Available from: http://www.statssa.gov.za/publications/P0318/P03182019.pdf%0A%0A.
[13] Botai CM, Botai JO, Adeola AM. Spatial distribution of temporal precipitation contrasts in South Africa. S Afr J Sci. 2018;114:1–9.
[14] Chersich MF, Wright CY, Venter F, et al. Impacts of climate change on health and wellbeing in South Africa. Int J Environ Res Public Health. 2018;15:1–14.
[15] Sershen S, Rodda N, Stenstrom TA, et al. Water security in South Africa: perceptions on public expectations and muncipal obligations, governance and water re-use. Water SA. 2016;42:456–465.
[16] Ngcamu BS. Exploring service delivery protests in post-apartheid South African municipalities: a literature review. J Transdiscipl Res South Africa. 2019;15:1–9.
[17] Twala C. The causes and socio-political impact of the service delivery protests to the South African citizenry: a real public discourse. J Soc Sci. 2017;39:159–167.
[18] Denby K. Emergence, interpretations and translations of IWRM in South Africa emergence, interpretations and translations of IWRM in South Africa Synne Movik. 2016.
[19] Republic of South Africa. Water Services Act, Gov Gaz [Internet]. 1997;390:36. [cited 2021 Jun 10]. Available from: http://www.saflii.org/za/legis/num_act/wsa1997175.pdf.
[20] Brown J. Can participation change the geography of water? Lessons from South Africa. Ann Assoc Am Geogr. 2013;103: 271–279.
[21] Gray A, Vawda Y. South African health review [Internet]. Durban; 2018 [cited 2021 Jun 20]; Available from: http://www.hst.org.za/publications/Pages/SAHR2018.
[22] Topp SM, Abimbola S. Call for papers—the Alma Ata declaration at 40: reflections on primary healthcare in a new era. BMJ Glob Heal. 2018;3:e000791.
[23] Kironde S, Kahirimbanyi M. Community participation in primary health care (PHC) programmes: lessons from tuberculosis treatment delivery in South Africa. Afr Health Sci. 2002;2:16–23.
[24] World Health Organisation/United nations Children's Fund (WHO/UNICEF). ALMA-ATA Primary Health Care. Int Conf Prim Heal Care [Internet]. 1978;63. [cited 2020 Jun 20]. Available from: https://www.unicef.org/about/history/files/Alma_Ata_conference_1978_report.pdf
[25] Fusheini A, Eyles J. Achieving universal health coverage in South Africa through a district health system approach: conflicting ideologies of health care provision. BMC Health Serv Res. 2016;16:1–11.
[26] Khuzwayo LS, Moshabela M. The perceived role of ward based primary healthcare outreach teams in rural KwaZulu-Natal, South Africa. African J Prim Heal Care Fam Med. 2017;9:1–5.
[27] Thurston WE, Mackean G, Vollman A, et al. Public participation in regional health policy : a theoretical framework. Health Policy (New York). 2005;73:237–252.
[28] McEvoy R, Tierney E, MacFarlane A. 'Participation is integral': understanding the levers and barriers to the implementation of community participation in primary healthcare: a qualitative study using normalisation process theory. BMC Health Serv Res. 2019;19:1–14.
[29] Statistics South Africa. Mid-year population estimates 2017. Stats Sa [cited 2021 Jun 20]. 2017;7–8. Available from: %0Awwwstatssagovza.
[30] Kahn K, Collinson MA, Xavier Gómez-olivé F, et al. Profile: agincourt health and socio-demographic surveillance system. Int J Epidemiol. 2012;41:988–1001.
[31] Witter S, van der Merwe M, Twine R, et al. Verbal autopsy with participatory action research (VAPAR) programme in Mpumalanga, South Africa: protocol for evaluation. BMJ Open. 2020;10:e036597.
[32] Loewenson R, Laurell AC, Hogstedt C, et al. Participatory Action Research in health systems. A methods Reader. cited 2021 Jul 18]. Available from. IDRC Canada, EQUINET, Harare: TARSC, AHPSR, WHO; 2014 []. : http:tinyurl.com/tf4fpmx
[33] Wariri O, D'Ambruoso L, Twine R, et al. Initiating a participatory action research process in the Agincourt health and socio-demographic surveillance site. J Glob Health. 2017;7. DOI:10.7189/jogh.07.010413.
[34] Hullur N, D'Ambruoso L, Edin K, et al. Community perspectives on HIV, violence and health surveillance in rural South Africa: a participatory pilot study. J Glob Health. 2016;6(1).
[35] Brooks C, D'Ambruoso L, Kazimierczak K, et al. Introducing visual participatory methods to develop local knowledge on HIV in rural South Africa. BMJ Glob Heal. 2017;2(3).
[36] Oladeinde O, Mabetha D, Twine R, et al. Building cooperative learning to address alcohol and other drug abuse in Mpumalanga, South Africa : a participatory action research process. Glob Health Action [Internet]. 2020;13:1–15.
[37] Hove J, D'Ambruoso L, Mabetha D, et al. "Water is life": developing community participation for clean water in rural South Africa. BMJ Glob Heal. 2019;4:1–13.
[38] Siokou C, Morgan R, Shiell A. Group model building : a participatory approach to understanding and acting on systems. Public Heal Res Pract. 2014;25:1–4.
[39] Conte KP, Davidson S. Using a ' rich picture ' to facilitate systems thinking in research coproduction. Health Res Policy Syst. 2020;2:1–14.
[40] van der Merwe MS, D'Ambruoso L, Witter S, et al. Collective reflections on the first cycle of a collaborative learning platform to strengthen rural primary health care in Mpumalanga, South Africa. Heal Res Policy Syst [Internet]. 2021;19:1–13.
[41] Harris LM. Assessing states : water service delivery and evolving state – society relations in Accra, Ghana and Cape Town, South Africa. Polit Sp. 2019;1–22.
[42]. Mushavi RC, Burns BFO, Kakuhikire B, et al. "When you have no water, it means you have no peace": a mixed-method, whole-population study of water insecurity and depression in rural Uganda. Soc Sci Med [Internet]. 2019; 112561.
[43] Marcatelli M, Liquid Violence BB. The politics of water responsibilisation and dispossession in South Africa. Water Altern. 2019;12:760–773.
[44] Weaver MJT, O'Keeffe J, Hamer N, et al. Water service delivery challenges in a small South African

municipality: identifying and exploring key elements and relationships in a complex social ecological system. Water SA. 2017;43:398–408.
[45] Makana Local YP Municipality Intervention Final Report [Internet]. 2015 [cited 2020 Oct 15]. Available from: https://makana-ra.org.za/wp-content/uploads/2018/10/Makana-Local-Municipality-Final-Report.pdf.
[46] Weaver MJT, O'Keeffe J, Hamer N, et al. A civil society organisation response to water service delivery issues in South Africa drives transformative praxis. Part 1: emergence and practice. Geoforum. 2019:1-13.
[47] Rollason E, Bracken LJ, Hardy RJ, et al. Evaluating the success of public participation in integrated catchment management. J Environ Manage [Internet]. 2018;228:267–278.
[48] Buanes A, Jentoft S. Building bridges: institutional perspectives on interdisciplinarity. Futures. 2009;41:446–454.
[49] Nelson S, Drabarek D, Jenkins A, et al. How community engagement in water and sanitation interventions impacts human health, infrastructure and service longevity in low- and middle-income countries: a realist review. Res Sq. 2020;1–27.
[50] Biswas AK. Integrated water resources management: is it working? In: Int J. Water Resour Dev. 200824(1):5–22.
[51] Lippman SA, Leddy AM, Neilands TB, et al. Village community mobilization is associated with reduced HIV incidence in young South African women participating in the HPTN 068 study cohort. J Int AIDS Soc. 2018;21:60–68.
[52] Beattie TSH, Mohan HL, Bhattacharjee P, et al. Community mobilization and empowerment of female sex workers in karnataka state, south india: associations with hiv and sexually transmitted infection risk. Am J Public Health. 2014;104:1516–1525.
[53] D'Ambruoso L, van der Merwe M, Wariri O, et al. Rethinking collaboration : developing a learning platform to address under-five mortality in Mpumalanga province, South Africa. Health Policy Plan. 2019;34:418–429.
[54] Ssemugabo C, Halage AA, Namata C, et al. Research Paper A socio-ecological perspective of the facilitators and barriers to uptake of water, sanitation and hygiene interventions in a slum setting in Kampala, Uganda : a qualitative study. J Water Sanit Hyg Dev. 2020;10:227–237.
[55] Woodhouse P, Muller M. Water Governance — an Historical Perspective on Current Debates. World Dev [Internet]. 2017;92:225–241.
[56] Dungumaro EW, Madulu NF. Public participation in integrated water resources management: the case of Tanzania. Phys Chem Earth. 2003;28:1009–1014.
[57] Haldane V, Chuah FLH, Srivastava A, et al. Community involvement in the development and implementation of chronic condition programmes across the continuum of care in high- and upper-middle income countries : a systematic review. Health Policy (New York) [Internet]. 2020;124:419–437.
[58] Nutley S, Morton S, Jung T, et al. Evidence and policy in six European countries: diverse approaches and common challenges. Evid Policy A J Res Debate Pract. 2010;6:131–144.
[59] Questa K, Das M, King R, et al. Community engagement interventions for communicable disease control in low- and lower- middle-income countries : evidence from a review of systematic reviews. Int J Equity Health. 2020;19:1–20.
[60] Haldane V, Chuah FLH, Srivastava A, et al. Community participation in health services development, implementation, and evaluation: a systematic review of empowerment, health, community, and process outcomes. PLoS One. 2019;14:1–25.
[61] Rajan D, Mathurapote N, Putthasri W, et al. Institutionalising participatory health governance: lessons from nine years of the National Health Assembly model in Thailand. BMJ Glob Heal. 2019;4:1-7.
[62] Alfredo K, Montalto FA, Bartrand T, et al. Using a participatory stakeholder process to plan water development in Kororo, Ethiopia. Water (Switzerland). 2016;8:1–20.
[63] Meessen B, Akhnif ELH, Kiendrébéogo JA, et al. Learning for Universal Health Coverage. BMJ Glob Heal. 2019;4:1–6.
[64] Gram L, Fitchett A, Ashraf A, et al. Promoting women's and children's health through community groups in low-income and middle-income countries: a mixed-methods systematic review of mechanisms, enablers and barriers. BMJ Glob Heal. 2019;4(6).
[65] Cahill C. Defying gravity? raising consciousness through collective research. Child Geogr. 2004;2:273–286.

