RELEVANCE OF SUSTAINABLE RURAL WATER SUPPLY AND SANITATION PROGRAM ON IMPROVING SANITATION FACILITIES AT THE HOUSEHOLD LEVEL IN ITILIMA DISTRICT SIMIYU REGION

WILSON STANLEY KILUWASHA (BD PPM)

MSc. Project Management, Monitoring and Evaluation in Health

Muhimbili University of Health and Allied Sciences

October 2024

Muhimbili University of Health and Allied Sciences

School of public health and social sciences

Department of Development Studies

RELEVANCE OF SUSTAINABLE RURAL WATER SUPPLY AND SANITATION PROGRAM ON IMPROVING SANITATION FACILITIES AT THE HOUSEHOLD LEVEL IN ITILIMA DISTRICT SIMIYU REGION

By

Wilson Stanley Kiluwasha

A Dissertation submitted in (Partial) Fulfilment of the Requirements for the Degree of Masters of Science in Project Management, Monitoring and Evaluation in Health of

Muhimbili University of Health and Allied Sciences

October 2024

CERTIFICATION

The undersigned certify that they have read and hereby recommend for acceptance by the **Muhimbili University of Health and Allied Sciences (MUHAS), a dissertation entitled "Relevance of Sustainable Rural Water Supply and Sanitation Program on improving sanitation facilities at the household level in Itilima District Simiyu Region"** in (partial) fulfillment of the requirements for award of the degree of Master of Science of Project Management, Monitoring and Evaluation in Health (PMMEH) of Muhimbili University of Health and Allied Sciences (MUHAS).

_____

Dr. Hussein Mohamed

(Main Supervisor)

_____

Date

_____

Ms. Elines Mwasanga

(Co-supervisor)

_____

Date

DECLARATION AND COPYRIGHT

I, **Wilson Kiluwasha,** declare that this dissertation is my own original work and that it has not been presented and will not be presented to any other University for a similar or any other degree award.

Signature……..…… **Date…….**

This dissertation is a copyright material protected under the Berne Convention, the Copyright Act 1999 and other international and national enactments, in that behalf, on intellectual property. It may not be reproduced by any means, in full or in part, except for short extracts in fair dealing, for research or private study, critical scholarly review or discourse with an acknowledgement, without a written permission of Directorate of Postgraduate Studies, on behalf of both the author and the Muhimbili University of Health and Allied Sciences.

ACKNOWLEDGEMENTS

I would like to express my sincere appreciation for the tremendous support and guidance I received during the development of this work. First and foremost, I am profoundly grateful to the Almighty Lord for granting me the energy, wisdom, and passion to embark on this endeavor.

I extend my heartfelt thanks to my supervisor, Dr. Hussein Mohamed, and Ms. Elines Mwasanga for their invaluable time and expertise in guiding me through this work.

I am also sincerely thankful to the teaching and administrative staff of the MUHAS School of Public Health and Social Sciences for their exceptional teaching, constructive criticism, and guidance, all of which have been instrumental in bringing this work to fruition.

My gratitude also extends to Itilima DC for granting me the opportunity to conduct my research in their district. I am deeply appreciative of the District Health Officer and their team for graciously offering their time and active participation during the data collection process.

Finally, I would like to express my profound gratitude to my father, Stanley Kiluwasha, my mama Anjelina Stanley, as well as my family and friends for their unwavering support, understanding, and flexibility throughout this educational journey.

DEDICATION

I dedicate the completion of my dissertation to my friend Holy Ghost, Father Stanley Kiluwasha, Mama Anjelina Stanley, and my family members. Their guidance and encouragement have been invaluable throughout this journey.

ABSTRACT

Introduction: Unimproved sanitation is a significant global concern, leading to adverse health outcomes and increased healthcare costs. Despite efforts to address this issue, many households lack access to improved sanitation facilities. In response, Tanzania has implemented several programs to improve sanitation, including the Sustainable Rural Water Supply and Sanitation Program (SRWSSP).

Objective: To assess the relevance of the SRWSSP in improving sanitation facilities in Itilima District.

Methods: A cross-sectional study with a quantitative approach was employed. Data were collected from household heads using questionnaires and observations. Descriptive statistics analyzed socio-demographic characteristics, latrine coverage, toilet utilization, and attitudes toward sanitation. Multivariable logistic regression identified factors associated with acceptance, with significance set at a P-value of less than 0.05.

Results: In Itilima District, 23% of households had improved sanitation facilities, with 54.3% utilization. Regarding acceptance, 55.4% of respondents noted efforts to improve sanitation, while 43.8% felt comfortable with the facilities. Significant factors associated with acceptance included age (40-59 years: AoR = 0.29, P = .014; 60+ years: AoR = 0.04, P = .000), income (AoR = 0.17, P = .043), education (AoR = 3.17, P = .022), and family size (AoR = 3.93, P = .047).

Conclusion: Improved sanitation facilities show partial relevance, with moderate relevance for utilization and acceptance. Despite efforts, many households continue to use unimproved facilities due to inadequate infrastructure and socio-economic disparities. Recommendations include promoting durable, culturally appropriate sanitation facilities, implementing health education programs to highlight the benefits of improved sanitation, and providing targeted subsidies to enhance improved sanitation among households.

TABLE OF CONTENTS

CERTIFICATION i
DECLARATION AND COPYRIGHT ii
ACKNOWLEDGEMENTS iii
DEDICATION iv
ABSTRACT v
LIST OF TABLES x
LIST OF FIGURES xi
LIST OF ABBREVIATIONS xii
OPERATIONAL TERMS xiii
CHAPTER ONE 1
1.0 INTRODUCTION 1
1.1 Background of the study 1
1.1.1 Description of the intervention 2
1.2 Problem statement 4
1.3 Conceptual framework 5
1.4 Rationale of the study 8
1.5 Research Questions 8
1.5.1 Main research question 8
1.5.2 Specific Research Questions 8
1.6 Research Objectives 9
1.6.1 Main research objective 9
1.6.2 Specific evaluation objectives 9
CHAPTER TWO 10
2.0 LITERATURE REVIEW 10
2.1 Household's latrine coverage 10
2.2 Utilization of household toilets 11
2.3 Acceptability of the SRWSSP 12

2.3.1 Affective attitude for the acceptability of improved sanitation facilities ... 12
2.3.2 Perceived effort required for acceptability of the program ... 13
2.4 Knowledge gap ... 14
CHAPTER THREE ... 15
3.0 RESEARCH METHODS ... 15
3.1 Study Design ... 15
3.2 Study Area ... 15
3.3 Target population ... 16
3.4 Eligibility criteria ... 16
3.4.1 Inclusion criteria ... 16
3.4.2 Exclusion criteria ... 17
3.5 Sampling and Sample Size Estimation ... 17
3.5.1 Sample size ... 17
3.5.2 Sampling technique ... 18
3.6 Dependent and independent variables ... 18
3.6.1 Dependent variable ... 18
3.6.2 Independent variables ... 19
3.7 Data Collection Methods ... 20
3.7.1 Questionnaire ... 20
3.7.3 Data collection procedures ... 20
3.8 Investigation tools and validity and reliability issues ... 21
3.8.1 Validity ... 21
3.8.2 Reliability ... 21
3.9 Data management ... 21
3.10 Data analysis and presentation ... 22
3.11 Ethical consideration ... 22
CHAPTER FOUR ... 24
4.0 STUDY FINDINGS ... 24

4.1 Demographic Characteristics of the Respondents 24
4.2 Proportion households with improved sanitation facility 26
4.2.1 Types of Toilets and its Features 26
4.3 Proportion households utilizing the sanitation facilities 27
4.3.1 Latrine Utilization Evidence 28
4.4 Household acceptance of improving sanitation facility 28
4.4.1 Perceived attitude 28
4.4.2 Perceived effort on improved sanitation facilities 29
4.4.3 Demographic factors influencing household acceptability on improving sanitation facilities. 30
CHAPTER FIVE 33
5.0 DISCUSSION 33
5.1 Discussion 33
5.1.1 Proportion of Improved toilets 33
5.1.1.1 Toilets types and its features on improved toilets 34
5.1.2 Toilets utilization 35
5.1.2.1 Utilization evidences 36
5.1.3 Households' acceptance 37
5.1.3.1 Socio-demographic factors influence household acceptance 37
5.2 Strengths and weakness of the study 39
5.2.1 Strength 39
5.2.2 Weakness 40
CHAPTER SIX 41
6.0 CONCLUSION AND RECOMMENDATION 41
6.1 Conclusion 41
6.2 Recommendations 42
7.0 References 44
8.0 APPENDICES 53

8.1 Appendix I: Informed consent form- English 53
8.2 Appendix II: Questionnaire - English 55
8.3 Appendix III Observation Checklist - English 58
8.4 Appendix IV: Informed consent - Kiswahili 59
8.5 Appendix V Questionnaire - Kiswahili 61
8.6 Appendix VI. Observation Checklist - Kiswahili 64
8.7 Appendix VII. Ethical letters 65
8.8 Appendix VIII Permission letters 67

LIST OF TABLES

Table 1: Demographic features of the respondents (N=311)..... 25
Table 2: Types of toilet facilities and its features (N=311) 27
Table 3: Latrine utilization evidence (N=311) 28
Table 4: Multivariable logistic regression for factors influencing acceptability (i.e., improving sanitation facilities (toilets) among households 32

LIST OF FIGURES

Figure 1: Conceptual framework for the relevance of SRWSSP adopted and modified by a researcher from the relevance framework (27) and acceptability framework (28) 7
Figure 2: Proportion of improved toilets 26
Figure 3: Proportion of households utilizing the sanitation facilities 27
Figure 4: Perceived effective attitude toward improved sanitation facility 29
Figure 5: Perceived effort to engage in improved sanitation facility 30

LIST OF ABBREVIATIONS

AF	Additional Financing
BD PPM	Bachelor Degree in Project Planning and Management
CDC	Centre for Disease Control
CLTSH	Community Led Total Sanitation and Hygiene
DLI	Disbursement-Linked Indicator
ESAR	Eastern and Southern Africa Region
HH	Household
MDG	Millennium Development Goal
MoH	Ministry of Health
MUHAS	Muhimbili University of Health and Allied Sciences
ODF	Open Defecation Free
PforP	Payment for Result Program
SDG	Sustainable Development Goal
SPSS	Statistical packages for social sciences
SRWSSR	Sustainable Rural Water Supply and Sanitation Program
VIP	Ventilated Improved Pit latrine
WASH	Water Sanitation and Hygiene
WHO	World Health Organization
WSDP	Water Sector Development Program

OPERATIONAL TERMS

Sanitation: Refers to the provision of facilities and services for the safe disposal of human urine and faeces (1).

Improved Sanitation: refers to facilities and services that ensure hygienic separation of human excreta from human contact. This may include access to flush toilets, ventilated improved pit latrines, composting toilets, or other facilities that effectively contain and dispose of human waste in a manner that minimizes health risks (1)

Unimproved Sanitation: refers to the lack of adequate facilities and services for safe disposal of human waste (1)

Acceptability: refers to the willingness and agreement of individual households to adopt and utilize a specific sanitation intervention or facility (2).

Concurrent Acceptability: refers to the idea that a particular action or decision is deemed acceptable by stakeholders involved simultaneously (2).

Affective attitude: refers to how individuals feel about the intervention toward improved sanitation facilities (2).

Coverage: refers to the extent to which households within a community or District have access to improved sanitation facilities and services (1)

Relevance: refers to the alignment between an intervention's objectives, design, the needs, and priorities of its beneficiaries. In simpler terms, it's about whether the intervention is addressing the right issues and if it continues to do so, even as circumstances change (3).

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of the study

Sanitation is crucial not only for reducing the risk of illnesses like diarrhea but also for addressing neglected tropical diseases, improving nutrition, safeguarding dignity and safety, increasing school attendance especially for girls reducing antibiotic resistance, enabling sustainable resource recovery from wastewater, and enhancing community resilience to climate shocks (4). The Sustainable Development Goals (SDG) target 6.1 and 6.2 for 2030 aim to ensure universal access to adequate and equitable sanitation and hygiene, end open defecation, and prioritize the needs of women, girls, and vulnerable populations (5). Achieving these goals involves improving non-shared facilities, ensuring safe disposal of excreta either on-site or through appropriate off-site treatment, and providing handwashing stations with soap and water (6).

The World Health Organization (WHO) has developed guidelines to maximize the health impact of sanitation interventions. These guidelines provide evidence-based recommendations to national and local authorities, including policymakers, planners, and implementers, to ensure effective risk management and improve health outcomes (7). Meeting the SDG targets 6.1 and 6.2 is estimated to cost about $114 billion annually. This figure includes $49 billion for safe faecal waste management, $19.5 billion for basic sanitation, and $37.6 billion for safe water. The estimate assumes that roughly 50% of homes would have basic pit latrines and access to water (5). Despite these efforts, by 2022, 3.5 billion people still lacked access to safely managed sanitation. This includes 1.9 billion with only basic access, 570 million sharing facilities, 545 million using unimproved options, and 419 million practicing open defecation (4).

Africa faces a severe sanitation crisis, with significant disparities related to socioeconomic status. About 70% of people in sub-Saharan Africa lack access to basic sanitation, and 25% practice open defecation (8). Poor sanitation, hygiene, and contaminated water contribute

to 115 deaths per hour, highlighting the devastating impact of inadequate sanitation. Furthermore, 40% of schools lack adequate sanitary facilities, exacerbating the problem (9). In 2020, only 27% of people had access to safely managed sanitation, and 37% practiced basic hygiene, with 779 million still lacking basic sanitation (1). To tackle these challenges, African governments have established the African Sanitation Policy Guidelines (ASPG). These guidelines help governments create, review, and revise sanitation policies by providing detailed instructions, background data, and model policy statements that can be adapted to local conditions and existing institutional frameworks (10). UNICEF plays a significant role in sanitation management by supporting various aspects of the sanitation chain and promoting diverse technologies and systems, from containment to reuse and disposal (11). In terms of sanitation coverage, the Eastern, Southern, West, and Central Africa Region (ESAR) lags behind the rest of the world, with access to at least basic sanitation at 31% and 32%, respectively. ESAR and South Asia are the only regions without reported households with access to safely managed sanitation services (12).

In Tanzania, the implementation of a promotional program has successfully increased household demand for improved sanitation facilities (13). While about 93% of the population has access to latrines, only 24% of these are considered improved (14). Despite the National Sanitation Campaign, by the end of 2018, 94% of the population was still using unimproved sanitation facilities (15). To address this, the Water Sector Development Programme Phase Three (WSDP III) for 2022/23 – 2025/26 aims to achieve universal access to adequate sanitation and hygiene services (16). This works hand in hand with the Sustainable Rural Water Supply and Sanitation Program (SRWSSP) from 2018 to 2025 to ensure that sanitation facilities are improved (17).

