INFLUENCE OF PSYCHOSOCIAL FACTORS ON ADOPTION OF COMMUNITY-LED TOTAL SANITATION A CASE OF TURKANA CENTRAL SUB-COUNTY, KENYA

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other institution

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DEDICATION

This thesis is dedicated to my parents, Mr & Mrs. Tuwei. To my loving wife, your constant encouragement and understanding have been the cornerstone of my perseverance.

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OPERATIONAL DEFINITION OF TERMS

Ability	Individual capacity and Skills to perform sanitation behaviors
Certification	The official recognition granted to a community that has successfully met the criteria for Open Defecation Free (ODF) status, indicating their achievement in eliminating open defecation
Claim	A formal announcement by the local authorities or sanitation organizations to the community, acknowledging and celebrating their attainment of Open Defecation Free (ODF) status.
Community-Led Total Sanitation	A participatory approach to sanitation and hygiene promotion, focusing on empowering communities to collectively initiate and sustain actions that lead to the elimination of open defecation within their area
Open Defecation	The act of individuals defecating in open areas, such as fields, bushes, or bodies of water, rather than using proper toilet or latrine facilities
Open Defecation Free	The status achieved by a community or area where every household has access to and consistently utilizes improved sanitation facilities, and no individuals engage in the practice of open defecation
Psychosocial Factors	The psychological and social elements that influence people's attitudes, beliefs, and behaviors related to sanitation, including factors such as cultural norms, community perceptions, and social pressure.
Triggering	The core CLTS process where facilitators evoke shame and

	disgust to motivate communities to abandon open defecation and adopt improved sanitation practices.
Verification	The process of confirming that a community consistently uses safe sanitation facilities and meets all criteria for Open Defecation Free (ODF) status.
Village Unit	Means any one of the smallest possible administrative units into which award is divided into.

ABBREVIATIONS

CHP	Community Health Promoters
CLTS	Community-Led Total Sanitation
FGD	Focus Group Discussion
H/H	Household
KNBS	Kenya National Bureau of Statistics
NACOSTI	National Commission for Science, Technology and Innovation
OLS	Ordinary Least Squares
PHO	Public Health Officer
RANAS	Risk, Attitude, Norm, Ability, Self-regulation
SDGs	Sustainable Development Goals
UNICEF	United Nations International Children's Emergency Fund
WHO	World Health Organization

ABSTRACT

The primary objective of Sustainable Development Goal 6.2 is to achieve universal access to adequate sanitation and hygiene and eliminate open defecation by 2030. One of the key strategies toward this goal is the implementation of Community-Led Total Sanitation (CLTS), a participatory approach that encourages communities to take responsibility for their sanitation behaviors. However, sustaining positive behavioral change post-intervention remains a significant challenge. This study was conducted among households in Turkana Central Sub- County, targeting a population of 8,509 households. A sample of 382 respondents was determined using the Yamane formula. The study aimed to investigate perceived health risk, examine the influence of attitude, assess the role of community norms, establish the influence of ability factors, and evaluate the role of self-efficacy on sanitation practices. A convergent research design was used to collect both quantitative and qualitative data simultaneously. Quantitative data were collected using structured questionnaires, while qualitative insights were obtained from focus group discussions. Stratified and simple random sampling techniques were employed. Results indicated that perceived knowledge of health risks was significantly associated with latrine presence ($R = 0.031$, $AOR = 0.023$, $p < 0.05$). In contrast, understanding and awareness were not significant. Community perceptions, including disgust toward open defecation and recognition of it as a traditional practice, showed significant associations ($p < 0.05$), with OLS $R = 0.253$. Social norms and self-efficacy also demonstrated notable influence, explaining 24% and 27.9% of variability in latrine presence, respectively. However, many variables had p-values > 0.05, indicating limited individual significance. The study concludes that while multiple factors affect latrine adoption, knowledge of health risks, social norms, and self-efficacy are particularly influential. It recommends behavior change communication strategies that are culturally appropriate and sensitive to local norms and environmental conditions in Turkana.

CHAPTER ONE: INTRODUCTION

1.1 Introduction

This chapter presents the background of Community-Led Total Sanitation (CLTS), outlines the problem statement specific to the study area, highlights the study objectives, provides the justification and significance of the research, and states its limitations and delimitations.

1.2 Background to the Study

Community-Led Total Sanitation (CLTS) presents an inventive and participatory approach to addressing the pressing challenges of sanitation and hygiene within communities, particularly those located in rural and low-income areas (Mariwah *et al.*, 2022). The primary objective of CLTS is to attain the significant condition of having communities that do not practice open defecation through the facilitation of behavior change, heightened awareness, and the empowerment of communities to undertake collective actions that enhance sanitation practices. Through fostering a sense of ownership and intervention, Community-Led Total Sanitation guides communities toward autonomous development in sanitation, thereby cultivating enduring shifts in behavior and augmenting overall health and well-being. This approach harnesses the communal strength of societies to engender sustainable advancements in both sanitation and hygiene behaviours. Fundamental to this methodology is the creation of awareness, the instigation of behavioural shifts, as well as ending the practice of defecation without using the toilet through the mobilization and empowerment of communities (Venkataramanan *et al*., 2018a)

The global issue of open defecation has prompted the emergence of CLTS as a prominent intervention plan. CLTS, a community-based approach, aims to combat open defecation by engaging individuals within communities and fostering a collective

understanding of health as a shared asset. By steering away from traditional top-down subsidy methods for toilet facilities, CLTS emphasizes active participation and ownership within the community, Harter, Lilje, Mosler, and technology (2019). A noteworthy aspect of CLTS is its capacity to incite transformative change. Across diverse cultural contexts, individuals have tended to build toilets after partaking in CLTS activities Harter *et al*. (2019).

A critical factor contributing to this success is the collaborative endeavor of community members towards a common objective. This dynamic interaction necessitates an examination of concepts such as social capital, encompassing elements such as interpersonal trust, cooperation, communication, and social cohesion among community members (Meek *et al.*, 2019). Harter *et al.* (2018) conducted a comparative investigation in India, Indonesia, and Nepal that sheds light on the dynamics of rural sanitation facilitated by CLTS. The research underscores the effectiveness of CLTS in generating sanitation improvements through community engagement.

Meek, Ogilvie, Lambert, and Ryan (2019) investigate the function of social capital within the framework of CLTS. Their mixed-methods exploration delves into the intricate interplay of trust, cooperation, and communication among community members and how these elements influence the success of CLTS initiatives. The CLTS approach has emerged as a globally recognized approach to address the practice of defecating without using a toilet. By fostering collective action and ownership, CLTS moves beyond traditional approaches, leading to tangible sanitation improvements. The success of CLTS hinges upon the interaction and collaboration of community members, with social capital playing a pivotal role in facilitating effective engagement and sustainable change (Meek *et al.*, 2019).

In 2015, more than two billion people did not have a properly designated place to relieve themselves, such as a toilet, necessitating the practice of defecating in the immediate surroundings within the places they lived (Mara & Evans, 2018). This perilous method of human waste disposal constitutes a significant catalyst for the prevalence of diarrheal diseases, which in turn contribute to an estimated annual mortality rate of 1.6 to 2.5 million individuals. Alarmingly, these diseases account for approximately 19% of all deaths among children who have not attained the age of five years in developing nations (Mara & Evans, 2018).

The ramifications of open defecation extend beyond immediate mortality, affecting child development as well. A study by Mara & Evans, 2018 indicates that children who are exposed to the practice of open defecation tend to exhibit stunted growth and diminished cognitive capacities. The compromised environment created by open defecation significantly hampers not only individual health but also communal well-being. Individuals who do not engage in open defecation themselves but reside in close proximity to those who do remain susceptible to health risks (Sun & Han, 2021). These findings emphasize the urgent need for comprehensive interventions to alleviate the detrimental consequences of open defecation on both individual and community health. Improving sanitation infrastructure and promoting hygienic practices are essential steps toward curbing the prevalence of diarrheal diseases and fostering healthier living conditions for populations in developing countries.

1.2.1Community-led total sanitation process

The implementation of community-led total sanitation involves three distinct stages. Firstly, there is a pre-triggering phase where relevant information is collected. Following this, a triggering event takes place, utilizing participatory activities to encourage the construction of latrines. Finally, a post-triggering phase is initiated, which involves a

series of follow-up visits aimed at providing ongoing support (Kangwa, 2017). According to Mara and Evans (2018), a significant number of individuals, totaling 892 million, engage in the practice of open defecation worldwide. The majority of these individuals reside in rural regions of South Asia. In numerous developing regions, the prevalence of open defecation has significantly decreased over the past two decades due to economic advancements and the collective endeavors of development organizations and national governments. From 2000 to 2015, there was a notable decline in open defecation rates in rural Sub-Saharan Africa, Central and Southern Asia, and Latin America. Specifically, the prevalence of open defecation declined from 42% to 32% in rural Sub-Saharan Africa, from 68% to 43% in Central and Southern Asia, and from 29% to 11% in Latin America (UNICEF, 2020). However, there is a need to expedite the progress in sanitation coverage in order to fulfil the objectives outlined in the Sustainable Development Goal (SDG) for sanitation. This goal entails the eradication of open defecation and the attainment of universal availability of suitable and fair sanitation facilities (Sarkar & Bharat, 2021). In the context of Indonesia, a nation characterized by a population of almost 110 million persons who lack adequate sanitation facilities are around 63 million individuals who practice open defecation, the occurrence of diarrheal illnesses among children is a matter of considerable importance (Venkataramanan *et al*., 2018). According to this research, it was seen that roughly 11% of children in Indonesia encountered diarrhoea over a span of two weeks. This concerning statistic is further compounded by an annual mortality rate of approximately 33,000 children, which can be directly connected to cases of diarrhoea (Venkataramanan *et al*., 2018).