Paper 4

PLOS ONE

RESEARCH ARTICLE

Participatory action research to address lack of safe water, a community-nominated health priority in rural South Africa

Jennifer Hove[1,2], Denny Mabetha[3], Maria van der Merwe[1], Rhian Twine[1], Kathleen Kahn[1], Sophie Witter[5], Lucia D'Ambruoso[1,2,6,7,8]*

1 MRC/Wits Rural Public Health and Health Transitions Research Unit (Agincourt), School of Public Health, University of the Witwatersrand Johannesburg, Johannesburg, South Africa, **2** Institute of Applied Health Sciences, Aberdeen Centre for Health Data Science, School of Medicine, Medical Sciences and Nutrition, University of Aberdeen, Scotland, United Kingdom, **3** Cochrane South Africa, South African Medical Research Council (MRC), Cape Town, South Africa, **4** Maria van der Merwe Consulting, White River, South Africa, **5** Institute for Global Health and Development, Queen Margaret University, Scotland, United Kingdom, **6** Department of Epidemiology and Global Health, Umeå University, Umeå, Sweden, **7** Public Health, National Health Service (NHS) Grampian, Scotland, United Kingdom, **8** Department of Global Health, Stellenbosch University, Stellenbosch, South Africa

* lucia.dambruoso@abdn.ac.uk

Check for updates

OPEN ACCESS

Citation: Hove J, Mabetha D, van der Merwe M, Twine R, Kahn K, Witter S, et al. (2023) Participatory action research to address lack of safe water, a community-nominated health priority in rural South Africa. PLoS ONE 18(7): e0288524. https://doi.org/10.1371/journal.pone.0288524

Editor: Kamal Gholipour, Tabriz University of Medical Sciences, IR Iran, ISLAMIC REPUBLIC OF IRAN

Received: October 19, 2022

Accepted: June 28, 2023

Published: July 27, 2023

Peer Review History: PLOS recognizes the benefits of transparency in the peer review process; therefore, we enable the publication of all of the content of peer review and author responses alongside final, published articles. The editorial history of this article is available here: https://doi.org/10.1371/journal.pone.0288524

Copyright: © 2023 Hove et al. This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Data Availability Statement: The author's study protocol does not allow to share the qualitative data beyond the research team to protect stakeholders

Abstract

Background

Despite international evidence supporting community participation in health for improved health outcomes and more responsive and equitable health systems there is little practical evidence on how to do this. This work sought to understand the process involved in collective implementation of a health-related local action plan developed by multiple stakeholders.

Methods

Communities, government departments and non-government stakeholders convened in three iterative phases of a participatory action research (PAR) learning cycle. Stakeholders were involved in problem identification, development, and implementation of a local action plan, reflection on action, and reiteration of the process. Participants engaged in reflective exercises, exploring how factors such as power and interest impacted success or failure.

Results

The local action plan was partially successful, with three out of seven action items achieved. High levels of both power and interest were key factors in the achievement of action items. For the achieved items, stakeholders reported that continuous interactions with one another created a shift in both power and interest through ownership of implementation processes. Participants who possessed significant power and influence were able to leverage resources and connections to overcome obstacles and barriers to progress the plan. Lack of financial support, shifting priorities and insufficient buy-in from stakeholders hindered implementation.

and organizations confidentiality. Providing this data publicly would violate the ethics approval received for this study. However, relevant excerpts of the data underlying the results presented here are available from the corresponding author upon reasonable request. Where authors are not available, data may be requested from achds@ukzn.ac.za.

Funding: LD acquired funding for this study. This study was funded by the Joint Health Systems Research Initiative from Department for International Development/MRC/Welcome Trust/ Economic and Social Research Council under MR/ N005597/1 and MR/P014844/1. https://wellcome.org/grant-funding/funded-people-and-projects. This work was nested within the MRC/Wits Rural Public Health and Health Transitions Research Unit (Agincourt), supported by the Faculty of Health Sciences, University of then Witwatersrand and the Medical Research Council, South Africa. The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

Competing interests: The authors have declared that no competing interests exist.

Abbreviations: BBR, Bushbuckridge; COVID-19, Corona Virus Disease of 2019; DoH, Department of Health; DSD, Department of Social Development; EHPS, Environmental Health Practitioners; EHS, Environmental Health Services; HDSS, Health and Demographic Surveillance Site; HIV, Human Immunodeficiency Virus; IUCMA, Inkomati Usuthu Catchment Management Agency; LMIC, Low- and Middle-Income Countries; MDoH, Mpumalanga Department of Health; MHS, Municipal Health Service; MRC, Medical Research Council; NGOs, Non-Governmental Organizations; NHA, National Health Act; NHI, National Health Insurance; PAR, Participatory Action Research; PHC, Primary Health Care; SDGs, Sustainable Development Goals; VAPAR, Verbal Autopsy with Participatory Action Research; WBPHCOT, Ward Based Primary Health Care Outreach Team; WHO, World Health Organization.

Conclusion

The process offered new ways of thinking and stakeholders were supported to generate local evidence for action and learning. The process also enabled exploration of how different stakeholders with different levels of power and interest coalesce to design, plan, and act on evidence. Creation of safe spaces was achievable, meanwhile changing stakeholders' level of power and interest was possible but challenging. This study suggests that when researchers, service providers and communities are connected as legitimate participants in a learning platform with access to information and decision-making, a shift in power and interest may be feasible.

Introduction

This paper reports on the process of collective implementation of a health-related local action plan developed in a participatory action research (PAR) process, addressing lack of safe water in rural South Africa. Community participation in primary health care (PHC) gained support in the Declaration of Alma Ata in 1978 by the World Health Organization (WHO) [1]. Normative support for participation has endured. Globally, community participation and development of strong partnerships has been advocated internationally and re-emerged as central in realizing sustainable development goals (SDGs), based on the following concepts: inform, consult, involve, collaborate and empower [2]. Participation progresses a paradigm shift in which communities are viewed not as mere beneficiaries of services, but co-implementors within the development context [2,3].

An important aspect of the participatory approach is an increasing appreciation of the benefits of involving service users in priority setting and collective action [4]. Research evidence worldwide has shown that community participation can lead to improved health outcomes and ensure a more responsive and equitable health system, including, for example, managing the current COVID-19 pandemic [5–12]. Evidence also suggests that participation enhances the legitimacy and acceptability of decisions, furthering trust in public institutions [1,6,8]. Fundamental to PAR is the creation of an enabling environment that addresses issues of representation, capacity, power differentials and sustainability [2,3]. Participation, particularly of vulnerable, marginalized groups in health systems, reflects a rights-based approach to health [13]. In Low- and Middle-Income countries (LMICs) participation is a key element in good governance and community empowerment [14–18].

Several conceptual frameworks and theories have been developed to assess levels of participation, but countries vary in implementation of participation. Arnstein's (1969) ladder of citizen participation is one of the most influential models, which describes participation as eight rungs of a ladder, from non-participation to citizen led control [19]. Arnstein's ladder describes how much influence stakeholders have in the process of decision making and control. When participation is tokenistic, communities have less control over decisions and actions that affect their lives and health. With more complete forms of empowerment, people are in control and have decision-making power. Arnstein stated that "*participation without redistribution of power is an empty and frustrating process for the powerless*" (p.216) [19]. Marginalized communities, however, are often inadequately engaged, under-represented or less empowered to achieve meaningful participation [10,20]. Power is complex, defined as '*capacity or ability to change the probabilities of occurrence of a desired event in a given social context*'

(pg. 8) [21]. In PAR approaches, relationships of power influence the level of participation and outcomes [22].

Since the dawn of democracy in South Africa in 1994, community participation in health has been embedded within policy and guidelines and has evolved over time [23]. Pre-dating PHC Re-engineering, community participation in PHC was institutionalized in the National Health Act of 2003, through establishment of health committees [23]. In addition, community health care teams known as Ward Based Primary Health Care Outreach Teams (WBPHCOTs) were established as part of the PHC re-engineering strategy to deliver services to residents in rural and underserviced areas where access to health care is often limited. However, despite extensive support for community participation, WBPHCOTs and health committees encounter challenges as mechanisms for community participation [24,25]. WBPHCOTS and health committees have not met expectations in terms of representing people's interests, lacking resources, lacking a clear mandate and accountability. Consequently, they are inefficient in addressing local need and amplifying the voices of marginalized communities [24–28]. These structures exist on the periphery of the health system, offering mainly health-related information and providing little opportunity for impact with regards to improved service planning, prioritization and co-production of more relevant evidence in health care [24,27,29].

Lack of water in Bushbuckridge

Located in the north-eastern region of the Mpumalanga province in South Africa, Bushbuckridge local municipality is a 'presidential nodal point' [30]. Presidential nodal points are typically defined by underdevelopment, contributing minimally to the Gross Domestic Product (GDP), having a high population density, encompassing the poorest rural and urban communities, being structurally disconnected from the developed world and the global economy, and lacking the capacity for self-generated growth [31].

Access to water is a basic human right. South African citizens have a constitutional right to access clean and safe water, and the government has an obligation to ensure that all citizens have access to this basic need [32]. The Bushbuckridge municipality experiences a number of challenges such as high levels of poverty, unemployment, and substantial service delivery backlogs [30,33]. Service delivery backlogs often lead to service delivery protests, as people express their dissatisfaction with the provision of essential municipal services such as water supply, electricity, and sanitation [34,35].

The sources of water in Bushbuckridge Municipality include both surface water and groundwater [32]. The municipality relies on dams, rivers, and boreholes to supply water to the local communities. However, the quality and reliability of the water supply can be affected by various factors such as drought, pollution, and poor infrastructure. In some areas, residents rely on water tankers to deliver water, which can be irregular and insufficient to meet their daily water needs [30]. This situation sometimes results in long queues at water collection points, which can be time-consuming and physically demanding. Furthermore, surface water in Bushbuckridge Municipality is not always safe for consumption due to contamination from various sources, including poor sanitation practices and pollution from agricultural activities. This situation can lead to the spread of water-borne diseases and negatively impact the health of the community.

There are various reasons why Bushbuckridge municipality in Mpumalanga may still lack access to safe water [35]. The situation could be due to a combination of factors, including a shortage of water resources, inadequate infrastructure for water distribution, vandalism, theft and the recent power supply interruptions that impact water pumping [33]. According to the

South African Human Rights Commission (SAHRC) report on water and sanitation, the municipality's water supply infrastructure is outdated and insufficient to meet the growing demand for water in the area [36]. The report highlighted that the municipality's water supply infrastructure is inadequately maintained or upgraded, leading to water leaks, burst pipes, and frequent disruptions to the water supply [36]. In addition, water supply systems may be poorly designed or inefficiently managed, leading to wastage and water losses [35,36].