1.1.1 Description of the intervention

On July 15, 2019, the World Bank, in partnership with the Government of Tanzania (GoT), launched the Sustainable Rural Water Supply and Sanitation Program (SRWSSP) (17). The principal objective of the SRWSSP is to improve rural water supply and sanitation services across the identified districts, including Itilima District in the Simiyu Region. This program

targets 25 regions and 137 district councils, chosen due to high rates of stunting, poverty, and inadequate access to sanitation and water facilities.

The SRWSSP employs a Program for Results (PforR) approach, where funding from the World Bank is linked to achieving predetermined and measurable outcomes known as Disbursement-Linked Indicators (DLIs) rather than being tied to expenses. Specifically, the program provides financial incentives to districts, awarding $3 for each individual who gains access to improved sanitation. To qualify for this incentive, a residential facility must meet several criteria (17).

The target region for the program is a geographical area made up of 25 regions and 137 district councils, including Itilima District in the Simiyu Region. This area was chosen based on several factors, such as high rates of stunting, high rates of poverty, and inadequate access to sanitary facilities and water supplies. This program is mostly spearheaded by Tanzania's Local Government Authorities (LGAs) (17).

The types of toilets eligible for the DLI include well-ventilated pit toilets, toilets with a slab over a pit, composting toilets with two pits, or toilets that flush to a tank or hole. The slab must be intact, whether washable or non-washable, without any cracks or holes (except for the drop hole) that expose excreta. Additionally, the facility must have a door that provides privacy and can be opened and closed, walls for privacy, and a lid (where applicable). There should be no sign of faecal matter leaking or spilling into the environment(17).

The district promotes the construction of improved sanitation facilities at the household level through sanitation advocacy and by encouraging hand-washing behaviors among households (18). Despite these efforts, the Simiyu Region remains one of the regions with significant unimproved sanitation, according to the 2022 government assessment (19).

In response to this, this study aims to assess the relevance SRWSSP. with a specific focus on enhancing improved sanitation in the Itilima District, Simiyu Region, Tanzania. The

significance of this research lies in the limited existing knowledge regarding the relevance of the intervention.

While previous studies have provided an overview of sanitation metrics and national campaign impacts, a more nuanced evaluation of the program's relevance at the local level is necessary. Evaluating the availability of improved latrines (coverage), utilization, and acceptability provided a comprehensive knowledge of the responsiveness of program at the household level in achieving improved sanitation in Itilima District. For this intervention to be known its relevance among the households depends on the proportion of households (HHs) with improved toilets, utilization and a well as acceptability drivers during the implementation period. The investigation presents an invaluable opportunity for researchers to gain insights into the relevance Sustainable Rural Water Supply and Sanitation Program in improving sanitation facilities within the limits of the Itilima District.

1.2 Problem statement

In rural areas of Tanzania in 2022, 65.3% of households had access to improved sanitation (20). In Simiyu, improved sanitation facilities remain a significant public health concern, where only 24.3% of households having access to them as of 2022. Simiyu region covers among the three regions with the lowest percentage of improved sanitation facilities compared with other regions such as Dar es Salaam with 98.5% and Ruvuma with 92.1%. Itilima district specifically is among the three districts in Simiyu with the greatest need for improvement in sanitation facilities (19). Reports from other studies show that Itilima District covers only 46% of the households having access to improved sanitation facilities, 3% of the households (HHs) practices open defecation (OD) and 51% of the households have unimproved sanitation facilities (21). This contributes to the rise of the national expenditure, as 70% of Tanzania's healthcare budget is used to treat preventable illnesses related to poor sanitation (22), where the prevalence of diarrhea in Simiyu, specifically in Itilima, is 15.9% (23). To solve this Tanzania's Second Five Year Development Plan aims to achieve 85% access to sanitation in rural areas by 2025, while Vision 2025 intends to raise enhanced sanitation coverage to 95% (24) and international organizations join the

government, by formulating government policies, guidelines, and programs as well as embarking on resources (27). Despite these efforts, the problem still exists in the Itilima (19).

The existing studies offer valuable insights into rural sanitation in Tanzania focusing on Sanitation Campaigns. However, a significant gap exists in the current research regarding the assessment of the relevance Sustainable Rural Water Supply and Sanitation Program to promote improved sanitation in Itilima District. This gap specifically pertains to variables such as coverage, utilization, and acceptability of sanitation facilities. To determine the extent to which the Sustainable Rural Water Supply and Sanitation Program (SRWSSP) is responsive to beneficiaries regarding the increase in access to improved sanitation facilities. When the availability of the improved toilets, and acceptability level are high and the households use the facility, this may tell that the program is implementable (relevant) to the households

1.3 Conceptual framework

The conceptual framework of this study adopts and modifies both the Acceptability Framework and the Relevance Framework to assess the effectiveness of the Sustainable Rural Water Supply and Sanitation Program (SRWSSP) in Itilima District, with a focus on the acceptability and utilization of improved sanitation facilities. Key variables from the Acceptability Framework, such as perceived burden how manageable the facilities are for households and affective attitudes the emotional response of users to these facilities are used to gauge how households perceive and respond to the program. The framework also incorporates variables from the Relevance Framework to assess the availability of improved latrines and their utilization at the household level, providing a comprehensive understanding of how the SRWSSP resonates with beneficiaries and its overall effectiveness in promoting improved sanitation practices.

While previous studies on rural sanitation in Tanzania have offered valuable insights, they often fail to specifically evaluate the SRWSSP's relevance and effectiveness in regions like Itilima District. This study fills that gap by focusing on variables such as coverage,

utilization, and acceptability of sanitation facilities, particularly in the context of SRWSSP interventions. By assessing whether households have sufficient access to improved facilities, consistently use them, and find them acceptable within their daily lives, the study determines the program's relevance in meeting community needs. High availability, acceptability, and proper usage of sanitation facilities would suggest that the SRWSSP is both effective and relevant in improving sanitation in the district.

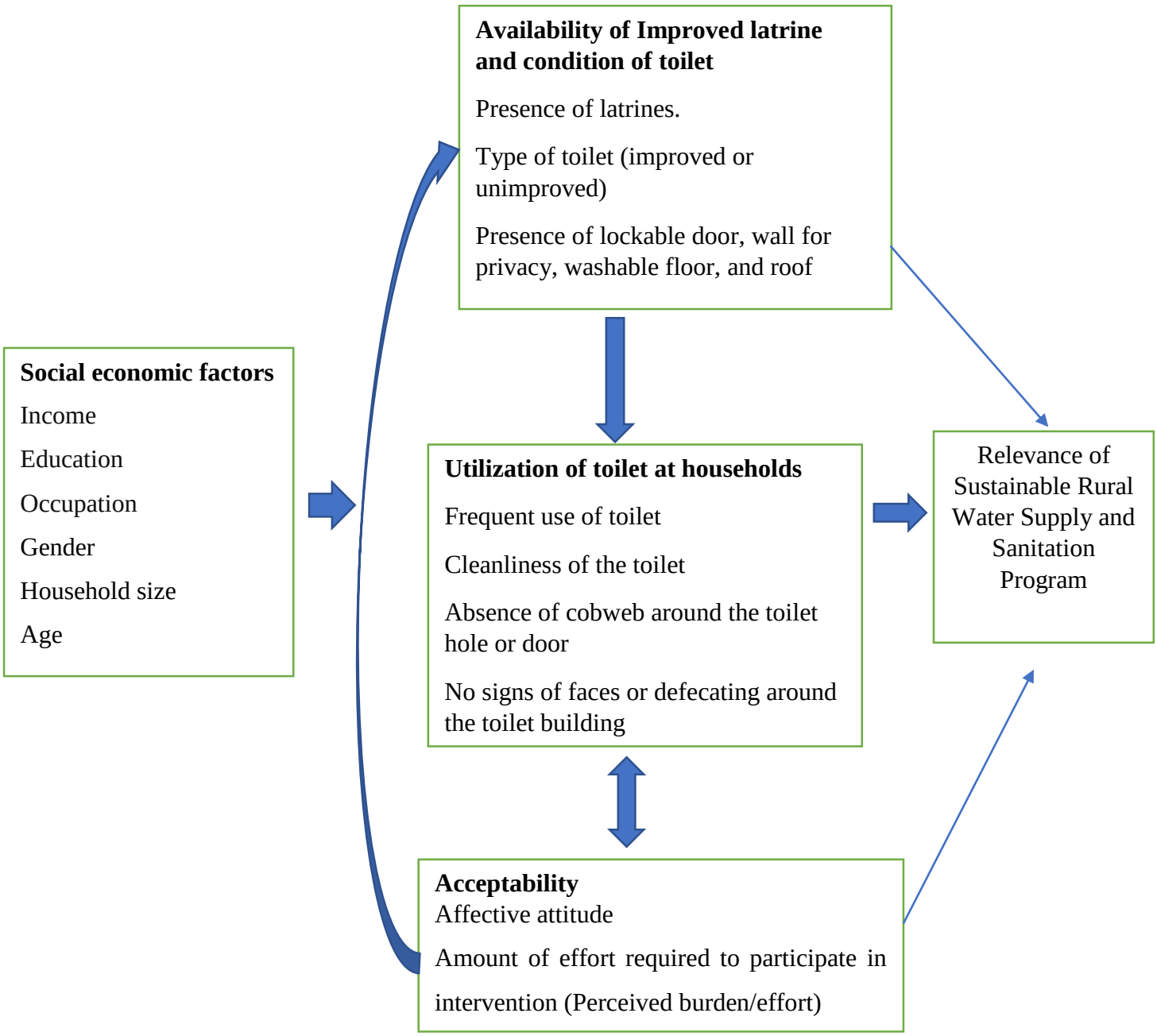


Figure 1: Conceptual framework for the relevance of SRWSSP adopted and modified by a researcher from the relevance framework (27) **and acceptability framework** (28)**.**

1.4 Rationale of the study

This study will provide a strategic framework for Tanzanian authorities to enhance their efforts towards achieving UN Sustainable Development Goal 6, particularly SDG 6, Target 2, which focuses on improving access to sanitation. By thoroughly evaluating the Sustainable Rural Water Supply and Sanitation Program (SRWSSP), the research will identify specific areas needing improvement, thereby guiding the development of targeted policies and strategies. The study will offer a clear picture of the current sanitation infrastructure and practices in Itilima District, highlighting critical gaps and informing effective interventions to address them.

The evaluation will also contribute to the existing body of knowledge by linking improved sanitation directly to better public health outcomes, such as reduced incidences of diseases like diarrhea. By presenting detailed data and actionable insights, the study will support stakeholders—including the Ministry of Health, policymakers, and researchers—in implementing evidence-based approaches to enhance sanitation facilities. This will not only help in refining the SRWSSP but also aid in setting a precedent for similar initiatives across Tanzania, ultimately advancing the goal of universal sanitation access by 2030.

1.5 Research Questions

1.5.1 Main research question

To what extent is Sustainable Rural Water Supply and Sanitation Program relevant on improving sanitation facilities at households' level in Itilima District?

1.5.2 Specific Research Questions

1) What is the proportion of households with improved sanitation facilities in Itilima District?
2) What is the proportion of households utilizing the sanitation facilities in Itilima District?

3) What are the social-demographic factors influencing household acceptance the Sustainable Rural Water Supply and Sanitation Program on improving sanitation facilities?

1.6 Research Objectives

1.6.1 Main research objective

To assess the relevance of the Sustainable Rural Water Supply and Sanitation Program on improving sanitation facilities at the households' level in Itilima District.

1.6.2 Specific evaluation objectives

1) To determine the proportion of households with improved sanitation facility in Itilima District.
2) To determine the proportion of households utilizing the sanitation facility in Itilima District.
3) To evaluate the influence of socio-demographic factors on the household's acceptance of improved sanitation facilities under the program

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Household's latrine coverage

Latrine coverage, reflecting the proportion of households with access to latrines or sewerage, is crucial for global sanitation efforts. With 2.4 billion people lacking improved sanitation and 946 million practicing open defecation (29), enhancing latrine coverage is essential to achieving universal sanitation (Sustainable Development Goal) access by 2030 (30). High latrine coverage and usage are key to effective sanitation strategies, yet identifying the most impactful interventions remains challenging (31). In India, the Total Sanitation Campaign significantly increased latrine coverage to 72% in participating villages, compared to less than 10% in non-participating ones (33).

In Africa, particularly in the Eastern, Southern, Western, and Central regions, significant disparities in basic sanitation coverage persist, with access to latrines varying widely compared to other parts of the world (32,33). For instance, studies in Cambodia and Ghana revealed varying levels of latrine coverage across rural communities, highlighting regional disparities (34). Further study in sub-Saharan Africa on latrines and associated factors among rural communities found that 58.4% of households had pit latrines, with 62.0% of these latrines being functional. However, over half required maintenance, and only 27.3% had sealed slabs, highlighting the ongoing issues with sanitation infrastructure (35).

A study in Tanzania on the impacts of sanitation campaigns on child health demonstrated that the Total Sanitation and Sanitation Meetings (TSSM) campaigns increased the likelihood of building a new latrine by 8.2 percentage points when delivered alone (a 15% increase compared to the control group) and by 7.7 percentage points (a 14% increase) when combined with the Handwashing with Soap (HWWS) campaign. The TSSM campaign also increased the probability that household members used improved latrines as the primary method of defecation by 15.1 percentage points (30%) when delivered alone, and by 10.6 percentage points (21%) when combined with the HWWS campaign.

Additionally, households in villages that received the TSSM campaign were less likely to practice open defecation and more likely to dispose of child feces correctly (36).

2.2 Utilization of household toilets

According to the WHO, toilets are essential for maintaining household sanitation and public health, as inadequate toilet access poses significant risks to the health of the entire community(33). WHO and UNICEF's programs have made notable progress in improving access to sanitation, hygiene, and safe drinking water, with over half the global population now using basic sanitation services. Additionally, nearly 39% use safely managed sanitation services. However, despite these improvements, billions still lack basic sanitation services (15). The CDC reports that 3.6 billion people, nearly half of the world's population, do not have access to safe toilets or latrines at the household level. Among these, 1.9 billion people live with basic sanitation services, and 494 million practice open-defecation (37).