1.2.2 Combating effects of open defecation

To combat these dire health risks associated with inadequate sanitation, Indonesia has taken proactive measures by incorporating Community-Led Total Sanitation (CLTS)

programs into the national strategy for enhancing environmental health outcomes in rural areas Venkataramanan *et al,* 2018). Beginning in 2008, CLTS initiatives were implemented in the rural areas of East Java, one of Indonesia's most populous provinces, home to approximately 38 million residents (Venkataramanan *et al.*, 2018). The primary objective of CLTS programs is to effect a transformation in community norms concerning sanitation practices, thereby fostering increased demand for proper toilet facilities and subsequently reducing instances of open defecation (Venkataramanan *et al.*, 2018). This approach emphasizes community engagement and empowerment, recognizing that local involvement is pivotal in driving sustainable improvements in sanitation and health outcomes. The prevalence of inadequate sewage disposal in Nigeria has given rise to significant medical challenges, disproportionately affecting women and children. The prevalence of open defecation (OD) is not exclusive to Nigeria, since a significant proportion of the worldwide populace, particularly in rural regions of sub-Saharan Africa, engages in this practice. The unhygienic practice in question has resulted in severe effects, as evidenced by the alarming annual mortality rate of more than 1.5 million children under the age of five due to diarrhoea, as reported by UNICEF (Ayadi & Rotowa, 2020). Nigeria has responded to the situation by implementing the CLTS plan and undertaking notable measures, such as the endorsement of Executive Order 009 by President Muhammadu Buhari, with the ambitious objective of accomplishing an ODF designation by 2025. Measuring the significance of focused awareness efforts and community engagement is essential in achieving these critical milestones.

The CLTS intervention in Uganda sought to attain several ambitious objectives, namely the achievement of a 100% ODF status, the enhancement of sanitation and hygiene measures (such as increased coverage of latrines and hand-washing facilities, improved latrine quality, and enhanced cleanliness), a reduction in the prevalence of diarrheal

diseases, and the empowerment of communities through the dissemination of adequate knowledge on sanitation and hygiene practices. Nevertheless, an assessment of the outcomes and impacts of CLTS in the Pallisa district, following a seven-year implementation period, had not been conducted prior to this study. Mugambe and Halage (2020) undertook a study with the aim of addressing a research gap by examining the possible impacts of the CLTS intervention in the Pallisa district. The researchers performed a comparison analysis between sub-counties that had implemented CLTS and those that had not. The primary aim of CLTS is to induce a persistent change in behaviour among communities, resulting in the voluntary and enduring cessation of open defecation behaviours. Additionally, its objective is to generate a need for secure sanitation and hygiene amenities, without the supply of any services or subsidies. The results of the study hold substantial value in comprehending the efficacy of the CLTS strategy within the setting. Furthermore, the research highlights a noteworthy application of CLTS in Pakistan, which resulted in a notable increase in latrine coverage within the designated districts. Consequently, this led to a significant decrease in the prevalence of open defecation within the local communities (Stern, 2018).

1.2.3 Implementation of community-led total sanitation in Kenya

Community-led total Sanitation initiative aimed at establishing pit latrines in rural Kenya to foster sustainable sanitation through behavioural change (Ogendo *et al.*, 2016). Grounded in social capital principles, this behaviour changes approach prompts households to construct pit latrines without relying on subsidies. Initiated by the Ministry of Health in 2007, the CLTS campaign's first phase concluded in 2013 with the achievement of Open Defecation Free (ODF) status. However, limited documentation exists concerning the assessment of the CLTS program's adoption, spanning from its initiation to the certification of villages as open-defecation-free (Mariwah *et al.*, 2022).

In Kenya, the issue of sanitation presents a formidable challenge, one that the country struggles to address in line with the SDGs set for both sanitation and drinking water. Currently, an estimated 70% of Kenya's population, amounting to nearly 33 million individuals, grapple with inadequate access to basic sanitation facilities. Alarmingly, 10% of the population, equating to around 5 million people, resort to open defecation as their sanitation solution (Nhamo *et al.*, 2019). Open defecation is primarily prevalent in rural areas, where 15% of the rural populace engages in this unsanitary practice, while the urban population's rate stands at a significantly lower 3%.

The sanitation predicament in rural Kenya encompasses more than just open defecation: an astonishing 85% of open defecation instances occur within 15 major counties, largely concentrated in the Arid and Semi-Arid Lands (ASAL), among these counties, approximately 10 house a substantial population of transhumant pastoralists, a group that proves to be challenging to reach with conventional sanitation interventions (Busienei *et al.*, 2019).

1.2.4 Status of community-led total sanitation in Turkana

Turkana County is recognized as the largest county in Kenya, known for its dry and semi-arid environment and warm and hot climate (Gitari *et al*., 2022). The primary factor contributing to the low population density in the region is the prevalence of pastoralist settlements. Surprisingly, an astonishing 95% of the populace under this jurisdiction resides beneath the absolute poverty threshold. In addition, it is worth noting that Turkana County is situated among the regions in Kenya that exhibit the lowest levels of WASH coverage, as indicated by the study conducted by Gitari *et al*. (2022).

In Study County, the foremost difficulties encountered by the residents of Turkana County, subsequent to contending with water scarcity, pertain to insufficiencies in sanitation. According to Mara *et al*. (2018), a substantial proportion of the population,

approximately 82%, experiences constraints in terms of accessing and utilizing sanitary services. This limitation has a considerable influence on their overall health and socio-economic progress. The phenomenon of open defecation has been seen to be widespread among a significant proportion of the population residing in Turkana for an extended period of time. The adoption of this behaviour can be attributed to multiple factors, such as limited knowledge of appropriate hygiene protocols, inadequate availability of potable water, and intricate social dynamics that shape attitudes towards sanitation and hygiene (Karanja *et al*., 2018).

Intriguingly, certain segments of the Turkana community hold onto a belief that defecating at the same site within a household is taboo. This belief, coupled with steadfast adherence to open defecation, perpetuates the existing scenario (Karanja *et al.*, 2018). Overcoming these challenges necessitates addressing not only practical issues such as access to sanitation facilities but also the intricate web of cultural beliefs and social norms. Strategies to promote lasting behaviour change must be considered in efforts to enhance the overall well-being and development of Turkana County's inhabitants.

1.2.5 Role of psychosocial factors in community-led total sanitation

Psychosocial factors encompass a diverse array of attributes that wield significant influence over an individual's psychological and social dimensions. These factors intricately describe an individual's interplay with their societal milieu, subsequently exerting profound effects on both their mental and physical well-being (Liu *et al.*, 2017). Notably, the construct of psychosocial factors comprises two primary components: protective psychosocial resources and psychological risk factors (Liu *et al.*, 2017). Within the scope of protective psychosocial resources, key elements embedded within an individual's social environment hold paramount importance. Among these are the

constructs of social networks and social support, which stand as influential determinants in shaping an individual's psychological resilience and overall health (Liu *et al.*, 2017).

Conversely, psychological risk factors contribute to the intricate psychosocial landscape by posing potential threats to an individual's well-being. These encompass vital exhaustion, depressiveness, hopelessness, and hostility (Jeon *et al.*, 2017). Such psychological risk factors can considerably undermine an individual's mental health and, by extension, have implications for their physical health (Jeon *et al.*, 2017). Central to the realm of psychological resources are core elements that further modulate an individual's adaptive responses to psychosocial challenges. Among these resources, one finds coping ability or mastery, a sense of coherence, and self-esteem. These resources empower individuals to navigate through the complexities of their environment, bolstering their psychological well-being and fostering an enhanced capacity to confront psychosocial stressors (Liu *et al.*, 2017).

Improvements in sanitation have demonstrated a profound influence on human health, as highlighted by Alemu *et al.* (2018). Empirical evidence indicates that enhanced sanitation practices can lead to a reduction of up to 36% in diarrheal disease occurrences and up to 50% in intestinal parasitic infections. Despite this promising impact, the year 2015 witnessed a staggering 2.4 billion individuals lacking access to improved sanitation facilities. The consequences of inadequate sanitation are dire, with over 1.8 million global deaths annually attributed to diarrheal diseases. Notably, a significant majority of these fatalities, approximately 90%, are concentrated among children under the age of five (Alemu *et al.*, 2018). Addressing this critical issue, the Risk, Attitude, Norm, Ability, Self-regulation (RANAS) model emphasizes the pivotal role of psychological factors in predicting behaviours related to Water, Hygiene, and Sanitation (WASH).

The RANAS approach is grounded in a systematic process of behaviour change, encompassing four essential steps. Firstly, the identification of potential behavioural determinants is undertaken. Secondly, a thorough measurement of these identified factors is conducted, with a focus on discerning those most influential in steering behaviour. The third step involves the selection of pertinent behaviour change techniques (BCTs) and the formulation of tailored behaviour change strategies. Lastly, the devised behaviour change strategies are implemented and subjected to evaluation (Millward, 2017).

In the field of psychology and behaviour change, the understanding of human behaviour is intricately tied to psychosocial factors that operate within an individual's mind. These factors involve the activation of knowledge, the emergence of beliefs and emotions, and the subsequent development of intentions to engage in specific behaviours. This psychological process ultimately leads to the outward manifestation of observable behaviours (Bird & Schjoedt, 2017). To effectively bring about behaviour change, it is crucial to address these underlying behavioural factors through targeted intervention programs. One established approach for scheming and appraising such behaviour change strategies is the RANAS method. This approach provides a systematic framework for identifying and modifying the behavioural factors associated with a particular behaviour within a specific population (Wang, 2017).

In essence, the RANAS approach offers a practical and accessible means of assessing the various behavioural factors, understanding their impact on behaviour, crafting tailored strategies to influence behaviour, and subsequently gauging the effectiveness of these strategies. This method facilitates an all-inclusive and structured approach to behaviour change by honing in on the cognitive and emotional elements that drive individuals' actions. The RANAS model highlights the intricate interplay between psychosocial and

behavioural factors, deeply rooted within contextual factors. These contextual elements exert their influence on behaviour through two main mechanisms, as elucidated by Gamma *et al.* (2017).