Responding to the need for practical guidance on community participation programmes in rural LMIC settings, this work aimed to understand how multisectoral action to address a community-nominated priority could be developed and implemented at a local level. This work builds upon previous work on PAR process which we identified health priorities, documented and analyzed the issues, and published our findings elsewhere [37–39]. The objectives were to develop and implement local action plans, to understand how multiple stakeholders influenced the implementation process, and to identify facilitators and barriers to the implementation process in achieving positive outcomes at the local level.

Methods

Study setting and design

The work was conducted at the MRC/Wits Rural Public Health and Health Transitions Research Unit (Agincourt) Health and Socio-Demographic Surveillance System (HDSS) in the Bushbuckridge sub-district in Mpumalanga province, northeast South Africa. Established in 1992, the HDSS conducts annual updates, collecting information on vital events including births, deaths, migration, and socioeconomic status to better understand population health in rapidly transitioning societies [40]. The HDSS covers 420km^2 with a population of 120,000 people living in 31 villages in 21,500 households, served by two health centers, seven government clinics and three district hospitals.

Infrastructure ranges from fully serviced houses to isolated rural homesteads accessing water from communal standpipes [40]. Bushbuckridge local municipality faces several challenges. These include high poverty levels attributed to high unemployment, limited economic base that results in extensive labor migration. While the place is a well-known tourist attraction, there are pervasive service delivery backlogs (water shortages, sanitation, and roads) and lack of large scale water supply infrastructure, reservoirs, and a reticulation system [35,40–42]. In 2001, the municipality was declared a presidential nodal point [42]. With poverty widespread, many households rely on government social grants as a key source of income [40]. HIV prevalence is high, and the rates of non-communicable diseases are steadily increasing among the population [40,41].

This study draws data from a programme of research titled Verbal Autopsy (VA) and Participatory Action Research (PAR) programme (VAPAR) (www.vapar.org) [43]. VAPAR is a collaborative learning platform established in the rural province of Mpumalanga to develop a partnership of local and international researchers, community members and authorities to co-produce and act on relevant local evidence [38,44]. Verbal Autopsy (VA) is a method used to determine the cause of deaths in settings where deaths are not medically certified [45,46]. It involves interviewing a family member of the deceased or a caregiver to collect information about the symptoms and circumstances leading to death [45,46]. PAR is a collaborative and democratic research approach that involves active participation of stakeholders (people affected) in the research process to address social issues and bring about positive change [47–50].

The VAPAR programme was designed to progress multi-sectoral engagement at different levels while prioritizing the needs of the communities to better understand their health problems and developing collective actions [37,38]. Lack of safe water was nominated as a priority



Fig 1. VAPAR schema developed by the research team illustrating participatory action cycles to tackle the issue of lack of safe water, which was identified as a top health priority by the community.

https://doi.org/10.1371/journal.pone.0288524.g001

health topic in one of the villages in Agincourt HDSS [37–39]. The VAPAR programme consists of a series of iterative five action learning cycles following a stepwise approach [43,44,51]. In this paper we report on the first cycle of the five, which comprised three steps described below and as shown in Fig 1. Cycle one involved a reiteration and adoption of the process in order to transfer ownership and embed it into the local context, incrementally and progressively. These steps in cycle one were crucial in informing the subsequent cycles reported elsewhere [52].

In this process, the research team and participants worked collaboratively in all stages of the research process, including problem identification, data collection, analysis, interpretation as well as the implementation of the local action items developed to address lack of safe water. The research team's role was to facilitate and support the participation of both community and government stakeholders in the research process, providing technical expertise, prepare workshop guides and ensuring that the research was rigorous and met ethical standards. The research team actively listened to and incorporated the perspectives and needs of the community stakeholders. The participants' role as partners was to actively engage in the process, share their knowledge and experience, and contribute to problem-solving and decision making. Overall, the level participation was high for both the research team and participants, playing active and equal role in the research process.

Step 1: Engage and observe

VAPAR staff re-engaged 24 community stakeholders who had been involved in the VAPAR pilot work in 2015 to maintain and sustain relationships [53]. Three villages were purposively selected based on varied accessibility to health care facilities and socio-economic status. Community members within each of the three villages were purposively sampled to understand the subjective reality and experiences using maximum variation sampling. Participants represented a cross-section of the community and included community and religious leaders, community health workers, traditional healers, and family members. In the first workshop,63% of the participants were females.

In each village, an initial workshop was held with eight original participants, where the study was introduced using PAR methods. Through facilitated discussions, participants listed a range of priority health topics. Participants used participatory data collection tools such as ranking and voting, a systematic way to collectively narrow down number of topics, into one topic that represents the collective perception of the group. One village nominated lack of safe water as a priority health issue, while in the other two villages, alcohol, and other drug abuse (AOD) was nominated as a priority health issue. This paper reports on lack of safe water in one village, AOD abuse findings are presented elsewhere [39].

In order to expand the participant base, original participants were asked to identify an additional eight participants from the same village. This approach aimed to bring in knowledgeable voices from those typically excluded and directly affected by lack of safe water, thereby supporting the sharing of ownership and control over the process. Women of reproductive age (18–50 years in this study) were identified by participants and recruited by the researchers. The village-based discussion group was then held with 16 participants, including original and new participants, and was convened in a series of seven workshops held in August-September 2017 (Fig 2). Participants were involved in co-designing the process and co-production of evidence through identifying the priority health topic, identifying new additional participants, co-facilitating, and through practical aspects such as choosing times and venues for workshops.

PAR tools were used to systemize subjective experience to develop collective accounts, to identify cause and effect relationships at various levels, to build shared understanding of the relationship between key actors and to explore priorities for action to address lack of safe water. The findings were collectively validated based on insights and perspectives of the group with outputs recorded and appraised. Photovoice was used as an additional input to the process a means of empowering participants to share their experience and perspective in a visual and accessible way. Participants were provided with cameras and asked to take photos of their daily lives and experiences related to the research topic. The photos were used as a basis for group discussions and analysis, allowing participants to share their insight and perspectives in a way that was visual and participatory. Workshops were held in xiTsonga, the commonly spoken language in the area, and discussions were audio recorded, transcribed, and translated for



Fig 2. Stakeholder engagement timeline: Activities were consistently communicated throughout the project and stakeholders were kept informed about upcoming meetings, workshops and were involved in planning the next steps, including creating meeting agendas and remained informed throughout the project.

https://doi.org/10.1371/journal.pone.0288524.g002

narrative analysis. In addition, flip charts were used to display a collective account. Results from this stage were organized into a research brief for the next step. The process is explained further elsewhere [38].

Step 2: Analyze and plan

We then held a series of facilitated workshops from January to April 2018 with government and community stakeholders to analyze and plan based on the research brief and PAR data from the Step1. The first workshop convened 13 officials from Mpumalanga Department of Health (MDoH) (district and province level) in the city of Mbombela in Ehlanzeni district, Mpumalanga province. There was recognition that the problem of lack of safe water lies outside the health system and requires multi-sectoral representation. As part of co-design, participants decided which sectors needed to be invited to be involved in the process. Therefore, the next two workshops brought together various role players from the community, and representatives from provincial and district MDoH, department of water and sanitation (DWS), department of basic education (DOBE), Department social Development (DSD), Cooperative Governance and Traditional Affairs (COGTA), and Culture, Sports, and Recreation. There were 12 and 15 stakeholders in the second and third workshops respectively. Outputs from the first workshop were discussed in workshop two, using rich pictures and group model building to develop consensus and shared understanding of lack of water, implications on health, challenges, potential solutions and on policy and strategy contexts. In the third workshop, stakeholders collectively developed recommendations for action with a focus on local implementation contexts. To create a more inclusive and equitable research process, participatory tools and techniques used were adapted to the level of capacity of all stakeholders to avoid any form of exclusion.

Two further interactive planning workshops were then held to develop inter-sectoral partnerships and action plans from September-October 2018 at the Agincourt HDSS offices in Bushbuckridge sub-district (Fig 2). In workshop four, we re-defined the focus topic to be 'lack of safe water and its effect on child health' to reflect and accommodate priorities of both community and DoH stakeholders. In workshop five, through facilitated discussion in groups, we explored and determined what action should take place, by whom, when and with what resources (Fig 3). We then developed a local action plan with seven action items through consensus and feasibility appraisal with consideration of current policies and existing strategies and action that could be taken by local stakeholders. All the stakeholders pledged their commitment to execute the action plans.

Step 3: Act/Reflect

We conducted a series of follow-up visits to stakeholders who had committed to leading the implementation of the action items during January–April 2019. During the follow up visits we appraised actions, actors, and the timing of the action, and revisited the baseline and targets set in the co-designed local action plan. A structured 'record of action' was used to capture reflections from participants who committed to lead, on mechanisms through which changes occurred during implementation, if at all; on impacts and whether and how these addressed health equity and empowerment; whether and how these related to the use of evidence; acceptability of the process; and how opportunities for interactions and reflections between participants were created.

At the end of four months, 27 follow-up visits had been completed and an additional eight follow-ups done telephonically with participants from the community, government departments and NGOs at sub-district and district levels who had committed to progress the action

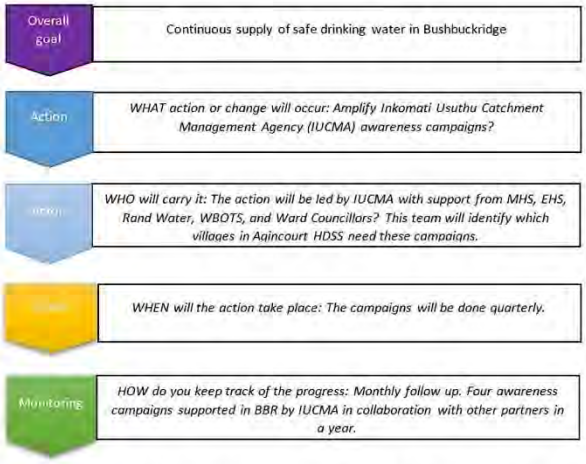


Fig 3. An example of how an action plan was developed, addressing lack of safe water.

https://doi.org/10.1371/journal.pone.0288524.g003

items. Participants were involved in more than one action item, which minimized the number of visits since two or three action items could be monitored in one visit. During follow up visits, participants reported on progress of the action plan, for example how the action was started, interim steps, transparency and information sharing, meetings held, or coordination with other departments. The research team convened weekly to discuss initial impressions and reflections from the participants' perspectives and experience. Discussion and information reported was recorded on the record of action and signed by both the stakeholder leading the action item and the study coordinator. At the end of the implementation period, we developed categories of achievement for each action item, accompanied by detailed narratives and reflections. The findings were shared with all the stakeholders by the researchers.