In Africa, Afro barometer surveys in 34 African countries reveal progress in sanitation access, with one-third of people having a toilet at home and 37% using nearby facilities. However, nearly 29% of the population still lacks access, including 14% who have no toilet at all. Countries like Morocco (95%) and Mauritius (93%) have almost universal in-home toilet access, but others, such as Niger (65%), Malawi (59%), and Uganda (58%), face significant deficits (38). While access to in-home toilets has increased from 30% to 35% over the past decade, open defecation has also risen by 5% in several regions, with Namibia being the only country to show a notable reduction in those lacking sanitation facilities (39). In Eastern Ethiopia, a 2022 study found higher latrine use in areas where Community Led Total Sanitation (CLTS) was implemented, highlighting the approach's effectiveness and recommending its expansion (40). A study in rural Zinder, Niger, reported that 92.5% of adults used household latrines, although only 55% of children did, signaling the need for further investment in building and maintaining household toilets, particularly for younger populations (41).

In Tanzania study on the National Campaign Program's effects on household toilet coverage and usage in Kiteto and Hanang District Councils in the Manyara Region found that the program has not yet achieved its goal of increasing toilet coverage and proper utilization. This suggests that some individuals continue to practice open defecation, contributing to environmental pollution (42).

2.3 Acceptability of the SRWSSP

2.3.1 Affective attitude for the acceptability of improved sanitation facilities

According to WHO, World Bank and UNICEF, global adoption of improved sanitation facilities is heavily dependent on attitudes, which are shaped by several important variables. To promote adoption, it is essential to comprehend the benefits that are seen, such as the decreased risk of cholera, dysentery, typhoid, intestinal worm infections, and polio. Cultural norms and beliefs have a vital role in shaping attitudes. It is necessary to modify actions, especially in societies where open defecation is prevalent. Through ongoing awareness efforts on the need of sanitation, education emerges as a critical variable that shapes positive attitudes. The accessibility and affordability of upgraded facilities have an influence on attitudes as well; when amenities are both reasonably priced and conveniently available, acceptability is likely to rise. Furthermore, community support is greatly influenced by the standard of sanitary facilities, including upkeep, privacy, and safety (4)

In sub-Saharan Africa, the acceptability of better sanitation facilities is influenced by several attitudinal issues. has emphasized that these determinants include money, educational status, exposure to educational messages, positive attitudes about cleanliness, and receiving help during building (43). Despite these factors, outlines how budgetary limitations, fast population increase, and insufficient policies and plans cause the actual availability and usage of these services to frequently fall short of national targets (44). Furthermore, found that sociodemographic variables such as education and service dependability have a big impact on who has access to sanitary facilities. Geographical disparities, the effects of climate change, poor socioeconomic status, and other factors all

provide obstacles to the adoption of better water, sanitation, and hygiene (WASH) (39). Also, there is a lack of local community involvement and a limited understanding of waterborne infections (45).

In Tanzania noted by a number of attitudinal elements are crucial to improving Tanzania's sanitation infrastructure and these elements have a big impact on who can access better sanitary facilities, and they include motivation, education, and socioeconomic level (46). highlights the influence of sociodemographic, cultural, and economic aspects on hygiene and sanitation behaviors (42). According to emotional motivators like the want to protect kids from illnesses and the goal of bettering living conditions are crucial in advancing the development of sanitary infrastructure. Taken as a whole, these studies highlight how crucial it is to deal with these attitudes in order to encourage Tanzanians to embrace better sanitation facilities on a large scale (47).

2.3.2 Perceived effort required for acceptability of the program

The impact of perceived effort on the acceptability of improved sanitation facilities has been investigated through international research conducted by WHO/UNICEF. The findings indicate that the resources required, such as funding and time, are significant considerations, particularly for impoverished households. The study revealed a notable association between perceived minimal effort and the likelihood of adopting improved sanitation amenities. Households that viewed the construction and maintenance of these facilities as requiring less effort were more inclined to use them. This suggests that minimal perceived effort can act as a strong incentive for families facing the challenges of rural living. The results illustrate the intricate decision-making processes involved, where the practicality and ease of implementing improved sanitation are closely linked to the perceived effort required. This perspective provides valuable insights into the relationship between perception, effort, and the practical realities of implementing improved sanitation in rural settings (48).

In sub-Saharan Africa, a variety of factors affect the acceptance and utilization of sanitation facilities. Research highlights that wealth, education, and attitudes toward sanitation are

significant drivers of acceptance, but financial limitations, rapid population growth, and inadequate policies remain significant barriers to sustainable sanitation practices (43,44). Additionally, regional disparities in access to resources, low levels of awareness about waterborne diseases, and the effects of climate change further challenge sanitation initiatives (45). Moreover, offers a localized viewpoint from Yaoundé, Cameroon, which highlights the unique difficulties in metropolitan settings (49).

In Tanzania, study on factors facilitating latrine adoption on ending OD in Rural Tanzania show that satisfaction with existing facilities and the availability of financial resources for renovations are key determinants of the perceived effort required for adopting improved sanitation (50). The study on multi-criteria assessment of sanitation technologies in rural Tanzania highlights the influence of sociodemographic, cultural, and economic factors on sanitation behaviors. It emphasizes the roles of education and economic status in shaping attitudes toward sanitation technologies and underscores the complex interactions between these aspects (51). Additionally, geographic location and economic status significantly impact access to and acceptance of improved latrines (52).

2.4 Knowledge gap

Several gaps in the existing literature regarding the relevance of the Sustainable Rural Water Supply and Sanitation Program are apparent. Existing studies have primarily focused on general sanitation practices and the effectiveness of various approaches, such as Community-Led Total Sanitation (CLTS) and improved sanitation adoption in different contexts (26,52–54). However, there is a lack of specific research addressing to what extent the Sustainable Rural Water Supply and Sanitation Program is relevant on improving sanitation facilities at the household level in Itilima District. This gap underscores the need for targeted research to evaluate the program's relevance in improving sanitation facilities at the HHs level within this particular region. By addressing this gap, the current study provides valuable insights into how the program is relevant to enhancing household acceptability, improving sanitation facilities, and utilization**.**

CHAPTER THREE

3.0 RESEARCH METHODS

3.1 Study Design

A cross-sectional design and quantitative approach were chosen for this evaluation to efficiently capture a snapshot of current sanitation facilities and water supply conditions in Itilima District. The cross-sectional design allows for a broad, representative sample to be assessed quickly and cost-effectively, providing valuable baseline data for future comparisons. The quantitative approach offers objective, numerical data that can be analyzed statistically, ensuring precise measurement of the program's impact. This method identifies patterns, supports generalizability to the larger population, and provides clear outcomes essential for evaluating the effectiveness of the Sustainable Rural Water Supply and Sanitation Program (55). An outcome evaluation approach was selected to directly assess the relevance of the program in achieving its goal of improving sanitation facilities, aligning with the study's objective to measure the program's impact on community health and sanitation**.**

3.2 Study Area

The study was conducted in Itilima district. Itilima District was founded in 2012 as a component of the Simiyu Region. Its boundaries are shared by the Meatu and Maswa Districts in the south, the Mwanza Region in the west, the Bariadi District in the north, and the Arusha Region in the east (56).

According to the 2022 Tanzania National Census, the population of Itilima District was 419,213 (57). Covering 2,647.7 square kilometers, Itilima District features a variety of landscapes: 1,938.70 square kilometers of rich land perfect for farming and raising livestock, 640 square kilometers devoted to the Maswa Game Reserve, and 69 square kilometers with hilly, marshy, and water features. Administratively, the district is divided into four divisions: Kinang'weli, Itilima, Bumera, and Kanadi. These divisions consist of 102 villages, 599 hamlets, and 22 wards. The Sukuma, also known as Ntuzu, are the major

ethnic group in the richly diverse Itilima District. Agriculture is the major economic activity in the district. Over 90% of the population practices subsistence farming under rain-fed conditions. The primary crops grown include bananas, beans, and maize for local consumption. Additionally, coffee (Robusta), maize, and Irish potatoes serve as the main cash crops and water accessibility in Itilima District is hindered by seasonal and unreliable water sources, underperforming piped water schemes due to limited operational funds, and widespread reliance on traditional, often contaminated water sources, affecting over 48% of the population (56).

The Itilima District in Simiyu Region is a relevant area for this research study because it is one of the districts where the SRWSSP has been implemented however 3% of the households (HHs) practice open defecation (21). Additionally, the prevalence of Schistosoma haematobium, a disease caused by poor sanitation, among adults is 8.1%, while the overall prevalence of S. haematobium among the 3779 schoolchildren who underwent urine testing is 10.1%. Moreover, Itilima ward ranks third among the six districts with unimproved sanitation facilities (58)**.**

This presents a significant challenge that makes a researcher assess the relevance of Sustainable Rural Water Supply and Sanitation Program on improving sanitation facilities at Itilima to ensure the health and safety of the local community.

3.3 Target population

All households in Itilima District served as both the target population and the unit of analysis for the evaluation. As the target population, they represent the entire group the evaluation aims to draw conclusions about. As the unit of analysis, each household's sanitation conditions were individually examined to assess the relevance of the Sustainable Rural Water Supply and Sanitation Program

3.4 Eligibility criteria

3.4.1 Inclusion criteria

All households with a head of household owner were included.

3.4.2 Exclusion criteria

All households who are living in communal residences such as camps. And households where the head is unavailable and there are no family members above the age of 18.

3.5 Sampling and Sample Size Estimation

3.5.1 Sample size

The sample size for the study was calculated by using Fisher's formula based on the study conducted by Fatuma Nansereko on the adequacy and utilization of sanitation facilities in Mpigi District-Tanzania, which recorded a proportion of 24% (14) of the households with improved latrines (coverage) in Tanzania.

$$N = Z^{\wedge 2} \frac{(P\ (1 - P))}{\varepsilon^{\wedge 2}}$$

Whereby;

N – Sample size required

Z – Is the standard, 1.96 corresponding to a 95% confidence interval.

P – Is the estimated proportion of the target population of teen girls dropped from school due to teenage pregnancies which is 24%

ε - Correspond to the margin of error (precision), is approximately 5%

$$n = l.96^2 \times \frac{0.24(1-0.24)}{0.05^2}$$

n= 280

The formula for calculating the adjusted sample size is given by:

$$\text{Adjusted Sample Size} = \frac{\text{Original Sample Size}}{1 - \text{Non-response Rate}}$$

For an original sample size of 280 and a non-response rate of 10%, the adjusted sample size is calculated as follows:

$$\text{Adjusted Sample Size} = \frac{280}{1-0.10}$$

$$\text{Adjusted Sample Size} = \frac{280}{0.90}$$

Thus, the adjusted sample size is 311

So, the adjusted sample size to account for a non-response rate of 10% would be approximately 311. Hence, the study included a sample size of 311 households.

3.5.2 Sampling technique

The evaluation utilized a multistage sampling method to ensure a comprehensive representation of the target population. The method involved a rigorous three-stage process. Initially, 35% of the total 22 wards were randomly selected, resulting in 8 wards being chosen to achieve a balance between manageability and accessibility including Budalabujiga, Ikindilo, Chinamili, Ndololezi, Mhunze, Lagangabilili, Nkoma, and Migato. Subsequently, one village or street within each of these selected wards was randomly chosen to ensure diverse representation across different areas and to prevent overrepresentation. In the final stage, a simple random sampling method was used to select 39 households from each of 7 villages or streets, and 38 households from one village: Gambasingu (38), Ikindilo (39), Isengwa (39), Mhunze (39), Migato (39), Mwakatale (39), Nanga (39), and Nangale (39). This comprehensive sampling strategy ensured a well-balanced representation of different characteristics within the sample, thereby minimizing potential biases and allowing for reliable generalization of findings to the target population. This meticulous approach provided a solid basis for evaluating the relevance of the Sustainable Rural Water Supply and Sanitation Program on sanitation facilities in Itilima District**.**

3.6 Dependent and independent variables

3.6.1 Dependent variable

The relevance of the SRWSSP refers to the extent to which the program effectively meets the needs of its beneficiaries (3). It is assessed based on three key factors: the program's

acceptability among households, the proportion of households with improved sanitation facilities, and the level of utilization of these facilities. A high relevance indicates that the program has successfully addressed the beneficiaries' needs by promoting widespread acceptance, ensuring a significant proportion of households have access to improved toilets, and encouraging consistent use of these facilities**.**

3.6.2 Independent variables

The proportion of households with improved sanitation facilities refers to the percentage of sanitation facilities in households that meet specific criteria of improved toilets. This was measured by dividing the number of households with such improved toilets by the total number of households surveyed and then multiplying by 100 (59)

The proportion of households utilizing toilets refers to the percentage of households using toilets that exhibit certain features, this was measured by the number of households using such clean latrines is divided by the total number of households surveyed, then multiplied by 100 (59).

Acceptability refers to how well a program is received based on two factors: affective attitude and perceived burden (2)

Social economic factors include:-

Income: Measured in terms of monthly earnings,

Education: Typically measured by highest level attained.

Occupation: measured according to job type.

Sex: Categorized as male or female,

Household size: Number of individuals living in the same household (60).

3.7 Data Collection Methods

3.7.1 Questionnaire

The study employed questionnaires to collect quantitative data through face-to-face interviews conducted by trained research assistants. The questionnaires, originally in English, were translated into Swahili to ensure comprehensibility for respondents where assessing acceptability, a questionnaire formulated by Sekhon (2) was employed. These questionnaires featured close-ended questions designed to gather specific information about household sanitation practices. The target audience for the questionnaire consisted of household members within the Simiyu Region. The research assistants were trained to conduct interviews effectively, ensuring that responses were recorded accurately and that any issues during the interview process were addressed. This method provided direct interaction with respondents, enhancing the reliability of the data collected**.**

3.7.2 Observations

An observational checklist was used to collect quantitative data regarding household sanitation infrastructure. This checklist, adapted from national guidelines (external assessments of Open Defecation Free) (ODF) programs (59), was employed to assess sanitation facilities' availability, type, and condition, including toilets, handwashing stations, waste pits, and waste bins. The target audience for these observations was the same households surveyed using the questionnaire, allowing for a comprehensive evaluation of their sanitation practices. Research assistants were trained to perform detailed and accurate observations, recording

3.7.3 Data collection procedures

Data collection in the Simiyu Region began with obtaining permissions from Regional, District, and ward authorities. The study's purpose, benefits, and risks were presented. After securing permissions, the researcher briefed community leaders on the study's objectives and procedures, providing a schedule of activities and key personnel.

The research assistants were recruited for efficient data collection. These team, along with community representatives, followed a set schedule to visit a representative sample of households. The team included the principal researcher and three research assistants with health backgrounds or relevant degrees. Before starting fieldwork, all team members underwent training on the study's objectives, data collection tools, and procedures.

3.8 Investigation tools and validity and reliability issues

3.8.1 Validity

In this study, validity was rigorously examined to ascertain the accuracy and relevance of the instruments in capturing data related to the relevance of SRWSSP toward improved sanitation facilities. The validation process involved a comprehensive review by experts in the field including, the main supervisor as well as the National SRWSSP Coordinator, ensuring that the instruments aligned with the research objectives and effectively measured the targeted constructs.