Firstly, they can directly impact behavioural factors, shaping how individuals perceive and evaluate certain behaviours. For instance, economic constraints might lead individuals with lower incomes to view the cost of hand washing soap as comparatively higher. Secondly, contextual factors can also modulate the potency of behavioural factors in driving actual behaviour. This can be exemplified by a person's strong commitment to procuring safe water, which, despite their dedication, might remain unrealized due to inadequate access to a safe water source. The contextual factors, categorized into social, physical, and personal domains, play pivotal roles in this dynamic process.

The social context, encompassing elements such as cultural norms, social relationships, legal frameworks, economic conditions, and the information environment, collectively influences how individuals perceive, engage with, and prioritize various behaviours (Yeung, 2019). This intricate interweaving of factors underscores the complexity of human behaviour and underscores the significance of considering the broader context when aiming to promote behavioural change.

Instantaneously, the RANAS model underscores the multifaceted nature of behaviour and its underlying drivers. Contextual factors wield a substantial impact on behaviour by shaping behavioural factors directly and by modulating their influence.

The social, physical, and personal contextual elements collectively form the backdrop against which behaviours are enacted and must be comprehensively understood and addressed in endeavours to promote positive behavioural outcomes. When examining the psychosocial factors influencing the adoption of CLTS, researchers can draw upon

various models, including the Health Belief Model (HBM), the Theory of Planned Behavior (TPB), and the Social Cognitive Theory (SCT).

Although each of these models provides unique insights, they may need customization or integration to comprehensively address the specific psychosocial aspects of sanitation-related behaviours. The RANAS model is selected for this study due to its comprehensive nature, encompassing various factors affecting behaviour change, such as risks, attitudes, norms, abilities, and self-regulation. Given the complexity of community-led total sanitation CLTS adoption, the RANAS model offers a holistic framework to examine the interplay of these elements. It particularly underscores the role of circumstantial factors, acknowledging that CLTS adoption is influenced by cultural norms, community dynamics, and environmental conditions.

Additionally, the model emphasizes psychosocial determinants, essential for adopting and maintaining new behaviours. Importantly, the RANAS model provides a practical structure for designing interventions aimed at promoting CLTS adoption and guiding the creation of targeted strategies. To bridge this gap, an investigation was carried out to determine the influence of psychosocial factors on the decision of individuals and communities to adopt CLTS, in Turkana County, focusing specifically on the Turkana Central Sub-County.

1.3 Problem Statement

The inconsistent adoption of Community-Led Total Sanitation practices within rural communities poses a significant challenge to achieving ODF status. Despite the implementation of the Kenya Environmental Sanitation and Hygiene Policy (KESH), recognizing safe water, sanitation, and hygiene as fundamental human rights, there exist significant disparities in the success of CLTS interventions across sub-counties, as evidenced by Ouma (2018). Remarkably, Nambale achieved 100% adoption, Siaya

reached 85%, and Teso North only achieved 40%, despite all interventions initiated simultaneously with equal resourcing under the KESH policy and utilizing the CLTS handbook by public health officers (PHOs). In Kalokol ward, which serves as a significant economic hub for the county due to its reliance on fishing activities, the adoption rate of essential health and sanitation practices stands at a mere 11% (MoH, 2023). This alarmingly low adoption rate reveals a substantial disparity between the community's knowledge and the actual implementation of crucial health measures. This discrepancy has been further exacerbated by the occasional reporting of cholera cases in the area. As such, the key problem of this study aims to address the urgent need to bridge this gap in health and sanitation awareness and practices to reduce the prevalence of cholera and improve overall community well-being.

Psychosocial factors encompass a diverse range of psychological and social elements that can exert influence on individuals' behaviours and decision-making processes. A study conducted by Alemu, Kumie, Medhin, and Gasana (2018) revealed that attitudes about latrines and social norms are the psychological predictors of latrine ownership. In contrast study by Mulopo, Kalinda, Chimbari, and health (2020) discovered that there was little difference between the groups of doers and non-doers and that perceived vulnerability was ranked low with a mean of 1.771, and self-efficacy in recovering from setbacks received low ratings of 0.561. Although CLTS has demonstrated success in numerous regions, its adoption is susceptible to the influence of various psychosocial factors that impact community engagement and behaviour change. The study highlighted vulnerability, attitudinal, and ability factors as influential in promoting the utilization of safe water sources, recommending prioritization of these psychosocial factors in (WASH) interventions.

There is a notable deficiency of research that clearly investigates the psychological variables that contribute to the adoption of CLTS. In order to bridge this existing knowledge gap, the imperative of this research endeavour is to evaluate the influence of psychological determinants on the implementation of CLTS in Turkana County. This study aims to utilize a mixed-methods research technique to collect subjective insights and quantifiable data. The projected outcomes of this research endeavour are anticipated to provide significant contributions to the knowledge base of policymakers, practitioners, and researchers, facilitating their comprehension of the intricacies surrounding the adoption of CLTS. This research will ultimately make a valuable contribution to the advancement of more efficient tactics aimed at boosting sanitation and hygiene habits in comparable environments.

1.4 Study Objectives

1.4.1 General objective

The general objective of the study is to investigate the influence of psychosocial factors on the adoption of Community-Led Total Sanitation in Turkana Central Sub-County, Kenya.

1.4.2 Specific objectives

i. To investigate the influence of perceived vulnerability and susceptibility to sanitation-related diseases on the adoption of community-led total sanitation in Turkana Central Sub-County, Turkana County
ii. To examine the influence of attitude on the adoption of community-led total sanitation in Turkana Central Sub-County, Turkana County.
iii. To assess the influence of community norms perception on the adoption of community-led total sanitation in Turkana Central Sub-County, Turkana County

iv. To establish the influence of ability factors on the adoption of community-led total sanitation in Turkana Central Sub-County, Turkana County

v. To examine the influence of sanitation practices on the adoption of community-led total sanitation in Turkana Central Sub-County, Turkana County

1.5 Research Questions

The following are the research questions that are formulated from the research objectives.

i. How do communities perceive vulnerability and susceptibility to infection of sanitation-related diseases risks on the adoption of community-led total sanitation in Turkana central sub-county, Turkana County?

ii. How do attitudes influence the adoption of community-led total sanitation in Turkana Central Sub-County, Turkana County?

iii. What is the impact of community norms perception on the adoption of Community-Led Total Sanitation in Turkana Central Sub-County, Turkana County?

iv. How do ability factors influence the adoption of community-led total sanitation in Turkana Central Sub-County, Turkana County?

v. What is the extent of influence exerted by sanitation practices on the adoption of Community-Led Total Sanitation within Turkana Central Sub-County, Turkana County?

1.6 Justification of the Study

The successful adoption of CLTS programs requires a deep understanding of the psychosocial factors that influence community members' decision-making processes. Studying psychosocial factors provides valuable insights into the cognitive, emotional, and social aspects that shape individuals' behaviours, and enables the development of targeted interventions that address specific barriers and facilitators to CLTS adoption. Understanding the underlying motivations, beliefs, and social dynamics within a

community, practitioners and policymakers can design programs that are more likely to succeed and sustain in the long term. The study of psychosocial factors influencing the adoption of CLTS is crucial for developing effective methodologies, enhancing CLTS practices, and informing policy decisions. By integrating robust research methodologies, tailoring interventions, and considering the broader social and cultural context, practitioners and policymakers can enhance the sustainability, scalability, and impact of CLTS programs, ultimately improving sanitation and hygiene practices within.

1.7 Significance of the Study

This study holds great importance as it has the ability to enhance public health and sanitation results within the community. Community-led total sanitation is an innovative practice that endeavours to eradicate OD and foster enhanced sanitation behaviours by allowing communities to engage in collective action. Gaining insight into the psychosocial determinants that influence the adoption of CLTS is of paramount importance in order to develop efficacious treatments and methods aimed at promoting behavioural modifications within communities. This study aims to provide a valuable contribution to the advancement of evidence-based policies and initiatives that may successfully tackle sanitation concerns within the Turkana County administration. The results of this study have the potential to provide valuable insights for policymakers, public health professionals, and development agencies. These findings can assist them in customizing their interventions to effectively address the unique requirements and circumstances of different communities. By utilizing facilitators effectively, they can enhance the adoption rates of CLTS initiatives.

Moreover, this study's significance extends beyond individual communities, as CLTS adoption can have wide-ranging impacts on public health outcomes. Improved sanitation practices lead to reduced incidences of waterborne diseases, improved nutrition, better

child development, and overall community well-being. Additionally, this research broadens understanding of social dynamics and behavior modification in the context of public health, by shedding light on the psychosocial factors influencing CLTS adoption. This study will enhance understanding of how communities can be empowered to drive positive change in public health practices. The insights gained from this research can be extrapolated to other domains beyond sanitation, informing interventions aimed at behavior change in various contexts. The identification of the psychological and social determinants that shape CLTS adoption will contribute to the development of effective policies, interventions, and programs that can improve public health and sanitation outcomes.

1.8 Limitations of the Study

The researcher run into encounters in accessing household heads due to the nomadic lifestyle prevalent in pastoral communities, where individuals often engage in grazing animals from early hours. This was combined with poor network coverage, delaying effective communication of information. To mitigate these limitations, the research implemented proactive measures such as arranging flexible transportation and establishing prior communication channels with distant households, aiming to streamline data collection processes and minimize time constraints associated with logistical challenges. This data was informed by the Ministry of Health (MoH) database, which served as a crucial resource for capturing information on CLTS adoption trends. However, it's important to acknowledge that the MoH database is dynamic and subject to sporadic updates and changes. Therefore, the evolving nature of the database presents a notable limitation for the study, as it may impact the accuracy and reliability of the data collected at different points in time. This dynamic nature necessitates a cautious

interpretation of the findings and underscores the need for regular validation and cross-referencing of the data to ensure its integrity throughout the research process

1.9 Delimitation of the Study

The study was carried out in Turkana Central Sub-County in Turkana County, particularly among communities that live where the CLTS intervention has been triggered. The results of this study were not taken as a full analysis culture of the Ng ‘Turkana people but can be used to understand community health risk perception, community attitudes towards OD, cultural norms, accessibility to resources, and the role of community leaders in communication on sanitation issues. The study utilized a convergent design research method to gather data on the adoption rate of CLTS in Turkana central sub-county within a defined timeframe.