Data analysis and management: Mendelow's matrix

We used Mendelow's matrix (1991) to understand the process involved in collective implementation of a health related local action plan with community stakeholders [54]. Mendelow (1991) classifies stakeholders on a grid whose axes are 'power' to influence and 'interest', Fig 4 [54]. Power is the influence, ability or capacity created by the relationship between resources and interest [55]. This approach to stakeholder analysis allowed us to explore power dynamics, and how power was shared to shift low power participants to high power [56]. Data were drawn from: follow up visits' formal and informal feedback, presentations, meeting minutes, completed records of action, observational notes, workshop reports, visual images, and the study coordinator's reflective journal. Data were stored in Microsoft Word and image files. Data were managed by researchers and stored on secure university servers.

The research team used NVIVO, a data management software, to analyze the data and synthesize information from the participants. This enabled the identification of facilitators and barriers to the implementation process. Going through the record of action, notes and reflective journals, the research team verified the evidence from the participants with regards to

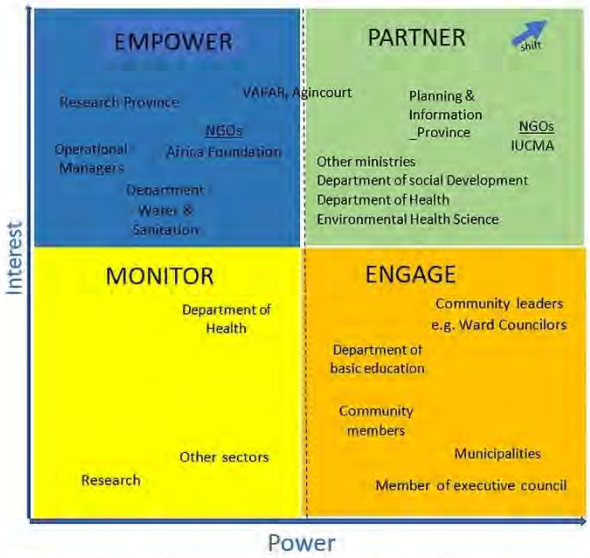


Fig 4. Stakeholder analysis using Mendelow's power grid, with arrow on the far right indicating overall shift in power and interest of stakeholders.

https://doi.org/10.1371/journal.pone.0288524.g004

whether action was achieved or not. The participants were consistently engaged telephonically throughout the analysis phase to minimize the impact of individual biases or interpretations. Furthermore, the research team prioritized the interpretations and perspectives of the participants in analyzing the impact of the study.

Ethical considerations

Ethical considerations related to PAR were observed from the beginning. The role of the researchers, democratic and power sharing principles, ownership, and control of the research were discussed without manipulation, being aware of our role, communicating openness to debate, equality of voices and subjective reality. Prior to their participation in the research, written consent was sought from all participants who were 18 years or older, explaining the details of the research at a level understandable to everyone so that participants could make an informed decision. To protect the privacy, safety of participant's personal information, and prevent any potential harm or negative consequences, codes were assigned in place of their real names, data was stored securely and confidentially. Only authorized individuals had access to the data. Participants were provided with refreshments and transport costs and were reimbursed for time spent in workshops with 300ZAR per participant at each step. The research was approved by Institutional Review Boards at the Universities of the Witwatersrand (M1704155; M190222) in South Africa and of Aberdeen (CERB/2017/14/1457; CERB2017/9/1518) in the UK and the Department of IIealth and Social Development (MP_201712_003) in Mpumalanga.

Table 1. Progress towards the action plan implemented in Agincourt Demographic Health Surveillance Site Villages.

Action Item	Baseline	Implementation mechanisms	Outcome
1. River clean-up campaign	Individual entities have clean-up campaigns, but other stakeholders are not involved	This action was led by IUCMA in partnership with other organizations. IUCMA coordinated with various stakeholders including communities in the study site. Community representatives including the research team also joined IUCMA stakeholder engagement team	Achieved
2. Amplify CMA awareness campaigns.	Four awareness campaigns yearly in BBR supported by IUCMA. Event has been happening but does not include other stakeholders for example Department of Health, Department Social Development.	Stakeholders (IUCMA) leading the action plan reported overwhelming support from the broader community and high attendance reported for the first quarter. The researchers and community members in Agincourt HDSS joined the IUCMA awareness campaign workshop held in Dumphries C village in the study site. Workshop participants were informed on water use licensing, water quantity and quality and compliance, illegal sand mining, and conservation (protection of wetlands and topsoil).	Achieved
3. Build trust between Municipality and community	No dialogue. Activism campaign. Communities coming together: "LET'S TALK ABOUT IT" to enable political tolerance	The research team created dialogue between communities and municipality. Contact was made with Agincourt and Lillydale Municipal office in Agincourt HDSS to build relationships and create partnership. Municipalities (two) in the study site agreed to work with VAPAR to understand community needs. An official from Lillydale municipality attended one of the workshops to respond to community issues. Through this we managed to create dialogue between communities and municipalities. The municipality reported that plans were underway to change to a bulky water system from Inyaka dam	Achieved
4. Advocate for a recycling center	No recycling center in the study site.	This was a long-term action hence the initial steps were initiated, and consultation made with relevant stakeholders. Africa Foundation led this action. Follow up visits highlighted that there is a place to establish the center. Africa Foundation is an NGO in BBR working in partnership with Sabi Sands reserve, which support it financially. Africa foundation had the land and resources for a center in Lilydale to cater for the villages in Agincourt HDSS.	Partially Achieved
5. Water harvesting to attention of school and clinics.	Nothing was happening during the time of our process in Sep 2019 Some schools we're harvesting water but infrastructure not maintained and had stopped.	Led by DoE via Schools and DoH via clinic. Stakeholders leading the process reported challenges during implementation. School governing bodies were meant to provide budget support and DoH had no budget. Resources which were donated to school were not maintained by the municipality. The researchers met with Agincourt and Lilydale municipal managers to find out more about water service delivery at schools and clinics. BBR is faced with water challenges and the municipality reported struggling to maintain some of the borehole system the communities are using.	Not Achieved
6. Advocate for water testing partnerships	Some water testing currently being done by DoH EHSs at some clinics. In the communities Africa Foundation test water for quality.	Africa foundation was nominated to lead they currently test borehole water. Africa Foundation advocated for collaboration between private/NGO partners to tests borehole and water tankers with support from Rand Water, municipality. Challenges were reported on clarity on roles and responsibilities on testing water. Africa Foundation only test borehole water that they control. Africa foundation tried to bring municipalities on board but all the boreholes they have assigned to municipalities were not maintained.	Not achieved
7. Orient Executive Mayor to VAPAR	Mayor not familiar with the VAPAR research work	The researchers found it hard to engage with the mayor. The mayor's office was busy preparing 2019 elections. The mayor confirmed availability in May 2019 after so many failed attempts from the beginning of the implementation period of Jan 2019-April 2018.	Not achieved

https://doi.org/10.1371/journal.pone.0288524.t001



Fig 5. River clean-up campaign, community and researchers picking up litter along the river in Bushbuckridge district, process led by UCMA (image reproduced with permission).

https://doi.org/10.1371/journal.pone.0288524.g005

"I have learnt that some problems don't need a lot of money to be solved but need peaceful communication between people who are affected and concerned with the problem. The idea is to understand the problem first before attempting to solve it".

(Community stakeholder)

Partially achieved action items

One action item, *advocating for a recycling centre*, was partially achieved. Africa Foundation, an NGO, committed to lead this action item, as its mandate is facilitating the fulfilment of needs identified by communities, communicating those needs to potential donors, and working with community leaders and project champions [58]. Africa Foundation had the land available to establish a recycling center and was already in partnership with other organizations with strong financial support. Initial contacts were made with relevant stakeholders, and resources were available, but the action was partially achieved as this was a long-term plan and could not happen within the four-month implementation period.

Despite limited time, follow-up visits revealed that the stakeholders were interested and also had power to influence implementation of the action as they had resources allocated for the action. The land was reserved for the recycling center but there was a lack of coordination among stakeholders, and the action was left to the sole responsibility of Africa Foundation. Some stakeholders were not actively engaged and did not share the responsibility for the implementation, as per original planning, owing to multiple competing priorities among government sector stakeholders.

Not achieved action items

Follow up reports indicated a sizeable gap between planned activities and what was executed for the three action items. The actions items not achieved were (1) *water harvesting*, *(2) water testing* and (3) *orienting the mayor to VAPAR programme*, Table 1. DBE and the DoH at sub-district level participants volunteered to progress bringing *water harvesting* to the attention of schools and clinics while also enhancing individual skills and social participation and inclusion. DBE stakeholders who had committed to progress the action could not adhere to the

planned activities due to lack of financial support and shifting priorities, despite policy support for rainwater harvesting at schools and clinics. In addition, DoH stakeholders at provincial level, though they had power, did not attend or facilitate any meeting, nor dedicate any resources to the implementation of this action due to work commitments and other competing priorities. There were no budgets from school or clinics to maintain donated infrastructure at the schools and clinics.

Africa Foundation was also nominated to lead the action item on *water testing*. The Africa Foundation had the power to influence implementation of this action item as they already were testing borehole water. They were interested, hence advocated for collaboration between NGOs and the private sector, with support from the municipality. Data analysis revealed that no meetings with stakeholders were held as planned. However, the follow up visits revealed that the Africa Foundation attempted to invite stakeholders for planning meetings to execute the action plan, but stakeholders were not available. Though targeted stakeholders' municipality and local run NGOs showed interest during the planning process, stakeholders reported multiple competing priorities, and lack of incentives. This action depended on departmental funding, hence there was lack of ability to mobilize resources for implementation, hence no dialogue was facilitated. There was increased awareness by committed stakeholders of the complexity of bringing multi-level actors together during the implementation process than had been previously recognized during planning.

The research team was assigned to *orient and share information about the project with the Bushbuckridge Executive Mayor office*. This was critical to bring the mayor on board to ensure political buy-in and to navigate the complex political environment. Several attempts were made to engage the mayor by the research team at the beginning of the implementation period from January to April 2019. The mayor was not available due to the timing as the mayor's office was preoccupied with preparations for the 2019 municipal elections. The office of the mayor had multiple competing priorities, and more attention was paid to political duties.

