**BINDURA UNIVERSITY OF SCIENCE EDUCATION**

**FACULTY OF SCIENCE**

**DEPARTMENT OF DISASTER RISK REDUCTION**




# ASSESSMENT OF WATER SUPPLY, SANITATION AND HYGIENE PRACTICES AMONG HOUSEHOLDS IN RUWA DISTRICT, ZIMBABWE

By

B224053B

MUNZIRA GALDANCIA

A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE BACHELOR IN HONORS DEGREE IN DISASTER MANAGEMENT SCIENCES OF BINDURA UNIVERSITY OF SCIENCE EDUCATION, FACULTY OF SCIENCE, DEPARTMENT OF DISASTER RISK REDUCTION.

JUNE 2026

SUPERVISOR: DR. J. N. BOWORA

# Declaration Form

I Galdancia Munzira, solemnly declare that the information in this dissertation, prepared in partial fulfilment of the Bachelor of Honors Degree in Disaster Management Sciences and submitted to the Department of Disaster Risk Reduction at Bindura University of Science Education, has not been presented, submitted or published in this part. Previous works have been duly accredited and acknowledged properly.

# RELEASE FORM

Bindura University of Science and Education is granted permission to make use of or part of this document in its library or to produce some copies of this project. The author reserves the rights for the publication of this document.

**Name of researcher:** Galdancia Munzira

**Title of research**: Water Supply, Sanitation and Hygiene Practices among Households in Ruwa District

**Programme of study:** Bachelor of Science Honours Degree in Disaster Management Sciences

**Year:** 2026

**Signed:** 

# APPROVAL FORM

The undersigned certify that they have read and recommended to the Bindura University of Science and Education, of this research.

**Dissertation Title: Water Supply, Sanitation and Hygiene Practices among Households in Ruwa District**

**Name of author:** Galdancia Munzira

**Programme:** Bachelor of Science Honours Degree in Disaster Management Sciences

Signature:  date: 15/05/2026

**Supervisor:** 

Signature ……. Date …15/05/2026…….

**Department Chairperson**

Signature …… Date …….

**External Examiner**

Signature …… Date ……

# DEDICATION

This research project is dedicated to Ruwa local board, the Ruwa clinic environmental health technicians, and the community to enlighten them on WASH services in Ruwa.

# Abstract

It seems that the phenomenon of water Supply, Sanitation and Hygiene practices among Households in Urban areas is universal across the world. Although other substitutes were introduced such as community water supply, the water challenge is still experienced across the globe. The paper under analysis discusses the, evaluates the water supply, Sanitation and Hygiene practices among households in Ruwa district with selected locations; Solomio, Zimre Park and Ruwa location with difference based on the geographical location and density. There was a sample size of 110 households on 3 chosen areas, Participant selected were household representatives regardless of occupation or level of income. And other 14 respondents were picked among were key respondents there were EHTs, RLB member (engineer), Community Health Workers to achieve a sample size of 124. The reason behind the selection of this sample was that it was to reduce time constraints; figure was viable for geographical spread of the three locations used in the study and manageable in the study because of the economic considerations. Purpose and Random Sampling were applied because they were the most appropriate when dealing with small size population under study. Despite small sample size efforts were made for representatives to remain through the use of sampling techniques mentioned and ensure findings still have general trends within the study population. The study took into account four objectives that are to assess sources and reliability of household water supply in Ruwa, to assess hygienic practices, such as water storage and waste disposal and to determine factors affecting WASH situation and to recommend strategies to improve WASH services in Ruwa.. These designs are adaptable because they display qualitative and quantitative results analysis and detail of this study. The researcher employs face to face interviews, observations and questionnaires to obtain information on the participants. The results were provided in graphs, pictures and tables. Results were also made and easily understood and interpreted using verbal quotations. The discovery made showed that the majority of the community lacks access to water supplied by RLB and the completely rely on the community boreholes and people with a middle and high income level particularly in Zimre park rely on the private boreholes. Majority of the population employed better sanitation thus local board had a massive contribution on sanitation particularly on garbage (solid waste) dumping. It was concluded that socioeconomic influences also may influence the access to water supply in cities and restricted hygienic habits defect the outbreak of diseases, and also constrains the protective health advantages of water and sanitation services.

# ACKNOWLEDGEMENT

First and foremost, I give thanks to my Lord and Savior, Jesus Christ, for granting me the strength to persevere through the challenges of my academic journey, even at this stage of my life. I would also like to sincerely express my appreciation to everyone who contributed to making this work possible. In particular, I am deeply grateful to my project supervisor, Doc Bowora, for his patience, dedication, and continuous guidance throughout the development of this project. His consistent support and constructive feedback greatly enhanced the quality of this work, shaping it into a thorough and insightful study. I also extend my thanks EHT Musara for guiding me through my research in Ruwa. My heartfelt appreciation goes to my parents Mrs. and Mr. Munzira and my siblings for their unwavering encouragement and support. Finally, I am thankful to all the respondents and interviewees who participated in this study. Their contributions were invaluable, and without them, this research would not have been possible. May God bless you all.

# List of Tables

Table 3. Study population…….37

Table 4.3.1. Hand washing behavior and facilities……44

Table 4.4. Factors influencing WASH services……47

# LIST OF DIAGRAMS


Diagram 1 study area map……8

Diagram 2 conceptual framework……..13

Diagram 3 sources and reliability of households water in Ruwa……..40

Diagram 4 types and conditions of sanitation facilities used by households……42

Diagram 5 solid waste disposal……45

Diagram 6 liquid waste disposal……46

Diagram 7 illegal dumping sites……49

Diagram 8 Open burning of waste……50

Diagram 9 Drainage system blockages……...51

# List of Appendices

Appendix 1……59

Appendix 2……61

Appendix 3……63

Appendix 4……67

Appendix 5……68

# ABBREVIATION

| | |
|---|---|
| EHTs | Environmental Health Technicians |
| RLB | Ruwa Local Board |
| WASH | Water Supply, Sanitation and Hygiene |
| JMP | Joint Monitoring Programmes |
| SDG | Sustainable Development Goals |
| CHW | Community Health Workers |
| MSD | Meteorological Services Department |
| UK | United Kingdom |
| US | United States |
| K-WASH | Kenya Water supply, Sanitation and Hygiene |
| NAWASIP | National Water and Sanitation Investment and Financing Plan |
| EHO1 | Environmental Health Officer report 1 |
| MOHCC | Ministry of Health and Child Care |

# Contents

Declaration Form ..... ii
RELEASE FORM ..... iii
APPROVAL FORM ..... iv
DEDICATION ..... v
Abstract ..... vi
ACKNOWLEDGEMENT ..... vii
List of Tables ..... viii
LIST OF DIAGRAMS ..... ix
List of Appendices ..... x
ABBREVIATION ..... xi
CHAPTER 1: INTRODUCTION ..... 1
1.0 INTRODUCTION ..... 1
1.1 BACKGROUND OF THE STUDY ..... 1
1.2 AIM OF STUDY ..... 4
1.3 OBJECTIVE OF STUDY ..... 4
1.4. RESEARCH QUESTIONS ..... 4
1.5 SIGNIFICANCE OF STUDY ..... 4
1.5.1 RUWA RESIDENTS ..... 4
1.5.2 ENVIRONMENTAL HEALTH TECHNICIANS (EHTS) ..... 5
1.5.3 RUWA LOCAL BOARD OFFICIALS. ..... 5
1.5.4 COMMUNITY HEALTH WORKER (CHWs) ..... 5
1.6 DELIMINATION OF THE STUDY ..... 6
1.7 LIMITATION OF THE STUDY ..... 6
1.8 DEFINITION OF TERMS ..... 7
1.9 ORGANISATION OF STUDY ..... 8
CHAPTER 2: LITERATURE REVIEW ..... 9
2.0 INTRODUCTION ..... 9
2.1 CONCEPTUAL FRAMEWORK ..... 10
2.2 GLOBAL PERSPECTIVE ON HOUSEHOLD WATER SUPPLY, SANITATION AND HYGIENE PRACTICES ..... 10
2.2.1 GLOBAL OVERVIEW ..... 11
Case study 1: United Kingdom ..... 11

Case study 2:  United States ..... 11
PEOPLE'S PERSPECTIVES AND PRACTICES ..... 12
2.1.2 Water Supply, Sanitation and Hygiene Practices in Kenya and Zambia ..... 12
Case study 1: Kenya ..... 12
Case study 2: Zambia ..... 13
Comparative Insights ..... 13
2.1.3 Water Supply, Sanitation and Hygiene Practices in Chitungwiza District, Zimbabwe ..... 13
Water Supply in Chitungwiza. ..... 14
Sanitation Challenges ..... 14
Hygiene practices ..... 15
Comparative and Policy Perspectives ..... 15
2.2 GLOBAL PERSPECTIVE ON TYPES AND CONDITIONS OF SANITATION FACILITIES USED BY HOUSEHOLDS ..... 16
Household sanitation facilities can be divided into types: ..... 16
Safely Managed Sanitation ..... 16
Basic Sanitation ..... 17
Poor and insufficient Sanitation ..... 17
Household sanitation facilities condition: ..... 17
Sustainability and Maintenance ..... 18
Comparative Insights ..... 18
2.2.1 AFRICAN PERSPECTIVE ON HOUSEHOLD SANITATION FACILITIES. ..... 18
Household Sanitation Facility in Africa: ..... 19
Household Sanitation Facilities Conditions: ..... 20
Sustainability and Maintenance ..... 20
Comparative Insights ..... 20
2.2.2 ZIMBABWEAN PERSPCTIVE ON HOUSEHOLD SANITATION FACILITY ..... 21
Household sanitation facilities in Zimbabwe: ..... 21
States of Sanitation Facilities in the Households: ..... 22
Sustainability and Maintenance ..... 22
Comparative Insights ..... 23
2.3 GLOBAL PESPECTIVES ON HYGIENE PRACTICES ..... 23
Hand washing Practices ..... 23

Water Storage Practices ..... 24
Waste Disposal Practices ..... 24
Comparative Insights ..... 25
2.3.1 AFRICAN PERSPECTIVE ON HYGIENE PRACTICES. ..... 25
Water Storage Practices ..... 26
Waste Disposal Practices ..... 26
Comparative insights ..... 27
2.3.2 Zimbabwean Hygiene Practice Perspective ..... 27
Hand washing Practices ..... 27
Water Storage Practices ..... 28
Waste Disposal Practices ..... 28
Comparative Insights ..... 29
2.4 CHAPTER SUMMARY ..... 29
CHAPTER 3: METHODOLOGY ..... 30
3.0 INTRODUCTION ..... 30
3.1 The Study Area ..... 30
3.2 RESEARCH DESIGN ..... 31
3.3 RESEARCH PHILOSOPHY ..... 32
3.4 POPULATION USED IN THE STUDY ..... 32
3.5 SAMPLING PROCEDURES ..... 34
Stage 1: random sampling ..... 34
Stage 2: purposive sampling ..... 35
3.4.1 Sample size (definition and calculation) ..... 35
3.6 RESEARCH TOOLS ..... 36
3.6.1 Key Informant Interviews ..... 36
3.6.2 Questionnaires ..... 36
3.6.3 Field observations ..... 36
3.7 Reliability and Validity of Research Tools ..... 37
3.8 Ethical Considerations ..... 37
3.9 Chapter Summary ..... 37
CHAPTER 4: DATA PRESENTATION, ANALYSIS AND DISCUSSION ..... 38
4.0 INTRODUCTION ..... 38

4.1 OBJECTIVE 1: Sources and Reliability of Households water supply in Ruwa. ..... 38
4.2 Objective 2: Types and conditions of sanitation facilities used by households ..... 40
4.3 Objective 3: Hygiene practices ..... 42
4.4 Objective 4: Factors affecting WASH practices ..... 46
OBSERVATIONS ..... 47
4.5 CHAPTER SUMMARY ..... 50
CHAPTER 5: SUMMARY, CONCLUSION AND RECOMMENDATIONS ..... 50
5.1: SUMMARY OF FINDINGS ..... 50
5.1.1 Objective1: Sources and Reliability of Households water supply in Ruwa. ..... 50
Objective 2: Types and conditions of sanitation facilities used by households in Ruwa ..... 50
Objective 3: Hygiene practices in households. ..... 51
Objective 4: socioeconomic and structural drivers of WASH practices. ..... 51
5.2 CONCLUSION OF FINDINGS ..... 51
5.2.1 Objective 1: Households Water supply, Sources and Practices ..... 51
5.2.2 Objective 2: Sanitation facilities types and conditions ..... 52
5.2.3 Objective 3: Hygiene Practices ..... 52
5.2.4 Objective 4: Impact of Socioeconomic factors on WASH Access. ..... 52
5.3 RECOMMENDATIONS ..... 53
REFERENCE ..... 54
APPENDICES ..... 58
APPENDIX 1: A letter of approval from the Ministry of Health and Child Care, District Medical Officer Office-Ruwa ..... 58
APPENDIX 2: INTERVIEW GUIDE FOR KEY INFORMANTS ..... 59
APPENDIX 3: FIELD OBSERVTION CHECKLIST ..... 61
APPENDIX 4: QUESTIONNAIRE FOR RUWA COMMUNITY ..... 63
Appendix 5: QUESTIONNAIRE FOR COMMUNITY HEALTH WORKERS ..... 66

# CHAPTER 1: INTRODUCTION

## 1.0 INTRODUCTION

The purpose of the project is to carry out a thorough evaluation of the current Water, Sanitation, and Hygiene (WASH) practices in the Ruwa district in Zimbabwe with particular study sites Solomio, Ruwa Location and Zimre Park. Safe water, good sanitation and proper hygiene (WASH) are essential to the health and sustainable development of the population. In Zimbabwe, urbanization and population growth have been at a very fast rate, which has put a mounting pressure on the local authorities to deliver quality WASH services. Ruwa Local Board, located on the east outskirts of Harare with numerous locations as follows Zimre and Zimre Extension, Damafalls phase 1-3, Damafalls phase 4-6, Chipukutu, Riverside, Elizabeth Park & Sebastopol, Invellengus Industry and Location and Hunters Rest, Tawana Garden, Springville, Marcus Park, Fairview, Ruwa Location, Timire. The present research explores the prevailing situation of the households in Ruwa in terms of water supply, sanitation, and hygiene practices with a view to identifying gaps and giving practical recommendations. In assessing the existing availability of safe water, effective sanitation facilities and common hygiene practices, this study aims to establish major challenges and opportunities in enhancing the WASH services and outcomes. The results will give important information on implementing specific interventions to mitigate WASH-related diseases, improve the health of communities, and help meet the global Sustainable Development Goals, specifically SDG 6, which is dedicated to clean water and sanitation.

## 1.1 BACKGROUND OF THE STUDY

Safe water, good hygiene and sanitation (WASH) is universally known as a basic human right and a pillar of sustainable development. In 2010, the United Nations General Assembly expressly recognized the human right to water and sanitation, and pointed out that clean drinking water and sanitation are critical to the fulfilment of all human rights. With this realization, the world is still living without these basic services by billions of people. The World Health Organization (WHO) and UNICEF Joint Monitoring Programme (JMP) estimates that more than 2 billion individuals worldwide do not have access to safely managed drinking water services and that an estimated 4.2 billion individuals do not have access to safely managed sanitation facilities (WHO & UNICEF,

2021). Such shortcomings are not just infrastructural, but a deep-rooted public health crisis, particularly in low- and middle-income nations. WASH crisis is especially acute in sub-Saharan Africa. The area encounters a mixture of fast urbanization, a scarcity of funds, poor governance systems, and climatic unpredictability, all which compound the problem of universal access to water and sanitation. In several regions of the region, water-borne diseases like cholera, typhoid, and dysentery are endemic, and this factor is associated with the high child mortality and morbidity rates. Among the major causes of death among children below the age of five are diarrheal diseases, which are largely preventable by enhanced WASH services. The most marginalized and the poorest in society bear the brunt of these diseases, and this cycle of poverty and ill health becomes a vicious circle.