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

This chapter reviewed existing literature pertaining to the adoption of community initiatives, psychosocial factors, risk, attitude, norms, ability and self-regulation factors, conceptual framework, theories or model supporting this study.

2.1 Overview of Community-Led Total Sanitation Adoption

Community-led total sanitation (CLTS) is a participatory methodology designed to facilitate the adoption of enhanced sanitation and hygiene behaviours within communities. The focal point lies in the promotion of community engagement and responsibility in attaining Open Defecation Free (ODF) status. This entails ensuring that all individuals within the community possess hygienic toilet facilities and abstain from the practice of open defecation. Community-led total sanitation (CLTS) has been widely embraced by numerous countries globally, including India, Bangladesh, Nepal, Cambodia, Uganda, and Kenya, among various others.

The aforementioned approach has demonstrated efficacy in enhancing the accessibility and utilization of sanitation facilities, while concurrently mitigating the prevalence of open defecation. According to Hanchett's (2016) study, the introduction of Community-Led Total Sanitation (CLTS) resulted in a reduction of 30% in open defecation rates within the regions where the Bangladesh Rural Advancement Committee (BRAC) and the Water Supply and Sanitation Collaborative Council (WSSCC) were engaged. In 2016, research done by UNICEF revealed that Bangladesh achieved notable progress in its efforts to address the issue of open defecation. According to UNICEF (2016), there was a significant decline in the prevalence of open defecation, dropping from 34% in 1990 to a remarkable 1% by 2015.

The study conducted by Gupta *et al*. (2019) in northern India provides evidence of the efficacy of Community-Led Total Sanitation (CLTS) in substantially decreasing the prevalence of open defecation. The study area witnessed a significant reduction in open defecation prevalence, declining from 75% to a paltry 6%, following the implementation of the Community-Led Total Sanitation (CLTS) intervention.

The adoption of Community-Led Total Sanitation (CLTS) can be measured using various indicators that are commonly used to assess the impact of sanitation programs. The common indicators used to measure the adoption of CLTS are: Open Defecation Free (ODF) status: This is a critical indicator of the adoption of CLTS. Communities are declared ODF if every household has access to and uses a toilet or latrine, and no human waste is visible in the open (Mara, Evans, & Development, 2018). According to a study conducted by Lawrence *et al.* (2016) in the Chombo district in the southern province of Zambia, community total sanitation which was piloted in 2007 showed an increase in ODF where 5-6 households had latrines with a smooth floor, superstructure, and hand washing facilities, the study further record that sanitation behavior has to reach 1.3 million in the 47 districts where the government had implemented hygiene and sanitation up the project.

Another indicator is toilet ownership, this indicator measures the percentage of households that have constructed a toilet or latrine after being triggered by CLTS activities (Mara *et al.*, 2018). However, this indicator does not guarantee its usage, this is evident in a study conducted by O'Reilly, Dhanju, and Louis (2017) in India where communities abandoned the constructed latrines and opted for open defecation. Hand washing infrastructure is the other indicator which many times detergents are used: This indicator measures the percentage of households that have a designated place for hand washing with soap or any other detergent. Behavior change is another indicator; this

indicator measures the percentage of community members who have adopted safe sanitation and hygiene practices after being triggered by CLTS activities.

Sustainability is an indicator used as well, this indicator measures the degree to which the behavior changes and ODF status are maintained over time. These indicators can be measured using various methods such as household surveys, direct observations, and community-based monitoring systems. The indicators and methods used to measure CLTS adoption can vary depending on the specific program and context. This study will therefore use the RANAS model of behavior change to assess the influence of psychosocial factors on its adoption.

2.2 Behavior Change Using the RANAS Approach

A comprehension of behavioral change can be achieved using the RANAS model, which is an approach that has been ascertained to be reliable and valid in the revelation of the socio-psychological functioning of interventions relating to behavioural change. The approach, which was created by the Environmental Health Psychology Group, encompasses before and after control design, which means that technological, environmental, and psychological issues are evaluated pre- and post-application of an intervention by the experimental group and not the control group.

The approach also encompasses a concept that is known as mediation analysis, which is used in the disclosure of behavioral, issues, particularly, the behaviours that changed as a result of the application of an intervention. The significance of mediation analysis is premised on the fact that it helps in figuring out if an intervention worked or not and ascertaining its level of effectiveness. Notably, the RANAS approach envisions an assumption that states that for behavioural change to occur, there must be a corresponding change in the mindset of the targeted audience. The assertion implies that the determinants of behavior such as socio-psychological influences, which may include

feelings, mental dispositions, and awareness about a behavior, should be subject to modification.

Another important issue to note about the approach is that it consists of multiple socio-psychological factors, which have in the past been proven to be determinants of behaviors that are commonly referred to as water, sanitation, and hygiene behaviours (WASH). The model also provides a description of behavior that can be categorized into five blocks such as one of the risk factors that are based on the concerns of perceived susceptibility, as well as the severity of getting a disease and awareness of health-related knowledge. The second is attitude factors, which consist of the beliefs concerning the merits and demerits of behavior and the emotional outcomes that arise from thinking of or conducting a certain behavior.

The third is the norm factor, which encompasses various social influences, the degree to which other people approve and disapprove of behaviour and personal preferences, and views of what is appropriate. The fourth is ability factors, which consist of how-to-do knowledge, which can be understood as knowledge on how to perform the behaviour. Ability factors also consist of how-to-do knowledge and confidence in performing, maintaining, and even recovering behavior that had been stopped.

The fifth is self-regulating factors, which assist one in dealing with goals that are conflicting or distracting elements during behavioural implementation and maintenance. Self-regulating factors also consist of having a plan on when, where, and how to implement a behavior and how it might assist one in fulfilling it while being able to meet needs that are essential in performing a behavior. Best practice dictates that the self-regulation factor should be accompanied by barrier planning. Contzen and Mosler (2012) define it as an approach used in the development of plans needed to overcome impediments.

Additionally, for one to be able to consistently implement a behavior, the individual must demonstrate an unwavering commitment to practicing it. The individual must remember to practice the behaviour in critical moments. A successful intervention process geared towards behavioral change must incorporate some of these behavioural determinants. In this study, the focus will be driven towards showing how different aspects of CLTS function through these determinants.

2.3 Perceived Health Risk and Adoption of CLTS

This literature review examines the perceived health risk factors that influence the adoption of CLTS, an approach aimed at improving sanitation practices through community empowerment. The study explores the impact of knowledge gaps, health risks, socioeconomic factors, cultural beliefs, and fear of stigma on CLTS adoption rates. The findings highlight the importance of addressing these perceived risks to promote sustainable sanitation behaviour change within communities. Although CLTS has shown promising results in addressing the global sanitation crisis, the adoption rates vary significantly across different communities.

The perceived health risk factor affecting CLTS adoption is the knowledge gap regarding the benefits of improved sanitation practices. Lack of information on the health and hygiene advantages associated with CLTS may lead to skepticism and resistance within communities, hindering the adoption process. In (2018b) mixed-method systematic review, it was emphasized that inadequate knowledge represents a significant risk factor contributing to the low adoption of sanitation practices. The authors cited multiple studies that have highlighted how the successful implementation of sanitation interventions hinges not only on hardware but also on the presence of knowledge-based resources, such as software solutions. Moreover, the fear of diseases like diarrhea and cholera has been identified as a driving force behind the adoption of Community-Led

Total Sanitation (CLTS) in various communities (Venkataramanan *et al*., 2018b). Conversely, communities with a low perception of health risks may display indifference or apathy toward adopting improved sanitation practices.

The inadequate provision of sanitation facilities presents a substantial threat to the well-being of the general population since it has the potential to facilitate the transmission of diseases that are transmitted by contaminated water or contact with fecal matter. The influence of perceived risk factors related to inadequate sanitation can have an impact on individual behavior and decision-making in relation to sanitation practices. The cross-sectional study undertaken by Dos Santos, Ouédraogo, Soura, and colleagues (2015) in Burkina Faso has highlighted a notable perceived risk factor related to inadequate sanitation which are, lack of awareness and understanding of the significance of sanitation and hygiene practices.

Individuals lacking comprehension of the correlation between inadequate sanitation and the transmission of diseases may exhibit a diminished inclination to accord significance to sanitation practices. In order to enhance hygienic behaviors, numerous hygiene education initiatives prioritize the augmentation of individuals' knowledge. In a study conducted by Dos Santos *et al*. (2015), a health and demographic surveillance model was employed to assess water-related factors in Bandung, Indonesia. The findings revealed a high prevalence of diarrhea among children under the age of five, despite 91% of households having access to improved water sources.

The researchers observed that implementers often assume that increased knowledge about the transmission of water and sanitation-related diseases would lead individuals to abandon unhygienic practices and adopt improved ones. Nevertheless, it is frequently seen that possessing greater knowledge does not necessarily result in corresponding actions being taken. In alignment with Devine's perspective on the Sani FOAM

framework, it is acknowledged that while knowledge plays a crucial role, it alone is insufficient in facilitating behavioral change. In the district of Wamesa, Indonesia, a study conducted by Linggar, Rantetampang, Tingginehe, Mallongi, and Research (2019) revealed a significant finding. The study demonstrated that individuals who possessed a higher level of knowledge were significantly less inclined to engage in open defecation, with a decrease in likelihood estimated at 2,496 times compared to those who were less informed.

According to Dos Santos, Ouédraogo, Soura, and health (2015), socioeconomic factors are other risk factors, such as poverty and lack of education, he argues that people living in poverty may not have access to safe water and sanitation facilities, and may not have the resources to prioritize sanitation practices. The results of the research were that out of 702 homes, only three of them boiled water. It further stated that one of the reasons why these other homes did not have running water was extreme poverty.