Reflections

Community stakeholders. The process was reported as valuable and significant as it created an opportunity for communities adversely affected by lack of water to connect and constructively and actively engage with authorities/ service providers in appropriate and accessible venues. For the achieved action items, stakeholders reported that continuous interactions with one another created a shift in both power and interest through ownership of the implementation process. Community discussions to engage and bring together many voices of the community created spaces and opportunities to expand and connect with stakeholders outside their communities. Dialogue between communities and government stakeholders helped to bring positive change, as community members began to recognize their own expertise, and this contributed to improved interest, commitment and buy in of multiple stakeholders. The process facilitated peer to peer learning and exchange of knowledge. Local community members reported improved awareness and understanding of the various stakeholders within the water supply chain, and the bureaucratic procedures among government departments. For example, a lack of water in the taps does not always imply a challenge at sub-district municipal level.

> *"Yes, because when we build good relationships with our service providers it is easy for them to attend to our issues when we need them. Like if today the municipality manager had come, and we could tell him peacefully what our problems are even if he doesn't have all the answers today, he may be able to consider or address them in future"*
>
> *(Community stakeholder)*

Community members reported having a deep sense of agency and belonging and felt that their voice was heard and included in decision making. Stakeholders were treated as equals; decisions were negotiated, and clearly communicated in a transparent way to ensure sharing of power. Community stakeholders reported that coordinating and active interaction during implementation resulted in improved confidence, communication, and problem-solving skills as they recognized that their voice matters.

"I think for me participating in VAPAR improved my abilities to identify whatever problem I might have, sit down with other people, and relevant stakeholders and talk as a way of trying to find solutions than to just go on strike and destroy the little that the government has provided to us"

(Community stakeholder)

"Here we are all equal, there is no one who is smarter than the other. VAPAR team allows everyone to speak their minds, we are not afraid to raise our issues. They also allow as to be part of the decision-making process in everything that we are doing here. This makes us feel in control the process"

(community stakeholder)

Stakeholders made a commitment that in future, if there are service delivery challenges related to water, they would resort to dialogue instead of protests, which are often violent and destructive. Community members reported increased interest in IUCMA's river clean up and awareness campaigns as they participated in the events and promised to join in future events.

"There have been a lot of service delivery protests in communities, but they did not accomplish much; everyone realized that it is time to shift our ways of thinking and initiate dialogue, unite and collaborate and create sustainable partnerships to solve community problems"

(Community stakeholder)

Government stakeholders. Attitudes and perceptions of government stakeholders shifted as they began to value and understand community voice. Overall, the deliberative process provided opportunities for shared learning, prompted a shift in power relations and collective responsibility. Stakeholders appreciated the process and its iterative nature, trying to systematically solve a problem gradually, making small changes over time in a subtle way. The process promoted integration of a variety of actors in collective action and decision making. In addition, the municipal managers encouraged community members to come forth with relevant information, and to report vandalism and illegal water connections.

"This programme was important for me. I got insight on how other government sectors operate and working together with communities and other sectors was empowering. I also learnt how to engage service users in decision making and planning"

(Government stakeholder)

Participants reported the process as instrumental in ensuring that interventions are aligned to local priorities. The process created safe platforms for dialogue for other government departments, for example DoH and DSD which reported that they do not have an active role in water governance.

Researcher reflections. The research team was composed of both local and international researchers, consisting of individuals from various backgrounds, including those who identify as black and white. During our initial fieldwork interactions, participants directed their communication in Xitsonga solely towards the black researchers, as the population in the study area was exclusively black African. Nevertheless, the project's local coordinator provided support in instances where the Xitsonga language proficiency of the research team was limited. Building relationships with the participants was crucial to addressing power dynamics, which are a fundamental element of PAR.

At the outset of the research process, the research team possessed greater power due to their access to resources and involvement in the initial design and planning stages. This included the development of topic guides for workshops and recruitment of the first cohort of participants. To mitigate potential power imbalances, the team engaged in reflexive discussions during the workshops and co-developed local action plans and joint implementation. However, the researchers were able to reflect on their positionality and gain a deeper understanding of the needs and perspectives of the participants.

The research team did not anticipate that lack of access to safe water would emerge as a health priority topic identified by community stakeholders, even though water is a key social determinant of health. At this juncture, there was a shift in power dynamics, and the role of the community stakeholders evolved from being mere informants to active agents in the data collection, action planning, and implementation phases. It has been appreciated that communities possess a nuanced understanding of their problems, and their insights are invaluable to informing effective solutions. Through engagement with the community, it was discovered that households desired a tap in each home. Regrettably, due to limited time and resources, this objective could not be achieved by the end of the first cycle examined in this paper. Nevertheless, the PAR approach facilitated the creation of neutral and safe spaces for dialogue between the community and service providers, which was a significant step in fostering constructive engagement and addressing the identified water crisis.

Collaboration with government stakeholders during the research process provided invaluable insight into the complexities and bureaucratic procedures involved in implementing policies across different government departments. We also encountered challenges in bridging the gap between knowledge and action as only three out of the seven local action items were achieved. The successful implementation of certain local action items hinged on the cooperation of local government officials and key stakeholders. However, the lack of financial support, shifting priorities and buy-in from these parties hindered the implementation of the local action plan as originally intended.

Despite these challenges, repeated interactions and collective planning and implementation enabled us to re-establish trust and forge new connections with sub-regional Bushbuckridge local municipalities. As a result of these efforts, the community stakeholders and municipalities made a joint commitment to tackle the issue of vandalism of water infrastructure, as well as corruption, to address the pressing water challenges in the area. By ceding power and control to stakeholders, unanticipated actions were able to emerge 'out of cycle' leading to the development of an organic process to emerge that was responsive to stakeholders needs and priorities, and reflective of the participatory nature of the process. Regardless of some local action items not being achieved, the reiteration of the process; reflection on action and co-design was key element prior to the subsequent cycles. This involved revisiting the research questions and identifying new stakeholders who could support the implementation process going forward. This collaborative approach fostered meaningful connections between diverse stakeholders. Stakeholders were able to gain a deeper understanding of how power and interest influence programmes and how they can be harnessed to drive success.

During the planning phase, it was crucial to time the project in a way that ensured the mayor's availability for support, buy-in, and participation, without other commitments. This is particularly important during election periods when the mayor's availability may be limited.

Discussion

The arrangements of the findings by the power/ interest analytical framework offers insights on how power and interest influenced implementation of local action plans. This process enabled exploration of how different stakeholders with different levels of power and interest coalesce to design, plan, and act on evidence. The three action items achieved had action leads with high interests and high power. The stakeholders leading the action items were not working in silos, but consensus decision making was facilitated regardless of level of power and interest, and they convened with all stakeholders as planned. The organizations and departments leading the actions offered resources and leadership with inputs from all stakeholders, they coalesced around commitment to action, and that had the potential to reduce power imbalances creating a culture of collective learning, and action.

This study suggests that when researchers, service providers and communities are connected as legitimate participants in a platform that provides equal learning opportunities, access to information and decision making, a shift in power and interest may be more feasible. Stakeholders leading the action items created conditions that enabled the other stakeholders to be actively involved to achieve collective action and an opportunity to learn by doing. When people work as a collective, a shared power and a shared interest can become feasible [59–62]. Continuous interactive engagement of all stakeholders, those with both low and high power and interest, allowed different voices, building, and strengthening capacities and decision-making power.

The implementation process of the action items created spaces for collaborative dialogue while power was negotiated among stakeholders. This was observed by understanding different backgrounds of participants, revisiting, renegotiating the PAR principles and putting those into action in collective advancement of the local action plan. The findings resonate with other research evidence which suggests that continuous collaboration of multiple stakeholders has potential to strengthen capacities of communities through development of skills, knowledge, and shared learning [63–66]. Empowerment of stakeholders that arise through continuous interaction and decision making in progressing action has the potential to shift power imbalances among the researchers and stakeholders [18,67–69]. Furthermore, implementation process that allow for collective learning increases the legitimacy of the process and sense of agency in previously marginalized, low interest and low power community stakeholders [22,59,70]. As reflected in our study and the wider literature, power and interest are fluid, and have the potential to change [56,63,71]. Egid at al [63], concluded that power is pervasive, hence tools, reflections and actions must provide opportunities to address power imbalances in participatory action research so as to move away from tokenistic co-design.

Consistent with other studies, our findings also show that in the action items partially and not achieved factors that influence implementation are complex [7,22,72–74]. Though challenging, continuous multi-sectoral stakeholder collaboration between community and government/ NGOs actors is essential to ensure that plans are turned into action [4,66,75–77]. Financial support is crucial for sustaining programmes, but it is important to also establish mechanisms for ongoing collaboration and decision making to prevent shifting priorities. This includes regular stakeholder meetings and reviews of progress towards goals, as well as establishing clear communication channels. In addition, power and interest is invariably shaped by the ability of the stakeholders to mobilize resources and their willingness to initiate and lead

the action [55,63]. DoH and DoE stakeholders lacked the ability to mobilize resources needed to execute the action items, and underestimated the time required, hence reported being overwhelmed, despite initial willingness to lead the action. Salka et al [78] concluded that lack of financial resources for providing services potentially hinders effective implementation of set goals and policies. Most scholars agree that high power and high interest coupled with resources has the potential to influence decision and implementation processes [63,68,78]. Resources include time, expertise, information, money and even political support where necessary [78].

High interest was linked with knowledge, information, commitment, and capacity to facilitate implementation of the local action plan. These factors are interrelated. For example, high interest (commitment, information, and capacity) without adequate power to mobilize resources is a major barrier to implementation. Our results highlight that all these factors are critical for the implementation of action plans. Hauck et al [79] conducted a case study on PAR in natural resources management. The authors found that the implementation of local action plans faced challenges such as lack of resources, power imbalance among stakeholders, shifting priorities and limited government support [79].

Creating safe space for dialogue was feasible and achievable. Reflections on the process reported the power of safe spaces for dialogue, strengthened capacity through regular interaction with others and generating and acting on community evidence on community nominated priorities. However, changing the stakeholders' level of power and interest was more challenging. For example, IUCMA was able to advance the action, but rural community dwellers had less ability to do so. In future application of this methods, careful attention to power and interest of stakeholders need consideration during implementation [22,67,80,81]. Power dynamics in multi-stakeholder collaborations if not careful monitored and managed, result in more powerful stakeholders dominating and subtly influencing low powerful stakeholders to their advantage [22,39]. However, establishing shared ownership and responsibility for the initiative can help ensure that all stakeholders remain committed to its success and that priorities remain aligned.

A gap in ownership was evident in the execution of some action items. It was observed in the not achieved action items that some of the stakeholders' interest fell away as their organization/ department priorities diverted them. Community stakeholders were strongly supportive of the implementation process (high interest), but they did not have power in terms of resources (financial/time) to mobilize action. Perhaps unrealistic plans, as well as low power, hindered the ability to implement some of the local action items, as some stakeholders lacked understanding of what they could achieve at a local level with restricted resources.