Zimbabwe, similar to most countries in the region, has done admirable work to enhance WASH services by national policies, donor assistance and community-based efforts. The National Water Policy and the Zimbabwe Sanitation and Hygiene Strategy offer guidelines on how to enhance service provision and increase hygiene education. But this is still not fully implemented, especially in the peri-urban and informal settlements. Ruwa, a peri-urban area on the eastern side of Harare, is a representation of this challenge. Ruwa has experienced considerable demographic change in the last twenty years, becoming a highly populated peri-urban centre out of a small town. The rural-urban migration, land reform programs, and the growth of informal housing developments have contributed to this growth.

Ruwa has also failed to have an equivalent investment in water and sanitation facilities despite its growth. Lack of availability of water sources like boreholes, shallow wells, and unregulated water vendors in places like Solomio and Timire present significant health hazards through contamination and unpredictable availability. Sanitation facilities are provided as simple pit latrines to primitive septic systems, and many are not provided with proper waste disposal systems. The socioeconomic status, levels of education, and cultural beliefs, as well as access to information, has a complicated effect on hygiene practices. Poor WASH facilities do not only endanger the health of individuals, but also impact the resilience of communities, school enrolment, and economic activity.

The case at Ruwa is a typical feature of systemic problems. These regions are defined as informal settlements, less municipal regulation and high susceptibility to water-borne diseases. The need is large with an estimated population of 74 520 households. The absence of quality water supply, inadequate sanitation facilities, and lack of hygiene education provides a conducive atmosphere to disease outbreak and chronic illnesses. Furthermore, formal planning and regulation is lacking in these locations, which makes it harder to adopt sustainable solutions. The current international initiatives, including the ones by WHO, UNICEF and other development agencies, have emphasized the need to incorporate WASH services into the wider health and education curricula. Research has demonstrated that better WASH in schools and health care institutions results in better health, less absenteeism and increased dignity, especially to women and girls. Nevertheless, it is increasingly being acknowledged that technical solutions are not enough. The need to know the So What? the real life implications of WASH deficiencies and the Now What? the actionable steps that can be taken to break through the barriers to service delivery.

This research will address that gap by undertaking an in-depth evaluation of the WASH situation in Solomio and Timire. It aims to determine the particular issues of the residents, analyze the effectiveness of the current interventions, and suggest strategic actions, which are specific to the local environment. The study will help the overall objective of realizing universal access to water and sanitation as Sustainable Development Goal 6 (SDG 6) by targeting these high-risk and underserved regions. Poor waste management and sanitation are the main challenges that continue to be a major high risk to the residents in Ruwa. Therefore based on UN (2015), they have identified the importance of environmental cleanliness and hygiene practices in the world by embracing the sustainable goals in 2015 where SDG 6 is to focus on accessibility of clean water and sanitation practices whereas SDG 11 is to make cities and human settlements inclusive, safe, resilient and sustainable. The results will not only guide local policy and planning but also act as an example on how to tackle the WASH issues in such peri-urban contexts in Zimbabwe and other places.

## 1.2 AIM OF STUDY

To assess the availability, accessibility, and quality of water supply, sanitation, and hygiene practices among households in Ruwa district, Zimbabwe.

## 1.3 OBJECTIVE OF STUDY

i. To evaluate sources and reliability of household water supply in Ruwa;
ii. To examine types and conditions of sanitation facilities used by households;
iii. To assess hygienic practices, including hand washing, water storage and waste disposal;
iv. To identify structural and socioeconomic factors influencing WASH situation in Ruwa.

## 1.4. RESEARCH QUESTIONS

i. What are the main sources of household water supply in Ruwa and how reliable they are?
ii. What type of sanitation facilities are used by household, and how accessible are they?
iii. Why are hygiene practices commonly observed in households?
iv. How do structural and socioeconomic factors affect WASH access and behaviour?

## 1.5 SIGNIFICANCE OF STUDY

The relevance of this study on water supply, sanitation and hygiene (WASH) practices among households in Ruwa is that it is a response to real and persistent public health, environmental and development challenges that are in the town. The rapid population growth and settlement expansion in Ruwa has been witnessed especially in the Ruwa location, Solomio and Zimre Park, where the available water and sanitation facilities have been overwhelmed. Knowledge of the way households gain access, use and control water, sanitation and hygiene services is thus critical to the enhancement of living standards and minimization of health hazards in the society. Information on WASH practices is very crucial to environment health technicians and officers, community health workers, Ruwa community members and Ruwa local board officials.

### 1.5.1 RUWA RESIDENTS

To the people of Ruwa and particularly those who live within some of the studied regions, the study is significant as it makes their daily lives visible, the problems and coping mechanisms of water scarcity, sanitation and hygiene standards. Large numbers of households use other sources of water, communal sanitation or makeshift facilities which can expose them to water-borne

diseases. Through these realities, the study will have a platform where the concerns of the residents can be aired and addressed. The results can empower communities with evidence that promotes safer hygiene practices and increased involvement in local WASH programs, which will eventually lead to better health and well-being.

### 1.5.2 ENVIRONMENTAL HEALTH TECHNICIANS (EHTS)

Environmental Health Technicians (EHTs) in Ruwa also find the study very valuable. EHTs are significant in the prevention of diseases, health promotion and environmental surveillance. The data obtained as a result of this study can assist them in learning more about the trends in water consumption, household level sanitation coverage and hygiene behaviour. This kind of information facilitates more focused health education, inspections and interventions especially in high-risk zones such as Solomio where there might be informal or semi-formal settlements. The study helps the EHTs prioritize their activities and allocate the limited resources better by detecting gaps and risky practices.

### 1.5.3 RUWA LOCAL BOARD OFFICIALS.

In the case of Ruwa Local Board (RLB) officials, this research will offer them practical knowledge on the effectiveness of current water supply and sanitation. Ruwa Local Board Officials were those in water utility and supply department and environmental health department. Local governments deal with the delivery of services, infrastructure planning and maintenance. The results can be used to point out which areas are poorly covered by the services, overworked or disproportionately allocated among suburbs like Zimre Park and Solomio. This can be used in terms of infrastructure development, budgeting and maintenance planning. It also enhances accountability as household experiences are directly related to service provision outcomes, making RLB officials accountable and responsive.

### 1.5.4 COMMUNITY HEALTH WORKER (CHWs)

The community health workers play a key role in improving the practice of WASH since their multifaceted functions involve bridging the gap between the community and local authorities hence access to the necessary health services and WASH programs. CHWs play a crucial role in gathering and tracking information on the current WASH practices, water sources and sanitation

issues that informed specific interventions. They target vulnerable groups and make sure that such households are provided with the support they need.

In general, the research is relevant to the overall improvement of the population health as it has established a correlation between water supply, hygiene and sanitation practices and household realities in Ruwa. By serving the needs of the residents, accompanying the work of EHTs, orienting officials of RLB. The study has a pivotal role to play in advancing sustainable WASH services, in the long-term, the results can be used to curb disease outbreaks, improve environmental health and the quality of life of communities in Solomio, Ruwa Location and Zimre Park in relation to SDG 6 of clean water and sanitation.

## 1.6 DELIMINATION OF THE STUDY

The scope of WASH practices is purposely set so that the scope is focused and manageable. The study is also geographically constrained to households in Ruwa District, but not institutional settings like schools and hospitals to ensure consistency in data collection. It only focuses on the three fundamental WASH elements; access to water, sanitation facilities and hygiene practices without going further to wider environmental health concerns such as waste management. The sampling period is limited to a certain time period hence failing to consider seasonal changes in the availability of water or hygiene habits. Moreover, the research is based on self-reported data and checklists of observation and does not include laboratory water testing and clinical health assessment. These limits assist in facilitating the research process and improving the credibility of the results in the specified setting (Creswell, 2014).

## 1.7 LIMITATION OF THE STUDY

The shortcomings of this research on household water supply, sanitation and hygiene (WASH) practices are indicative of other factors outside the researcher control that could influence the generalizability and validity of the results. To begin, the use of self-reported data creates the risk of response bias, since it is possible that the participants will exaggerate a good practice, like hand washing, or under-report a problem, like open defecation. Second, laboratory analysis of water quality or clinical health assessment is not part of the study which reduces the possibility of directly connecting, WASH conditions to health outcomes. Third, the cross-sectional design only captures

the practices at a one-point time, which makes it hard to determine seasonal differences or trends. Also, the sample size and geographic area was limited due to logistical limitations and resources, which might not be representative of further regional or national situations.

The limitations were however overcome by adding observational checklists, which were used to check household practices like accessibility of hand washing facilities, availability of soap and sanitation conditions. The application of various sources of data assisted in enhancing the validity of the results.

Laboratory testing of water quality was not done, but I cooperated with health institutions and heck on water samples results that were tested last year. Through such partnerships the capacity to directly correlate the WASH conditions with the health outcomes is enhanced.

To overcome the limitations of the cross-sectional design, longitudinal or repeated seasonal survey study could be used in future research to determine how water availability, sanitation, and hygiene practices change over time. This would give a better idea of the long-term trends and seasonal variations.

Although the sample size and geographical coverage were limited by logistical and resource constraints, systematic attempts were made to sample the households in a systematic manner to represent the study area fairly.

## 1.8 DEFINITION OF TERMS

***Water Supply***: The supply of water through the public utility, private sellers or natural sources to households to be used in drinking, cooking and cleaning.

***Sanitation***: The hygienic treatment of human excreta by facilities and services that provide hygienic separation of waste and contact with humans. The sanitation is also enhanced with flush toilets, ventilated improved pit latrines and composting toilets.

***Hygiene***: Hygiene practices that can be used to keep healthy and prevent spread of diseases, particularly by washing hands with soap, proper food handling and hygiene management during menstruation.

***Improved Water Source***: A water source that is not contaminated by external sources, especially faecal matter. Examples are piped water to houses, drinking taps, boreholes and covered springs.

***Hand washing*** Facility: A special area in or around the home that has water and soap to wash hands. Its occurrence is a major predictor of hygiene practices.

***Household***: A family of people who have meals and live together. In the context of this research, it is residential units that are surveyed on WASH practices.

## 1.9 ORGANISATION OF STUDY

The whole research process is structured in five chapters that cover different facets of the research to provide a comprehensive and logical discussion of the WASH practices among the households in Ruwa district. This chapter gives the background to the study, the statement of the problem, research objectives, research questions, significance of the study, scope and delimitations, limitations and definition of key terms. It provides the background by putting WASH problems in Zimbabwe and in Ruwa in particular into perspective. Chapter 2 is a literature review of the water supply, sanitation, and hygiene practices all over the world, regionally, and locally. It examines theoretical models, past empirical research and policy papers pertaining to WASH. The chapter also presents gaps in the literature that the current study aims at filling. Chapter 3 describes the research design, population and sampling strategies, data collection tools, processes and data analysis methods. It justifies the decision to use a mixed-methods approach and outlines the way validity and reliability was guaranteed.

Chapter 4 gives the information gathered on households in Ruwa district. It involves descriptive statistics, thematic analysis and discussion of findings in connection with the research questions. Tables, graphs and charts are employed to enhance clarity. The last chapter is chapter 5 and it talks about the findings in terms of the literature reviewed and the objectives of the study. It makes inferences, underscores policy and practice implications, and provides some suggestions on how to enhance WASH services and practices in Ruwa. Future research suggestions are also given.

# CHAPTER 2: LITERATURE REVIEW

## 2.0 INTRODUCTION

The chapter is a critical review of the available scholarly literature on Water, Sanitation, and Hygiene (WASH). It starts by exploring the international situation of WASH, pinpointing the most pressing challenges, tendencies, and the development of the research in the area. The review then focuses more to examine the WASH situation in Zimbabwe, the problems that prevail, and gaps in research, especially in peri-urban and rural setting, to provide a contextual framework of the

present study. A literature synthesis is organized around the main themes in the context of this research, which provides a theoretical basis and shows the gap in knowledge that the dissertation is focused on. The chapter has ended with a conclusion of the main insights made on the basis of the literature.

## 2.1 CONCEPTUAL FRAMEWORK

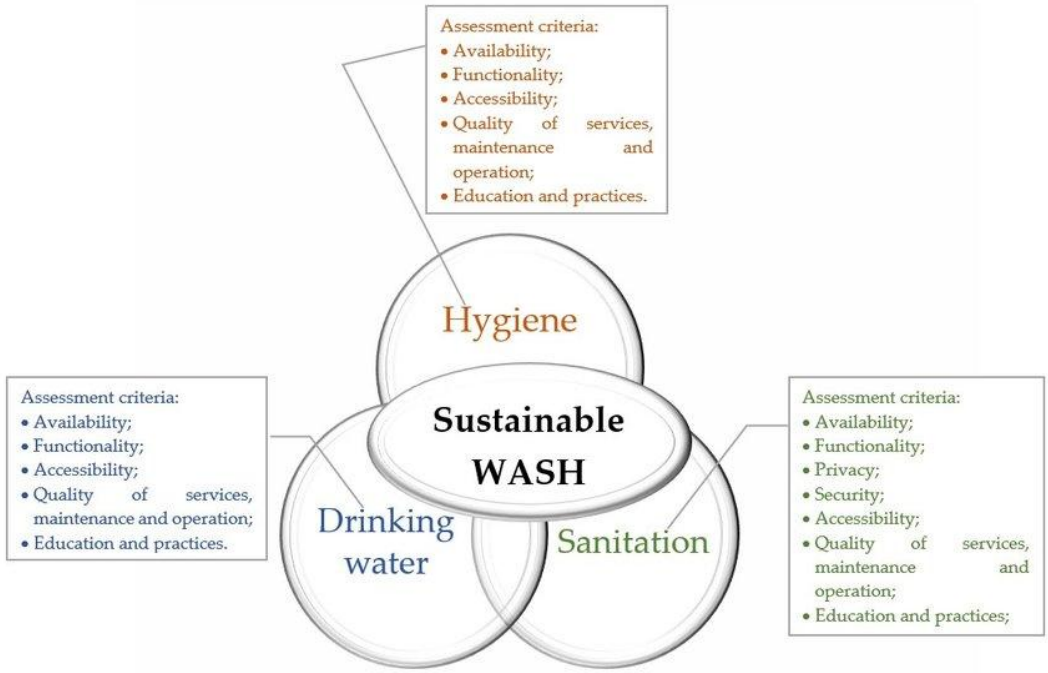



*Fig 2.1. System approach to WASH [adopted lnt. J. Environ. Res. Public Health 2021, 18, 9652 pg5]*

The framework above shows the method Sustainable WASH system that employs Venn diagram to indicate main sectors that are attained as sustainable. It lays emphasis on access to safe and clean water, hygiene and sanitation in disease prevention.

## 2.2 GLOBAL PERSPECTIVE ON HOUSEHOLD WATER SUPPLY, SANITATION AND HYGIENE PRACTICES

### 2.2.1 GLOBAL OVERVIEW

The most extensive global data on household water, sanitation, and hygiene is the WHO/UNICEF Joint Monitoring Programme (2023). Their results indicate that the availability of safely managed drinking water and sanitation has increased across the world, but inequalities in the availability of these services remain, especially in rural and marginalized groups. UNICEF (2021) also highlights that hand hygiene is a burning international issue, frequently overseen disproportionally by women and girls, which influences the household practices and burdens.