3.8.2 Reliability

The reliability of the research instruments was assessed to ensure consistency of responses. These instruments were piloted and standardized for the actual study. The pilot study was conducted in a neighboring village (Lagangabili), involving 10% of the total number of respondents. Accordingly, a sample of 31 household representatives was selected for this pilot study (61).

3.9 Data management

The research assistant underwent extensive training in data collection procedures, ethical considerations, and the management of sensitive information. This training included the use of ODK Collect for administering questionnaires and observation checklists. Data was uploaded to the server every evening after collection to ensure adherence to guidelines and maintain uniformity in data gathering. The researcher continuously monitored the process to ensure the accuracy and completeness of the data. To minimize errors during data entry, consistency checks and validation rules were applied within the data collection tools.

Additionally, the collected data was securely stored with access restricted to authorized personnel only, ensuring both confidentiality and security**.**

3.10 Data analysis and presentation

The data analysis process commenced with thorough coding, editing, and error-checking of household responses to ensure data accuracy before entering them into SPSS version 20.00 for analysis. Descriptive statistics, such as frequencies and percentages, were employed to summarize socio-demographic characteristics such as sex, marital status, occupational status, educational status, and economic status, which were presented in tables.

To gauge community adherence to sanitation practices, the study descriptively calculated the proportion of toilet usage within households. Similarly, the analysis assessed the proportion of households with improved latrines to provide insights into the overall effectiveness of sanitation interventions. Additionally, the acceptance of improved sanitation facilities among households was evaluated based on predictors such as perceived effort and perceived affective attitude. These findings are presented in the accompanying table and figure.

Inferential statistics were employed to analyze the factors influencing households' acceptance of improved sanitation facilities. Bivariate analysis techniques were used to examine associations between variables and to determine the crude ratios. Additionally, multivariable logistic regression was applied with household acceptance as the dependent variable, considering socio-demographic factors such as age, sex, education, occupation, income, and family size. Significant associations, indicated by a p-value less than 0.05, were highlighted to emphasize key findings. These results are presented in the accompanying table, effectively communicating the comprehensive outcomes of the study.

3.11 Ethical consideration

Ethical clearance to conduct this study was granted by the Institutional Review Board (IRB) of the Muhimbili University of Health and Allied Sciences (MUHAS) with reference

number (MUHAS-REC-04-2024-2181). Further permissions to conduct the study were obtained from the Regional Administrative Secretary (RAS), reference number (BA.233/271//01J/74). and from the Itilima Dc administration reference number (AK.26/425/02/116). These approvals allowed the researcher to proceed with data collection. Willing respondents were also asked to sign a written informed consent form. respondents were fully informed about their freedom to participate, the nature of the study, confidentiality, anonymity, and their right to withdraw from the study without facing any negative consequences.

CHAPTER FOUR

4.0 STUDY FINDINGS

This chapter presents the findings of the research conducted to assess the relevance of the Sustainable Rural Water Supply and Sanitation Program (SRWSSP) in enhancing improved sanitation facilities in Itilima District. The data collected through questionnaires and observation checklists were analyzed using both descriptive and inferential statistical methods. The analysis focuses on several key areas: the socio-demographic characteristics of the respondents, the coverage of improved latrines, the utilization of these sanitation facilities, and the acceptability of the SRWSSP interventions among the households.

4.1 Demographic Characteristics of the Respondents

The demographic characteristics of the respondents reveal that nearly half (48.6%) are aged between 18 and 39 years, with 37.9% aged 40-59 years, and 13.5% aged 60 years and above. A significant majority (77.8%) have an income of less than 49,999 Tsh, while 14.1% earn between 50,000 and 149,999 Tsh, and only 8.0% earn more than 150,000 Tsh. The predominant occupation is self-employment (85.9%), followed by a small proportion of unemployed (8.4%) and employed individuals (5.8%). The gender distribution is 41.5% male and 58.5% female. In terms of education, 24.1% have no formal education, 65.0% have completed primary education, 6.4% have secondary education, and 4.5% have tertiary education. Family size data shows that 35.4% of households have 1-5 members, 53.7% have 6-10 members, and 10.9% have more than 11 members **(Table 1)**.

Table 1: Demographic features of the respondents (N=311)

Variables	Frequency (n)	Percentage
Age (years)		
18-39	151	48.6
40-59	118	37.9
60+	42	13.5
Respondents Income (Tsh.)		
<49999	242	77.8
50000 - 149999	44	14.1
150000>	25	8.0
Occupation		
Unemployed	26	8.4
Self Employed	267	85.9
Employed	18	5.8
Gender		
Male	129	41.5
Female	182	58.5
Education level		
None	75	24.1
Primary	202	65.0
Secondary	20	6.4
Tertiary	14	4.5
Family Size		
1-5	110	35.4
6-10	167	53.7
11+	34	10.9

4.2 Proportion households with improved sanitation facility

The results show that 77% of households have unimproved sanitation facilities, while only 23% have improved sanitation **(Fig. 2)**

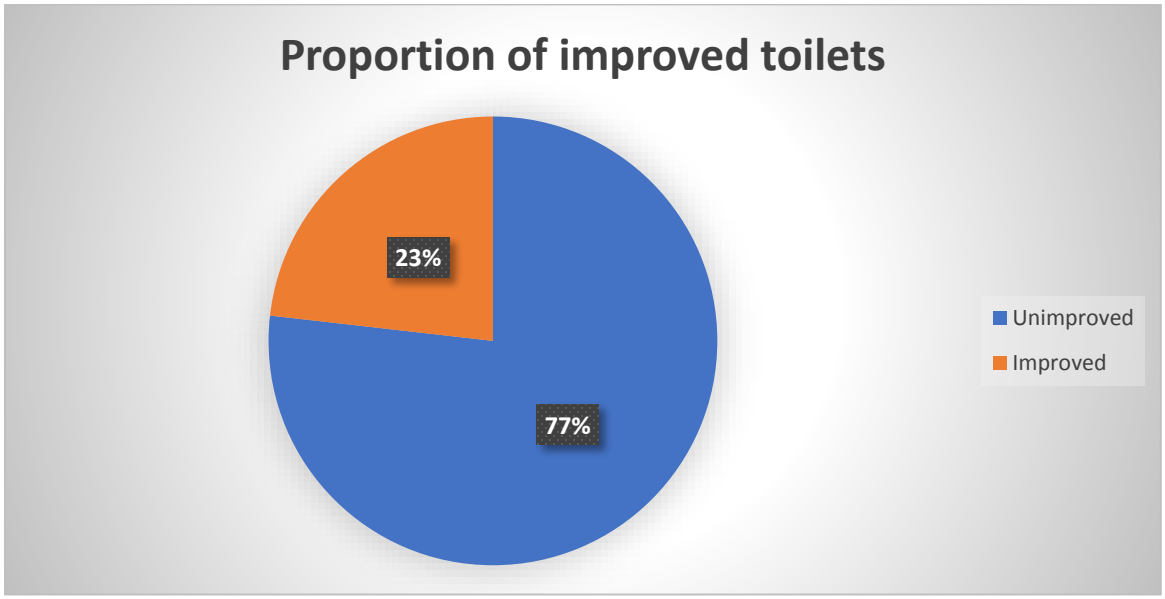


Figure 2: Proportion of improved toilets

4.2.1 Types of Toilets and its Features

The data shows the distribution of toilet types, with pit latrines being the most common (28.3%), followed by VIP (22.2%) and flush toilets (17.0%), while 25.1% of households lack any toilet facilities. Additionally, the condition of toilets reveals that 58.5% do not have washable floors, 62.1% lack durable superstructures, and 64.3% do not have well-fitted roofs. Moreover, feces are visible in 87.8% of facilities, indicating poor sanitation conditions **(Table 2).**

Table 2: Types of toilet facilities and its features (N=311)

	Type of toilet	Frequency	Percent
	Pit	88	28.3
	Flash	53	17.0
	VIP	69	22.2
	None	78	25.1
	Shared	23	7.4
Toilets features		**No**	**Yes**
	Washable floor	182(58.5%)	129(41.5%)
	Superstructure with durable walls and doors.	193(62.1%)	118(37.9%)
	Well, fitted roof.	200(64.3%)	111(35.7%)
	Feaces visible on the floor, walls, doors and squatting platform	273(87.8%)	38(12.2%)

4.3 Proportion households utilizing the sanitation facilities

The data from Fig. 3 shows that 54% of households in Itilima District, Simiyu Region, are utilizing sanitation toilets provided by the Sustainable Rural Water Supply and Sanitation Program, while 46% are not.

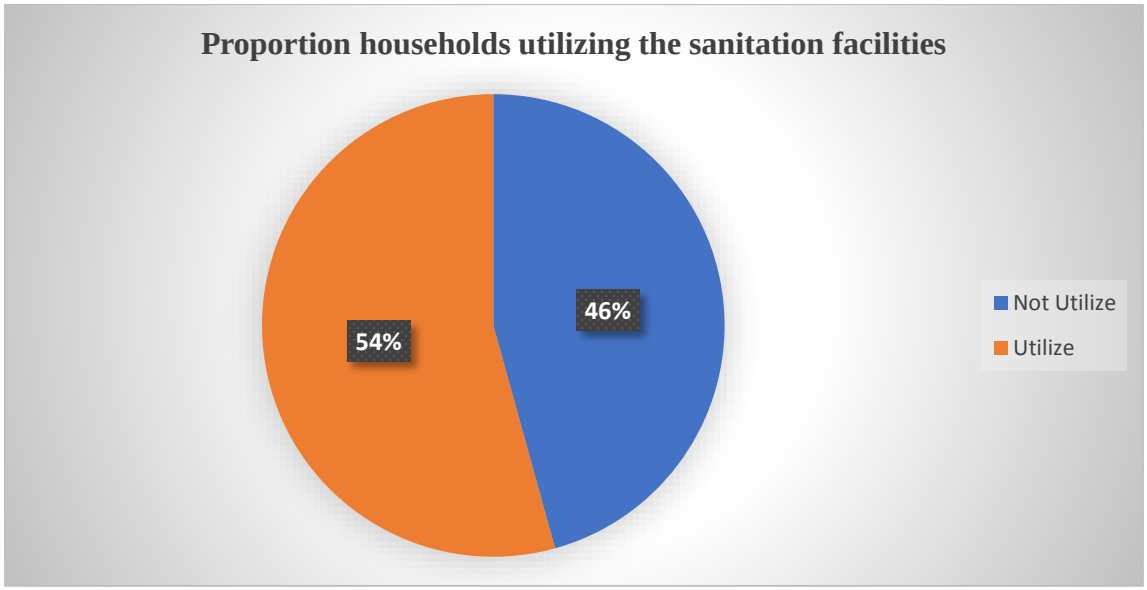


Figure 3: Proportion of households utilizing the sanitation facilities

4.3.1 Latrine Utilization Evidence

Table 3 shows evidence of latrine utilization among households in Itilima District. 68.8% of households have a visible or trodden path to the latrine, indicating regular use. Absence of spider webs in the pit or hole was observed in 96.8% of latrines, suggesting consistent use. Additionally, 93.2% of compounds showed no traces of open defecation (OD), and 63.7% of latrines were found to be clean. These indicators point to a generally positive level of latrine utilization in the district.

Table 3: Latrine utilization evidence (N=311)

		No	Yes
Evidence of Latrine Use	A visible/trodden path to the latrine	97(31.2%)	214(68.8%)
	Absence of spider web especially on the pit/hole	10(3.2%)	301(96.8%)
	OD traces in the vicinity within compound	21(6.8%)	290(93.2%)
	Clean latrine	113(36.3%)	198(63.7%)

4.4 Household acceptance of improving sanitation facility

4.4.1 Perceived attitude

Figure 4 shows that the majority of households have a positive attitude toward acceptance of improved sanitation facilities, with 49.8% feeling comfortable and 43.8% feeling very comfortable. Only a small percentage of households feel uncomfortable (3.4%) or very uncomfortable (1.3%), while 1.7% have no opinion. This indicates a generally favorable perception of improved sanitation facilities acceptance among most households.

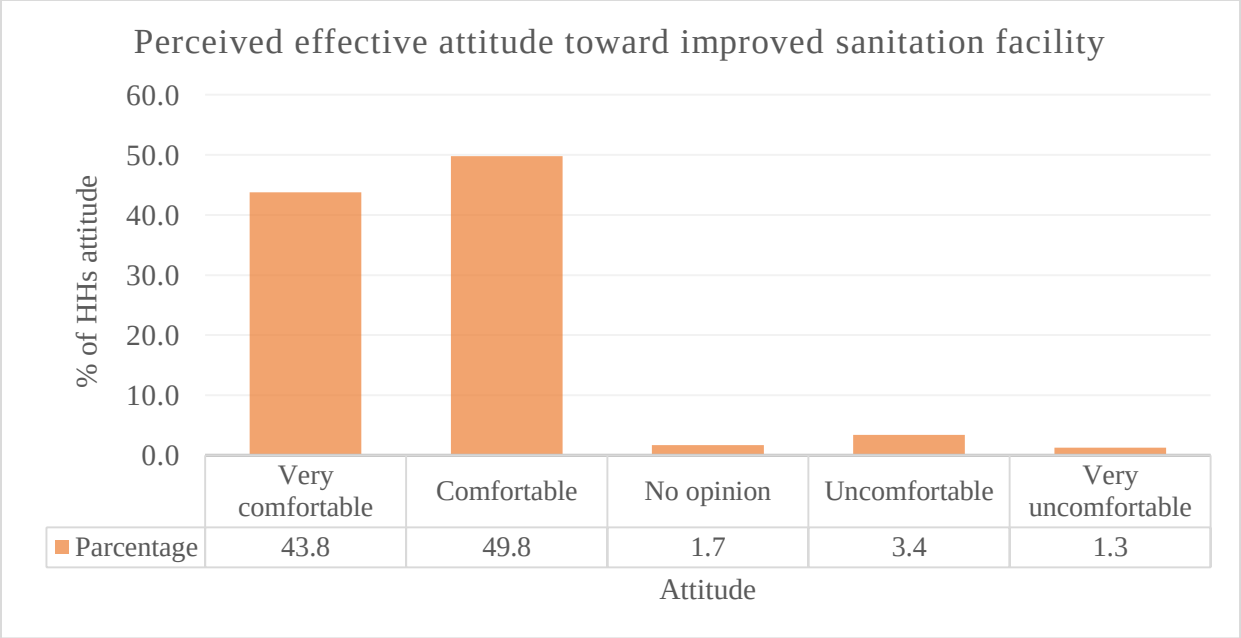


Figure 4: Perceived effective attitude toward improved sanitation facility

4.4.2 Perceived effort on improved sanitation facilities

Figure 5 indicates that a majority of respondents (55.4%) perceive that engaging in an improved sanitation facility requires a lot of effort, with 23.2% believing it takes a huge effort. A smaller portion sees the effort as minimal, with 9.9% stating it requires little effort and 8.6% saying it requires no effort at all, while 3.0% have no opinion.