The wider literature offers important insights. In a case study on community led maternal health programs in rural Bangladesh, scaling up community mobilization was successfully initiated without financial interventions or increase human resource [70]. However, the case study highlighted the challenges encountered during implementation of the program, such as limited resources, low levels of literacy among some community members and a lack of support from some government officials [70]. These challenges underscore the importance of addressing structural and systemic issues that can impact the success of community-based interventions [70].

Methodological reflections

The Agincourt HDSS, a stable public health observatory, enabled the research team to create safe spaces connecting otherwise disconnected actors in an action learning process across a range of government departments. Despite action plans being partially achieved, the process

was deemed to be positive and useful as it was conducted in the very communities where change had to happen. A deliberative bottom-up approach, engaging stakeholders right from priority setting through design, planning and implementation enhanced the legitimacy of the process. Co-designing, and co-production of knowledge and reflections on action between researchers, communities and service providers promoted a sense of ownership, and community stakeholders felt empowered. However, throughout the process, some government stakeholders were unable to attend all meetings and workshops and had to send representatives in their place, attending again when they were available. This disrupted the flow of the implementation process as certain aspects of the process had to be re-explained to the new participants who were not present in previous discussions.

Stakeholders acknowledged that they were able to understand the process, and that learning from other stakeholders was key in transforming and shifting mindsets, building confidence, and empowering ownership. Power was derived from the information and expertise that stakeholders acquired during the collective implementation of the local action. Evidence produced through the PAR process was relevant and context specific. When we came to collectively reflect on and adapt the process for the subsequent cycle, health system officials recommended integration into routine health system planning to support community participation in PHC [51]. This reflects the epistemological fundamentals of PAR for democratic knowledge production that addresses local needs and enables its translation into action in the form of policy, practice or behavior change in individuals or institutions [48,49,71,82,83]. Co-design and reiteration enabled a more specific and embedded process that was more deeply owned and controlled by stakeholders.

Stakeholders developed an increased sense of ownership by identifying their own resources to solve community problems. The process required time, commitment and resources to build and sustain relationships and could not be covered as an additional item on the already full agendas of some stakeholders in full-time employment [63,84]. As this study only analyzed implementation of the local action plan at the end of the sixteen months cycle, the implementation period was limited. At the end of the cycle, we collectively reflected and adapted to improve context specificity and for practical relevance. Through this process, health system officials recommended its integration into routine statutory planning [51].

Conclusion

This paper examined processes of implementation of a local action plan through multi-sectoral and community-based collaboration. The process provided opportunities for community stakeholders to connect with service providers and officials in spaces that enabled collective learning, co-production of local evidence and creation of partnerships. While the local action plan was only partially achieved, the process provided a nuanced understanding of implementation processes from the experience and perspectives of stakeholders leading the action plans. The collective decision-making process enabled some stakeholders to shift their power and interests towards addressing social determinants of health. Through the collective, interest could increase if you already had power and power could increase if one already has interest. This process, though contextually bound, offers insights into effective ways to engage multisectoral stakeholders and could guide other HDSSs in the region. It is important to acknowledge that some local action items require longer implementation time than originally anticipated, and setbacks and challenges are a natural part of the process.

However, more attention to power relations during planning and design of multisectoral collaborations processes need consideration to address social injustices. The lack of dedicated resources (time/finance), and institutional support hindered overall implementation of the

local action plan. By understanding these challenges, researchers and practitioners can better design and implement participatory research programmes that can effectively create meaningful change in communities. Multi-sectoral collaborations can be effective in addressing social determinants of health, but adequate resources and institutional support are essential, and attention to power dynamics is necessary to ensure equitable outcomes.

Acknowledgments

The authors would like to thank all community stakeholders, government, and NGO stakeholders study participants for agreeing to be part of the process, and for sharing their time, knowledge, and perspectives. Thanks also to the Verbal Autopsy with Participatory Action Research (VAPAR) team and staff of the Medical Research Council (MRC)/Wits Rural Public Health and Health Transitions Research Unit (Agincourt), especially Simon Khoza, Khanyisa Ngobeni and Palesa Mataboge. Permissions have been secured for the reproduction of all images.

Images

The schematic diagram in Fig 1 and stakeholder mapping diagram in Fig 2 was produced by the research team. Permissions have been secured from participants for the reproduction of all the images taken during the research. All images are owned by the VAPAR programme and reproduced in this paper under a creative commons license (Fig 5).

Author Contributions

Conceptualization: Maria van der Merwe, Kathleen Kahn, Sophie Witter, Lucia D'Ambruoso.

Data curation: Jennifer Hove, Denny Mabetha, Maria van der Merwe, Rhian Twine, Kathleen Kahn, Sophie Witter, Lucia D'Ambruoso.

Formal analysis: Jennifer Hove, Denny Mabetha, Maria van der Merwe, Rhian Twine, Kathleen Kahn, Sophie Witter, Lucia D'Ambruoso.

Funding acquisition: Kathleen Kahn, Sophie Witter, Lucia D'Ambruoso.

Investigation: Jennifer Hove, Denny Mabetha, Maria van der Merwe, Rhian Twine, Kathleen Kahn, Sophie Witter, Lucia D'Ambruoso.

Methodology: Jennifer Hove, Denny Mabetha, Maria van der Merwe, Kathleen Kahn, Sophie Witter, Lucia D'Ambruoso.

Project administration: Denny Mabetha, Maria van der Merwe, Rhian Twine, Lucia D'Ambruoso.

Resources: Kathleen Kahn, Lucia D'Ambruoso.

Supervision: Rhian Twine, Kathleen Kahn, Lucia D'Ambruoso.

Writing – original draft: Jennifer Hove.

Writing – review & editing: Denny Mabetha, Maria van der Merwe, Rhian Twine, Kathleen Kahn, Sophie Witter, Lucia D'Ambruoso.

References

1. World Health Organisation and United nations Children's Fund (WHO/UNICEF). ALMA-ATA Primary Health Care. Int Conf Prim Heal Care [Internet]. 1978;63. https://www.unicef.org/about/history/files/Alma_Ata_conference_1978_report.pdf.

2. United Nations. Department of Economic and Social Afffairs. Multi-stakeholder engagement in 2030 Agenda implementation: A review of Voluntary National Review Reports (2016–2019) [Internet]. https://evalsdgs.org/2020/04/02/multi-stakeholder-engagement-in-2030-agenda-implementation-a-review-of-voluntary-national-review-reports-2016-2019/.
3. WORLD HEALTH ORGANIZATION (WHO). Handbook on Social Participation for Universal Health Coverage. 2021.
4. Zanella MA, Goetz A, Rist S, Schmidt O, Weigelt J. Deliberation in multi-stakeholder participation: A heuristic framework applied to the Committee on World Food Security. Sustain. 2018; 10.
5. Haldane V, Chuah FLH, Srivastava A, Singh SR, Koh GCH, Seng CK, et al. Community participation in health services development, implementation, and evaluation: A systematic review of empowerment, health, community, and process outcomes. PLoS One. 2019; 14:1–25. https://doi.org/10.1371/journal.pone.0216112 PMID: 31075120
6. Wilson P, Mavhandu-mudzusi AH. Working in partnership with communities to improve health and research outcomes. Comparisons and commonalities between the UK and South Africa. 2019.
7. Supple D, Roberts A, Hudson V, Masefield S, Fitch N, Rahmen M, et al. From tokenism to meaningful engagement: best practices in patient involvement in an EU project. Res Involv Engagem. 2015; 1:1–9.
8. Morrison C, Dearden A. Beyond tokenistic participation: Using representational artefacts to enable meaningful public participation in health service design. Health Policy (New York) [Internet]. 2013; 112:179–186. Available from: http://dx.doi.org/10.1016/j.healthpol.2013.05.008. PMID: 23786993
9. George AS, Mehra V, Scott K, Sriram V. Community Participation in Health Systems Research: A Systematic Review Assessing the State of Research, the Nature of Interventions Involved and the Features of Engagement with Communities. PLoS One. 2015; 10:1–25. https://doi.org/10.1371/journal.pone.0141091 PMID: 26496124
10. Questa K, Das M, King R, Everitt M, Rassi C, Cartwright C, et al. Community engagement interventions for communicable disease control in low- and lower- middle-income countries: evidence from a review of systematic reviews. Int J Equity Health. 2020; 19:1–20. https://doi.org/10.1186/s12939-020-01169-5 PMID: 32252778
11. Marston C, Renedo A, Miles S. Comment Community participation is crucial in a pandemic. Lancet [Internet]. 2020; 2019:2019–2020. Available from: http://dx.doi.org/10.1016/S0140-6736(20)31054-0.
12. Scotland NHS. Equality Impact Assessment. COVID-19 physical distancing measures and approaches to community engagement-'Engaging differently'. 2020.
13. Mulumba M, Roelens K. Health Committees as Vehicles for Democratic Governance in Health Systems: Lessons from Selected Health Unit Management Committees in Uganda. 2022:1–22.
14. Byskov J, Marchal B, Maluka S, Zulu JM, Bukachi SA, Hurtig AK, et al. The accountability for reasonableness approach to guide priority setting in health systems within limited resources—findings from action research at district level in Kenya, Tanzania, and Zambia. Heal Res Policy Syst. 2014; 12:1–19. https://doi.org/10.1186/1478-4505-12-49 PMID: 25142148
15. Razavi S Donya, Kapiriri L, Abelson J, Wilson M. Who is in and who is out? A qualitative analysis of stakeholder participation in priority setting for health in three districts in Uganda. Health Policy Plan. 2019; 34:358–369. https://doi.org/10.1093/heapol/czz049 PMID: 31180489
16. Berge Jerica M., PhD, LMFT, CFLE*, Mendenhall Tai J., PhD, LMFT, CFT*, and Doherty William J., PhD, LMFT C. Using Community-based Participatory Reasearch (CBPR) To Target Health Disparities in Families. Fam Relat. 2009; 58:475–488.
17. Achoki T, Sartorius B, Watkins D, Glenn SD, Kengne AP, Oni T, et al. Health trends, inequalities and opportunities in South Africa's provinces, 1990–2019: findings from the Global Burden of Disease 2019 Study. J Epidemiol Community Health. 2022; 76:471–481. https://doi.org/10.1136/jech-2021-217480 PMID: 35046100
18. Popay J, Whitehead M, Ponsford R, Egan M, Mead R. Power, control, communities and health inequalities I: theories, concepts and analytical frameworks. Health Promot Int. 2020;1–11.
19. Arnstein SR. A Ladder Of Citizen Participation. J Am Plan Assoc. 1969; 35:216–224.
20. Olu O, Drameh-Avognon P, Asamoah-Odei E, Kasolo F, Valdez T, Kabaniha G, et al. Community participation and private sector engagement are fundamental to achieving universal health coverage and health security in Africa: Reflections from the second Africa health forum. BMC Proc [Internet]. 2019; 13:1–11. Available from: http://dx.doi.org/10.1186/s12919-019-0170-0.
21. Hall OH. An Analysis of Power and Its Role in the Decision- Making Process of the Formal Organization. LSU Hist Diss Theses. 1964.
22. Dewulf A, Elbers W. Power in and over cross-sector partnerships: Actor strategies for shaping collective decisions. Adm Sci. 2018; 8.