#### Case study 1: United Kingdom

The United Kingdom household water supply and sanitation are defined by the high adherence to the safety standards. In 2023, the Drinking Water Inspectorate (2023) stated that more than 99% of drinking water supplies in the country passed regulatory tests in the period between 2020 and 2022, which highlights the effectiveness of national regulation. Ofwat (2023) emphasizes that transparency and accountability that come with regulatory performance reporting help to build public confidence in the quality of household water.

The sanitation practices at the household level are emphasized by the public health agencies as well. The UK Health Security Agency (2021) emphasizes the significance of safe domestic plumbing and hand hygiene as being essential elements in infection prevention. This is supplemented by Water UK (2022), which gives advice on household plumbing care, which strengthens the importance of daily habits to maintain water safety.

#### Case study 2: United States

The situation is different in the United States. Although the regulatory frameworks of the Safe Drinking Water Act are strong (U.S. Environmental Protection Agency, 2023), inequalities exist. Allaire, Wu, and Lall (2018) reported national drinking water violation trends and revealed that millions of Americans are residing in regions where the quality of water systems falls below safety standards. DigDeep and the U.S. Water Alliance (2023) also approximate that more than two million individuals do not have access to running water or indoor plumbing, emphasizing ongoing inequities in access.

The Centers of Disease Control and Prevention (2022) offers practical advice to households, especially those using the privately drilled wells, prioritizing their maintenance and prevention of

contamination. These guidelines influence household hygiene behavior particularly in rural underserved communities where infrastructure disparities are greatest.

#### PEOPLE'S PERSPECTIVES AND PRACTICES

In both settings, the practice of WASH is influenced by the household perceptions and lived experiences. In the UK, compliance and strong direction promote trust in tap water, decreasing the use of bottled water and promoting normal hygiene practices. In the U.S., however, families in underserved communities tend to respond by boiling, filtering, or finding other sources, as coping mechanisms have been reported by DigDeep and USWA (2023). UNICEF (2021) emphasizes on a global scale that hygiene practices, especially hand washing, are gendered, and women and girls have the disproportionate responsibility of household water and sanitation.2.1.2 Kenya and Zambia Water supply, sanitation and hygiene practices.

### 2.1.2 Water Supply, Sanitation and Hygiene Practices in Kenya and Zambia

The availability of safe water, sanitation and proper hygiene practices has been a key factor that predetermines the socio-economic development and health of the population in Africa. In spite of the development in the world, the African nations are still struggling to reach universal coverage of WASH. This section examines Kenya and Zambian literature on studies and focus on household practices, infrastructure and policy frameworks that determine the outcomes of WASH.

#### Case study 1: Kenya

Kenya has gone a long way in ensuring that water and sanitation are constitutional rights but coverage is not even. Kenya Water, Sanitation and Hygiene Program (K-WASH), initiated under the National Water and Sanitation Investment and Financing Plan (NAWASIP 20222030) is designed to increase the services in the rural counties (Kirui, 2025).

Findings of empirical research show that there are gaps. Owino et al. (2025) investigated WASH in Busia, Kakamega, and Vihiga counties and discovered that households frequently use common water supplies and pit latrines. Limited availability of soap and water limited hygiene practices like hand washing. The paper has highlighted that reliability of infrastructure and governance by the community are essential in maintaining household hygiene.

These results highlight that although Kenya has strong policy frameworks, household level practices are still influenced by the resource constraints and local service delivery problems.

### Case study 2: Zambia

Zambia has increased its rural water infrastructure, yet lack of functionality compromises sustainability. A mixed-method study by Tembo and Phiri (2025) was carried out in Chama District and the authors found that most of the boreholes and handpumps were either non-functional or provided low-quality water. The families used to use untreated sources, which undermined hygiene and predisposed them to waterborne illnesses.

The researchers have associated poor sanitation and unreliable water supply with the diarrheal disease prevalence, indicating the direct correlation between the reliability of WASH services and health outcomes. Governance structures and community involvement were found to be influential factors in determining service sustainability and the significance of local involvement in the sustainability of infrastructure.

Therefore, the case of Zambia demonstrates that the infrastructure development is not enough, but it is crucial to make sure that infrastructure is functional and owned by the community to enhance the household WASH practices.

### Comparative Insights

Both Kenya and Zambia emphasize the interactions between policy frameworks, infrastructure and household practices. The problem facing Kenya is to spread coverage and provide reliable service delivery, whereas Zambia is facing the issue of the sustainability of the already established infrastructure. The household hygienic practices in both settings are limited by the scarcity of resources and the health outcomes are directly linked to the dependability of the WASH services.

These lessons can be used in other African settings, such as Zimbabwe, where a combination of the problems of access, reliability, and community engagement influence the household WASH practices.

## 2.1.3 Water Supply, Sanitation and Hygiene Practices in Chitungwiza District, Zimbabwe

Water supply, sanitation and hygiene (WASH) are universally acknowledged to be fundamental to the public health, human dignity and socio-economic development. Cities like Chitungwiza in Zimbabwe have been struggling to provide sound water and sanitation services. Water shortages and sanitation crises have been caused by rapid population growth, aging infrastructure and lack of municipal capacity. This literature review summarizes the existing studies on the WASH

practices in Chitungwiza, outlining the progress and still unmet challenges and placing the experience of the district in the context of the country and region.

### Water Supply in Chitungwiza.

The water supply system in Chitungwiza has been typified by the intermittent services delivery. The urban systems cannot sustain the increasing population and people are compelled to use other means like boreholes, shallow wells, and private water vendors. Mhlanga (2019) has reviewed the Urgent Water Supply, Sanitation and Rehabilitation Project (UWSSRP) Phase II, which was conducted in 2015-2018. The researchers concluded that although the project had a short-term positive effect on water delivery, poor infrastructure maintenance and high rates of urbanization negated sustainability.

The use of informal sources of water causes quality and safety concerns. The water stored in the household containers is likely to be contaminated, which poses a greater risk of waterborne diseases. According to the University of Zimbabwe (2019), households often have to choose between affordability and safety because water sold by vendors is not always of a high quality to comply with health standards. These results raise the issue of the structural inabilities that make households unable to have access to reliable and safe water supplies.

Moreover, the imbalance between population increase and investment in infrastructure has contributed to the disparity in service delivery. Researchers point out that, unless there is substantial reform and development of city infrastructure, households will be unable to stop relying on unsafe sources, and cycles of ill health and susceptibility will persist.

### Sanitation Challenges

The population growth and poor investment in Sanitation infrastructure in Chitungwiza has put a strain on the infrastructure. Common pit latrines and congested facilities are used and result into poor waste management and increased risk of disease outbreak. According to the University of Zimbabwe (2019), sanitation issues in Chitungwiza have led to frequent cholera and typhoid epidemics, especially during rainy seasons when the threat of contamination is the most significant.

The city planning has failed to keep up with the population growth and as a consequence, there have been informal settlements that lack sanitation facilities or those that are in poor conditions.

This scenario increases the environmental health hazards, because the untreated waste pollutes water bodies and compromises the hygiene of the community.

According to scholars, sanitation gains need to be incorporated into wide-ranging urban development plans so as to be sustainable. Sewerage, waste management and community-based sanitation projects are important investments to mitigate health risks and enhance the quality of life. In the absence of these, families will continue to be susceptible to preventable illnesses associated with poor sanitation.

### Hygiene practices

The lack of clean water and sanitation facilities influence the household hygienic practices in Chitungwiza. Water is usually kept in containers by the residents and this can jeopardize hygiene unless handled well. Hygiene promotion campaigns have been performed, still, due to the low access to soap and clean water, the practice of hand washing is not repeated. The level of community awareness is high but structural factors do not allow households to practice recommended hygiene practices to the full extent.

Mhlanga (2019) noted that water and sanitation infrastructure is also reliable to ensure the sustainability of the improved hygiene practices, not just awareness. This highlights the fact that infrastructure and behavior go hand in hand: hygiene practices like hand washing cannot be properly adhered to even when families are aware of their significance, without reliable water supply.

The University of Zimbabwe (2019) also highlighted the fact that hygiene practices tend to be gendered and women and girls tend to have a disproportionate role in household water and sanitation. This is indicative of the larger global results that WASH challenges intersect with social roles, time use, and health outcomes.

### Comparative and Policy Perspectives

The problems experienced in Chitungwiza WASH reflect those experienced in other urban districts in Zimbabwe, including Harare and Ruwa, where urbanization and lack of adequate infrastructure puts a strain on municipal systems. Water and sanitation are considered as basic rights in national policies but due to financial limitations and governance issues, there is a lack of implementation.

Scholars claim that community involvement and governance changes are crucial to maintaining WASH improvements in urban districts (University of Zimbabwe, 2019).

Global policies, including the Sustainable Development Goals (SDG 6), give indicators of universal access to water and sanitation. Nevertheless, local realities within Chitungwiza reveal the disconnection between policy hopes and family lives. It is necessary to fill this gap through integrated measures that involve investment in infrastructure, community involvement, and capacity building in the institutions.

Comparisons with the African context, including Kenya and Zambia, indicate that despite the possible strength of policy frameworks, household practices are limited by the reliability of infrastructure and resources. These similarities emphasize that it is essential to base sustainable WASH policies in Zimbabwe on regional experience.

## 2.2 GLOBAL PERSPECTIVE ON TYPES AND CONDITIONS OF SANITATION FACILITIES USED BY HOUSEHOLDS

Cleanliness is one of the pillars of community health and human respect. Sustainable Development Goal 6 (SDG 6) asserts the need to achieve universal access to safe sanitation by 2030, but the world situation with household sanitation facilities remains very unequal. The WHO/UNICEF Joint Monitoring Programme (JMP) offers the most detailed statistics on sanitation, indicating that although access to better facilities has increased since 2000, discrepancies in quality, reliability, and safety remain across the regions (WHO/UNICEF JMP, 2023). The review is a synthesis of the evidence of sanitation facilities used by households globally, including the type and the conditions of the facilities, and it reveals the variation based on income levels, regions, and urban-rural differences.

### Household sanitation facilities can be divided into types:

#### Safely Managed Sanitation

In developed nations, families mostly operate flush toilets that are linked to sewerage systems. They have well-established regulatory frameworks that support safe disposal and treatment of waste in these facilities. As an illustration, sewerage systems serve most urban households in Europe and North America, and these factors have led to low rates of sanitation-related illnesses (World Health Organization, 2017). Middle-income countries also use septic tanks in their

suburban and rural regions to treat waste locally since centralized sewerage is inaccessible (UNICEF, 2021).

### Basic Sanitation

Homesteads in most of the low- and middle-income countries use pit latrines or ventilated improved pit (VIP) latrines. These are deemed as better facilities since they are hygienically isolated human excreta and human contact. South Asian and sub-Saharan African research indicates that VIP latrines decrease flies breeding and controlling odor, but must be maintained frequently to work effectively (JMP, 2023).

### Poor and insufficient Sanitation

Poor sanitation facilities are shared in the overcrowded urban African and Asian regions. Although they are open, JMP rates them as limited because of hygiene and safety issues. Unimproved pit latrines (without slabs), bucket latrines, or hanging latrines are still prevalent in rural areas and are very dangerous to health (WHO/UNICEF JMP, 2023).

## Open Defecation

Nevertheless, even today open defecation continues in South Asia and Africa. According to JMP statistics, the numbers have been decreasing since 2000, although the gains are not even, and millions of people continue to resort to open defecation because of poverty, cultural beliefs, or insufficient infrastructure (UNICEF, 2021).

### Household sanitation facilities condition:

#### *Regional Inequalities*

Sanitation systems in high-income countries are usually safe, reliable and regulated. Conversely, the facilities in low-income countries are usually not long lasting, private, and safe. In rural Africa, such as pit latrines, commonly collapse during rainy seasons, polluting water sources and exposing people to diseases (WHO, 2017).

#### *City versus Country Division*

Flush toilets or common facilities in urban households are more common whereas pit latrines are widely used in rural households. The JMP (2023) emphasizes that rural regions are much less

developed than urban centers in terms of better sanitation, and the struggles with functionality and maintenance complicate the inequalities.

#### *Gender and Safety Issues.*

Women and girls are also at special risk when utilizing the same or unimproved facilities, such as privacy and violence. The JMP (2023) highlights that menstrual hygiene management is an important but frequently overlooked component of household sanitation. Research indicates that poor facilities are a barrier to school attendance among girls and discourage dignity and safety (UNICEF, 2021).

#### Sustainability and Maintenance

There are a lot of facilities that are built and not maintained. Septic tanks and pit latrines must be desludged, which is unaffordable or unavailable in low-income environments. According to scholars, sustainability is a community-driven process through community involvement and financial support rather than infrastructure supply (WHO, 2017).

#### Comparative Insights

The sanitation facilities in the world are characterized by sharp inequalities. High-income countries use flush toilets that are connected to sewer systems, and pit latrines and shared toilets are still used in low-income areas. Defecation, which is open but is decreasing, still has serious health hazards. Facilities can be in a wide range of conditions, where rural households are more likely to experience poor maintenance and lack of privacy. Gendered burdens also imply the necessity of comprehensive approaches to safety and dignity, as well as infrastructure.

### 2.2.1 AFRICAN PERSPECTIVE ON HOUSEHOLD SANITATION FACILITIES.

Sanitation is one of the most urgent problems of the public health in Africa. Although the world is making progress in accessing better sanitation, a large proportion of African households still use basic or unimproved sanitation. According to the WHO/UNICEF Joint Monitoring Programme (JMP, 2023) sub-Saharan Africa is significantly behind other regions, and millions of households do not have access to safely managed sanitation. This literature review examines the nature and state of sanitation facilities that households use in Africa based on scholarly literature in Kenya, Zambia, Zimbabwe, and others to illuminate regional differences and household behaviors.

## Household Sanitation Facility in Africa:

### *Flush toilets and Sewer systems.*

Most African countries have few flush toilets which are linked to sewer systems, and are predominantly found in urban centers and affluent households. Research in Nairobi, Kenya, indicates that fewer than half of the households in formal settlements are connected to sewerage systems, and informal settlements use shared or unimproved facilities (Owino et al., 2025). Equally, in Lusaka, Zambia, sewerage coverage is centralized in the central urban areas, and the peri-urban households rely on pit latrines (Tembo & Phiri, 2025).

### *On-Site Systems and Septic Tanks*

In urban and peri-urban areas, middle-income households have a higher use of septic tanks. Their effectiveness is however compromised by maintenance issues. A study in Harare, Zimbabwe, revealed that septic tanks often overflow because of insufficient desludging services, polluting groundwater and endangering the health of people (Mhlanga, 2019).

### *Pit Latrines*

The most common sanitation facility throughout rural Africa is still the pit latrines. A safer option, ventilated improved pit (VIP) latrines, is encouraged as a safer alternative with the benefit of odor control and flies reduction. However, research indicates that a large portion of families have plain pit latrines without slabs, which can easily collapse during rainy seasons (WHO, 2017). Tembo and Phiri (2025) reported the general use of pit latrines in the Chama District of Zambia, where the shortage of functionality was associated with improper constructions and insufficient maintenance.