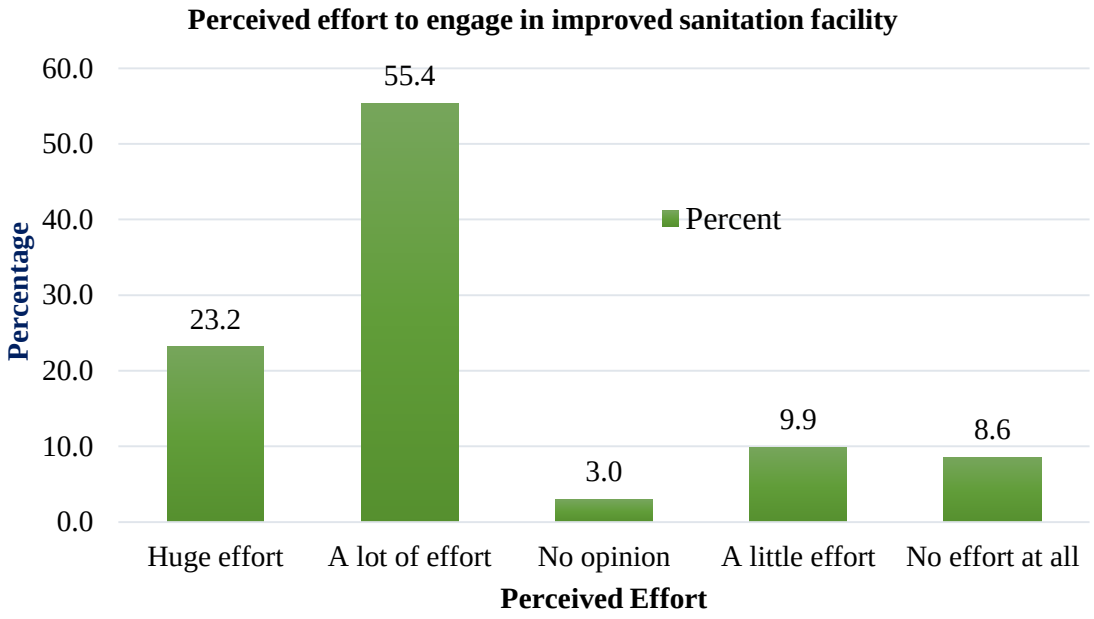


Figure 5: Perceived effort to engage in improved sanitation facility

4.4.3 Demographic factors influencing household acceptability on improving sanitation facilities.

The adjusted multivariable analysis (Table 4) identifies several significant factors associated with the acceptability of improved sanitation facilities among households. Respondents aged 40-59 years (AoR = 0.29, 95% CI: 0.11-0.78, P = .014) and those aged 60 and above (AoR = 0.04, 95% CI: 0.01-0.15, P = .000) are significantly less likely to accept improved sanitation facilities compared to those aged 18-39 years. Males are also significantly less likely to accept these facilities compared to females (AoR = 0.23, 95% CI: 0.09-0.57, P = .002). Respondents earning less than 49,999 Tsh are significantly less likely to accept improved sanitation facilities compared to those earning more than 150,000 Tsh (AoR = 0.17, 95% CI: 0.03-0.95, P = .043). In terms of education, those with primary

education (AoR = 3.17, 95% CI: 1.18-8.54, P = .022) are significantly more likely to accept improved sanitation facilities compared to those with no formal education. Employment status shows that self-employed respondents are significantly more likely to accept these facilities compared to unemployed respondents (AoR = 5.26, 95% CI: 1.66-16.68, P = .030). Family size also influences acceptability; households with 1-5 members are significantly more likely to accept improved sanitation facilities compared to those with 11 or more members (AoR = 3.93, 95% CI: 1.02-15.12, P = .047)

Table 4: Multivariable logistic regression for factors influencing acceptability (i.e., improving sanitation facilities (toilets) among households

Factor	CoR (95%CI)	P-Value	AoR (95%CI)	P-Value
Age (Years)				
18-39	Ref			
40-59	.27 (.12-.59)	.001	.29 (.11-.78)	.014*
60+	.02 (.01-.06)	.000	.04 (.01-.15)	.000*
Gender				
Female	Ref			
Male	.23 (.12-.43)	.000	.23 (.09-.57)	.002*
Income of respondents				
150000>	Ref			
50000 - 149999	4.67 (1.37-.15.85)	.014	2.36 (.59-9.49)	.228
<49999	.25 (.10-.60)	.002	.17 (.03-.95)	.043*
Education level				
None	Ref			
Primary	4.96 (2.45-9.87)	.000	3.17 (1.18-8.54)	.022*
Secondary	22.91 (2.82-185.16)	.003	11.11 (.93-132.22)	.057
Tertiary	20.36 (2.50-165.64)	.005	50.89 (.92-2807.38)	.055
Occupation				
Unemployed	Ref			
Self Employed	6.60 (2.82-15.45)	.000	5.26 (1.66-16.68)	.030*
Employed	12.00 (2.85-50.59)	.001	14.37 (1.36-151.92)	.075
Family size				
11+	Ref			
1-5	10.65 (3.68-30.78)	.000	3.93 (1.02-15.12)	.047*
6-10	4.74 (1.83-12.29)	.001	3. 20 (.91-11.21)	.069

CHAPTER FIVE

5.0 DISCUSSION

5.1 Discussion

The discussion is structured around the research objectives, offering a comprehensive analysis of the SRWSSP's impact on sanitation in Itilima District. It begins by evaluating household access to improved sanitation facilities and identifying key gaps. Next, it examines the types and features of toilets, revealing common sanitation challenges. The section on utilization patterns emphasizes the need for better infrastructure and education, while evidence of usage sheds light on household behaviors. Finally, the analysis of household acceptance explores socio-demographic factors that influence the adoption of improved facilities. This clear, objective-based approach ensures a thorough evaluation of the program's effectiveness.

5.1.1 Proportion of Improved toilets

The evaluation of the Sustainable Rural Water Supply and Sanitation Program (SRWSSP) in Itilima District highlights significant challenges in achieving sanitation improvement. Despite ongoing interventions, 77.3% of households continue using unimproved sanitation facilities, revealing critical infrastructure gaps. These findings align with global data, where approximately 3.5 billion people still lack access to safely managed sanitation services, with rural populations particularly affected (1,4). Align with a study in Sub-Saharan Africa, where around 73% of the population lacks basic sanitation, and open defecation is still prevalent, posing significant public health risks (4). For example, in Southern Ethiopia, only 27.3% of households have access to improved sanitation, largely due to rapid population growth, urbanization, and limited resources (43). Research in Ethiopia (62). These figures are also significantly below the targets set by Tanzania's Second Five-Year Development Plan, which aims for 85% access to improved sanitation in rural areas by 2025, and Vision 2025's goal of 95% coverage (16,24). Conversely, a study in Tunduru District reported only 18.9% of rural households have improved

sanitation, compared to 69.4% in peri-urban areas, which differs from the situation in Itilima (54). Similar issues are observed in Itilima, where inadequate sanitation infrastructure persists, and programs aimed at improvement face challenges. Addressing the sanitation challenges in Itilima District requires increased investment in infrastructure, improved policy enforcement, and stronger community engagement. Upgrading sanitation facilities, particularly in rural areas, is crucial. Additionally, educating communities on proper hygiene practices and promoting behavioral change are essential to reducing open defecation. Partnerships between governments, NGOs, and international bodies should focus on targeted interventions, while regular monitoring and evaluation ensure that programs meet national goals, such as those outlined in Tanzania's Five-Year Development Plan and Vision 2025.

5.1.1.1 Toilets types and its features on improved toilets

The data on toilet types and features in Itilima District reveals significant sanitation challenges. Data reveals substantial sanitation issues that align with similar findings from other studies. For instance, the high reliance on pit latrines (28.3%) and the significant proportion of households without any toilet facilities (25.1%) reflect against patterns observed in a study conducted in Babati, where the most common types of household sanitation facilities were pit latrines with slabs (42%) (42). However on HHs without any toilet facilities, this contrasts with findings from Mtwara, where only 2.6% of households lacked latrines (63). In terms of VIP latrines, the findings in Itilima are higher than those in a study from Southern Ethiopia, where only 3.6% of households used VIP latrines (64). Additionally, the proportion of households with shared latrines in Itilima contrasts with a study in Ethiopia, where 68.1% of households shared toilets with other households (65). To address the significant sanitation challenges in Itilima District, efforts should focus on promoting the construction of improved latrines such as VIP and pit latrines with slabs, reducing open defecation through community-led sanitation programs, and providing subsidies or support for low-income households to build hygienic facilities. Additionally, raising awareness about the importance of sanitation and encouraging households to

transition from shared latrines to private facilities will help improve overall public health and sanitation coverage

Furthermore, regarding toilet features, the durability of toilet superstructures is crucial for privacy, safety, and protection from environmental elements (7). However, the study findings in Itilima District align with the study findings in Southern Africa, that 62.1% of the toilets have durable walls and doors, indicating that a significant portion of households have reasonably well-constructed toilets (45). Similar to the study conducted in Kenya found that 70% of respondents were dissatisfied with the poor state of sanitation facilities, citing issues such as lack of safety, privacy, poor design, and inaccessibility of toilets (66). The findings also align with a study conducted in Kenya on latrine structure, design, and conditions, as well as the practice of open defecation, where both studies indicate that poor construction materials, lack of durable features, and unsanitary conditions (such as feces on the floor) contribute to low latrine usage and ownership, thereby promoting open defecation (67). Furthr thr study findings align with the scudy conducted in northeastern Ethiopia on Household latrine utilization and associated factors in semi-urban areas with the study's findings that a majority of latrines lack essential features, such as sealed slabs and durable construction, highlighting the urgent need for improved sanitation infrastructure and practices (68). To address these issues, there should be a focus on improving construction quality, enhancing regular maintenance to address sanitation problems, and educating communities on effective hygiene practices.

5.1.2 Toilets utilization

The evaluation of the Sustainable Rural Water Supply and Sanitation Program (SRWSSP) in Itilima District indicates that while the majority of households use sanitation toilets, a significant portion either does not use them consistently or does not use them at all (46%). This finding aligns with global studies that highlight the utilization of sanitation facilities as a key indicator of the success of sanitation programs (4,11,33,69). According to the World Health Organization (WHO) in 2020, only 54% of the global population used safely

managed sanitation services (1). These findings are consistent with a study in Africa assessing latrine utilization and associated factors in Community-Led Total Sanitation (CLTS) programs implemented in Ethiopia, which found an overall utilization rate of 56.1%, with higher rates in CLTS kebeles (40). This is lower compared to rural research in Niger, where adult toilet usage rates were high (92.5%), but rates among children were lower (55%), underscoring the need for expanded efforts in constructing and maintaining rural household toilets to improve overall sanitation outcomes (41). Additionally, align with a study in the Takussa district of northwest Ethiopia revealed a low proper latrine utilization rate of 41.9% among rural households (70). Key factors associated with higher latrine utilization included the presence of school-aged children, maintaining a clean latrine, optimal distance of the latrine from the living room, and the perceived benefits of using latrines. To enhance sanitation utilization, includes enhancing infrastructure by constructing more durable and accessible latrines, promoting regular maintenance, and providing targeted education to raise awareness about the benefits of proper sanitation. Additionally, efforts should focus on expanding outreach programs to engage communities, particularly addressing gaps in latrine usage among children and reinforcing the importance of sanitation practices for overall health and hygiene.

5.1.2.1 Utilization evidences

From the findings, households generally demonstrate strong evidence of latrine use, with a majority maintaining a visible path to the latrine, no spider webs, no traces of open defecation nearby, and clean latrines. This contrasts with the latrine conditions observed in Turkana County, Kenya, where issues such as stagnant water, scattered feces, and shared usage among multiple households were reported. Specifically, although 63.7% of latrines are noted as clean, the overall conditions, including limited availability of water, frequent sharing, and infrequent cleaning, indicate ongoing challenges in maintaining latrine hygiene and accessibility (67). Additionally, these findings do not align with a study conducted in northern Ethiopia, where observations revealed that 82.9% of latrines were dirty, and a significant portion of households rarely cleaned their latrines (68). This

discrepancy suggests that the reported cleanliness and maintenance practices in Itilima do not fully reflect the actual hygienic conditions of the latrines. To address the discrepancies between observed latrine conditions and reported cleanliness, it is recommended to enhance regular latrine maintenance, improve water access near latrines, reduce the number of households sharing each latrine, and conduct educational programs on proper hygiene practices. Additionally, regular monitoring and evaluation should be implemented to promptly identify and address any issues affecting latrine hygiene and accessibility.

5.1.3 Households' acceptance

The evaluation of household acceptance of improved sanitation facilities under the Sustainable Rural Water Supply and Sanitation Program (SRWSSP) in Itilima reveals that while the majority of households have a positive attitude, a significant portion still faces challenges in consistent use or adoption. This finding aligns with a study in Tanzania, which emphasized that a positive attitude towards the intervention is crucial for sustained use and behavioral change (52). The study also highlights that significant effort is required for households to engage with improved sanitation facilities. This align with the study in sub-Saharan Africa indicates a widespread recognition of the substantial dedication or resources needed, consistent with literature that identifies perceived barriers such as cost, maintenance, and habitual change (44).

5.1.3.1 Socio-demographic factors influence household acceptance

The study provides compelling insights into the influence of socio-demographic factors on the acceptance of improved sanitation facilities. The significant associations identified inform targeted strategies to enhance the acceptance and implementation of these facilities, ultimately improving public health outcomes.

Younger individuals (age) are significantly more likely to accept improved sanitation facilities compared to adults and the elderly. This finding aligns with studies in sub-Saharan Africa, which suggest that younger individuals are generally more open to adopting new technologies and practices due to their adaptability and receptiveness to

change (71). Consequently, younger age groups are prime targets for interventions aimed at promoting improved sanitation, as their openness facilitates the rapid adoption and normalization of improved sanitation behaviors within communities.

Gender differences significantly impact the acceptance of improved sanitation facilities, with females being more likely to accept these facilities than males. This observation is consistent with prior research in Ethiopia, which highlights that women, as primary caregivers, often prioritize sanitation and hygiene more than men (72). Involving women in sanitation programs can enhance overall acceptance and usage of improved facilities, underscoring the importance of gender-sensitive approaches in designing and implementing sanitation interventions. Programs that empower women and involve them actively in decision-making processes related to sanitation are likely to be more successful.