45. Byass P, Chandramohan D, Clark SJ, D'Ambruoso L, Fottrell E, Graham WJ, et al. Strengthening standardised interpretation of verbal autopsy data: the new InterVA-4 tool. Glob Health Action. 2012; 5:19281. https://doi.org/10.3402/gha.v5i0.19281 PMID: 22944365

46. Byass P, Hussain-Alkhateeb L, D'Ambruoso L, Clark S, Davies J, Fottrell E, et al. An integrated approach to processing WHO-2016 verbal autopsy data: The InterVA-5 model. BMC Med. 2019; 17. https://doi.org/10.1186/s12916-019-1333-6 PMID: 31146736

47. Areguy F. Process and reflection on participatory action research with young carers in a community context. Youth Engagem Heal Promot [Internet]. 2017; 1:1–11. Available from: http://ips.library.utoronto.ca/.

48. Mason K. Participatory Action Research: Coproduction, Governance and Care. 2015; 9:497–507.

49. Glassman M, Erdem G. Participatory Action Research and Its Meanings: Vivencia,. 2014.

50. Loewenson R, Laurell AC, Hogstedt C, Ambruoso LD, Shroff Z. Participatory Action Research in health systems. A methods Reader. TARSC, AHPSR, WHO, IDRC Canada, EQUINET, Harare ISBN:; 2014.

51. Van Der Merwe MS, D'Ambruoso L, Witter S, Twine R, Mabetha D, Hove J, et al. Collective reflections on the first cycle of a collaborative learning platform to strengthen rural primary health care in Mpumalanga, South Africa. Heal Res Policy Syst [Internet]. 2021; 19:1–13. Available from: https://doi.org/10.1186/s12961-021-00716-y PMID: 33874951

52. D'Ambruoso L, Mabetha D, Twine R, Van Der Merwe M, Hove J, Goosen G, et al. PLOS GLOBAL PUBLIC HEALTH ' Voice needs teeth to have bite '! Expanding to address alcohol and drug abuse in rural South Africa. 2022;1–26. Available from: http://dx.doi.org/10.1371/journal.pgph.0000323.

53. Wariri O, Ngobeni S, Van Der M, Spies B. Initiating a participatory action research process in the Agincourt health and socio–demographic surveillance site. Glob Heal. 2017; 7. https://doi.org/10.7189/jogh.07.010413 PMID: 28685035

54. Mendelow A. 'Environmental Scanning: The Impact of the Stakeholder Concept'. Proceedings From the Second International Conference on Information Systems 407–418. Cambridge, MA. [Internet]. 2018. https://blog.oxfordcollegeofmarketing.com/2018/04/23/what-is-mendelows-matrix-and-how-is-it-useful/.

55. Ganz M. ' Framework PEOPLE, POWER AND CHANGE. Hauser Center, Harvard Kennedy School, 79 JFK Street, Cambridge, MA 02138 [Internet]. 2008. chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://wcl.nwf.org/wp-content/uploads/2018/09/Marshall-Ganz-People-Power-and-Cha.

56. Brugha R, Varvasovszky Z. Review article Stakeholder analysis: a review. Health Policy Plan. 2000; 15:239–246.

57. Inkomati Catchment Management Agency (IUCMA). Strategic-Plan-2015-16-to-2020-21. Nelspriit, South Africa. [Internet]. https://iucma.co.za/iucma-documents/#1632576881011-53c99908-3dd3.

58. Africa Foundation. Why South Africa? Place of diversity in culture and landscape. [Internet]. 2013. https://www.africafoundation.org.za/countries/south-africa/.

59. Trowbridge J, Tan JY, Hussain S, Osman AEB, Di Ruggiero E. Examining Intersectoral Action as an Approach to Implementing Multistakeholder Collaborations to Achieve the Sustainable Development Goals. Int J Public Health. 2022; 67:1–8. https://doi.org/10.3389/ijph.2022.1604351 PMID: 35652124

60. Lake D, Wendland J. Practical, epistemological, and ethical challenges of participatory action research: A cross-disciplinary review of the literature. J High Educ Outreach Engagem. 2018; 22:11–42.

61. Reed MS. Stakeholder participation for environmental management: A literature review. Biol Conserv. 2008; 141:2417–2431.

62. Mash B, Ray S, Essuman A, Burgueño E. Community-orientated primary care: a scoping review of different models, and their effectiveness and feasibility in sub-Saharan Africa. BMJ Glob Heal. 2019; 4: e001489. https://doi.org/10.1136/bmjgh-2019-001489 PMID: 31478027

63. Egid BR, Roura M, Aktar B, Amegee Quach J, Chumo I, Dias S, et al. 'You want to deal with power while riding on power': Global perspectives on power in participatory health research and co-production approaches. BMJ Glob Heal. 2021; 6:1–15. https://doi.org/10.1136/bmjgh-2021-006978 PMID: 34764147

64. Schaaf M, Topp SM, Ngulube M. From favours to entitlements: Community voice and action and health service quality in Zambia. Health Policy Plan. 2017; 32:847–859. https://doi.org/10.1093/heapol/czx024 PMID: 28369410

65. Andrews JO, Newman SD, Meadows O, Cox MJ, Bunting S. Partnership readiness for community-based participatory research. Health Educ Res. 2012; 27:555–571. https://doi.org/10.1093/her/cyq050 PMID: 20837654

66. Crisp N. Mutual learning and reverse innovation-where next? Global Health. 2014; 10:1–4.

23. Republic of South Africa. Department of Health. National Health Act, 2003. National Health Insuarance Policy, Towards Universal Health Cover. 2017.

24. Nelson C, Madiba S. Barriers to the Implementation of the Ward-Based Outreach Team Program in Mpumalanga Province: Results From Process Evaluation. J Prim Care Community Heal. 2020; 11.

25. Mhlongo EM, Lutge E. The roles, responsibilities and perceptions of community health workers and ward-based primary health care outreach teams (WBPHCOTs) in South Africa: a scoping review protocol. Syst Rev. 2019; 8. https://doi.org/10.1186/s13643-019-1114-5 PMID: 31383014

26. Khuzwayo LS, Moshabela M. The perceived role of ward-based primary healthcare outreach teams in rural KwaZulu-Natal, South Africa. African J Prim Heal Care Fam Med. 2017; 9:1–5. https://doi.org/10.4102/phcfm.v9i1.1388 PMID: 28582992

27. Haricharan HJ, Stuttaford M, London L. The role of community participation in primary health care: Practices of South African health committees. Prim Heal Care Res Dev. 2021; 22:1–10. https://doi.org/10.1017/S146342362100027X PMID: 34127167

28. Haricharan HJ, Stuttaford M, London L. Effective and meaningful participation or limited participation? A study of South African health committee legislation. Prim Heal Care Res Dev. 2021; 22:1–8. https://doi.org/10.1017/S1463423621000323 PMID: 34109933

29. Hove J, D'Ambruoso L, Kahn K, Witter S, van der Merwe M, Mabetha D, et al. Lessons from community participation in primary health care and water resource governance in South Africa: a narrative review. Glob Health Action [Internet]. 2022; 15. Available from: https://doi.org/10.1080/16549716.2021.2004730 PMID: 34994660

30. Republic of South Africa. Bushbuckridge local municipality final integrated development plan 2021/22. 2022; https://bushbuckridge.gov.za/wp-content/uploads/2021/06/FINAL-IDP-BLM-2021-22.pdf.

31. Republic of South Africa. Expanding economic opportunity in the Presidential poverty nodes. 2007;20. file:///C:/Users/Admin/Downloads/Expanding economic opportunity in the Presidential poverty nodes. pdf 204.pdf.

32. Republic of South Africa. Department of Water and Sanitation. The national water and sanitation master plan: Ready for the future and ahead of the curve. 2019;1–103. https://www.gov.za/sites/default/files/gcis_document/201911/national-water-and-sanitation-master-plandf.pd.

33. Diamini VG, Cousins T. Case study on Bushbuckridge Water Service Delivery Challenges in the Context of Integrated Water Resource Management (IWRM) and Sustainable Water and Sanitation Services: Turning Advocacy into Action in the South African Water Sector. 0–68.

34. Bushbuckridge residents protests over lack of water. https://www.news24.com/SouthAfrica/News/bushbuckridge-residents-protest-over-lack-of-water-20170613.

35. Beyers LJE, Shuttle NE. Guidelines for Improving Infrastructure Development in the Rural Communities of Bushbuckridge Limpopo Province. Stud Tribes Tribals. 2018; 16:33–39.

36. UN. South African Human Rights Commission. Report on the state of Human Rights in South Africa. Public Law [Internet]. 2020;25:1–6. https://www.unwater.org/water-facts/human-rights/.

37. Hove J, D'Ambruoso L, Twine R, Mabetha D, van der Merwe M, Mtungwa I, et al. Developing stakeholder participation to address lack of safe water as a community health concern in a rural province in South Africa. Glob Health Action [Internet]. 2021;14. Available from: https://doi.org/10.1080/16549716.2021.1973715 PMID: 34538225

38. Hove J, D'Ambruoso L, Mabetha D, Van Der Merwe M, Byass P, Kahn K, et al. "Water is life": Developing community participation for clean water in rural South Africa. BMJ Glob Heal. 2019; 4:1–13.

39. Oladeinde O, Mabetha D, Twine R, Hove J, Van Der Merwe M, Byass P, et al. Building cooperative learning to address alcohol and other drug abuse in Mpumalanga, South Africa: a participatory action research process. Glob Health Action [Internet]. 2020; 13:1–15. Available from: https://doi.org/10.1080/16549716.2020.1726722 PMID: 32116156

40. Kahn K, Collinson MA, Gomez-Olive FX, Obed M, Mee P, Afolabi SA, et al. Profile: Agincourt Health and Socio-demographic Surveillance System. 2012;988–1001. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3429877/.