### *Shared Facilities*

Households in highly populated cities tend to use common sanitation facilities. Although they are available, they are categorized as limited by JMP (2023) because of the hygiene and safety issues. In western Kenya, Owino et al. (2025) discovered that shared latrines were prevalent in informal settlements, but due to overcrowding and lack of maintenance, hygiene was affected.

### *Poor Toilet and Open Defecation*

Some rural and peri-urban places still use unimproved facilities like bucket latrines or hanging latrines. In some areas of sub-Saharan Africa, open defecation is still practiced, especially in rural areas where people are too poor to afford better facilities and cultural practices do not allow them

to take up better facilities. According to UNICEF (2021), open defecation does not only compromise health but also dignity and safety, particularly to women and children.

### Household Sanitation Facilities Conditions:

#### *Urban–Rural Divide*

The urban households also tend to have access to flush toilets, septic tanks or shared facilities whereas the rural household depends extensively on pit latrines. JMP (2023) points out that rural regions are far behind the city in terms of access to better sanitation, and functionality and maintenance issues aggravate disparities.

#### *Sex and Safety Issues*

The use of shared or unimproved facilities exposes women and girls to special risks such as loss of privacy and being exposed to violence. Owino et al. (2025) observe that poor sanitation facilities make it hard to attend school especially during menstrual periods among girls. According to UNICEF (2021), menstrual hygiene management is a significant yet overlooked area of home sanitation in Africa.

#### Sustainability and Maintenance

Numerous sanitation facilities are built and not maintained. Desludging is necessary in septic tanks and pit latrines, and is expensive or not available in low-income environments. Tembo and Phiri (2025) believe that sustainability is pegged on community involvement and funding, rather than provision of infrastructure. Similar results were found by Mhlanga (2019) who noted that rehabilitation projects in Chitungwiza, Zimbabwe, could only enhance sanitation in the short term but could not be sustained in the long term because of insufficient maintenance.

### Comparative Insights

There are inequalities in sanitation facilities across Africa. Flush toilets and septic tanks are concentrated in the rich urban families whereas the rural areas have pit latrines. Informal settlements have shared facilities but they undermine hygiene and safety. Lack of improved facilities and open defecation continue to be a source of health hazards and social injustices in marginalized communities. Researchers always point out that to enhance sanitation in Africa, it is essential to implement combined strategies that would involve investment in infrastructures, community involvement, and consideration of gender and equity issues (WHO/UNICEF JMP, 2023; UNICEF, 2021).

### 2.2.2 ZIMBABWEAN PERSPCTIVE ON HOUSEHOLD SANITATION FACILITY

Sanitation is a very important factor in determining both the socio-economic development and the health of the people. Safe and decent sanitation is a problem in Zimbabwe, especially in urban areas like Harare and Chitungwiza, and in rural areas where infrastructure is scarce. According to the WHO/UNICEF Joint Monitoring Programme (JMP, 2023), Zimbabwe, as many sub-Saharan African nations, has a difficult time attaining universal access to safely managed sanitation. This literature review examines the nature and quality of sanitation facilities adopted by households in Zimbabwe, with the aid of scholarly research to point out the progress as well as the challenges that continue to be experienced.

#### Household sanitation facilities in Zimbabwe:

##### *Flush toilets, Sewer systems*

In formal urban places, the most common sanitation facilities are flush toilets that are linked to sewer systems. But, old infrastructure and fast urbanization has put pressure on the municipal systems. In a study conducted on Chitungwiza, Mhlanga (2019) discovered that the sewerage systems are blocked and broken down frequently, which undermines the sanitation services, resulting in environmental pollution. Although the use of flush toilets is still the most desirable, it requires a good supply of water and efficient sewerage systems, which is not always available.

##### *On-Site Systems and Septic Tanks*

Septic tanks are employed in peri-urban and more affluent homes instead of sewer connections. These systems are on-site treatment systems that need frequent desludging. A study by Nhapi (2009) has brought to light the fact that the desludging services are poorly maintained in septic tanks in Harare, which overflow and contaminate groundwater, exposing people to waterborne diseases. This highlights the need to maintain and provide services to on-site sanitation systems in order to maintain their sustainability.

##### *Pit Latrines*

The most common sanitation facility in the rural part of Zimbabwe is the pit latrines. Improved pit (VIP) latrines have been advocated as a safer option, which provides odor control and flies. Nevertheless, research indicates that a large number of households still use simple pit latrines that lack slabs, which are likely to collapse during rainy seasons. Manzungu and Machiridza (2005)

noted that rural dwellers tend to build their pit latrines inadequately under technical advice hence poor durability and hygiene performances.

### *Shared Facilities*

Households in congested urban settings often use common sanitation systems. Although they are accessible, JMP classifies them as limited because of hygiene and safety reasons. According to Mhlanga (2019), in Chitungwiza, toilets were frequently overcrowded and in poor condition, which created unsanitary conditions. Shared facilities also pose a problem of privacy and security, especially to women and children.

### *Poor Defecation and Improvement*

Some informal settlements continue to use unimproved facilities, like bucket latrines. In marginalized rural areas, open defecation, despite its decreasing trend, continues to be practiced due to poverty and cultural practices that make it hard to adopt better facilities. UNICEF (2021) points out that open defecation compromises the dignity and health, which plays a role in the outbreak of cholera and typhoid in Zimbabwe.

## States of Sanitation Facilities in the Households:

### *Urban–Rural Divide*

The urban households are more inclined to have access to flush toilets or septic tanks whereas the rural households are dependent on the pit latrines. As JMP (2023) emphasizes, rural regions are much more disadvantaged compared to urban areas and access to enhanced sanitation and the inability to maintain and improve the functionality further complicates inequalities.

### *Sex and Safety Issues*

Women and girls are particularly vulnerable to using shared or unimproved facilities, such as inadequate privacy and violence. According to Nhapi (2009), girls are unable to attend school due to poor sanitation facilities especially during menstruation. According to UNICEF (2021), menstrual hygiene management is an important but neglected issue of household sanitation in Zimbabwe.

## Sustainability and Maintenance

Numerous sanitation facilities are built and not maintained. Septic tanks and pit latrines need to be desludged, which is usually unaffordable or not offered in low-income environments. Mhlanga (2019) noted that Chitungwiza rehabilitation projects enhanced sanitation short-term but did not

achieve long-term sustainability because of ineffective maintenance. According to Manzungu and Machiridza (2005) sustainability is not only defined by the provision of infrastructure, but also by community involvement and financial resources.

### Comparative Insights

The sanitation problems in Zimbabwe are similar to those in other African countries, including Kenya and Zambia, where pit latrines are predominant in rural regions, and shared facilities are typical in urban settlements. The use of flush toilets and septic tanks is still concentrated in the hands of the affluent, whilst the use of unimproved facilities and open defecation continues in the marginalized communities. Researchers always underline that the development of sanitation in Zimbabwe needs synergistic solutions that intertwine the investments in infrastructure, community-based initiatives, and the consideration of gender and equity issues (Nhapi, 2009; Mhlanga, 2019; Manzungu and Machiridza, 2005).

## 2.3 GLOBAL PESPECTIVES ON HYGIENE PRACTICES

At the core of the concept of public health lies hygiene, which lowers the spread of infectious diseases and enhances the quality of life. Sustainable Development Goal 6 (SDG 6) focuses on water, sanitation, and hygiene (WASH) accessibility to everyone by 2030. Regardless of improvement, there are disparities in domestic hygiene practices across the globe. The current review will explore the world views regarding hand washing, water storage and waste disposal based on recent research and reports published in 2015-25.

### Hand washing Practices

One of the best interventions in preventing diarrheal diseases and respiratory infections is hand washing with soap. According to the WHO/UNICEF Joint Monitoring Programme (2023), 75% of the world population had access to basic hand washing facilities with soap and water at home as of 2022.

Hand hygiene was re-evaluated during the COVID-19 pandemic. According to a study by Wolf et al. (2019), inequalities in access to hand washing facilities across the globe exposed billions of people to the risk of disease outbreaks. Likewise, Freeman et al. (2017) revealed that better hand washing techniques can considerably decrease childhood diarrheal disease and respiratory infections. UNICEF (2021) highlighted the importance of behavioral change campaigns, along with providing infrastructure, to enhance hand washing practices around the world.

### Water Storage Practices

Water storage is very essential to ensure the quality of water even after collection. Despite the availability of better water sources to the households, contamination usually takes place in transit or storage. Bain et al. (2015) conducted a systematic review, which revealed that microbial contamination of stored water is often greater than of source water, underlining the significance of safe storage methods.

The world is full of storage containers; some are jerry cans, clay pots, others are plastic buckets. The JMP (2023) observes that the risk of contamination is the greatest when containers are not covered, and water is pulled using dirty utensils. Families in rural Africa and Asia tend to keep water a few days, which raises the chances of bacteria growth.

Narrow-necked containers, covered storage and household chlorination have been discovered to decrease contamination. Recent research underlines the importance of safe storage practices on the same level as source protection, as household contamination nullifies the advantages of better water supply (Bain et al., 2015).

### Waste Disposal Practices

The other critical area of hygiene is household waste disposal. Inappropriate disposal of solid and liquid wastes adds to environmental pollution and spread of diseases. Management of waste by income level is diverse in the world.

In developed nations, families enjoy the advantage of systematized systems of waste collection and treatment. Conversely, the poor countries usually have to depend on informal ways of disposal, including open dumping or burning. In South Asia and Africa, research demonstrates that household wastes are often disposed in open areas, polluting water bodies and forming habitats of disease vectors (UN-Habitat, 2016).

It is also difficult to dispose of liquid waste. In most rural areas, wastewater is released in the environment without treatment. JMP (2023) highlights that global hygiene outcomes can be enhanced by the use of integrated waste management systems, with community-based initiatives being a crucial part of this approach.

### Comparative Insights

Hygiene practices are associated with extreme inequalities all over the world. The presence of hand washing facilities is almost universal in high-income nations but scarce in low-income countries. Safe water storage is not a priority and as such, when the households have better water sources, contamination occurs. Disposal methods are diverse, with well-structured systems in the richer nations, and unstructured, unsafe systems in the poorer areas. It is always highlighted by scholars that infrastructure is not the only way to enhance hygiene but also behavioral change, community involvement, and policy support (Freeman et al., 2017; Wolf et al., 2019; Bain et al., 2015).

## 2.3.1 AFRICAN PERSPECTIVE ON HYGIENE PRACTICES.

Hygiene practices form the basis of the health of the population, preventing the spread of infectious diseases and enhancing quality of life. The WHO/UNICEF Joint Monitoring Programme (JMP, 2023) also points out the existing disparities in the provision of basic hygiene services in Africa, especially in rural territories and informal settlements. In spite of this development, millions of households are still deprived of hand washing and safe water storage facilities as well as proper waste disposal. The review will discuss the African approach to hygiene practices, with the latest research to explain the situation, issues, and the impact on the overall health of the population.

**Hand washing Practices**

The most effective interventions that can be used to prevent diarrheal and respiratory diseases include hand washing with soap. However, in most African homes, hand washing facilities are not easily available. According to the JMP (2023), fewer than one out of every three households in sub-Saharan Africa has access to basic hand washing with soap and water.

In Kenya, Owino et al. (2025) established that the level of awareness on hand washing was high but due to structural challenges like water shortage and unavailability of soap, households could not practice hand washing regularly. On the same note, Ng'andwe et al. (2025) noted that in Kitwe City, Zambia, the households in informal settlements did not possess soap and dependable water, which discouraged regular hand washing habits. The results highlight the necessity of infrastructure provision and behavioral change campaigns. 55

Hand hygiene became a new focus during the COVID-19 pandemic. Wolf et al. (2019) emphasized that the world inequality of hand washing facilities exposed billions of people to disease outbreaks, and Africa was not the least. This shows that hand washing is not just a domestic activity but also an important intervention to health in the general population.

### Water Storage Practices

Water storage facilities are necessary to preserve water quality once collected. Although households can use better water sources, in most cases, water can be contaminated during transportation or storage. Bain et al. (2015) discovered that in African households, the stored water often harbored more microbial contamination than the source water, in significant part because of the uncovered containers and poor handling techniques.

According to Ng'andwe et al. (2025) he found that in Zambia that families tended to keep water in plastic buckets or jerry cans, but contamination could occur easily when the container was uncovered or when water was drawn with contaminated utensils. In rural Zimbabwe, Mhlanga (2019) observed that families usually kept their water over a few days, which enhanced the chances of bacterial proliferation and waterborne illnesses.

Narrow-necked containers, covered storage, and household chlorination are some of the interventions that have been found to reduce contamination. According to the scholars, safe storage measures are equally significant as source protection as household contamination cancels the advantages of enhanced water supply (Bain et al., 2015).

### Waste Disposal Practices

The disposal of household wastes is a significant problem in Africa. Solid waste is also disposed of in open places or burnt in most urban settlements, which pollute the environment and pose the risk of diseases. According to UN-Habitat (2016), informal settlements in African urban areas have no formal waste collection systems, so households must use unsecured ways of disposing of waste.

There are also difficulties in liquid waste disposal. Ng'andwe et al. (2025) in Kitwe, Zambia, observed that wastewater was often released into the environment polluting the water sources around. In Zimbabwe, Mhlanga (2019) observed that improper waste management in Chitungwiza was a factor that led to frequent cholera epidemics. These results highlight the importance of

combined waste management solutions that integrate municipal services and community-based programs.

Researchers underscore the fact that waste management activities are closely interconnected with governance and infrastructure. Lack of proper municipal support necessitates the use of unsafe practices by households, which in turn keeps the poor hygiene and disease transmission cycles going.

#### Comparative insights

In Africa, there are gross disparities in hygiene practices. Rural and informal settlements have limited hand washing facilities, neglect safe water storage and use unsafe ways of disposing wastes. Scholars always highlight that to enhance hygiene, it is not only necessary to ensure infrastructure but also behavioral change, involvement of communities, and policy support (Ng'andwe et al., 2025; Owino et al., 2025; Bain et al., 2015).

Comparisons with Kenya, Zambia and Zimbabwe indicate that they share common problems: few soaps and water to wash hands, poor storage habits and lack of proper waste disposal systems. The results reveal that combined strategies that focus on both domestic and structural infrastructure deficiencies are necessary.

### 2.3.2 Zimbabwean Hygiene Practice Perspective

Hygiene practices play a key role in the field of public health, decreasing the spread of infectious diseases and enhancing the quality of life. The problem of hand washing, water storage and waste disposal in Zimbabwe is influenced by the high rate of urbanization, economic factors and the deteriorating infrastructure. WHO/UNICEF Joint Monitoring Programme (JMP, 2023) emphasizes that Zimbabwe, as well as most of the sub-Saharan African states, has a hard time reaching universal access to basic hygiene services. This review examines Zimbabwean attitude towards hygiene practices based on the recent researches to exemplify the situation, household behavior, and consequences to the health of the people.

#### Hand washing Practices

One of the most effective interventions in the prevention of diarrheal and respiratory diseases is hand washing with soap. Yet, the availability of hand washing facilities is still low in most of the

Zimbabwean homes. According to the JMP (2023), in Zimbabwe, fewer than half of households have basic hand washing facilities with soap and water.

In cities like Harare and Chitungwiza, the intermittent supply of water negates regular hand washing. Mhlanga (2019) discovered that homes had no running water, and the residents had to consider water to cook and drink but not to take care of their hygiene. The rural areas are worse, with families having to use boreholes or shallow wells, which in many cases are far away.

UNICEF (2021) highlighted that behavioral change initiatives, including hygiene education in schools have enhanced hand washing awareness, but structural limitations, especially water shortage restrict its practice. Females and girls have more than their fair share of household hygiene responsibility, which is an extension of gendered WASH practices.