Income level is a significant determinant of the acceptance of improved sanitation facilities. This aligns with studies in sub-Saharan Africa, which indicate that financial constraints are a major barrier to adopting improved sanitation practices (71). Interventions that provide subsidies or financial incentives for lower-income households can effectively increase adoption rates. Additionally, microfinance schemes or community-based savings groups can support households in investing in sanitation infrastructure.

Education level also plays a critical role in the acceptance of improved sanitation facilities. Individuals with at least some formal education are significantly more likely to accept these facilities compared to those with no formal education. This finding aligns with studies in Bangladesh, which show that higher education levels are associated with better awareness and understanding of the health benefits of improved sanitation (73). Educational campaigns that raise awareness about sanitation should be tailored to the educational backgrounds of the target audience to maximize their impact.

Occupational status influences the acceptance of improved sanitation facilities. Self-employed individuals are more likely to accept these facilities compared to unemployed

individuals, as financial stability and social influence play significant roles in adopting sanitation practices (61). Programs that integrate sanitation promotion with employment opportunities, such as job training or linking sanitation projects with local economic development initiatives, could enhance acceptance rates. Workplace sanitation programs can also model best practices and encourage broader community adoption.

Family size significantly affects the acceptance of improved sanitation facilities. Larger households are less likely to accept these facilities compared to smaller ones. This aligns with studies in Kenya and Tanzania, which report that larger families face logistical and financial challenges in upgrading their sanitation facilities, including space constraints and higher costs (21,74). Tailored interventions that address the specific needs of larger households, such as scalable sanitation solutions and financial support, could be effective in increasing acceptance. Community-led total sanitation (CLTS) approaches that involve all family members in the sanitation decision-making process can also address the unique needs of larger households. Overcoming challenges related to resource constraints, geographical conditions, and complex usage patterns requires innovative construction approaches, strong local government commitment, and adequate resource allocation

5.2 Strengths and weakness of the study

5.2.1 Strength

Methodological Appropriateness: The use of a cross-sectional study design and quantitative methods, including structured questionnaires and observations, is appropriate for the research objectives. The methodological rigor is evident and supports the reliability of the findings. .

Robust Data Collection and Analysis: The data collection process is comprehensive, involving a significant sample size of 311 households across multiple villages. The statistical analysis, particularly the use of multivariable logistic regression, adds depth to the study and provides valuable insights.

5.2.2 Weakness

Lack of Longitudinal Data: The cross-sectional design provides a snapshot in time but does not capture changes over time. A longitudinal study could better assess the established causal relationships between SRWSSP and sanitation improvements. Future research could employ longitudinal designs to establish causal relationships.

Insufficient Qualitative Insights: While quantitative data is well-analyzed, the study could benefit from more qualitative insights into the reasons behind households' acceptance or rejection of improved sanitation facilities. Interviews or focus groups could provide a deeper understanding and context in the future study.

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATION

6.1 Conclusion

The assessment of the relevance of the Sustainable Rural Water Supply and Sanitation Program in Itilima District, Simiyu Region, reveals both notable achievements and persistent challenges in enhancing household sanitation facilities. Despite efforts to expand access to improved sanitation, the program's relevance in achieving this objective is partial. While less than a quarter of households have improved sanitation facilities, a significant majority still lack or have unimproved facilities. These highlights due to inadequate infrastructure, poor maintenance practices, and socio-economic disparities.

Regarding utilization, the program has moderate relevance, with more than half of the households' using toilets. This indicates some success in promoting usage, but nearly half of the households are not utilizing these facilities, suggesting room for improvement in engagement strategies. Many households still use basic pit latrines or encounter issues with the quality and maintenance of existing facilities. Problems like insufficient structural integrity and poor hygiene standards remain, contributing to health risks and environmental degradation.

The evaluation of household acceptance, while many households express positive attitudes toward improved sanitation, the program shows moderate to high relevance. The program's effectiveness in influencing acceptance varies significantly based on factors like age, gender, income, education, and employment status. There are clear associations showing that certain demographic and socioeconomic factors positively influence acceptance. To enhance the program's relevance further, targeted strategies addressing these factors could improve overall acceptance rates. Enhanced sanitation facilities are crucial not only for reducing disease transmission but also for enhancing dignity, safety, and overall well-being in the community.

6.2 Recommendations

Based on the assessment, the following recommendations are proposed to strengthen the relevance of the Sustainable Rural Water Supply and Sanitation Program on improved sanitation facilities:

Increase the proportion of households with improved sanitation facilities:

- The government should encourage households to construct durable and culturally appropriate sanitation facilities, using local feedback to inform construction standards.
- The Sustainable Rural Water Supply and Sanitation Program should introduce targeted subsidies or flexible financing options based on household economic conditions.
- Households (HHs) should seek financial assistance through government or NGO subsidies, low-interest loans, or grants, and join community savings groups to pool resources for sanitation facility construction.
- Households (HHs) should prioritize sanitation improvements by allocating resources and budgeting for the construction and maintenance of improved sanitation facilities.
- Local Government Authorities (LGAs) should perform regular inspections and provide support for the maintenance of sanitation facilities.

Increase the proportion of households utilizing sanitation facilities:

- The Ministry of Health (MoH) should implement health education programs highlighting the benefits of improved sanitation and hygiene.
- Community leaders and NGOs should promote the importance of sanitation through local campaigns and educational outreach.
- The District Monitoring Team should establish feedback loops to adjust strategies based on the actual usage of sanitation facilities.

Increase household acceptance of improved sanitation facilities:

- The Sustainable Rural Water Supply and Sanitation Program should implement a subsidy program to lower the cost of constructing or upgrading to improved sanitation facilities for low-income families.
- PO-RALG should design tailored interventions for different demographic groups to overcome specific barriers related to the acceptance of improved sanitation facilities

7.0 References

1. United Nations Children's Fund (UNICEF) and World Health Organization (WHO). Progress on Sanitation and Hygiene in Africa. 2023;3–15. Available from: https://washdata.org/reports/jmp-2023-progress-sanitation-and-hygiene-africa
2. Sekhon M, Cartwright M, Francis J. Development of a theory-informed questionnaire to assess the acceptability of healthcare interventions. BMC Health Serv Res. 2022 Mar 1;22.
3. OECD. Evaluation Criteria. OECD Heal Work Pap. 2016;(OECD):1–23.
4. WHO, UNICEF JMP. Progress on Household Drinking Water, Sanitation and Hygiene (Jmp) [Internet]. 2020. Available from: http://apps.who.int/bookorders.
5. Hutton G, Varughese M. The Costs of Meeting the 2030 Sustainable Development Goal Targets on Drinking Water, Sanitation, and Hygiene: Summary Report. Int Bank Reconstr Dev / World Bank. 2016;(January 2016).
6. Akpakli DE, Manyeh AK, Akpakli JK, Kukula V, Gyapong M. Determinants of access to improved sanitation facilities in rural districts of southern Ghana: Evidence from Dodowa Health and Demographic Surveillance Site. BMC Res Notes [Internet]. 2018;11(1):1–7. Available from: https://doi.org/10.1186/s13104-018-3572-6
7. WHO. Guidelines On Sanitation and Health. [Internet]. World Health Organization. 2018. 1–220 p. Available from: http://www.who.int/water_sanitation_health/publications/guidelines-on-sanitation-and-health/en/
8. Belay DG, Asratie MH, Aragaw FM, Tsega NT, Endalew M, Gashaw M. Open defecation practice and its determinants among households in sub-Saharan Africa: pooled prevalence and multilevel analysis of 33 sub-Saharan Africa countries demographic and health survey. Trop Med Health [Internet]. 2022;50(1). Available from: https://doi.org/10.1186/s41182-022-00416-5

9. Dingnan Zhang. 10 Facts About Sanitation in Africa. Borgen Proj. 2020;
10. AMCOW. African Sanitation Policy Guidelines. Abuja, Nigeria: African Ministers' Council on WateR; 2021. 3 p.
11. USAID. Children Waiting to Use Sanergy Toilet, Nations, United Goal, Millennium Development. 2017; Available from: https://2012-2017.usaid.gov/what-we-do/water-and-sanitation/advancing-water-supply-sanitation-and-hygiene/improving-sanitation
12. Bekele T, Rawstorne P, Rahman B. Effect of water, sanitation and hygiene interventions alone and combined with nutrition on child growth in low and middle income countries: a systematic review and meta-analysis. BMJ Open http//dx.doi.org/101136/bmjopen-2019-034812. 2020;10(7).
13. MOH. Evaluating Tanzania ' s national sanitation campaign , Nyumba Ni Choo. Proj Clear. 2022;(March).
14. Fatuma Nansereko. Adequacy and utilization of sanitation facilities in secondary school in Mpigi District-Tanzania. Open Access Libr J. 2010;1(2016):105.
15. WHO @ UNICEF. WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene: Many homes lack basic handwashing facilities. WHO. 2018;(2017):2–3.
16. MoW - URT. Water Sector Development Plan III. 2022;(Wsdp Iii).
17. URT. Sustainable Rural Water Supply and Sanitation Program (SRWSSP) (2018-2025) SRWSSP. Minist WATER [Internet]. 2023;1–14. Available from: https://www.ncbi.nlm.nih.gov/books/NBK558907/
18. Water SR, Program S. 124301 Sustainable Rural Water and Sanitation Program. 2018; Available from: https://www.researchgate.net/publication/299537242
19. URT. Ministry of Health use of improved sanitation in facility Tanzania. Nature. 2022;188(4749):452–3.
20. TDHS-MIS. Demographic and Health Survey and Malaria Indicator Survey (TDHS-MIS) 2022. Report. 2022;(NBS).
21. URT. Tanzania Wash Portal. Minist Heal [Internet]. 2023;12(5). Available from:

https://nsmis.moh.go.tz/nsmisportal/#/indicator

22. UNICEF and URT. Water , sanitation and hygiene. 2022;(Tanzania Budget Issue Papers 2022 Tanzania Budget Issue Papers 2022).
23. Maseke LS, Mushi V, Tarimo D, Kwesigabo G, Mazigo H. Adolescents and young adults excluded from preventive chemotherapy for schistosomiasis control in Northern Tanzania: are they at risk and reservoirs of infection? Prevalence and determinants of transmission in Northern Tanzania. IJID Reg [Internet]. 2022;4(July):111–9. Available from: https://doi.org/10.1016/j.ijregi.2022.07.008
24. URT. National five year development plan 2021/22 - 2025/26. 2021;(June).
25. URT. The Tanzania Country Brief The Country Briefs were prepared by governments ahead of the SWA 2019 Sector Ministers' Meeting. They are a snap-shot of the country's current state in terms of water, sanitation and hygiene, and future targets. MoH. 2020;1–5.
26. URT. Process Evaluation of the National Sanitation Campaign of Tanzania. Res Rep Process. 2021;1–140.
27. Education IC for L in. Rigor/Relevance Framework ™. Http://WwwLeaderedCom/RrrHtml. 2013;1–8.
28. Sekhon M, Cartwright M, Francis JJ. Acceptability of healthcare interventions: an overview of reviews and development of a theoretical framework. BMC Health Serv Res [Internet]. 2017;17(1):88. Available from: https://doi.org/10.1186/s12913-017-2031-8
29. WHO @ UNICEF. WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene: Many homes lack basic handwashing facilities. 2018;(2017):2–3.
30. Fewtrell L, Jr JMC. Water , sanitation and hygiene in developing countries : interventions and diarrhoea — a review. Water Sci Technol. 2013;52 No8(June 2025):133–42.
31. Evans, BE, Haller, L and Hutton G. Closing the sanitation gap - the case for better public funding of sanitation and hygiene 1. Report OECD , Paris. 2014;5(2016):1–

26.

32. Barnard S, Routray P, Majorin F, Peletz R, Boisson S, Sinha A, et al. Impact of Indian Total Sanitation Campaign on Latrine Coverage and Use : A Cross-Sectional Study in Orissa Three Years following Programme Implementation. Plon One e71438 doi101371/journal.pone0071438. 2022;8(8):2–8.
33. WHO. Global Water , Sanitation , & Hygiene (WASH) Toilets & Latrines The Need for Toilets and Latrines Sanitation Facilities and Children ' s Education. 2020;4(2020):66.
34. UNICEF @ World Bank. Water, Sanitation, Hygiene National Outcome Routine Mapping. A report of findings. Natl Bur Stat. 2019;2(2020):457.
35. Endalew M, Belay DG, Tsega NT, Aragaw FM. Limited handwashing facility and associated factors in sub-Saharan Africa : pooled prevalence and multilevel analysis of 29 sub-Saharan Africa countries from demographic health survey data. BMC Public Health. 2022;22(2022):1–12.
36. Glaeser E, Gonzales M, Jack K, Steinberg BM, Bedoya G, Saltiel G, et al. Financing Municipal water and sanitation services in Nairobi's informal settlement. Natl Bur Econ Res. 2021;5(July 2021):54.
37. S.O. Ome. community led total sanitation in Nigeria report. 2017;5(2018):5–57.
38. Armah-Attoh D. Is Africa losing ground in the battle for water and sanitation? – Afrobarometer. Afrobarometer [Internet]. 2022; Available from: https://www.afrobarometer.org/articles/africa-losing-ground-battle-water-and-sanitation/
39. Kamwi2 MA and J. Socio-demographic determinants of access to sanitation facilities and water in the Namibian Rural Areas of Omaheke and Oshikoto Regions. 2020;20(3):15919–35.
40. Murad M, Ayele DM, Gobena T, Weldegebreal F. Latrine Utilization and Its Associated Factors Among Community Led Total Sanitation Implemented and Non-Implemented Kebeles of Tullo District, West Hararge, Eastern Ethiopia. Environ Health Insights [Internet]. 2022 Jan 1;16:11786302221091736. Available

from: https://doi.org/10.1177/11786302221091737

41. Mamadou O Diallo DR, Hopkins and Mohamed S kane. Household latrine use, maintenance and acceptability in rural Zinder, Niger. Int J Environ Health Res. 2018;17(6)(2019):443–52.
42. Mshida H, Malima G, Machunda R, Muzuka ANN, Banzi J, Gautam OP, et al. Sanitation and Hygiene Practices in Small Towns in Tanzania : The Case of Babati District , Manyara Region. 2020;103(June 2017):1726–34.
43. Afework, A et al.. Moving Up the Sanitation Ladder: A Study of the Coverage and Utilization of Improved Sanitation Facilities and Associated Factors Among Households in Southern Ethiopia. Semant Sch. 2022;(April 2019).
44. Bishoge O. Challenges facing sustainable water supply, sanitation and hygiene achievement in urban areas in sub-Saharan Africa. Local Environ. 2021 May 25;26:1–15.
45. Id NPT, Mindu T, Kalinda C, Chimbari MJ. Barriers and facilitators to Water , Sanitation and Hygiene (WaSH) practices in Southern Africa : A scoping review. 2022;1–17. Available from: http://dx.doi.org/10.1371/journal.pone.0271726
46. Nyanza EC, Sciences A, Jahanpour O, Sciences A, Hatfield JM, Meer F Van Der. Access and utilization of water and sanitation facilities and their determinants among pastoralists in the rural areas of northern Tanzania . Access and utilization of water and sanitation facilities and their determinants among pastoralists in the rural . 2018;(January).
47. Id AC, Muangi WC, Aunger R, Massa K, Curtis V. Theory-driven formative research to inform the design of a national sanitation campaign in Tanzania. 2019;1–17.
48. Report W/ U. Water , Sanitation and Hygiene in Health Care Facilities : status in low-and middle-income countries and way forward Question and Answer. 2015;
49. Arsène W, Nzouebet L, Kengne ESOH, Magloire I, Noumsi K. Assessment of the faecal sludge management practices in households of a sub-Saharan Africa urban area and the health risks associated : the case study of Yaoundé , Cameroon

Assessment of the faecal sludge management practices in households of a sub-Sahar. 2019;(November).