The study also revealed that there was a chance that people in these households did not understand that boiling water served an antimicrobial purpose; they also did not have sufficient resources in terms of access to energy, such as coal, wood, and gas, to boil water. The issue was particularly predominant in informal areas of residence where access to electricity was limited. Another risk factor is the cultural beliefs and practices that play a role in shaping perceptions of sanitation and hygiene practices. For example, Ginja, Gallagher, and Keenan (2021), while conducting formative research on why contingencies of reinforcement are needed in the WASH sector found that many authors have overemphasized the behavior change which is rooted in cultural beliefs, this study agrees with Figueroa and Kincaid (2010) that in some cultures, boiling water is not necessary because of cultural belief of the attribute of water of purity.

Some practices may be considered acceptable to defecate in open spaces, which can contribute to poor sanitation practices. A study conducted by O'Reilly *et al.* (2017) in India found that caste relations which are based on the belief in social classes anticipated that cultural beliefs have an influence on practices of open defecation and defecating in open space is attached to purity. Additionally, fear of stigma and discrimination is also a perceived risk factor associated with poor sanitation. People may be reluctant to use public toilets or latrines due to concerns about being seen or judged by others.

Lack of access to sanitation facilities has been identified as a significant perceived risk factor associated with poor sanitation (Dos Santos *et al.*, 2015). Perceived risk factors play a crucial role in influencing the adoption of community-led total sanitation. Addressing the knowledge gap, mitigating social stigma, providing financial support, and emphasizing health benefits are vital strategies for enhancing CLTS adoption. This literature review underscores the need for tailored interventions that target these perceived risks to promote sustainable sanitation behavior change within communities.

However, most of this literature on CLTS is contained on websites and knowledge bases in the form of gray literature, primarily produced by practitioners to share insights from their implementation experiences. The aforementioned case is applicable to Turkana County whereby it has in the past been found to have limited evidence on the impact of CLTS. Currently, governments and non-governmental organizations that are pursuing the implementation of CLTS encounter problems of navigating vast and mixed-up bodies of literature necessary to inform their decision-making.

2.4 Attitude on Adoption of CLTS

Community-led Total Sanitation is a participatory methodology designed to enhance sanitation and hygiene practices within communities. The process entails raising awareness among members of the community regarding the advantages of adopting

proper sanitation and hygiene habits, as well as empowering people to actively enhance their own sanitation conditions. Inadequate adherence to hygiene standards significantly contributes to the transmission of infectious illnesses. The perception of Water, Sanitation, and Hygiene (WASH) has a crucial role in the transmission of infectious illnesses. This research investigates the impact of attitudes towards the implementation of CLTS in the Turkana Central sub-county.

Attitudes are not observable in a direct manner, but rather may only be inferred based on anticipated patterns of conduct. Linggar *et al*. (2019) conducted a cross-sectional study in Indonesia to investigate the correlation between attitude and defecation behavior in community latrines subsequent to a triggering event. The analysis of the study findings was conducted utilizing a chi-square statistical test, employing a significance threshold of 95%. The p-value found was 0.010, suggesting a statistically significant association between attitude and defecation behavior in communal latrines following the triggering event.

In contrast Harter *et al*. (2019) in Ghana, did not consider the attitude or perception of facilitators to trigger disgust and shame to shape latrine use, the factor provided a minimal variance with a high level of a ceiling effect. In Ghana, a study by Biney *et al.* (2017) found that the adoption of CLTS was influenced by several factors, including the perception of community members toward open defecation, their knowledge of the health risks associated with it, and their willingness to change their behavior. The study also highlighted the importance of engaging community members in the planning and implementation of CLTS programs. Similarly, a study by Pham *et al.* (2016) in Vietnam found that the success of CLTS programs was linked to the level of community participation and the willingness of community members to change their sanitation behavior. The study also noted the importance of involving local leaders and

stakeholders in the implementation of CLTS programs. Another study by Muga *et al.* (2016) in Kenya found that the success of CLTS programs was influenced by the level of community awareness and the availability of resources, such as water and sanitation facilities. The study also noted that the involvement of local government and non-governmental organizations in the implementation of CLTS programs was important for their sustainability.

According to a systematic review by Novotný, Hasman, Lepič, and Bořil (2018) who investigated the factors that influence the adoption of CLTS in low- and middle-income countries. They analyze various studies conducted across different contexts to identify common themes and patterns related to attitudes and CLTS adoption. The review highlighted the significance of attitudes in shaping the success or failure of CLTS interventions. They found that attitudes towards sanitation and hygiene practices, including beliefs, values, and cultural norms, influence the willingness of individuals and communities to adopt CLTS.

Similarly, in a quantitative cross-sectional study conducted by Alemu, Kumie, Medhin, and Gasana (2018), whose objective was to evaluate the influence of psychological factors on the prediction of latrine ownership in rural areas of Ethiopia. The findings from the adjusted logistic regression analysis indicated notable correlations with the consistent usage of latrines. The present study identified a set of characteristics that demonstrated a statistically significant association with consistent latrine use. These parameters are provided in percentages together with their corresponding 95% confidence intervals (CI). Positive Attitude: Individuals who exhibited a positive attitude towards latrines demonstrated a much higher likelihood of consistently using latrines, with a substantial increase of 700% (95% CI: 455% to 1055%).

Ownership of a Latrine with Superstructure: Ownership of a latrine with a superstructure was associated with a 230% increase in the likelihood of consistent latrine use (95% CI: 147% to 348%).Clean Latrine: Having a clean latrine was associated with a 169% higher likelihood of consistent latrine use (95% CI: 100% to 300%).Latrine with a Protected Door: Participants with a latrine featuring a protected door had a 194% greater chance of being consistent latrine users (95% CI: 110% to 348%). In the multivariate logistic regression analysis, where significant factors from the univariate analysis were considered, only one psychological factor, namely a positive attitude, and the three latrine quality factors remained statistically significant in predicting consistent latrine use. This finding suggests that those who held a favorable attitude towards latrines exhibited a significantly higher likelihood of consistently using latrines, with a relative increase of 700% (95% CI: 491% to 1130%). The results of the study indicate that psychological factors such as attitude and injunctive norms play a significant role in predicting latrine ownership. Additionally, the study found that consistent latrine use is influenced by attitude, cleanliness of the latrine, and privacy. Therefore, interventions aimed at improving sanitation should prioritize efforts to modify societal norms, and attitudes, and the promotion of high-quality latrines (Alemu *et al*., 2018).

The local perceptions and addressing misconceptions is essential for effective implementation. The positive attitudes towards community engagement and empowerment contribute to the success of CLTS and active participation, ownership, and involvement of community members are vital for sustaining behavior change. They added that attitudes towards collective action and social norms greatly impact CLTS adoption, social pressure, and the desire to conform to community expectations can encourage or discourage behavior change. They further argued that attitudes are influenced by awareness and knowledge about the health and economic benefits of

improved sanitation practices, providing accurate information and education can positively influence attitudes towards CLTS adoption.

The study also found that attitudes towards external support and facilitation, such as from NGOs, local authorities, and implementers, can affect the acceptance and adoption of CLTS. Positive attitudes towards external actors and their guidance can enhance CLTS outcomes. Overall, the literature suggests that the adoption of CLTS is influenced by a range of factors, including community participation and ownership, the provision of incentives, community awareness and willingness to change behavior, and the involvement of local leaders and stakeholders.

Although the RANAS model provides a comprehensive framework for understanding behavior change, there are some gaps in the specific area of attitudes and the adoption of CLTS. The RANAS model includes attitudes as one of the psychosocial factors, further research could delve into specific attitudes that are particularly relevant to CLTS adoption. For example, understanding the attitudes towards open defecation, sanitation facilities, or communal sanitation practices could provide insights into the underlying factors that influence behavior change to support this argument Alemu *et al.* (2018) in a study on the influence of psychological factors demonstrated the relationship between positive attitude and increased percentage in latrine usage.

Since community-led total sanitation implementation varies across different cultural contexts, attitudes toward sanitation and hygiene practices are shaped by cultural norms, beliefs, and values. Exploring how attitudes interact with cultural context in CLTS adoption could help in designing more context-specific behavior change interventions. Furthermore, investigating the consistency between attitudes and actual behavior change in CLTS adoption is another potential gap. While attitudes are considered influential in behavior change models, the actual translation of positive attitudes into sustained

behavior change can be complex. Examining the relationship between attitudes and behavior outcomes can provide insights into the effectiveness of attitudes as predictors of behavior in the CLTS context.

Other research could focus on evaluating the effectiveness of different interventions aimed at changing attitudes towards CLTS adoption by identifying strategies that effectively shift attitudes towards positive perceptions of CLTS and sanitation practices that could contribute to more successful behavior change campaigns. For long-term sustainability, CLTS aims for sustainable behavior change, but there may be a research gap in understanding how attitudes evolve and are maintained over the long term.

Exploring the stability of attitudes and the factors that influence attitude persistence could help in developing strategies to ensure the continued adoption of CLTS practices. This study will therefore try to close the identified research gap by assessing individual attitudes through mixed-method studies that focus on attitudes towards CLTS within the RANAS model in Turkana County to provide a deeper understanding of the psychosocial factors influencing CLTS adoption. Such insights can inform the development of more effective interventions and policies to promote sustainable sanitation practices and improved health outcomes in Kenya.

2.5 Social Norms on Adoption of CLTS

The Community-led Total Sanitation strategy is designed to enhance sanitation practices within communities by instigating shifts in social norms and behaviors, ultimately leading to the establishment of open defecation-free (ODF) environments. The efficacy of Community-Led Total Sanitation hinges upon the community members' embrace of the method, which can be shaped by prevailing social norms pertaining to sanitation behaviors. The present study aims to assess the societal norms pertaining to sanitation practices and their influence on the adoption of Community-Led Total Sanitation (CLTS).