### Water Storage Practices

After water has been collected, safe water storage is essential to the preservation of water quality. Where households have access to better water sources, they are usually contaminated during transit or storage. Bain et al. (2015) discovered that microbial contamination of stored water in Zimbabwean households was often greater than that of source water, which was in large part related to uncovered containers and unsafe storage practices.

Mhlanga (2019) noted that in Chitungwiza, households usually kept water in plastic buckets or drums because there was a non-regular supply of water by the municipal. Contamination risks however were very high when containers were not covered or when water was drawn using unclean utensils. Families living in rural areas usually keep the water in their stores during a few days, which makes them more prone to bacterial growth and waterborne diseases.

NGOs and government agencies have encouraged interventions like narrow-necked containers, covered storage, and household chlorination. However, affordability and accessibility have been a challenge, especially in low-income neighborhoods. Researchers claim that safety storage measures are as crucial as source protection, as household contamination will negate the advantages of better water supply.

### Waste Disposal Practices

Disposal of household wastes is a significant problem in Zimbabwe. In most of the urban settlements, solid waste is dumped in open areas or burnt, which leads to contamination of the

environment and the risks of diseases. According to UN-Habitat (2016), in Harare and Chitungwiza, informal settlements are usually characterized by the lack of an organized waste collection system, which means that households have to use unsafe means of disposal.

There are also problems with liquid waste disposal. Mhlanga (2019) observed that improper waste management in Chitungwiza led to frequent cholera, where wastewater was dumped into the environment, and it polluted the surrounding water. In rural regions, families tend to dump their waste in open pits, which may cause ground water to be polluted.

Researchers note that waste disposal activities are tightly interconnected with governance and infrastructure. Lack of proper municipal assistance compels households to use unsafe methods, which continue the processes of bad hygiene and infectious disease spread. To enhance hygiene outcomes in Zimbabwe, integrated waste management systems, which are a combination of municipal and community-based efforts, are needed.

### Comparative Insights

The hygiene behavior of Zimbabwe is representative of the African problems. In urban and rural locations, there are limited hand washing facilities, safe water storage is not given much attention and waste disposal systems are not safe. The comparison with Kenya and Zambia shows that they have similar problems: there is a lack of soap and water to wash their hands, unsafe storage conditions, and poor waste disposal systems (Ng'andwe et al., 2025; Owino et al., 2025). These results underscore the importance of combined strategies that focus on the household behaviors and gaps in the system infrastructure.

The situation in Zimbabwe highlights the need to integrate infrastructure investment and behavior change campaigns. Although the hygiene practices are very high, the structural barriers like the intermittent supply of water and improper disposal of wastes do not allow households to practice them on a regular basis.

## 2.4 CHAPTER SUMMARY

This literature review has put into place the worldwide importance of WASH, describing the systemic challenges encountered in delivering universal access to safe water, sanitation, and hygiene. It has brought to the fore some critical issues like inequality of services, discrepancy between infrastructures and provision of reliable services and the intricate connection between

WASH practices and health outcomes. These world themes have also been linked to the context in the review, establishing the context of an inquiry into the condition of WASH in Ruwa District.

# CHAPTER 3: METHODOLOGY

## 3.0 INTRODUCTION

This chapter describes my methodology of assessing the water supply, sanitation and hygiene (WASH) practices among households in Ruwa, Zimbabwe. The research examines the availability, accessibility, and quality of WASH services, socioeconomic determinants of household behaviors in three target areas that are Ruwa location, Solomio and Zimre park. The research took a mixed-method approach to guarantee the thorough data collection and analysis. This method helps to make evidence-based suggestions on how to enhance the WASH services in the district.

## 3.1 The Study Area

In 1990, the Zimbabwean government founded Ruwa, and it continues to be known as the Ruwa Local Board (RLB). The Town of Ruwa is a 24 km peg of Harare and 180km of Mutare on the major Harare-Mutare road and railroad. Ruwa is a Zimbabwean urban settlement in Harare, a dormitory. It lies at the provincial boundary of the Harare Metropolitan province, and

Mashonaland East province and it is situated in the Harare Metropolitan province. Ruwa is said to be located on 3 soils, which are black basalt soil, sands, and gravel (Muzondi, 2014). The town of Ruwa is located on a watershed that extends from Rusape to Harare and is approximately 1422 meters high. The region is mainly moderate with slopes of gentle slope to rugged terrain. The Municipal area is cut by many streams, most of which flow out to the Ruwa River, which is a tributary of the Marimba River. The zone is mainly affected by northeast winning winds, which are predominant between August and November with an average speed of between 8.0 and 9.3 knots, as found by MSD. It is in the Agro-ecological region two, with a tropical savannah climate. Ruwa has a mean temperature of 18 $^{0}$C and a mean yearly rainfall of 450-600mm. In some cases, rainfall was not sufficient during the agricultural season in the area, leading to the occurrence of droughts occasionally

## 3.2 RESEARCH DESIGN

The research design used in this study was descriptive cross-sectional research design as it sought to determine the availability, accessibility, and quality of water supply, sanitation and hygiene practices (WASH) among households in Ruwa district. The cross-sectional design was adequate to gather data at a specific moment and enable the occurrence of patterns, relationships, and differences between various household groups (Saunders, Lewis, and Thornhill, 2019).

The study was based on a mixed-methodology in which quantitative and qualitative methods were used. Structured household questionnaires were used to collect quantitative data to determine the reliability of water sources, types of sanitation facilities, and hygiene practices. The qualitative data were collected through interviews and Questioners among community members and local authorities to examine contextual issues affecting WASH practices.

This design was selected to gain a complete picture of the situation with WASH in Ruwa where different types of infrastructure are used in formal residential and informal settlements (Ruwa Local Board, 2025; ROCK Blue, 2025). The combination of these two types of data boosts the validity of the findings and assists in making actionable recommendations on how to improve WASH services.

Thus the combination of quantitative and qualitative research methodology was to come up with more holistic results responding to the phenomenon under study, data validation by triangulation, flexibility and adaptability in the research process. This was supported by Creswell et al, (2017), that the mixed methods research approach would give a more in-depth response to the complex research questions that cannot be answered exhaustively by either research method, and, therefore, also addressed by Matere et al, (2023).

## 3.3 RESEARCH PHILOSOPHY

The research philosophy that formed the foundation of this study was pragmatic research philosophy, which focuses on the application of various approaches in order to examine complex real world issues. Pragmatism enables researchers to tap into both positivist and interpretivist traditions, basing them on the nature of the research questions deployed and the type of data needed (Saunders, Lewis, and Thornhill, 2019).

The positivist method was used by administering structured questionnaires that provided measurable information on the household sources of water, sanitation facilities and hygiene practices. This allowed statistical analysis of trends and correlations in the entire population. In the meantime, the interpretivist lens informed the qualitative aspects of the research, including interviews and focus group discussions, that examined the lived experiences, perceptions, and cultural aspects that shape WASH practices.

Thus, Pragmatism especially, was appropriate and significant to my research since the WASH problems in Ruwa are diverse and comprise infrastructure, behaviour, policy and socioeconomic processes. This pragmatic position enabled the research to be based on what was best in the Ruwa context, considering social, economic and environmental realities affecting the WASH behaviors. The combination of objective measurement and contextual knowledge makes the research give a comprehensive overview of the issues and possibilities to improve WASH services in the district (WHO and UNICEF, 2021; ROCKBlue, 2025).

## 3.4 POPULATION USED IN THE STUDY

The sample population used in the study was households in the Ruwa district in Harare Metropolitan Province in Zimbabwe. Ruwa is a fast developing urbanized settlement that

comprises of formal residential areas, informal settlements, and peri-urban settlements. The Ruwa Local Board (2025) indicates that the region has an estimated population of 74 520 people spread out in various administrative wards. Therefore, population of 11 178 of three (3) locations; Zimre park, Solomio and Ruwa location from EHO1 monthly reports of Ruwa environmental Technicians under MOHCC was used to determine the size of population sample.

The research focused on household heads or adult representatives (above 18) who had good information regarding the water supply in their household, sanitation facilities, and hygiene practices. This was chosen as they are the ones who usually control the use of domestic water, sanitation and hygiene practices. The inclusion of a wide variety of households provided representation of various structural and socioeconomic statuses, types of housing, and geographic areas. This study selected a population of 183 due to resources, accessibility, and time and logistical constrains such as geographical spread, which limited the ability to reach a large number of population.

The Zimbabwe National Statistics Agency (ZIMSTAT) is the source of population data and demographic profiles, which offers census and household survey data, which can be used in urban planning and interventions in the field of public health (ZIMSTAT, 2022). Ward-level maps and service coverage data (Ruwa Local Board and ROCKBlue, 2025) were also used to further refine the population frame by providing information on infrastructure access and community-level WASH problems.

This group was suitable to the purpose of the study to evaluate the availability, accessibility, and quality of WASH and determine the behavioral and socioeconomic determinants of household practices.

This study is going involve: n=124

| Stakeholder group | Role in the study | Targeted population |
|---|---|---|
| **Household heads/adult household representative** | Provide primary data on household water supply, | 110 |

| | | |
|---|---|---|
| | sanitation and hygiene practices | |
| **Community health workers (CWH)** | Provide information and community health issues | 7 |
| **Environmental Health Technicians (MOHCC)** | Provide technical and regulatory insights on WASH | 5 |
| **Ruwa Local Board Officials** | | 2 |

## 3.5 SAMPLING PROCEDURES

To ensure representativeness and reliability of findings, the study employed a multi-stage sampling technique. This approach was chosen to capture the diversity of households across Ruwa's formal residential areas, informal settlements, and peri-urban zones (Ruwa Local Board, 2025).

### Stage 1: random sampling

Random Sampling was used to obtain data from Ruwa residents. A list of households was collected, from community registers and local council records. A computer method was used to randomly generate numbers until a total sample size of 110 households was reached. Each house was visited to administer questionnaires to household's representatives (adult representative or house heads). Every house has a chance to be selected and this method allows generalize results and Supports reliable statistical analysis. "Random sampling increases the likelihood that the study sample is representative of the target population and reduces sampling bias." Etikan et.al, (2016). This was mainly used in Ruwa location where there is highest population.

In Zimre park households were selected using systematic random sampling. A sampling interval was calculated based on the estimated number of households in this ward, and every $10^{th}$ household was selected from a pre-listed enumeration. This method reduced selection bias and allowed for even geographic distribution. This method was designed to pick at minimum of 36 households from each of the selected three locations.

### Stage 2: purposive sampling

In addition to household surveys, purposive sampling was used to select key informants such as: Local Board officials, Environmental health technicians, Community health workers, NGOs. These respondents gave qualitative information about the delivery of WASH services, behaviour patterns, and policy issues.

Such a mix of random, systematic random, and purposive sampling is well-adapted to the best practices in the field of research in the areas of public health and development (Saunders, Lewis, and Thornhill, 2019), and it is especially successful in diverse urban environments such as Ruwa.

### 3.4.1 Sample size (definition and calculation)

The sample size was calculated using Cochran's formula for large populations:

$n0=Z2 \cdot p \cdot (1-p)\ e2$

Where: $Z$=1.96 (score for confidence level of 95%)

$p$=0.5 (estimated proportion of households with adequate WASH), gives maximum sample size

q=1 p=0.5

$e$ = 0.05 (margin of error 5%)

$n0$ = (1.96)2·0.5

·0.5 (0.05) 2= 124.15

The lowest sample size is 124 households, and the possibility of an encounter of non-responses. This is a common method of calculation used in social science and research in the field of public health (Saunders et al., 2019).

This research a sample size of 124 respondents included in data collection since the sample was viable and workable to the study. The respondents were made up as follows:

- 7 (seven) Community Health Workers (CHWs)
- 5 (five) Environmental Health Workers (EHTs) from MHOCC
- 2 (two) Ruwa Local Board Officials

- 110 (hundred and ten ) respondents from Ruwa District household representatives

## 3.6 RESEARCH TOOLS

The research used a mixture of both qualitative and quantitative research instruments to gather comprehensive information on WASH practices in the Ruwa district. The tools have been chosen to guarantee triangulation, add more richness to the data, and identify not only measurable indicators but also contextual information (Saunders, Lewis, and Thornhill, 2019).

### 3.6.1 Key Informant Interviews

Semi-structured interviews that will be carried out with the main stakeholders such as: Ruwa Local Board officials, Water utility technicians, Environmental health officers, Community members. These interviews offered professional insights into the sanitation infrastructure issues, service provision, and policy gaps that impact WASH access (ROCKBlue, 2025). This is because face-to-face interviews give a complete and even more detailed dialogue between the interviewer and the interviewee making them feel at ease in a friendly atmosphere therefore the interviewee gives out a larger amount of information required. Population of key respondents were 14 (n=14).

### 3.6.2 Questionnaires

A questionnaire is defined as the main instrument for collecting data which comprises a set of standardized questions to collect individual data Mc Leod, (2019). Structured questionnaires were administered to selected households to gather quantitative data on: Water sources and reliability, Types and conditions of sanitation facilities, Hygiene practices (e.g., Hand washing, waste disposal), Socioeconomic and demographic characteristics household's representatives selected by age. Above 18 representatives were only chosen (n=110). The questionnaire was pre-tested and refined to ensure clarity and relevance. It was designed based on global WASH indicators from WHO & UNICEF (2021).

### 3.6.3 Field observations

Field observations are a qualitative data collection method, which is used to observe naturally occurring behavior of people in their natural settings. Direct observation was used to validate self-reported data and assess: Physical condition of sanitation facilities, Water storage methods, and Waste disposal practices. Observation checklists were used to ensure consistency and reduce observer bias.

## 3.7 Reliability and Validity of Research Tools

Kurniawan *et al*, (2014) defined reliability as the extent of consistence that is shown by the procedure utilized in a research in order to provide more bankable results. To ensure reliability, all tools were standardized and administered consistently across households. The questionnaire was pilot-tested with 10 households to assess internal consistency and refine ambiguous items.

Validity was ensured through: Expert review of instruments by public health professionals, Triangulation of data from multiple sources (questionnaires, interviews, observation), Use of internationally recognized WASH indicators (WHO & UNICEF, 2021). These measures enhanced the credibility and generalizability of the findings.

## 3.8 Ethical Considerations

The research complied with the principles of human subject research. Important steps were: Informed consent: The participants were informed of the purpose of the study, procedures and their rights.

***Anonymity***: Anonymity of personal data was ensured.

***Voluntary participation***: The respondents were not obligated to stay, thus they could leave any time.

***Consent***: A recognized institutional review board provided ethical clearance.

These protections guaranteed the respect of the participants and adherence to the ethical standards (Saunders et al., 2019).

## 3.9 Chapter Summary

In this chapter, the methodological framework that was employed in the evaluation of water supply, sanitation, and hygiene (WASH) practices among households in Ruwa district, Zimbabwe was introduced. The descriptive cross-sectional design was followed with the pragmatic research philosophy that utilized both quantitative and qualitative designs. The research was aimed at the households in both formal and informal settlements and multi-stage sampling was employed to make the research representative.

The data collection instruments were structured questionnaires, key informant interviews, direct observation, and focus group discussions. These instruments facilitated triangulation and further

analyzed the WASH access, behaviours and influencing factors. Pilot testing, expert review, and alignment with global WASH indicators were used to ensure reliability and validity. Informed consent, confidentiality and voluntary participation were ethical considerations that were strictly adhered to.