50. Sara S, Graham J. Ending Open Defecation in Rural Tanzania : Which Factors Facilitate Latrine Adoption ? 2014;62:9854–70.
51. And AS, Bhat2 MG. Multi-Criteria Assessment of Sanitation Technologies in Rural Tanzania: Implications for Program Implementation, Health and Socio-Economic Improvements. 2016;
52. Mwakitalima A, Massa K, Seleman A, Kassile T. Scaling up rural sanitation in Tanzania: Evidence from the national sanitation campaign. J Water Sanit Hyg Dev. 2018;8(2):290–306.
53. Ange H, Andrianisa HA, Bologo M, Sossou SK, Nguematio RM, Djambou MD. Acceptance Factors for the Social Norms Promoted by the Community-Led Total Sanitation (CLTS) Approach in the Rural Areas : Case Study of the Central-Western Region of Burkina Faso. 2023;
54. John G. Safari FII and ZSM. Community Perception and Adoption of Improved Sanitation in Tunduru Community Perception and Adoption of Improved Sanitation in Tunduru. ResearchGate. 2020;(August).
55. Setia MS. Methodology Series Module 3: Cross-sectional Studies. Indian J Dermatol [Internet]. 2016;61(3). Available from: https://journals.lww.com/ijd/fulltext/2016/61030/methodology_series_module_3__cross_sectional.3.aspx
56. URT. The Strategic Plan for Itilima District Council will be for five years (2014/2015 - 2018/2019). Strateg Plan. 2019;(2):1–13.
57. NBS. Administrative Units Population Distribution Report. Natl Popul House Census Tanzania Natl Bur Stat Dar es Salaam, Tanzania. 2022;1–290.
58. Lee J, Cha S, Cho Y, Musiba A, Marwa B, Mazigo HD. Prevalence of Schistosomiasis and Soil-Transmitted Helminthiasis and Their Risk Factors : A Cross-Sectional Study in Itilima District ,. 2023;
59. United Republic of Tanzania. National Guidelines for Verification and

Certification of ODF Communities. Minist Heal. 2016;35 pp.

60. Dreibelbis R, Winch P, Leontsini E, Hulland K, Ram P, Unicomb L, et al. The Integrated Behavioural Model for Water, Sanitation, and Hygiene: A systematic review of behavioural models and a framework for designing and evaluating behaviour change interventions in infrastructure-restricted settings. BMC Public Health. 2013 Oct 26;13:1015.
61. County M, Kasiva G, Mukiri L, Nkanata K. In the Cultural Mirror : Influence of cultural factors on adoption of sanitation practices in rural areas : A case of Nzaui. 2022;(June):2022.
62. Novotný J, Mamo BG. Household-level sanitation in Ethiopia and its influencing factors: a systematic review. BMC Public Health [Internet]. 2022;22(1):1448. Available from: https://doi.org/10.1186/s12889-022-13822-5
63. Kema K, Semali I, Mkuwa S, Kagonji I, Temu F, Ilako F, et al. Factors affecting the utilisation of improved ventilated latrines among communities in Mtwara Rural District, Tanzania. Pan Afr Med J. 2012 Dec 25;13:4.
64. Woyessa ET, Ashenafi T, Ashuro Z, Ejeso A. Latrine Utilization and Associated Factors Among Community-Led Total Sanitation and Hygiene (CLTSH) Implemented Kebeles in Gurage Zone, Southern Ethiopia: A Cross-Sectional Study. Environ Health Insights [Internet]. 2022 Jan 1;16:11786302221114820. Available from: https://doi.org/10.1177/11786302221114819
65. Tesfaw A, Tiruneh M, Mamuye M, Walle Z, Teshager W, Teshome F, et al. Magnitude and determinants of improved household latrine utilization in Ethiopia: Multilevel analysis of the mini Ethiopian Demographic Health Survey (EDHS) 2019. PLoS One [Internet]. 2023 Aug 2;18(8):e0289427. Available from: https://doi.org/10.1371/journal.pone.0289427
66. Mutiiria, Susan Muthoni1, Rutto, Jane Jemeli2, Muthuri, Grace Gakii2 KD 1. Determinants of sanitation practices in rural settlements of. 2022;(June):2022.
67. Busienei PJ, Ogendi GM, Mokua MA. Latrine Structure, Design, and Conditions, and the Practice of Open Defecation in Lodwar Town, Turkana County, Kenya: A

Quantitative Methods Research. Environ Health Insights [Internet]. 2019 Jan 1;13:1178630219887960. Available from: https://doi.org/10.1177/1178630219887960

68. Asnake D, Adane M. Household latrine utilization and associated factors in semi-urban areas of northeastern Ethiopia. PLoS One [Internet]. 2020 Nov 12;15(11):e0241270. Available from: https://doi.org/10.1371/journal.pone.0241270
69. Temesgen A, Molla Adane M, Birara A, Shibabaw T. Having a latrine facility is not a guarantee for eliminating open defecation owing to socio-demographic and environmental factors: The case of Machakel district in Ethiopia. PLoS One [Internet]. 2021 Sep 30;16(9):e0257813. Available from: https://doi.org/10.1371/journal.pone.0257813
70. Omer N, Bitew BD, Engdaw GT, Getachew A. Utilization of Latrine and Associated Factors Among Rural Households in Takussa District, Northwest Ethiopia: A Community-Based Cross-Sectional Study. Environ Health Insights [Internet]. 2022 Jan 1;16:11786302221091742. Available from: https://doi.org/10.1177/11786302221091742
71. Malima G, Mshida H, Machunda R, Moyo F, Banzi J, Gautam OP, et al. What influences individuals to invest in improved sanitation services and hygiene behaviours in a small town? A formative research study in Babati, Tanzania. PLoS One [Internet]. 2022 Jul 21;17(7):e0270688. Available from: https://doi.org/10.1371/journal.pone.0270688
72. Assefa GM, Sherif S, Sluijs J, Kuijpers M, Chaka T, Solomon A, et al. Gender equality and social inclusion in relation to water, sanitation and hygiene in the oromia region of ethiopia. Int J Environ Res Public Health. 2021;18(8).
73. Kabir A, Roy S, Begum K, Kabir AH, Miah MS. Factors influencing sanitation and hygiene practices among students in a public university in Bangladesh. PLoS One [Internet]. 2021 Sep 22;16(9):e0257663. Available from: https://doi.org/10.1371/journal.pone.0257663

74. Simiyu S, Swilling M, Cairncross S, Rheingans R. Determinants of quality of shared sanitation facilities in informal settlements: Case study of Kisumu, Kenya. BMC Public Health. 2017 Jan 11;17.

8.0 APPENDICES

8.1 Appendix I: Informed consent form- English

My name is WILSON STANLEY KILUWASHA, a student from Muhimbili University of Health and Allied Sciences pursuing a Master of Science in Project Management Monitoring and Evaluation in Health. I am conducting research to assess the relevance of the Sustainable Rural Water Supply and Sanitation Program on improving sanitation facilities at the household level in Itilima District, Simiyu.

Consent to Participate in the Study: I, Wilson Stanley Kiluwasha, am researching to assess the relevance of the Sustainable Rural Water Supply and Sanitation Program on improving sanitation facilities at the household level in Itilima District, Simiyu. Therefore, I respectfully request your participation by answering some questions.

Study Objective: This research is part of the criteria for completing a Master of Science degree in Project Management Monitoring and Evaluation in Health. The study aims to assess the relevance of the Sustainable Rural Water Supply and Sanitation Program in improving sanitation facilities at the household level in Itilima District, Simiyu. Your participation is crucial to achieving this goal. Please consider participating.

Expectations After Accepting Participation: You will be required to answer a set of research questions designed for this study.

Confidentiality: All information will be collected confidentially. Only those involved in this research will have access to the data. Your name will not be used in any record of the information you provide.

Risks: There are no anticipated risks associated with participating in this study.

Voluntary Participation and Withdrawal: Participation in this study is voluntary. You may choose not to participate or withdraw at any time without penalty or loss of benefits.

Benefits: Your contribution will contribute to an accurate understanding of the evaluation of the effectiveness of the Sustainable Rural Water Supply and Sanitation Program in improving household toilet infrastructure in Itilima District.

Contact Person: If you have any questions about this research, you can contact the Principal Investigator, Wilson Stanley Kiluwasha, from Muhimbili University of Health and Allied Sciences (MUHAS), P.O. Box 65001, Dar es Salaam, Phone: +255677694969. For questions about your rights as a participant, you can contact the Chairperson of the Research and Publications Committee at MUHAS, P.O. Box 65001 Dar es Salaam, Phone: 0221503026.

Declaration: I, ..., have read and understood the contents of this form. My questions have been answered to my satisfaction. I consent to participate in this study and to answer the questions as asked.

Participant's Signature: ..... Date: .....
Interviewer's Signature: ..... Date: .....

8.2 Appendix II: Questionnaire - English

(To be completed by the research team only)

PART ONE

Village/**Street**: _____ Ward: _____District: _____ Date of data collection_____ Total household_____

Introduction:

Thank you for participating in this research. Your feedback is valuable in assessing the relevance of the Sustainable Rural Water Supply and Sanitation Program on improving sanitation facilities at households level in Itilima District. Please answer the following questions honestly and to the best of your knowledge.

PART TWO

Demographic Information

2.1 Age of the head of the household: _____ years

2.2 Sex of the head of the household:

a) Male b) Female

2.3 Education level of the head of the household:

a) None b) Primary c) Secondary d) Tertiary

2.4 Occupation of the head of household …….

2.5 Income of the head of household: _____ (in Tsh)

2.6 Family size: _____ individuals

PART THREE

3. Determining the Proportion of Improved Sanitation Facilities Coverage Rate in the Study Area

3.1.1 Does your household have access to a toilet facility within your premises?

a) Yes b) No

2.1.2 What type of toilet facility do you have?

a) Flush/pour flush latrine to septic tank / pit b) Ventilated Improved Pit (VIP) latrine

c) Pit latrine with a slab d) Composting toilet including twin pit latrine. e) None

f) Other (please specify) ……...

3.1.3 Is the toilet facility easily accessible to all members of your household, including children and elderly individuals?

a) Yes, easily accessible b) Somewhat accessible

c) Not very accessible d) Not accessible at all

3.2: Determining the Proportion of Households Utilizing Sanitation Facilities in the Study Area

3.2.1 How frequently does your household utilize the toilet facility available to you?

a) Daily b) Several times a week c) Occasionally d) Rarely or never

3.2.2 Are there any specific reasons why your household might not utilize the improved toilet facility regularly? (Select all that apply)

a) Lack of awareness about the importance of sanitation

b) Cultural or traditional preferences for open defecation

c) Distance or inconvenience of accessing the facility

d) Maintenance or cleanliness issues

3.2.3 Have you observed any changes in your household's health or hygiene practices since using the improved toilet facility?

a) Yes, positive changes b) No noticeable changes c) Not sure

3: Evaluating Acceptability Drivers for the Implementation of the Sustainable Rural Water Supply and Sanitation Program on Enhancing Improved Sanitation Facilities

3.3.1 Affective attitude

How comfortable are you with engaging in the construction of improved toilets?

a) Very comfortable b) Comfortable c) No opinion

d) Uncomfortable e) Very Uncomfortable

3,3.2 Perceived Burden (Amount of effort)

How much effort does it take to engage in the construction of improved toilets?

a) Huge effort b) A lot of effort c) No opinion

d) A little effort e) No effort at all

3.3.3 Do you believe the promotion done is effectively addressing the sanitation needs of your community?

a) Yes, very effectively b) Yes, somewhat effectively

c) No, not very effectively d) No, not at all

8.3 Appendix III Observation Checklist - English

No.	Score: YES = 1; NO = 0	Number of HHs latrines Observed**										Score
	Indicators	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	
1.1	Latrine Status											
1.1	Availability of latrine											
1.2	Washable floor											
1.3	Superstructure with durable walls and door											
1.4	Well, fitted roof											
1.5	Feaces visible on the floor, walls, doors and squatting platform											
Sub-Total												
2.0	Evidence of Latrine Use											
2.1	A visible/trodden path to the latrine											
2.2	Absence of spider web especially on the pit/hole											
2.3	OD traces in vicinity within compound											
2.4	Clean latrine											
	Sub-Total											
	TOTAL											

8.4 Appendix IV: Informed consent - Kiswahili

Jina langu ni WILSON STANLEY KILUWASHA, mwanafunzi kutoka Chuo Kikuu cha Afya na Sayansi shirikishi “Muhimbili” ninayesoma Shahada ya Uzamili ya Sayansi katika Usimamizi, Ufuatiliaji, na Tathmini wa Miradi ya Afya. Ninafanaya utafiti kutathmini ufanisi wa programu Huduma Endelevu ya Maji na Usafi wa Mazingira katika kuboresha miundombinu ya vyoo ngazi ya kaya wilaya ya Itilima-Simiyu.

Kukubali Kushiriki katika Utafiti: Mimi, Wilson Stanley Kiluwasha, ninafanya utafiti katika kutathmini ufanisi wa mradi Huduma Endelevu za Maji na Usafi wa Mazingira Vijini katika kuboresha miundombinu ya choo ngazi kaya katika wilaya ya Itilima. Kwa hiyo, nakuomba kwa heshima yako kushiriki kwa kujibu baadhi ya maswali.