41. Mathebula RL, Maimela E, Ntuli NS. The prevalence of selected non- communicable disease risk factors among HIV patients on anti-retroviral therapy in Bushbuckridge sub-district, Mpumalanga province. 2020;1–10.

42. Bushbuckridge Local Municipality. Bushbuckridge Local Municipality 2020/21 Final IWMP. 2020; https://www.cogta.gov.za/cgta_2016/wp-content/uploads/2021/02/Bushbuckridge-Municipality.pdf.

43. Mpumalanga Health Policy and System Research Learning Platform. [Internet]. https://www.vapar.org/.

44. Witter S, van der Merwe M, Twine R, Mabetha D, Hove J, Goosen G, et al. Verbal autopsy with participatory action research (VAPAR) programme in Mpumalanga, South Africa: protocol for evaluation. BMJ Open. 2020; https://doi.org/10.1136/bmjopen-2019-036597 PMID: 32024794

45. Byass P, Chandramohan D, Clark SJ, D'Ambruoso L, Fottrell E, Graham WJ, et al. Strengthening standardised interpretation of verbal autopsy data: the new InterVA-4 tool. Glob Health Action. 2012; 5:19281. https://doi.org/10.3402/gha.v5i0.19281 PMID: 22944365

46. Byass P, Hussain-Alkhateeb L, D'Ambruoso L, Clark S, Davies J, Fottrell E, et al. An integrated approach to processing WHO-2016 verbal autopsy data: The InterVA-5 model. BMC Med. 2019; 17. https://doi.org/10.1186/s12916-019-1333-6 PMID: 31146736

47. Areguy F. Process and reflection on participatory action research with young carers in a community context. Youth Engagem Heal Promot [Internet]. 2017; 1:1–11. Available from: http://ips.library.utoronto.ca/.

48. Mason K. Participatory Action Research: Coproduction, Governance and Care. 2015; 9:497–507.

49. Glassman M, Erdem G. Participatory Action Research and Its Meanings: Vivencia,. 2014.

50. Loewenson R, Laurell AC, Hogstedt C, Ambruoso LD, Shroff Z. Participatory Action Research in health systems. A methods Reader. TARSC, AHPSR, WHO, IDRC Canada, EQUINET, Harare ISBN:; 2014.

51. Van Der Merwe MS, D'Ambruoso L, Witter S, Twine R, Mabetha D, Hove J, et al. Collective reflections on the first cycle of a collaborative learning platform to strengthen rural primary health care in Mpumalanga, South Africa. Heal Res Policy Syst [Internet]. 2021; 19:1–13. Available from: https://doi.org/10.1186/s12961-021-00716-y PMID: 33874951

52. D'Ambruoso L, Mabetha D, Twine R, Van Der Merwe M, Hove J, Goosen G, et al. PLOS GLOBAL PUBLIC HEALTH ' Voice needs teeth to have bite '! Expanding to address alcohol and drug abuse in rural South Africa. 2022;1–26. Available from: http://dx.doi.org/10.1371/journal.pgph.0000323.

53. Wariri O, Ngobeni S, Van Der M, Spies B. Initiating a participatory action research process in the Agincourt health and socio–demographic surveillance site. Glob Heal. 2017; 7. https://doi.org/10.7189/jogh.07.010413 PMID: 28685035

54. Mendelow A. 'Environmental Scanning: The Impact of the Stakeholder Concept'. Proceedings From the Second International Conference on Information Systems 407–418. Cambridge, MA. [Internet]. 2018. https://blog.oxfordcollegeofmarketing.com/2018/04/23/what-is-mendelows-matrix-and-how-is-it-useful/.

55. Ganz M. ' Framework PEOPLE, POWER AND CHANGE. Hauser Center, Harvard Kennedy School, 79 JFK Street, Cambridge, MA 02138 [Internet]. 2008. chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://wcl.nwf.org/wp-content/uploads/2018/09/Marshall-Ganz-People-Power-and-Cha.

56. Brugha R, Varvasovszky Z. Review article Stakeholder analysis: a review. Health Policy Plan. 2000; 15:239–246.

57. Inkomati Catchment Management Agency (IUCMA). Strategic-Plan-2015-16-to-2020-21. Nelspriit, South Africa. [Internet]. https://iucma.co.za/iucma-documents/#1632576881011-53c99908-3dd3.

58. Africa Foundation. Why South Africa? Place of diversity in culture and landscape. [Internet]. 2013. https://www.africafoundation.org.za/countries/south-africa/.

59. Trowbridge J, Tan JY, Hussain S, Osman AEB, Di Ruggiero E. Examining Intersectoral Action as an Approach to Implementing Multistakeholder Collaborations to Achieve the Sustainable Development Goals. Int J Public Health. 2022; 67:1–8. https://doi.org/10.3389/ijph.2022.1604351 PMID: 35652124

60. Lake D, Wendland J. Practical, epistemological, and ethical challenges of participatory action research: A cross-disciplinary review of the literature. J High Educ Outreach Engagem. 2018; 22:11–42.

61. Reed MS. Stakeholder participation for environmental management: A literature review. Biol Conserv. 2008; 141:2417–2431.

62. Mash B, Ray S, Essuman A, Burgueño E. Community-orientated primary care: a scoping review of different models, and their effectiveness and feasibility in sub-Saharan Africa. BMJ Glob Heal. 2019; 4: e001489. https://doi.org/10.1136/bmjgh-2019-001489 PMID: 31478027

63. Egid BR, Roura M, Aktar B, Amegee Quach J, Chumo I, Dias S, et al. 'You want to deal with power while riding on power': Global perspectives on power in participatory health research and co-production approaches. BMJ Glob Heal. 2021; 6:1–15. https://doi.org/10.1136/bmjgh-2021-006978 PMID: 34764147

64. Schaaf M, Topp SM, Ngulube M. From favours to entitlements: Community voice and action and health service quality in Zambia. Health Policy Plan. 2017; 32:847–859. https://doi.org/10.1093/heapol/czx024 PMID: 28369410

65. Andrews JO, Newman SD, Meadows O, Cox MJ, Bunting S. Partnership readiness for community-based participatory research. Health Educ Res. 2012; 27:555–571. https://doi.org/10.1093/her/cyq050 PMID: 20837654

66. Crisp N. Mutual learning and reverse innovation-where next? Global Health. 2014; 10:1–4.

67. Howard-Grabman L, Miltenburg AS, Marston C, Portela A. Factors affecting effective community participation in maternal and newborn health programme planning, implementation and quality of care interventions. BMC Pregnancy Childbirth. 2017; 17:1–18.

68. Salvesen D, Evenson KR, Rodriguez DA, Brown A. Factors influencing implementation of local policies to promote physical activity: A case study of Montgomery County, Maryland. J Public Heal Manag Pract. 2008; 14:280–288. https://doi.org/10.1097/01.PHH.0000316487.57512.16 PMID: 18408553

69. Nelson S, Drabarek D, Jenkins A, Negin J, Abimbola S. How community engagement in water and sanitation interventions impacts human health, infrastructure and service longevity in low- and middle-income countries: a realist review. Res Sq. 2020;1–27.

70. Nahar T, Azad K, Aumon BH, Younes L, Shaha S, Kuddus A, et al. Scaling up community mobilisation through women's groups for maternal and neonatal health: Experiences from rural Bangladesh. BMC Pregnancy Childbirth. 2012; 12. https://doi.org/10.1186/1471-2393-12-5 PMID: 22273440

71. Loewenson R, Beznec P, Coelho V, D'ambruoso L, Dorras J, Dudding R, et al. Building social power and participation in local health systems: Learning from practice. Harare: Training and Research Support Centre; 2017.

72. Strickland C. Challenges in community-based participatory research implementation: Experiences in cancer prevention with Pacific Northwest American Indian tribes. Cancer Control. 2006; 13:230–236. https://doi.org/10.1177/107327480601300312 PMID: 16885920

73. Hudson B, Hunter D, Peckham S. Policy failure and the policy-implementation gap: can policy support programs help? Policy Des Pract [Internet]. 2019; 2:1–14. Available from: https://doi.org/10.1080/25741292.2018.1540378

74. Abou-malham S, Hatem M, Leduc N. Analyzing barriers and facilitators to the implementation of an action plan to strengthen the midwifery professional role: a Moroccan case study. BMC Health Serv Res [Internet]. 2015; Available from: http://dx.doi.org/10.1186/s12913-015-1037-3.

75. Bullock HL, Lavis JN. Understanding the supports needed for policy implementation: A comparative analysis of the placement of intermediaries across three mental health systems. Heal Res Policy Syst. 2019; 17:1–13. https://doi.org/10.1186/s12961-019-0479-1 PMID: 31438977

76. Akhmouch A, Clavreul D. Introduction: A Call for More Inclusive Water Governance. In: Karar E, editor. Freshw Gov 21st Century. Glob Issues Water Policy 6 [Internet]. 2017. p. 29–49.

77. Ansell C, Sørensen E, Torfing J. Improving policy implementation through collaborative policymaking. Policy Polit. 2017; 45:467–486.

78. Šálka J, Dobšinská Z, Hricová Z. Factors of political power—The example of forest owners associations in Slovakia. For Policy Econ. 2016; 68:88–98.

79. Hauck J, Stein C, Schiffer E, Vandewalle M. Seeing the forest and the trees: Facilitating participatory network planning in environmental governance. Glob Environ Chang [Internet]. 2015; 35:400–410. Available from: http://dx.doi.org/10.1016/j.gloenvcha.2015.09.022.

80. Solnes Miltenburg A, van Pelt S, de Bruin W, Shields-Zeeman L. Mobilizing community action to improve maternal health in a rural district in Tanzania: lessons learned from two years of community group activities. Glob Health Action [Internet]. 2019; 12. Available from: https://doi.org/10.1080/16549716.2019.1621590 PMID: 31190635

81. Akhmouch A, Clavreul D. Stakeholder Engagement for Inclusive Water Governance: "Practicing WhatWe Preach" with the OECD Water Governance Initiative. Water (Switzerland). 2016; 8.

82. Wyborn CA. Connecting knowledge with action through coproductive capacities: Adaptive governance and connectivity conservation. Ecol Soc. 2015; 20.

83. Jasanoff S. Humility in the Anthropocene. Globalizations [Internet]. 2021; 18:839–853. Available from: https://doi.org/10.1080/14747731.2020.1859743

84. Ozano K, Dean L, Adekeye O, Bettee AK, Dixon R, Gideon NU, et al. Guiding principles for quality, ethical standards and ongoing learning in implementation research: Multicountry learnings from participatory action research to strengthen health systems. Health Policy Plan. 2020; 35:II137–II149.