In general, the methodology was a solid basis to come up with practical insights and recommendations to enhance WASH services in Ruwa.

# CHAPTER 4: DATA PRESENTATION, ANALYSIS AND DISCUSSION

## 4.0 INTRODUCTION

This chapter presents results from the assessment of Water supply, Sanitation and Hygiene practices among households in Ruwa. Looking at these three suburbs, Solomio, Ruwa location and Zimre Park. The study employed a mixed method approach, combining qualitative surveys and quantitative interviews with Ruwa residents, Environmental health technicians, Ruwa local board officials (Water Utility engineer and environmental technicians) and Community Health Workers.

## 4.1 OBJECTIVE 1: Sources and Reliability of Households water supply in Ruwa.

Objective 1 was trying to investigating sources and reliability of households in Ruwa. The findings show that new emerging suburb like Solomio prefer using wells and private boreholes than relying on Ruwa Local Board.

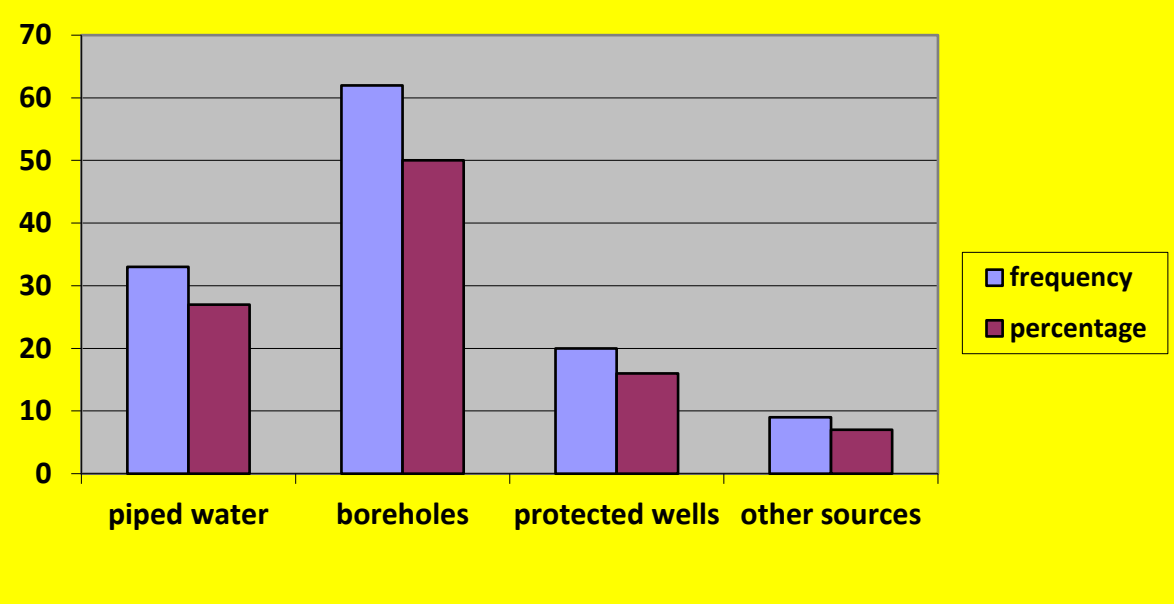



***Fig 4.1: primary household water sources (source: field work 2026)***

Fig 1 reveals the significant functionality deficit in municipal services in its findings. Only 27% of respondents rely on the Ruwa Local Board piped network water as their primary sources. The majority of (50%) have shifted to boreholes. There are community boreholes in Ruwa location and in Solomio and Zimre Park people are relying on private boreholes, indicating privatization of water sources in Solomio and Zimre Park. And lastly 16% are also relying on protected wells to get water and least of people are the 7% percent using other sources liking buying water from water vendors (illegal water suppliers) and nearby water streams.

From key informant interviews it was noted the aging infrastructure cannot keep up with the rapid expansion of informal settlements like Solomio and also they noted that they have a mixed of piped water, boreholes and protected wells. This leads to intermittent supply or contamination risks.

**Key informant 1**, *"some areas face intermittent supply or contamination risk, so we're working on infrastructure upgrades and promoting households water treatment options."*

Residents expressed frustration,

***Respondents 1**: "we pay rates but the tap has been dry for months, the community boreholes is only our lifeline."*

***Respondent 2**: "we use community borehole which is near the police station at Chiremba and at times they are crowded but, it is the most reliable source we have here in location"*

***Respondent 3**: "we use protected wells, but sometimes the water becomes dirty and not looking very good during rain seasons."*

Portraying water scarcity in households and they have to depend on community boreholes especially in Ruwa location, and in Solomio they mainly depend on wells and other community and private boreholes.

These results the Kenyan and Zambian context discussed in Chapter 2, where functionality deficit leads to a reliance on unregulated private sources. Above responses highlighted struggles on water supply due to short of water from a larger population which still depends on local authorities which was also agreed on by RLB officials as they highlighted water shortages which has forced the residents to copy using community and private boreholes and wells. This shows that water supply systems are not dependable, leading households to use unsafe sources and also unregulated. The reliance on other sources none from RLB piped systems increases vulnerability and health risks. Similarly with what was observed by Mhlanga (2019), as unreliable local board water forced households to rely on alternative sources. And also WHO and UNICEF JMP (2023) noted informal water dependency in developing countries due to infrastructure gaps. Hence Ruwa still reflects a typical-urban challenge of infrastructure stain on water supply

## 4.2 Objective 2: Types and conditions of sanitation facilities used by households

Objective 2 tried to overlook at types and conditions of sanitation facilities in Ruwa district. The findings were that most of the households uses flush to sewer sanitation facility. The results included the accessibility of these facilities

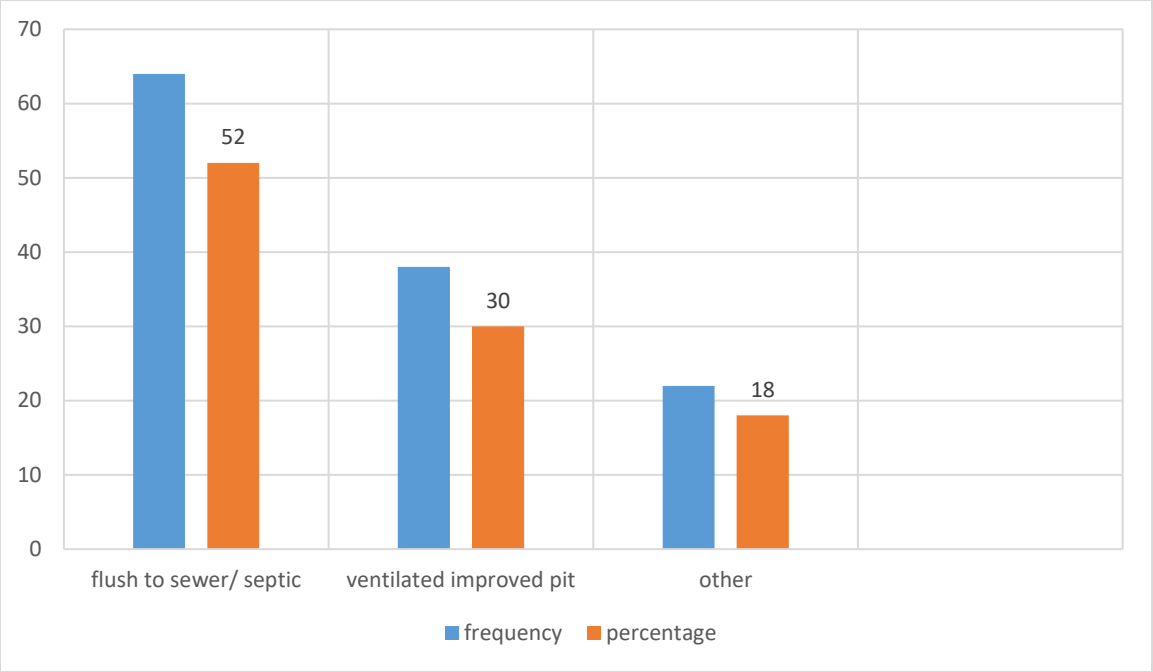



Fig 4.2: field work 2026

| Type of facility | GOOD | FAIR | POOR |
|---|---|---|---|
| Flush to sewer/septic | 32 | 19 | 13 |
| VIP | 20 | 12 | 6 |

Fig 2.1: field work 2026

Fig 2 and fig 3 summarizes the findings while 52% of the community uses some form of flush to sewer toilets with an observed number of 32 toilets which were clean and poorly maintained 13, a concerning 30% still rely on ventilated improved pits with 20 facilities in good condition and 6 poorly maintained, which pose a high risk of ground water contamination in areas like Solomio with high borehole density and Zimre. And least percent of 18% is relying on other sources like use of public toilets as they are facing challenges with their household toilets (as other facilities were not present within households to observe).

**Observations**, noted that many ventilated improved pit in Solomio were poorly maintained, with a large number of observed units having concrete floors or evidence of flies.

**Key formant** noted that, *" we have a mixed of sanitation facilities in Ruwa, including VIP toilets in some households and due to systematic urbanization flush or sewer and VIP are mostly coded."*

**Respondent 1**, "*the toilets fill up quickly and we do not have any knowledge on regular waste removal services."*

The condition varies; some are well maintained while others need upgrading or are at risk of collapse. They emphasize that they are working on promoting improved sanitation options and provides support for upgrades especially for vulnerable households through the help of community health workers and other stakeholders.

In a questionnaire one of the responded pointing a challenge with sewer tanks when they are full and some toilets not very clean as they cannot find time to clean them time to time and especially when 2 to 3 households are sharing the same toilet, they give each other duties but there will be no supervision.

**Discussion:** While access exists quality is lacking. This correlate the problem regarding the absence of formal planning in peri-urban hubs. This highlights that sanitation challenges are not only about access but also about sustainability and maintenance. This aligns with Nhapi (2009) who noted that sanitation systems in Zimbabwe often fail due to poor maintenance and rapid population growth in urban cities. However while literature suggest improved facilities, this study is highlighting ventilate improved pits system failing without maintenance.

## 4.3 Objective 3: Hygiene practices

Objective 3 summarizes hygiene practices on households in Ruwa district. Results indicated presence of hand washing stations, hygiene practices, water treatment and liquid and solid waste disposal methods being used.




***Fig 3.1: field work 2026***

The fig above is portraying hygiene practices are weakest link in the water supply, sanitation and hygiene practices chain. Only 17% of households had soap available at a designated hand washing station and also have hand washing basins at stations. Furthermore, 8% of households do not treat water before drinking, despite 50% relying on borehole that may be close to latrines.

**Questionnaire**: many respondents cited how they forget to place soap at hand washing stations and trust in borehole water as reasons for not practicing hand washing or water treatment. Some of the respondent, replied,

**Respondent 1**: "*we do trust borehole water more and as well as water from well as we are taught they are free from any bacteria that may affect water and our wellbeing"*,

**Respondent 2**, " *water is a challenge here so we don't have water reserved for washing hands often as it is reserved for cooking and washing*,"

Many residents imply that they were mostly encouraged to use borehole water than piped water in clinics where they take health education as it is safe. And they claim piped water sometimes it can run with residues inside and they end up using it for other house chores than for consuming.

Findings on solid waste management

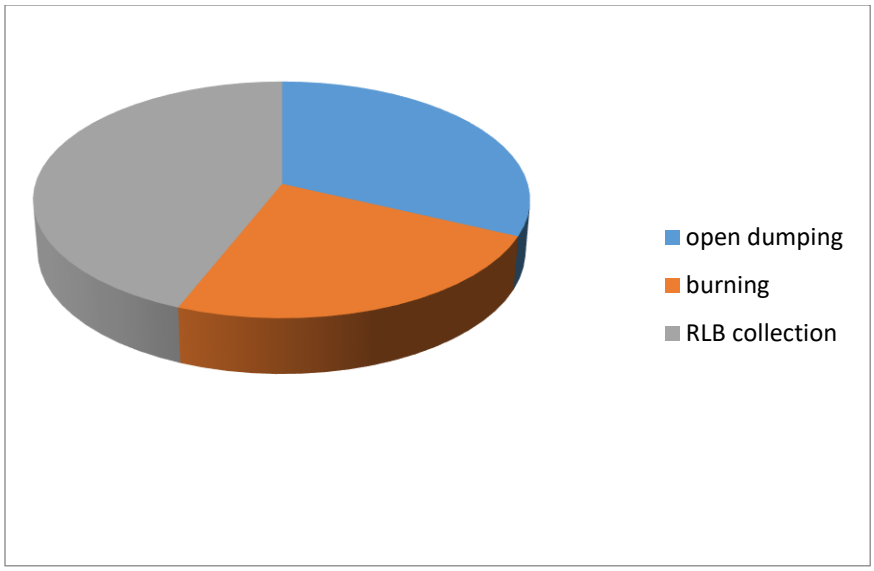



*Fig 4.2: field work*

Chart above illustrates how solid waste is disposed in three location of Ruwa which are Solomio, Ruwa location and Zimre Park. 32% of waste is being dumped along railway lines and near roads and market places, 24% of waste is burned and 44% of waste is collected by Ruwa Local Board and recycle or dispose it properly at their designated areas.

**Key interview 1**: "*waste collection services are available and the community rely on Ruwa Local Board waste collection trucks but, sometimes they delay due to challenges faced here and rubbish piles and already they don't collected regularly but they have days per location."*

***Respondent 1**: "we rely on RLB waste collection but sometimes they don't collect waste regularly so we do end up burning wastes at our backyards or at night we would dispose it at marabu near spar shops."*

**Observations:** while the researcher was doing data collection she observed waste dumped at little farms besides railway line in Ruwa locations. And also burning remains were seen at houses. (see fig 4.3.1 and 4.3.2)

Analysis: the findings show that burning and dumping rubbish at undesignated points is a coping mechanism that is already adopted by the community due to inefficient waste collection systems by RLB. It poses a risk on environmental and health hazards such as pollution and also leads to outbreak of choleras and diarrhea which is a highly recorded disease in Ruwa.

Waste water management

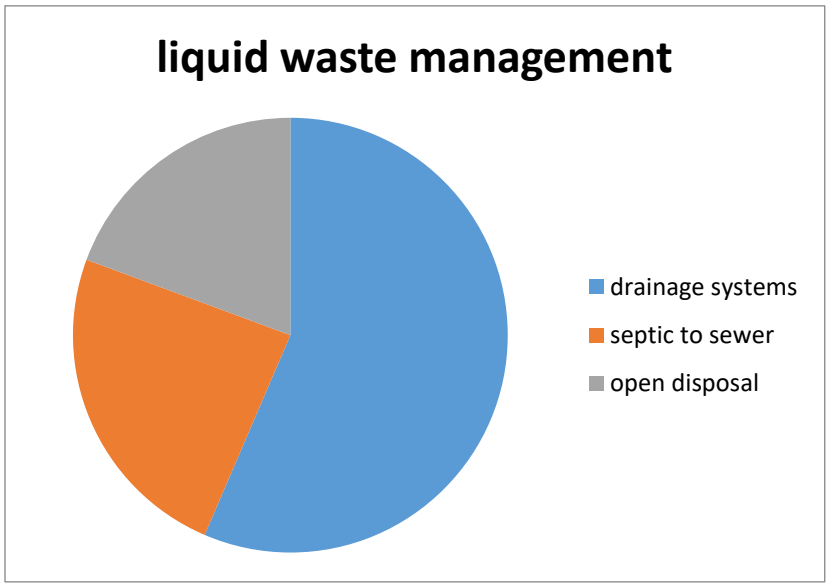



*Fig 4.3: field work 2026*

The data shows that drainage systems 56% as the community have relatively better access to formal waste disposal infrastructure, septic tanks 24% showing reliance on on-site sanitation system and open disposal 20% of liquid waste management practices which clearly shows gap in access to sanitation services.