Ajzen's (1991) Theory of Planned Behavior posits that behavioral intentions are shaped by attitudes, subjective standards, and perceived behavioral control. Social norms, which are a component of subjective norms, are widely recognized as a significant determinant of behavioral intentions. Social norms refer to the implicit guidelines governing behavior that are commonly accepted and adhered to by individuals within a certain group or community. These norms are of utmost importance since they significantly influence the conduct of individuals (Cialdini & Trost, 1998). The adoption of CLTS intervention in the realm of sanitation practices might be influenced by social norms.

According to Hendrix's (2020) study conducted in Cambodia, it was discovered that social norms played a substantial role in impeding the acceptance and implementation of CLTS initiatives. The findings of the study indicate that open defecation was perceived as a widely accepted social behavior, and participants exhibited hesitancy in discontinuing this habit due to apprehensions over potential social repercussions. The authors proposed that the development of interventions should be focused on altering societal norms pertaining to open defecation in order to enhance the acceptance and implementation of Community-Led Total Sanitation (CLTS) programs.

Sarkar *et al*. (2017) conducted a study in India that revealed that the implementation of CLTS was influenced by prevailing social norms and cultural practices. The findings of the study indicated that open defecation was a culturally entrenched behavior, necessitating a shift in cultural attitudes in order to transform prevailing social norms associated with this activity. The authors proposed that initiatives pertaining to Community-Led Total Sanitation (CLTS) should prioritize the alteration of cultural attitudes surrounding open defecation as a means to enhance the acceptance of such interventions. The findings of a cross-sectional survey conducted in Suna West, Kenya

by Aluoch, Asweto, and Onyango (2022) indicated that 66.1% of households had experienced a partial reversion to non-open defecation-free (ODF) status.

The study also highlighted the importance of legislative measures in promoting positive sanitation practices within families, while emphasizing the potential effectiveness of incentivizing behaviors to reduce the likelihood of households reverting to non-ODF status. Furthermore, households that perceived building or maintenance supplies to be expensive were less likely to have odds of being ODF. The results of the study offered proof of ODF status reversion within villages that had been certified before. It also found that homes that had a retained ODF status also had enhanced hygiene and sanitation practices. The findings also revealed an interesting aspect which was that households that practice social norms had less likelihood of being ODF.

The result was an indication that there was a failure in the CLTS process in integrating social norms regarding appropriate sanitation which would have inspired community action towards behavioral change. The literature suggests that social norms surrounding sanitation practices play a significant role in the adoption of CLTS (Jenkins, Scott, & medicine, 2007). Studies have shown that social norms can be a barrier or a facilitator to the adoption of CLTS, depending on the context. Interventions aimed at improving sanitation practices should, therefore, consider social norms and cultural practices when designing interventions. This review highlights the need for community-based interventions that focus on changing social norms surrounding open defecation.

The RANAS model is a well-established framework used to understand and promote behavior change, particularly in the context of health and sanitation. While the RANAS model offers a comprehensive framework for analyzing and addressing psychosocial factors influencing behavior change, there are some gaps when applying it specifically to the adoption of CLTS. The RANAS model acknowledges the influence of social norms

on behavior change, but there may be a need for more research on the specific cultural and social norms that affect the adoption of CLTS. Understanding the existing norms, their formation, and the factors that perpetuate or hinder behavior change in the context of CLTS can provide valuable insights for designing effective interventions.

The community-led total sanitation handbook by Kar and Chambers (2008) elaborates the emerging natural leaders after triggering the community either with 3-5 hours or even a week, the success of the community in the adoption of the intervention still relies much on the leaders, further research, therefore, could explore the identification and engagement of influential individuals or groups who can promote CLTS adoption, presence of so-called natural leaders in CLTS focuses strongly on the involvement of such committed community members they are activists and enthusiasts who emerge and take the lead during CLTS processes as reported by (Harter *et al.*, 2019).

Understanding how opinion leaders influence norms and behaviors related to sanitation practices can help in developing targeted strategies to leverage their influence. The current research is backed by Harter *et al.*'s (2019) investigation of implementation factors in rural regions of Ghana. Harter and colleagues explored the significance of various factors in their study. Additionally, the findings of Crocker *et al.* (2016), who examined the effects of CLTS in rural communities in Ghana, further support the current study. Crocker and her team observed that the success of CLTS was notably greater when community members were carefully chosen and given specialized training, in comparison to the conventional CLTS implementation without such targeted training.

The approach emphasizes the importance of normative expectations and perceptions, which refer to an individual's beliefs about what others think they should do and their perception of the prevailing norms as supported by (Contzen & Mosler, 2012) while developing the model. Further research could investigate how normative expectations

and perceptions specifically impact the adoption of CLTS and how they can be effectively influenced to drive behavior change. Since communities are not homogenous entities, there may be significant variations in norms and behaviors within a given community as reported in a study conducted in Turkana County by (Karanja, Gathu, & Nzisa, 2018).

Exploring intra-community variations in the adoption of CLTS can help identify subgroups with different levels of readiness for change. This knowledge can inform the development of tailored interventions that address the specific needs and motivations of different segments within the community. Addressing these research gaps can help enhance the application of the RANAS model in understanding the psychosocial factors influencing the adoption of CLTS. By gaining a deeper understanding of the specific contextual factors at play, researchers and practitioners can design more effective interventions to promote sustained behavior change and improved sanitation practices within communities.

2.6 Ability Factors on Adoption of CLTS

Community-led total sanitation is an approach that focuses on empowering communities to collectively take action to end open defecation. This approach has been shown to be effective in promoting behavior change and increasing sanitation coverage in many countries. However, the success of CLTS is dependent on the individual abilities and resources of community members. This study examines the impact of individual abilities and resource availability on the adoption of CLTS.

Individual abilities such as knowledge, attitudes, and beliefs have been shown to have a significant impact on the adoption of CLTS. A study conducted in Ethiopia by Molla *et al* (2019) found that community members who had better knowledge about the dangers of open defecation and the benefits of improved sanitation were more likely to adopt

CLTS. Similarly, a report by (WSP, 2014) in India found that community members who had a positive attitude towards sanitation and perceived it as important were more likely to adopt CLTS. This highlights the importance of targeted behavior change communication (BCC) strategies that focus on improving the knowledge, attitudes, and beliefs of community members. Resource availability, including financial and physical resources, also plays a significant role in the adoption of CLTS. A study in Ghana by Owusu *et al.* (2020) found that lack of financial resources was a major barrier to the adoption of CLTS.

Similarly, a study in Nepal by Malla *et al.* (2017) found that the lack of physical resources such as water and sanitation facilities was a major barrier to the adoption of CLTS. This highlights the importance of providing financial and physical resources to support communities in adopting CLTS. Social norms and networks also play a significant role in the adoption of CLTS. A study in Malawi by Kaponda *et al.*, (2019) found that social norms and networks were important predictors of CLTS adoption. Community members who had strong social networks and were able to influence others were more likely to adopt CLTS. This highlights the importance of social mobilization and community engagement strategies in promoting the adoption of CLTS.

The success of CLTS is dependent on the individual abilities and resource availability of community members. Targeted behavior changes communication strategies, financial and physical resources, and social mobilization and community engagement strategies are important in promoting the adoption of CLTS. However, more research is needed to explore the impact of individual abilities and resource availability on the sustainability of CLTS. The research findings show that knowledge plays an important role in the evaluation of an individual's abilities.

Although the RANAS model covers several important factors, including risks, attitudes, norms, abilities, and self-regulation, there might be a potential research gap in the specific area of the ability factor as it relates to the adoption of CLTS. The ability factor in the RANAS model refers to the individual's perceived capability to perform the desired behavior. In the context of CLTS, it could involve the skills, knowledge, resources, and infrastructure required to implement and sustain improved sanitation practices. Exploring the ability factor can help identify barriers and facilitators that influence individuals' ability to adopt CLTS practices effectively.

Further studies can be conducted to investigate the specific skills and knowledge gaps that exist among individuals or communities regarding CLTS practices. This could involve understanding the level of knowledge about sanitation, hygiene practices, or the technical aspects of constructing and maintaining sanitation facilities. Additionally, examining the availability of necessary resources (financial, material, and human resources) to implement CLTS effectively. This could include assessing the accessibility and affordability of sanitation-related products, materials, or technologies required for CLTS adoption.

Despite the CLTS handbook by Kamar and other authors citing the non-subsidy in the intervention, there is a need to assess the underlying factors behind the ability capabilities of an individual or the community to ensure the success of the intervention. A study by Karanja *et al.* (2018) in Turkana County found that latrine users were afraid of the structures collapsing due to poor materials as well as loose soils, similarly, O'Reilly *et al.* (2017) in India where the communities were also afraid of the collapsing of latrine which is an attribute to nature of available materials and individual competence of constructing the latrine gave them doubt to use the latrine and opted for open defecation.

Therefore, there is a need to investigate the role of infrastructure in CLTS adoption. This could involve exploring the challenges related to the availability of water supply, waste management systems, or the suitability of the local environment for implementing CLTS practices especially in arid- and semi-arid land where Turkana County falls under. Identifying capacity-building needs: Further research can focus on assessing the training and capacity-building needs of individuals or communities to enhance their ability to adopt CLTS practices. This could involve identifying the gaps in knowledge, skills, or technical expertise and developing targeted interventions to address those gaps. This study will form based on the influence of the ability factor on the adoption of the intervention, the findings might be limited to the study area, therefore they need to assess other geographic in order to draw comparisons.

2.7 Self-Regulation on Adoption of CLTS

Sanitation is a crucial factor for ensuring health and well-being, particularly in developing countries where poor sanitation practices are still prevalent. Self-regulation refers to an individual's ability to set goals, monitor their progress, and adjust their behavior accordingly to achieve desired outcomes. In CLTS adoption, self-regulation can play a crucial role in sustaining behavior change over time. However, limited research has focused on explicitly examining self-regulation as a distinct factor within the RANAS model and its influence on CLTS adoption.