Lengo la Utafiti: Utafiti huu unafanyika kama sehemu ya vigezo vya kukamilisha shahada ya Uzamili ya Sayansi katika Usimamizi, Ufuatiliaji, na Tathmini wa Miradi ya Afya. Utafiti wenyewe ni kutathmini ufanisi wa mradi Huduma Endelevu za Maji na Usafi wa Mazingira Vijini katika kuboresha miundombinu ya choo ngazi kaya katika wilaya ya Itilima. Kushiriki kwako ni muhimu kufikia lengo hili. Tafadhali, naomba ushiriki wako.

Matarajio Baada ya Kukubali Kushiriki: Utatakiwa kujibu mwongozo wa maswali ya utafiti ulioundwa kwa ajili ya uchunguzi huu.

Usiri: Maelezo yote yatakusanywa kwa usiri. Ni wale tu waliohusika katika utafiti huu. Jina lako halitatumika katika rikodi ya maelezo utakayotoa.

Hatari: Hakuna madhara yanayotarajiwa kutokana na kushiriki katika utafiti huu.

Haki za Kujitoa na Mbadala: Kushiriki katika utafiti huu ni hiari. Unaweza kuchagua kutokushiriki au kujiondoa wakati wowote bila adhabu au kupoteza faida zozote.

Umuhimu: Mchango wako utachangia uelewa sahihi wa tathmini ya ufanisi wa maradi Huduma Endelevu za Maji na Usafi wa Mazingira Vijini kwenye kuboresha miundombinu ya vyoo ngazi ya kaya Wilayani Itilima.

Mtu wa Kuwasiliana Naye: Ikiwa una maswali yoyote kuhusu utafiti huu, unaweza kuwasiliana na Mtafiti Mkuu, Wilson Stanley Kiluwasha, kutoka Chuo Kikuu cha Afya na Sayansi Shirikishi Muhimbili (MUHAS), S.L.P. 65001, Dar es Salaam, Simu: +255677694969. Kwa maswali kuhusu haki zako kama mshiriki, unaweza kuwasiliana na Mwenyekiti wa Kamati ya Utafiti na Machapisho ya MUHAS, S.L.P. 65001 Dar es Salaam, Simu: 0221503026.

Tamko: Mimi, ……, nimesoma na kuelewa maudhui ya fomu hii. Maswali yangu yamejibiwa kufikia kuridhika. Ninaridhia kushiriki katika utafiti huu na kujibu maswali kama yaliyoulizwa.

Sahihi ya Mhojiwa: …… Tarehe: ……

Sahihi ya Mhoji: …… Tarehe: ……

8.5 Appendix V Questionnaire - Kiswahili

(Kujazwa na timu ya utafiti pekee)

SEHEMU YA KWANZA

Kijiji/Barabara: _____ Kata: Wilaya: _____
Tarehe ya kukusanya data Jumla ya kaya_____

Utangulizi:

Asante sana kwa kukubali kushiriki katika utafiti huu. Maoni yenu ni muhimu katika kutathmini Ufanisi wa utekelezaji wa Programu ya Huduma ya Maji Endelevu na Usafi wa Mazingira katika katika kuchochea Miundombinu Bora ya choo ngazi ya kaya katika Wilaya ya Itilima. Tafadhali jibu maswali yafuatayo kwa uaminifu na kulingana na ufahamu wako.

SEHEMU YA PILI

Taarifa za Kidemografia

2.1 Umri wa mkuu wa kaya: _____ miaka

2.2 Jinsia ya mkuu wa kaya:

a) Mwanaume b) Mwanamke

2.3 Kiwango cha elimu cha mkuu wa kaya:

a) Hana b) Msingi c) Sekondari d) Elimu ya juu

2.4 Kazi ya mkuu wa kaya: …….

2.5 Kipato cha mkuu wa kaya: _____ (kwa Tsh)

2.6 Idadi ya watu katika familia: _____ watu

SEHEMU YA TATU

3.1 Uwepo wa choo bora kwenye kaya

3.1.1 Je, kaya yako ina choo ndani ya mipaka ya makazi yako?

a) Ndiyo b) Hapana

3.1.2 Ni aina gani ya choo mnachotumia?

a) Choo cha kuvuta/kumwaga maji kwenda kwenye shimo au tenki la maji taka

b) Choo cha shimo kilicho na uingizaji hewa (VIP)

c) Choo cha shimo chenye sakafu imara d) Choo cha mboji ikiwemo choo cha shimo pacha

e) Hakuna f) Nyingine (tafadhali fafanua) ……...

3.1.3 Je, choo chenu kinapatikana kwa urahisi kwa wanakaya wote, ikiwemo watoto na wazee?

a) Ndiyo, kinapatikana kwa urahisi b) Kinapatikana kwa kiasi

c) Hakipatikani sana d) Hakipatikani kabisa

3.2 Utumikaji wa choo kwenye kaya

3.2.1 Je, kaya yako hutumia choo kilichopo mara ngapi?

a) Kila siku b) Mara kadhaa kwa wiki c) Mara chache d) Mara chache sana au kamwe

3.2.2 Je, kuna sababu maalum zinazoweza kufanya kaya yako isitumie choo bora mara kwa mara? (Chagua zote zinazohusika)

a) Kukosa uelewa kuhusu umuhimu wa usafi

b) Utamaduni au mila ya kujisaidia maeneo ya wazi

c) Umbali au usumbufu wa kufikia choo

d) Matatizo ya matengenezo au usafi

3.2.3 Je, umeona mabadiliko yoyote katika afya au tabia za usafi za kaya yako tangu mnapotumia choo bora?

a) Ndiyo, mabadiliko chanya b) Hakuna mabadiliko ya maana c) Sijui

Kutathmini Vichocheo vya Kukubalika kwa Utekelezaji wa Mpango Endelevu wa Maji Vijijini na Usafi wa Mazingira katika Kuboresha vyoo ndani ya kaya.

3.3.1 Mtazamo wa Kihemko

Unajisikiaje kujishughulisha na ujenzi wa choo bora?

a) Najisikia vizuri sana b) Najisikia vizuri c) Sina maoni

d) Najisikia vibaya e) Najisikia vibaya sana

3.3.2 Mzigo Unaohisiwa (Kiasi cha juhudi)

Inachukua nguvu kiasi gani kujishughulisha na ujenzi wa choo bora?

a) Nguvu kubwa sana b) Nguvu nyingi c) Sina maoni

d) Nguvu kidogo e) Hakuna ngu kabisa

3.3.3 Je, unaamini uhamasishaji unayofanyika inakidhi mahitaji ya kuwa na choo bora katika jamii yako?

a) Ndiyo, inakidhi sana b) Ndiyo, inakidhi kiasi

c) Hapana, haikidhi sana d) Hapana, haikidhi kabisa

8.6 Appendix VI. Observation Checklist - Kiswahili

Na.	**Alama: NDIO = 1; HAPANA=0**	**Idadi ya choo za kaya Zilizoorodheshwa****										**Alama**
	Viashiria	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	
1.1	Hali ya Choo											
1.1	Upatikanaji wa choo											
1.2	Sakafu inayoweza kuoshwa											
1.3	Miundo imara yenye kuta na mlango											
1.4	Paa linalofungwa vizuri											
1.5	Kinyesi kinachoonekana sakafuni, kwenye kuta, milangoni na kwenye eneo la kujisaidia											
	Jumla ndogo											
2.0	Uthibitisho wa Matumizi ya Choo											
2.1	Njia inayoonekana/kupitika kuelekea chooni											
2.2	Kuna utando wa buibui hasa kwenye shimo la choo											
2.3	Kuna kutapakaa kwa kinyesi katika eneo la karibu na nyumba											
2.4	Choo ni safi											
	Jumla ndogo											
	JUMLA KUU											

8.7 Appendix VII. Ethical letters

UNITED REPUBLIC OF TANZANIA

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES

OFFICE OF THE DIRECTOR – RESEARCH, PUBLICATIONS AND INNOVATIONS

Ref. No.DA.282/298/01.C/2181 Date: 22/04/2024

MUHAS-REC-04-2024-2181
WILSON STANLEY KILUWASHA
SHOOL OF PUBLIC HEALTH AND SOCIAL SCIENCES
MUHAS

RE: APPROVAL FOR ETHICAL CLEARANCE FOR A STUDY TITLED: ASSESSMENT OF RELEVANCE OF IMPLEMENTATION OF SUSTAINABLE RURAL WATER SUPPLY AND SANITATION PROGRAM ON ENHANCING IMPROVED SANITATION FACILITIES AT THE HOUSEHOLD LEVEL AT ITILIMA DISTRICT SIMIYU REGION

Reference is made to the above heading,

I am pleased to inform you that the Chairperson has on behalf of the University Senate, approved ethical clearance of the above-mentioned study, on recommendations of the Senate Research and Publications Committee meeting accordance with MUHAS research policy and Tanzania regulations governing human and animal subjects research.

APPROVAL DATE: 22/04/2024
EXPIRATION DATE OF APPROVAL: 22/04/2025

STUDY DESCRIPTION:

Purpose:

The purpose of this cross-sectional study is to assess relevance of implementation of Sustainable Rural Water Supply and Sanitation Program on enhancing improved sanitation facilities at households' level in Itilima District Simiyu

The approved protocol and procedures for this study is attached and stamped with this letter, and can be found in the link provided: https://irb.muhas.ac.tz/storage/Certificates/Certificate%20-%2015517.pdf and in the MUHAS archives.

The PI is required to:

1. Submit bi-annual progress reports and final report upon completion of the study.
2. Report to the IRB any unanticipated problem involving risks to subjects or others including adverse events where applicable.
3. Apply for renewal of approval of ethical clearance one (1) month prior its expiration if the study is not completed at the end of this ethical approval. You may not continue with any research activity beyond the expiration date without the approval of the IRB. Failure to receive approval for continuation before the expiration date will result in automatic termination of the approval for this study on the expiration date.
4. Obtain IRB amendment (s) approval for any changes to any aspect of this study before they can be implemented.
5. Data security is ultimately the responsibility of the investigator.
6. Apply for and obtain Data Transfer Agreement (DTA) from NIMR if data will be transferred to a foreign country.
7. Apply for and obtain Material Transfer Agreement (MTA) from NIMR, if research materials (samples) will be shipped to a foreign country.
8. Apply for and obtain permission to publish the results from National Institute for Medical Research. The application should be before submitting to a publisher and not concurrently through the email publications@nimr.or.tz.
9. Any researcher, who contravenes or fail to comply with these conditions, shall be guilty of an offence and shall be liable on conviction to a fine as per NIMR Act No. 23 of 1979, PART III section 10 (2)
10. The PI is required to ensure that the findings of the study are disseminated to relevant stake holders.
11. PI is required to be versed with necessary laws and regulatory policies that govern research in Tanzania. Some guidance is available on our website https://drp.muhas.ac.tz/.

Dr. Nahya Salim Masoud,
Chairperson, MUHAS Research and Ethics Committee

Muhimbili University of Health and Allied Sciences
DIRECTOR
Research, Publications & Innovations
Box 65001

8.8 Appendix VIII Permission letters

JAMHURI YA MUUNGANO WA TANZANIA

OFISI YA RAIS
TAWALA ZA MIKOA NA SERIKALI ZA MITAA

HALMASHAURI YA WILAYA YA ITILIMA

Unapojibu taafadhali taja:

Kumb. Na.AK. 26/425/02/116 **Tarehe:27/05/2024**

WATENDAJI WA KATA,
WATENDAJI WA VIJIJI,
HALMASHAURI YA WILAYA YA ITILIMA,
S.L.P 308,
ITILIMA.

Yah: **KUMTAMBULISHA NDUGU WILSON STANLEY KILUWASHA KWAAJILI YA KUFANYA UTAFITI**

Tafadhali husika na mada tajwa hapo juu, pia rejea barua yenye kumb Na.BA.233/271/01'J'/74 ya tarehe 23/05/2024 kutoka kwa Katibu Tawala Mkoa ambayo ilipokea barua kutoka Chuo Kikuu cha Afya na sayansi Shirikishi (MUHAS) yenye kichwa cha habari hapo juu.

2. Napenda kukujulisha kuwa ninamtambulisha kwako mtafiti huyo ambae atakuwepo kwenye Kata/Kijiji kwa ajili ya kufanya utafiti huo. Aidha, utatakiwa kushirikiana nae na kumpatia ushirikiano kwa kipindi chote katika zoezi hilo la utafiti wa masuala ya mabadiliko ya hali ya hewa.

3. Tafadhali mpokee na umpe ushirikiano.

W.S.Mtega
Kny Mkurugenzi Mtendaji(W)
ITILIMA

K.N.Y MKURUGENZI MTENDAJI HALMASHAURI YA WILAYA ITILIMA

Nakala: Mkurugenzi Mtendaji(W),
S.L.P 308,
ITILIMA.

Halmashauri ya Wilaya ya Itilima, S. L. P 308, Itilima, Simu +255 028 2986329, Barua pepe: info@itilimadc.go.tz.
Tovuti: www.itilimadc.go.tz

JAMHURI YA MUUNGANO WA TANZANIA
OFISI YA RAIS
TAWALA ZA MIKOA NA SERIKALI ZA MITAA

MKOA WA SIMIYU
Anwani ya Simu: "REGCOM"
Simu Na: 028-2700011/2700054
Nukushi: 028-2700168
Barua Pepe:*ras@simiyu.go.tz*

OFISI YA MKUU WA MKOA,
MKOA WA SIMIYU,
56 BARABARA YA SIMIYU,
S.L.P. 4,
39180 SIMIYU

Unapojibu tafadhali taja:
Kumb. Na. BA.233/271/01J/74

23 Mei, 2024

Mkurugenzi Mtendaji,
Halmashauri ya Wilaya,
S.L.P 308,
ITILIMA

YAH: KUMTAMBULISHA NDUGU WILSON STANLEY KILUWASHA

Tafadhali rejea somo tajwa hapo juu.

2. Namtambulisha kwako Ndugu Wilson Stanley Kiluwasha mwanafunzi wa Chuo Kikuu cha Afya na Sayansi Shirikishi (MUHAS), mwenye lengo la kufanya utafiti katika maeneo ya Halmashauri ya Wilaya ya Itilima Mkoa wa Simiyu.

3. Utafiti huo una kichwa cha habari **"Assessment of Relevance of Implementation of Sustainable Rural Water Supply and Sanitation Program on Enhancing Improved Sanitation Facilities at the Household level at Itilima District Council Simiyu Region"**. Utafiti huu utafanyika kwa muda wa wiki mbili (2) kuanzia tarehe **24 Mei, 2024 hadi tarehe 6 Juni, 2024.**

4. Namleta kwako ili umpe ushirikiano unahitajika ili aweze kufanikisha dima kusudiwa.

Pendo S. Kuleng'wa
KNY: KATIBU TAWALA MKOA
SIMIYU

Nakala: Katibu Tawala Wilaya,
Ofisi ya Mkuu wa Wilaya,
ITILIMA