**Key interview 1**: *"we have drainage systems in place, but maintenance is a challenge due to limited resources. In other areas like Solomio and Timire they are not yet connected to proper sewer systems, which forces residents to use alternative disposal methods like using septic tanks and waste water into open spaces increasing poor hygiene."*

**Key interview 2***: "open disposal of waste water is contributing to environmental contamination of disease outbreaks and communities need more awareness on safe hygiene practices, as services must also improve."*

Respondent 3: *"here in Ruwa location we rely on drainage systems, but sometimes the system blocks and overflow especially if you visit Mavambo areas during the rainy seasons."*

**Discussion**: This implies a high risk of E. coli contamination. As mentioned in questioners by EHTs, the lack of water treatment directly correlates with the endemic nature of typhoid and

diarrhea in the region. Linking to literature review, Owino et al. (2025) examined WASH practices in Busia, Kakamega, and Vihiga counties, finding that households often rely on shared water points and pit latrines. Hygiene practices such as hand washing in Ruwa location and mostly in Solomio are constrained by limited soap and water availability. The results emphasized that infrastructure reliability and community-led governance are crucial for sustaining household hygiene.

## 4.4 Objective 4: Factors affecting WASH practices

Objective 4 summarizes findings on factors affecting Water supply, sanitation and hygiene practices among households in Ruwa district. It highlighted lack of clean access to water being a major factor hindering successful WASH practices.

| Factor | Frequency | Percentage |
|---|---|---|
| Lack of clean access water | 50 | 40 |
| Low income | 30 | 24 |
| Poor sanitation facilities | 20 | 16 |
| Low awareness/ education | 15 | 12 |
| Cultural beliefs | 9 | 8 |

***Fig 4: correlation between factors and WASH practices (source: field work 2026)***

The above illustrated results shows that WASH practices are mainly influenced by structural and social-economic factors rather than individual behavior alone. The major factor affecting WASH practices is lack of access to clean water (40%) limited by infrastructure constraints, followed by low income (24%), indicating that both infrastructure and economic status significantly influence hygiene behaviors. Poor sanitation facilities have 16% meaning that in some areas infrastructures such as drainage systems and toilets and disposal services on waste are limited or overcrowded. 12% indicating that a portion of population still lacks sufficient knowledge on proper hygiene practices. Lastly there is 8% showing cultural beliefs as some practices are discouraging modern sanitation or promote unsafe disposal practices.

**Key informant interview 1:** *"Zimre Park has relatively better sanitation infrastructure, but maintenance issues are increasing health risk as more of tested water is resulting in E.coli found increasing the rate of diarrhea recorded in clinics"*

**Key informant Interview 2**: *"the major WASH problem is not only on water access but also on poor sanitation practices and inadequate waste disposal systems especially in Ruwa location which have a high population than others".*

**Respondent 1:** *"as access to water is a challenge here in Solomio, in rainy seasons we get unclear water from our wells and even in boreholes sometimes as residues are observed from our buckets when the water settles,"*

From **observations**: from all the three locations in the study their difference in structural development, sources of water used defines status and economic differences. In Ruwa location more households cannot afford private boreholes and hence in Zimre park almost half of the population own boreholes for water access.

**Discussion**: this confirms that WASH access in Ruwa is not equitable and influenced by socioeconomic status, Solomio has the poorest WASH conditions followed by Ruwa location, while Zimre Park show relatively better infrastructure but still faces sanitation risks. This is supported by JMP(2023) which emphasize inequalities in WASH access across income groups, also studies of Kenya and Zambia Tembo and Phiri(2025), highlights that economic and governance factors shape household WASH outcomes.

## OBSERVATIONS

Observation 1: illegal dumping site in Ruwa location



Fig 4.3.1 :  shot on Camera 2026

Observations on illegal dumping areas were witnessed during the field work on hygienic practices in households which includes waste disposal. The image shows illegal dumpsite for a numbr of mixed households. Poor waste management as it shows an unsegregated waste and and the area looked like an unmanaged area. This may pose illness as such dumping sites attract disease vectors like flies and mosquitoes which spread malaria and typhoid and other sanitation related diseases.

Observation 2: open burning of waste



Fig 4.3.2 : shot on camera 2026

The picture above shows a bin area at backyard where household waste is burned portraying concerns about hygiene and waste disposal practices as in Ruwa households are seeing it as an escape plan from rubbish collection by RLB as there is limited access to organized waste collection in Solomio. As shown in the diagram all waste has not been fully burnt posing environmental and health risks. Burning waste might lead to pollution causing respiratory illness and also the site might still attract pest such as flies and rodents especially when organic matter is still available.

Observation 3: Drainage system blockages



Fig 4.3.3 : shot on camera 2026

The image above is showing a drainage opened after a blockage at spar as there is an inter-link on surrounding houses. This secondary data shows several important issues related to household hygiene and also poor drainage systems in cities as they should allow continuous flow of waste to avoid sewer burst. This also shows that at household level solid waste is dumped in the channel which blocks water flow and worsens stagnation. This pose environmental pollution and increased public health.

## 4.5 CHAPTER SUMMARY

This chapter summarizes findings of water supply, sanitation and hygiene practices among households. Data was acquired from questionnaires, interviews and observations. Discussions were done using literature review and analysis from all respondents. Findings reviews most used water source as from boreholes highlighting a shortfall of local authority supply, sanitation upgraded still at low percentage hence showing compliance and improvements in the urban. Findings on hygiene practices were highlighted and also factors affecting WASH services or practices as WASH are concluded to be accessible and not equitable.

# CHAPTER 5: SUMMARY, CONCLUSION AND RECOMMENDATIONS

## 5.1: SUMMARY OF FINDINGS

### 5.1.1 Objective1: Sources and Reliability of Households water supply in Ruwa.

The study found out that most households in Ruwa have access to water; however, the reliability and safety of water sources vary considered but income level and location. High income households largely depend on private boreholes to compensate foe unreliable municipal supply, and others on low income depends on wells and community boreholes and communal wells and intermittent piped water. Households treatment practices were limited, increasing the risk of were borne diseases among vulnerable groups. Water access and type of sources are defined with location as in Ruwa location mainly depend on council supply and community boreholes, Solomio residents on wells and private boreholes. In Zimre park private boreholes are dominating and council water supply not their worry.

This finding supports the view of WHO and UNICEF 2017 who states that "safely managed drinking water requires more than access, including reliability and water quality."

### Objective 2: Types and conditions of sanitation facilities used by households in Ruwa

the results indicate that although a majority of households use sanitation facilities classified as improved, a significant proportion still relies on traditional pit latrines. Statistics indicate that the

sanitation facilities are not well maintained, which makes them less effective and endangers the environment and health.

This is in line with WHO (2018), which highlights that the health benefits of better sanitation require proper maintenance and safe handling of facilities.

### Objective 3: Hygiene practices in households.

The research found that hygiene behaviors especially hand washing using soap are not well practiced in most households. Fewer than half of the households had hand washing facilities that were within reach of toilets and access to soap was limited. This restricts the health protective benefits of water and sanitation services.

This is in line with Freeman et al. (2017), who mention that the availability of soap and water at hand washing areas is the most predictive of effective hygiene behavior,

### Objective 4: socioeconomic and structural drivers of WASH practices.

The paper has shown that access to water, sanitation and hygiene services in Ruwa is determined by socioeconomic status. The wealthier households were always better in their water sources, better sanitation facilities and better hygiene conditions whereas the low income households had to struggle with many issues.

This substantiates Hutton 2016 who claims that income and social exclusion are the major contributing factors to inequalities in WASH access.

## 5.2 CONCLUSION OF FINDINGS

### 5.2.1 Objective 1: Households Water supply, Sources and Practices

They examine the study concludes that water access in Ruwa is very stratified with regards to economic status. It determined that water supply is neither reliable nor equitable although most households in Ruwa have some access to water. Municipal water supply failures have been adjusted to by high income households using investments in private boreholes and low income households through reliance on communal boreholes, wells and fragmentary piped systems. The insufficient practice of households' water treatment also puts vulnerable populations at a risk of health, and the most common one is water borne diseases and diarrhea. Despite the adoption of water treatment in some households, either by boiling or aqua-tabs, the adoption is low 35% indicating a lack of awareness, affordability or regularity.

### 5.2.2 Objective 2: Sanitation facilities types and conditions

The results show that despite the fact that most (52%) houses had better sanitation amenities, a significant number continue to use the ventilated improved pits and other sanitation facilities. Additionally, inadequate upkeep of the current sanitation facilities compromises their safety and efficiency, which increases the chances of environmental pollution and the spread of diseases.

On-site inspection indicated that most of the sanitation facilities are in a bad condition with 40% of the latrines inspected having concrete floors or flies. This means that the mere access does not ensure safe sanitation and maintenance practices are a significant weakness.

Consequently, poor sanitation in Ruwa is not only on the basis of facility deficiency, but on the maintenance and environmental management.

### 5.2.3 Objective 3: Hygiene Practices

Hygiene practices became the least strong aspect of WASH chain. The research indicates that hygiene habits especially hand washing with soap are not well embraced by the households in Ruwa. The lack of soap and easy access to hand washing is a constraint to the health potential of existing water and sanitation services, particularly in low-income households. Lack of proper hygiene practices heightens the chances of diarrheal diseases especially in children and were corrupted by interviews of key informants who pointed out that there was a frequent incidence of diseases in low income clusters.

The problem of waste management is also important because numerous individuals rely on the services of Ruwa Local Board, yet the system that presents its problems to the residents is causing them to turn to other waste disposal methods that they appear to find appropriate to themselves like burning and dumping. This therefore results in environmental hazards and outbreak of diseases within the society.

This supports the fact that hygiene practices are the weakest link in the WASH chain and have a critical negative impact on the general health outcomes in Ruwa.

### 5.2.4 Objective 4: Impact of Socioeconomic factors on WASH Access.

The research established that WASH access and quality in Ruwa are mainly predetermined by socioeconomic status and structures. The level of income also affects the nature of the water source utilized as well as the facilities and practices of hygiene. Shared facilities, lack of resources to

maintain the facilities and access to hygiene material compound the risks faced by low income households.

Thus, the WASH access in Ruwa is fundamentally unfair, and low-income households are vulnerable to compounded because of the lack of resources and structural exclusion.

## 5.3 RECOMMENDATIONS

Resting on the findings and conclusions, the following recommendations are suggested to Ruwa key beneficiaries on Water supply, Sanitation and Hygiene Practices research conducted in Ruwa District:

- The local government ought to embrace decentralized and pro-poor WASH planning strategies that focus on low income communities and peri urban communities. Gender sensitive WASH planning should also be incorporated, taking into consideration that women and children are the ones who bear disproportionate burden in collection of water and household hygiene.
- The rehabilitation and upgrading of municipal water infrastructure should be observed to provide reliable and safe supply of piped water by the Rwau local board officials. Encouragement of controlled community boreholes that have regular water quality analysis. This involves also household water treatment and safe storage public health campaigns.
- The government and local authorities should gradually stop using traditional pit latrines, particularly in high density areas such as Ruwa location first. Subsides or micro financing programs to assist low income families in improving and better sanitation facilities. Education programs in the community should be focused on maintenance of sanitation facilities and a regular check-up and imposition of sanitation reinforced.
- Community health workers, environmental health practitioners or technicians need to enhance hygiene education programs, emphasising on hand washing with soap during emergent periods and providing low cost hygiene materials in susceptible communities.
- The residents should assume responsibility to embrace safe WASH practices in their homes. This involves treatment and safe storage of water, latrines and frequent hand washing. Accountability and sustainability can be enhanced by collective action, e.g. establishing neighbourhood committees to oversee common water points.
- The government ought to offer hygiene kits, chlorine pills and soap to the households. They are also able to fund community initiatives like rainwater harvest and environmentally friendly

constructions of latrines. In addition to providing resources, stakeholders concerned need to push towards sustainable WASH funding and educate local health workers on hygiene promotion to enable communities to be resilient and self-sufficient in the long run.

- Community health workers is a mediator between households and health system. They need to work on educating families on the need to have hand washing facilities at the most important moments like after visiting a toilet and before cooking. Low-cost hand washing amenities such as tippy taps can be demonstrated to promote the use of hygiene practices even in resource limited environments.

# REFERENCE


Allaire, M., Wu, H., & Lall, U. (2018). National trends in drinking water quality violations. *Proceedings of the National Academy of Sciences*, 115(9), 2078–2083. https://doi.org/10.1073/pnas.1719805115

Bain, R., Cronk, R., Hossain, R., Bonjour, S., Onda, K., Wright, J., Yang, H., Slaymaker, T., Hunter, P., & Prüss-Ustün, A. (2015). Global assessment of exposure to faecal contamination through drinking water. *Tropical Medicine & International Health*, 19(8), 917–927.

Bose, R. The impact of water supply and sanitation interventions on child health: evidenced from DHS surveys. In Proceedings of the Bi-annual Conference on Impact Evaluation in Colombo, Colombo, Sri Lanka, 22-23 April 2009

Centers for Disease Control and Prevention (CDC). (2022). *Drinking water and public health*. https://www.cdc.gov

Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). Sage Publications.

Creswell, J. W., & Plano Clark, V. L. (2017). *Designing and conducting mixed methods research* (3rd ed.). Sage Publications.

DigDeep & U.S. Water Alliance. (2023). *Closing the water access gap in the United States*.

Drinking Water Inspectorate. (2023). *Drinking water quality in England report*.

Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics*, 5(1), 1–4.

Freeman, M. C., Stocks, M. E., Cumming, O., Jeandron, A., Higgins, J. P. T., Wolf, J., Prüss-Ustün, A., Bonjour, S., Hunter, P. R., Fewtrell, L., & Curtis, V. (2017). Hygiene and health: Systematic review of hand washing practices worldwide. *International Journal of Epidemiology*, 43(3), 906–916.

JMP (WHO/UNICEF Joint Monitoring Programme). (2023). *Progress on household drinking water, sanitation and hygiene 2000–2022*.

Kenya Water, Sanitation and Hygiene Program (K-WASH). (2022–2030). *National water and sanitation investment plan*.

Kirui, P. (2025). Water and sanitation policy implementation in Kenya. *Journal of African Development Studies*.

Kurniawan, R., et al. (2014). Reliability in research instruments. *Journal of Research Methods*.

Manzungu, E., & Machiridza, R. (2005). Economic-legal ideology and water management in Zimbabwe. *Physics and Chemistry of the Earth*, 30(11–16), 799–804.

Matere, J., et al. (2023). Mixed methods research in development studies. *African Research Review*.

McLeod,S.(2019).Questionnaire design. *Simply Psychology*. https://www.simplypsychology.org

Mhlanga, D. (2019). Urban water supply and sanitation challenges in Zimbabwe. *Journal of Urban Studies*.

Muzondi, L. (2014). Environmental and soil characteristics of Ruwa. *Zimbabwe Geographical Review*.

Ng'andwe, P., et al. (2025). Hygiene practices in informal settlements in Zambia. *Public Health in Africa*.

Nhapi, I. (2009). The water situation in Harare, Zimbabwe. *Water Policy*, 11(2), 221–235.

Ofwat. (2023). *Water company performance report*.