This study will assess the role of self-regulation factors in the adoption of CLTS in Turkana County. The adoption of community-led total sanitation is one strategy that has been utilized to improve sanitation in these settings. However, sustaining behavior change in sanitation practices remains a challenge. Self-regulation is a process by which individuals monitor and control their own behavior to achieve desired goals (Contzen &

Mosler, 2012). In the context of sanitation, self-regulation factors are critical in sustaining behavior change.

A study by Whaley and colleagues (2016) found that self-efficacy, social support, and perceived control were significant predictors of sustained behavior change in sanitation practices. The study also suggested that individuals who perceived greater control over their behavior were more likely to maintain good sanitation practices. Another study by Sigler and colleagues (2015) found that self-regulatory skills, including goal-setting, self-monitoring, and problem-solving, were essential for sustaining behavior change in sanitation practices. Another strategy is to use social marketing campaigns to promote sanitation behavior change. This approach has been shown to be effective in increasing awareness and adoption of sanitation practices (Mosler *et al.*, 2012).

In a separate investigation conducted by Abidaru *et al*. (2018), it was observed that immediate factors contributing to open defecation include financial limitations, insufficient land or space for latrine construction, inadequate skills or knowledge regarding latrine construction, scarcity of construction materials, the distance between the household and the latrine, and prevailing weather conditions.

Whereas the RANAS model has been applied in studies related to CLTS adoption, there is a gap in exploring the specific role of self-regulation as a factor in the model within the context of CLTS adoption in Kenya. Although this study will assess the role of self-regulation factors, further studies can be conducted to develop and validate tools to measure self-regulation specifically related to CLTS adoption. These tools should capture aspects such as goal setting, self-monitoring, feedback, and self-reflection relevant to sustaining sanitation and hygiene practices.

Additionally, some studies can investigate how individuals with higher levels of self-regulation are more likely to maintain desired behaviors and overcome challenges

associated with CLTS adoption, such as building and using latrines, hand washing practices, and waste management. The identification of effective strategies to enhance self-regulation skills among individuals and communities in CLTS adoption will promote self-regulation, such as goal-setting workshops, behavior-tracking tools, or social support mechanisms, and their impact on sustained behavior change.

2.8 Theoretical Frameworks and Models on Adoption of CLTS

The behavior theory of change in sanitation is an important area of study in public health and development. There are several theories that have been proposed to explain the behavior change process in sanitation. The RANAS model is a behavior change framework that seeks to explain the adoption of CLTS programs. Psychosocial factors play a crucial role in the success of these programs, and the RANAS model identifies several key factors that influence behavior change.

2.8.1 Social Cognitive Theory

This research was guided by the social cognitive theory by Wood and Bandura (1989). The theory of social cognition argues that behavior change is influenced by personal, environmental, and behavioral factors. The theory is relevant to this study since it can be used to understand how individuals and communities adopt and sustain improved sanitation practices. Personal factors such as attitudes, beliefs, and values play a significant role in behavior change related to sanitation. For instance, people may not use toilets or practice proper hand washing because they do not see the value in doing so.

Thus, CLTS interventions often involve changing individuals' perceptions of sanitation and hygiene practices through awareness-raising activities, demonstrations, and information dissemination. Environmental factors such as the availability of toilets and water facilities can also influence behavior change. In the case of CLTS, communities are encouraged to build their own toilets, which can increase access and utilization of

sanitation facilities. Behavioral factors such as social norms and peer influence can also be critical in behavior change related to sanitation.

In CLTS, community members are encouraged to collectively commit to ending open defecation, creating a social norm around improved sanitation practices. Additionally, the participatory nature of CLTS interventions, which involves community members actively engaging in the planning and implementation of sanitation interventions, can further strengthen social norms and promote behavior change. Overall, the theory of social cognition provides a useful framework for understanding the various factors that influence behavior change related to sanitation in the context of CLTS. By addressing personal, environmental, and behavioral factors, CLTS interventions can be designed to effectively promote and sustain improved sanitation practices in communities.

2.8.2 Health Belief Model

This study further utilized the Health Belief Model (HBM) since the process of behavior change is contingent upon an individual's views pertaining to the severity of a health hazard, their vulnerability to said threat, the perceived advantages, and obstacles associated with taking action, as well as the presence of cues that prompt action.

According to this model, people are more likely to change their behavior if they believe that a particular behavior will reduce their risk of a negative health outcome (Janz & Becker, 1984). The HBM can be used to understand why some communities may be more receptive to CLTS than others.

The perceived susceptibility to a health threat, the perceived severity of the health threat, the perceived benefits of taking action, and the perceived barriers to taking action are all important factors that influence behavior. In the context of CLTS, if a community perceives open defecation as a serious health threat, and believes that using a toilet or latrine can prevent the spread of disease, they are more likely to adopt CLTS. Conversely,

if a community does not see open defecation as a problem or they do not believe that using a toilet or latrine will prevent disease, they may be less likely to adopt CLTS.

Therefore, the HBM provides a useful framework for understanding the adoption of CLTS and designing effective interventions to promote sanitation behavior change. By understanding the beliefs and perceptions of a community, implementers can tailor their approach to increase the perceived susceptibility and severity of poor sanitation emphasize the benefits, and reduce the barriers to using toilets or latrines.

In conclusion, both Social Cognitive Theory (SCT) and the Health Belief Model (HBM) offered a complementary insight into understanding the influence of psychosocial factors on the adoption of Community-Led Total Sanitation (CLTS). Whereas SCT emphasizes the role of observational learning, self-efficacy, and social influence in behavior change, HBM focuses on individuals' perceptions of susceptibility, severity, benefits, and barriers to health-related actions. Together, these frameworks highlight that CLTS adoption is not solely a matter of knowledge or infrastructure, but is significantly shaped by community norms, perceived health risks, confidence in one's ability to act, and the influence of social networks. Integrating both theories provides a robust foundation for analyzing how psychosocial dynamics drive or hinder sanitation behavior change in the context of Turkana Central Sub-County.

2.9 Conceptual Framework

The theoretical approach employed in this study is based on the notion that the decision to practice open defecation is shaped by specific determinants at the individual and community levels. The conceptual framework is developed based on the Theory of Planned Behavior (TPB), which facilitates the analysis of individual engagement in open defecation and investigates the reasons that impede this behavior. The researcher utilized the theory of planned behavior as a framework for elucidating the phenomenon

of CLTS adoption. The adoption of CLTS was examined as the dependent variable, while psychosocial elements were investigated as independent variables, hypothesized to influence the adoption of CLTS.

The adoption of Community-Led Total Sanitation (CLTS) could be measured using various indicators that are commonly used to assess the impact of sanitation programs. The common indicators used to measure the adoption of CLTS are, ODF, to measure ODF the number of households who have access to and use a toilet or latrine, and no human waste is visible. Secondly, toilet ownership: This indicator measures the percentage of households that have constructed a toilet or latrine after being triggered by CLTS activities.

Another indicator is hand washing infrastructure which many times detergents are used: This indicator measures the percentage of households that have a designated place for hand washing. Behavior change is an indicator that measures the percentage of community members who have adopted safe sanitation and hygiene practices after being triggered by CLTS activities. Sustainability is also an indicator that measures the degree to which the behavior changes and ODF status are maintained over time. On the other hand, according to the RANAS model, behavior change is influenced by five factors: Risk, Attitudes, Norms, Abilities, and Self-regulation.

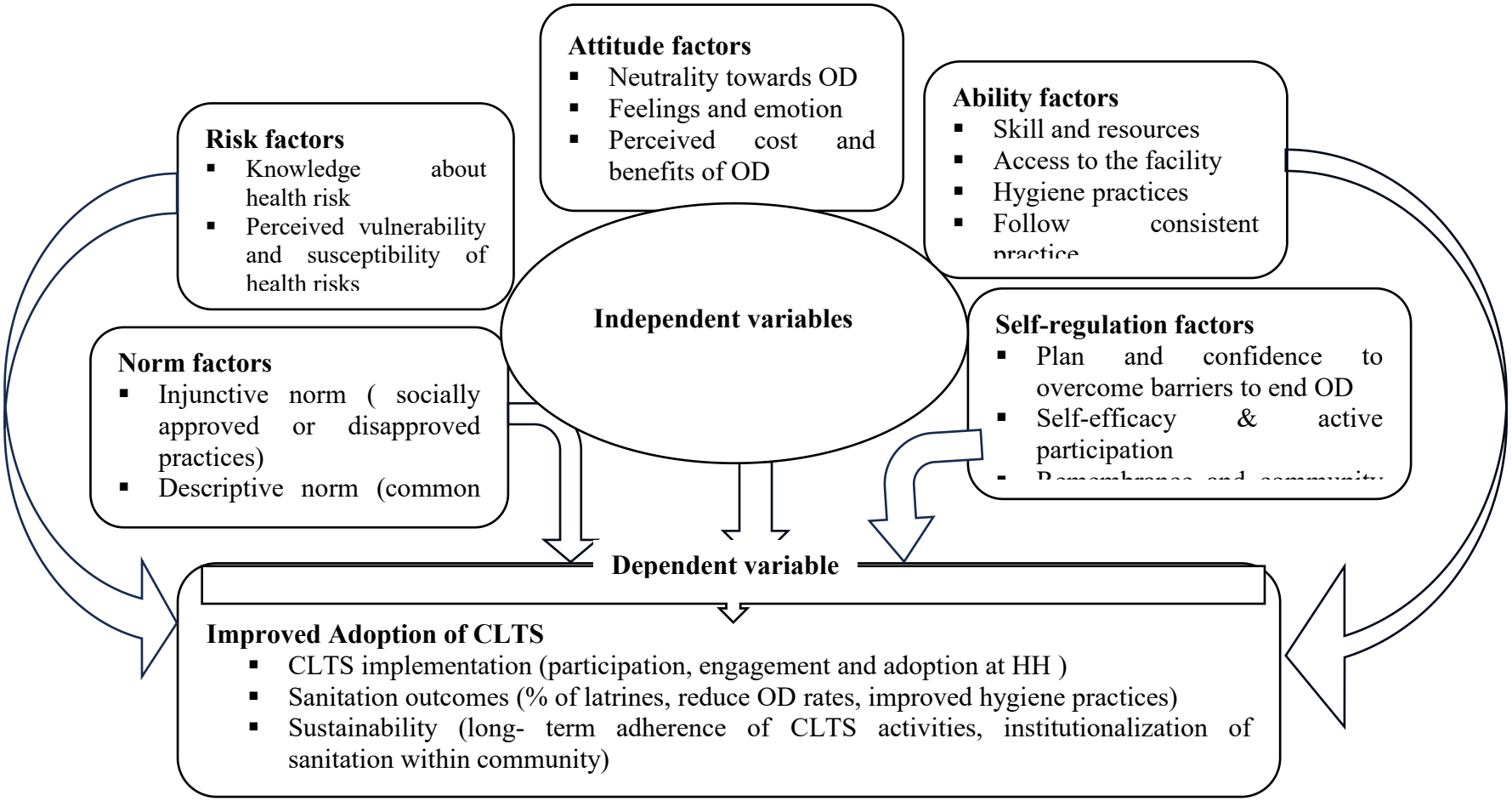
Psychosocial factors are related to each of these factors and play a role in determining whether individuals are likely to adopt CLTS programs, these blocks are therefore independent variables of the study. Risk perception is a crucial psychosocial factor that influences behavior change. Individuals who perceive a high risk associated with poor sanitation practices are more likely to adopt CLTS programs, under this factor, knowledge of the importance of sanitation and hygiene will be assessed, and