Owino, F., et al. (2025). Household WASH practices in western Kenya. *African Journal of Environmental Health*.

ROCKBlue. (2025). *Water governance and infrastructure report in Zimbabwe*.

Ruwa Local Board. (2025). *Water and sanitation service report*.

Saunders, M., Lewis, P., & Thornhill, A. (2019). *Research methods for business students* (8th ed.). Pearson.

Tembo, B., & Phiri, M. (2025). Rural water supply and sanitation in Zambia. *Water Policy Journal*.

U.S. Environmental Protection Agency (EPA). (2023). *Safe Drinking Water Act overview*. https://www.epa.gov

UN-Habitat. (2016). *World Cities report: Urbanization and development: Emerging futures*. Nairobi, Kenya: UN-Habitat.

UNICEF. (2021). State of the world's children: On my mind: Promoting, Protecting and Caring for Children's mental health. *New York, NY: United Nations Children's Fund.*

United Nations (2015). Transforming our world: The 2030 Agenda for Sustainable Development . United Nations.

University of Zimbabwe. (2019). *Urban WASH challenges in Zimbabwe*. A comprehensive assessment of water, sanitation and hygiene infrastructure.

Water UK. (2022). *Household water safety guidance*: Best practices for maintained domestic water systems.

WHO & UNICEF. (2021). *Progress on household drinking water, sanitation and hygiene* (2000-2020): Five years into the SGD geneva, Switzerland: World Health O

WHO (World Health Organization). (2017). *Guidelines on sanitation and health*.

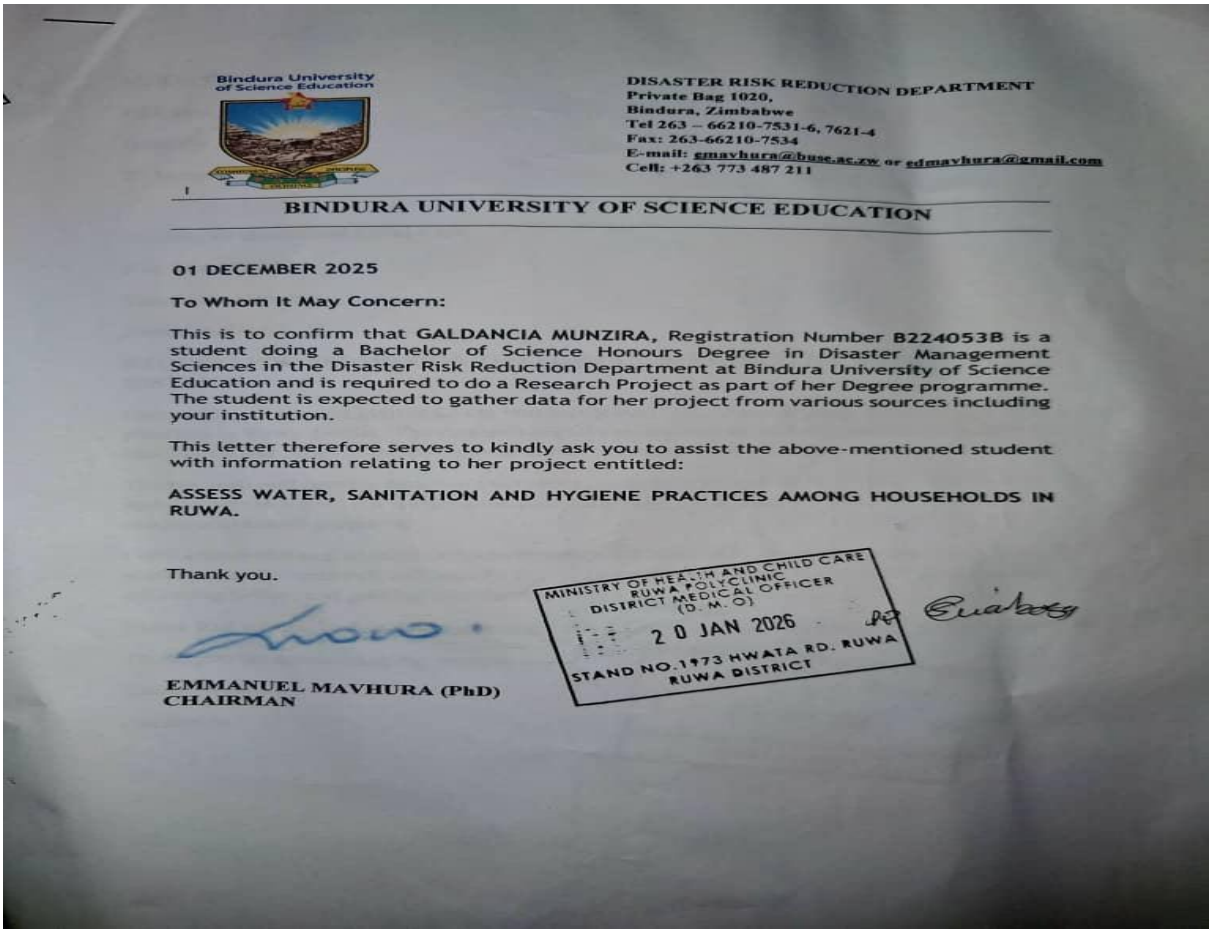
WHO/UNICEF Joint Monitoring Programme (JMP). (2021, 2023). *Global WASH reports*.

Wolf, J., et al. (2019). Impact of inadequate hand washing facilities on disease transmission. *The Lancet Global Health*, 7(11), e1492–e1499.

ZIMSTAT. (2022). *Zimbabwe population and housing census report*.

# APPENDICES

## APPENDIX 1: A letter of approval from the Ministry of Health and Child Care, District Medical Officer Office-Ruwa



Bindura University of Science Education

DISASTER RISK REDUCTION DEPARTMENT
Private Bag 1020,
Bindura, Zimbabwe
Tel 263 – 66210-7531-6, 7621-4
Fax: 263-66210-7534
E-mail: emavhura@buse.ac.zw or edmavhura@gmail.com
Cell: +263 773 487 211

BINDURA UNIVERSITY OF SCIENCE EDUCATION

01 DECEMBER 2025

To Whom It May Concern:

This is to confirm that **GALDANCIA MUNZIRA**, Registration Number **B224053B** is a student doing a Bachelor of Science Honours Degree in Disaster Management Sciences in the Disaster Risk Reduction Department at Bindura University of Science Education and is required to do a Research Project as part of her Degree programme. The student is expected to gather data for her project from various sources including your institution.

This letter therefore serves to kindly ask you to assist the above-mentioned student with information relating to her project entitled:

**ASSESS WATER, SANITATION AND HYGIENE PRACTICES AMONG HOUSEHOLDS IN RUWA.**

Thank you.

MINISTRY OF HEALTH AND CHILD CARE
RUWA POLYCLINIC
DISTRICT MEDICAL OFFICER
(D. M. O)
20 JAN 2026
STAND NO. 1973 HWATA RD. RUWA
RUWA DISTRICT

**EMMANUEL MAVHURA (PhD)**
**CHAIRMAN**

## APPENDIX 2: INTERVIEW GUIDE FOR KEY INFORMANTS

My name is Galdancia Munzira student of the Bindura University of Science Education. I am pursuing a degree in Bachelors of Science Honors degree in Disaster Management Sciences. I am conducting a research on the evaluation of Water Supply, Sanitation and Hygiene Practices among households in Ruwa District. My research is based on the following objectives, to assess sources and reliability of household water supply in Ruwa, to assess types and conditions of sanitation facilities utilized by households, to assess hygiene practices, such as hand washing, water storage and waste disposal. I am thus asking you to help me in taking part in this survey. Your answers will be kept confidential and anonymous.

INTERVIWEE No…….

Date…….

Sex of respondent: ☐Male ☐Female ☐Other

Age……

Ward/Area…….

1. **Understanding the context**
    a. Can you provide some background information about water supply, sanitation and hygiene practices among households in Ruwa and its insights for improvements?
    b. How did the Ruwa local board and the Ministry of Health and Child Care response and address WASH services to the community
2. **Sources and reliability**
    a. What are common water sources for household in your area?
    b. What is the water supply coverage in Ruwa? (RLB)
    c. Are there any challenges with water availability or quality?
    d. How do households typically handle water treatment or purification?
    e. How many sentinel sites do you have in Ruwa?
    f. How often do you taste water sentinel sites?
3. **Types and conditions of sanitation facilities**
    a. What types of toilets do most households use?

b. How often do you inspect sanitation facilities?
c. What are the condition of these facilities generally?
d. Do households share toilets? If so how does that work?
e. What happens when toilets are full or broken?
f. How do you handle complains about WASH services?

**4. Hygiene practices**

a. How do people usually handle waste?
b. Are there any challenges with soap access or use?
c. Are there any factors influencing hygiene behaviours in households?
**d.** Do you have any challenges with waste management?

**5. Recommendations for improvement**

a. Based on your experiences and expertise, what recommendations would you propose to improve WASH services among households in Ruwa?
b. What practical steps can improve water access?
c. Who should lead WASH improvements in Ruwa District

**6. Closing**

a. Are there any WASH comments, or insights you would like to share regarding the accessibility and quality of water, sanitation facilities and hygiene practices among households in Ruwa?
b. Do you have partnership to improve WASH services?

***Thank you for your time and valuable input in my research***

## APPENDIX 3: FIELD OBSERVTION CHECKLIST

My name is Galdancia Munzira a student from Bindura University of Science Education. I am currently studying a degree in Bachelors of Science Honors' degree in Disaster Management Sciences. I am carrying out a study on the **"Assessment of Water Supply, Sanitation and Hygiene Practices among households in Ruwa District".** The main thrust of my research is hinged on the following objectives, to evaluate sources and reliability of household water supply in Ruwa, to examine types and conditions of sanitation facilities used by households, to assess hygiene practices, including hand washing, water storage and waste disposal. I am therefore requesting your assistance to participate in this survey. I assure you of utmost confidentiality and anonymity of your responses.

1. Water supply

a. Origin of water (piped, borehole, well, other)

b. Does the source have protection against contamination?

c. Safe storage containers available.

d. Indications of water treatment (chlorination, filtration)

2. Sanitation facilities

a. Latrine or toilet type.

b. Location (distance between household and water source)

c. Cleanliness and maintenance (of smell, flies, faeces)

d. Accessibility of hand washing facility to latrine.

e. Accessibility

3. hygiene practices

a. Availability of hand washing equipment with soap/ash and water.

b. Monitoring of real hand washing behavior.

c. Personal hygiene

4. Waste management

a. Waste disposal, solid and liquid.

b. Stagnant water.

c. Community waste management system.

5. Environmental cleanliness

a. Household surroundings

6. Health and behavior indicators.

a. Diarrhea, cholera or other water-borne diseases.

b. WASH practices in the community.

c. Participation in hygiene promotion activities.

NB: these observations were done by marking(ye/no) and rating scales location.

## APPENDIX 4: QUESTIONNAIRE FOR RUWA COMMUNITY

My name is Galdancia Munzira a student from Bindura University of Science Education. I am currently studying a degree in Bachelors of Science Honors' degree in Disaster Management Sciences. I am carrying out a study on the "Assessment of Water Supply, Sanitation and Hygiene Practices among households in Ruwa District". I am therefore requesting your assistance to participate in this survey. I assure you of utmost confidentiality and a pledge that all the information gathered will be strictly used for academic purposes and please note that your participation in this survey is voluntary.

**May you please tick where applicable.**

**Section A: Household Identification**

QUESTIONNAIRE No_____

Date _____

Sex of respondent: ☐Male ☐Female ☐Other

Age: _____

Ward/Area: _____

Household size: _____

**Section B: Water Supply**

1. What is your main source of water for household use? ☐Piped water ☐Borehole ☐well

☐Other (specify): _____

2. Is this water source available throughout the year? ☐Yes ☐No

If no, specify months when it is unavailable: _____

3. How many hours per day is water available from your main source? ☐Always available

☐Less than 4 hours ☐4–8 hours ☐More than 8 hours

4. How far is the water source from your home? ☐Within dwelling ☐Less than 500 meters

☐500–1000 meters ☐More than 1 km

5. Do you treat your water before drinking? ☐Yes ☐No

If yes, how? _____

**Section C: Sanitation Facilities**

6. What type of toilet facility does your household use? ☐Flush toilet (connected to sewer/septic)

☐Ventilated improved pit latrine ☐Other:

7. Is the toilet shared with other households? ☐No (private) ☐Yes → Number of households sharing: _____

8. Is the toilet facility functional and in good condition? ☐Yes ☐No

If no, explain: _____

9. Is the toilet facility accessible to all household members (e.g., children, elderly, disabled)?

☐Yes ☐No

**Section D: Hygiene Practices**

10. Do you have a designated hand washing facility?

☐Yes ☐No

11. Is water and soap available at the hand washing facility? ☐Water only ☐Water and soap/ ash

☐Neither

12. When do household members usually wash their hands? (Select all that apply)

☐Before eating ☐After using the toilet ☐Before preparing food

☐After handling waste ☐Rarely/Never

13. How do you store drinking water at home? ☐Covered container ☐Uncovered container

☐Bottled water ☐Other

14.(a) How do you dispose of household solid waste? ☐Collected by municipality ☐Burned ☐ Dumped in open area ☐Other

14(b). How often is waste collected? ☐After 3 days ☐weekly ☐monthly

15. How do you dispose of wastewater (e.g., from bathing, washing)?

☐Soak pit ☐Drainage system ☐Poured in open area ☐Other: _____

**Section E: Socioeconomic Factors**

16. What is the highest level of education attained by the head of household?

☐No formal education ☐Primary ☐Secondary ☐Tertiary

17. What is the main source of income for your household?

☐Formal employment ☐Informal trade ☐Farming

☐Remittances ☐Other: _____

18. What is your estimated monthly household income?

☐Less than USD 50 ☐USD 50–100 ☐USD 101–200 ☐Above USD 200 ☐Prefer not to say

19. Have you received any WASH-related education or training in the past year? ☐Yes ☐No

20. what are other factors affecting water supply, sanitation and hygiene practices among households?

……
…….

21. What challenges do you face in accessing safe water, sanitation, or hygiene services?

……
……
……..

22. What improvements would you recommend for WASH services in your area?

……
……

---

## Appendix 5: QUESTIONNAIRE FOR COMMUNITY HEALTH WORKERS

My name is Galdancia Munzira a student from Bindura University of Science Education. I am currently studying a degree in Bachelors of Science Honors' degree in Disaster Management Sciences. I am carrying out a study on the "Assessment of Water Supply, Sanitation and Hygiene

Practices among households in Ruwa District”**.** I am therefore requesting your assistance to participate in this survey. I assure you of utmost confidentiality and a pledge that all the information gathered will be strictly used for academic purposes and please note that your participation in this survey is voluntary.

1. Are you trained to be CHW? (yes/no)
   If yes, how many years have been working in Ruwa?
2. How do community health workers collaborate with other stakeholders on WASH initiatives (Ministry of Health and Child Care and Ruwa Local Board)?
3. What’s the role of CHWs in promoting public health issues?
4. How do CHWs identify and address WASH related health issues in the community?
5. Do you conduct households’ visits focused on wash? (yes/no)
   And how often?
6. Are there any WASH educational materials available for CHWs to use?
   (yes/no) if yes give examples
7. Are there any specific WASH targets or goals you’re working towards Ruwa?
8. How do you ensure vulnerable groups are included in WASH initiatives?
9. What strategies do you use to encourage communities to adopt better WASH practices?