socioeconomic characteristics which include; level of education, and income play a critical role in the adoption of the intervention.

Attitudes toward sanitation and hygiene also play a role in behavior change. Positive attitudes toward sanitation and hygiene are more likely to result in the adoption of CLTS programs. Norms refer to social norms and expectations surrounding sanitation and hygiene. Psychosocial factors such as perceived social pressure and social influence can influence whether individuals are likely to adopt CLTS programs. Abilities refer to the individual's perceived ability to engage in sanitation and hygiene practices. Psychosocial factors such as self-efficacy and perceived behavioral control can influence whether individuals are likely to adopt CLTS programs. Self-regulation refers to the individual's ability to self-regulate and control their behavior. Psychosocial factors such as self-monitoring and goal setting can influence whether individuals are likely to adopt the CLTS program.

Figure 2. 1

Conceptual framework



Source: Researcher (2023)

Table 2. 1

Operationalization table of the variable

Research questions	IV	Indicator	Data collection tool	Type of analysis	Software
Perceived vulnerability and susceptibility to Sanitation-related diseases	Risk factor	-Knowledge about sanitation disease -Awareness about risk of health -Understanding about CLTS principles	-Questionnaire -Observation checklist - FGDs	-Descriptive, -Logistic regression	Stata
Influence of attitude factors on adoption of CLTS	Attitude factor	- perceived benefits and barriers - Recognition of role sanitation. to end OD - Positive attitude to change	-Observation -Checklist -FGDS	-Descriptive, -Logistic regression	Stata
Influence of social norm factors on adoption of CLTS	Norm factor	-Perceived approval or disapproved from peers and natural leaders - Level of community engagement	-Observation Checklist -Questionnaire	-Descriptive, -Logistic regression	Stata
Influence of ability factors on adoption of CLTS	Ability factor	-Skills and resource availability -Accessibility to facilities	-Questionnaire -FGDs	-Descriptive, -Logistic regression	Stata
Influence self-regulation factors on adoption of CLTS in TCC.	Self-regulation factor	-consistent sanitation practices.(hand washing, proper waste disposal) -ownership of sanitation facilities - Behavior change - No. of natural leaders	-Observational - Checklist -Questionnaire	-Descriptive, -Logistic regression	Stata

Notes: Research question of the study, independent variable, indicator of the variable, data collection tools, types of analysis conducted and software used.

Source: Researcher (2023)

CHAPTER THREE: METHODOLOGY

3.1 Introduction

This chapter on methodology was composed of the following: research design, study area, target population, sample and sampling techniques, research instrument, eligibility criteria, pilot testing, reliability and validity, data collection, data analysis and ethical considerations.

3.2 Study Design

The study employed a convergent research design, chosen for its capability to collect and analyze both quantitative and qualitative data simultaneously. This approach, as advocated by Roomaney and Coetzee (2018), facilitate the integration of diverse strands of the study within the same research phase. Given that the adoption of community-led total sanitation encompasses complex elements such as individual knowledge, perceptions, attitudes, and norms, a convergent design was considered suitable. This assertion aligns with (Roomaney & Coetzee, 2018) and (Creswell, Fetters, & Ivankova, 2004). The intricate interplay of psychosocial factors, the design facilitated a comprehensive understanding of their influence on adoption. Furthermore, the design facilitated triangulation, as recommended by the literature, thereby strengthening the validity and reliability of the study's findings.

3.3 Study Area

The study was conducted within two wards: Kalokol and Lodwar township of Turkana's central sub-county, Turkana County, which is situated in Northwestern part of Kenya at GPS coordinates of 3.531597 and 35.859583 with an area mass of 68,233.1sqKm^2. The area of study falls under arid and semi-arid zones with high temperatures and receives low rainfall of less than 250mm per year. The area of study was chosen because CLTS program was activated but still OD was higher, from ministry of health CLTS database.

Nonetheless, the area is inhabited by nomadic pastoral who contribute large percentages of OD thus affects adoption of CLTS and the area is a fishing ground, where most cases of cholera outbreak is reported.

3.4 Target Population

The study population comprise of the 8,509 households from the two selected wards of Turkana Central sub-County (KNBS, 2019). The two wards have a total of 143 villages, and a total of 8,509 households who had been activated by community-led total sanitation intervention.

3.5 Sample Size and Sample Technique

This section discussed the number of participants that were selected to represent the larger population and the process of selecting these respondents.

3.5.1 Sample size

The target population comprised 8,509 households from Lodwar Township and Kalokol Ward. Yamane's (1967) formula was applied because the population is less than 10,000; it yields a sufficient sample for reliable inferences at a specified margin of error and confidence level. The formula is:

$$n = \frac{N}{1+N[e]^2} \quad (1)$$

Where *n* is the desired sample size, N is the estimated population (8,509 households), and e is the margin of error (0.05 at a 95% confidence level). Substituting the study parameters into Equation 1

$$n = \frac{8509}{1+8509\ (0.05)^2} = 382 \quad (2)$$

Table 3. 1

Computation of sample size using Yamane's (1967) formula

Parameter	Value
Estimated population (N)	8,509
Margin of error (e)	0.05
Confidence level	95%
Formula	$n = \frac{N}{1 + N[e]^2}$
Computed sample size (n)	382

Note. The sample size was computed using Yamane's (1967) formula (see Equations 1–2)

3.5.2 Sampling technique

Turkana central have five wards, namely Kangatotha, Kerio Delta, Lodwar Township, Kalokol, and Kanamkemer, two wards were purposively selected based on CLTS adoption performance as recorded in the CLTS database. Kalokol Ward, which exhibited the lowest level of CLTS adoption, and Lodwar Township Ward, which showed the highest adoption, were selected to capture contrasting levels of implementation. This approach allowed for comparative analysis of factors influencing latrine adoption in both low- and high-performing areas. Purposive stratified sampling method, where the population was first stratified based on CLTS adoption levels, and then extreme cases were selected to allow for deeper understanding of the underlying determinants and barriers. Subsequently, within each selected ward, simple random sampling was employed to select participating households. This ensured that each household within the ward had an equal chance of being included, minimizing selection bias and enhancing the representativeness of the sample at the household level.

A stratified sampling technique was employed to categorize the population into two strata based on ward population density, with a ratio of 2:1 for the densely populated ward to the sparsely populated ward. From the total sample of 382 households' heads,

255 (two-thirds) were selected from the densely populated Lodwar township, and 127 (one-third) were selected from the sparsely populated Kalokol ward. This approach ensured proportional representation of households from both wards in the sample. Stratified sampling with ratios reflecting population density, such as 2:1, helps improve representativeness in studies where one group is more populous than another (Lohr, 2010). Similar approaches have been used in population health surveys in Kenya (Afulani *et al*., 2019; KNBS, 2019).

To determine household to be picked randomly at each village unit, nine sub-strata of village units were formulated, namely: Kapua with 507 households, Kalokol township 3367 households, Namadak 194 households, Nabwel Ekorot 134 households, and Lodwar township 618 households, Napetet 1019 households, Nakwamekwi 1254 households, Kawalase 962 households and Kakwanyang 400. The number of households in each village unit was obtained from the public health CLTS Sub- County data base. To select the representative sample size of each stratum, the researcher employed the formula as shown in table 3.2.

Table 3. 2

Household size sample tabulation

Ward Strata	No. of HH in village unit	Sample size
	Village units selected	$n=\frac{N_1}{N}\times n$
Kalokol	Kapua Ni 507	15
	Kalokol township Ni 3367	102
	Namadak Ni 194	6
	Nabwel Ekorot Ni 134	4
Sub-total	n=4202	*n*=127
Lodwar township	Lodwar township Ni 618	37
	Napetet Ni 1019	61
	Nakwamekwi Ni 1254	75
	Kawalase Ni 962	58
	Kakwanyang Ni 400	23
Sub-total	n=4253	*n=255*
Total	N=8455	*n*=382

Source: Yamane, (1967) Elementary sampling Theory

Where: n is the sample size of the population in each ward.

N_i is the population of each stratum

N is the population target in the whole ward ($N=N1+N2+\ldots N^{th}$)

n_i is the sample size in each stratum/village unit (where $_i=1, 2, 3, 4$)

Finally, simple random sampling was used to select one household representative from the sample size. This ensured that each household had an equal chance of participating in the study.

For the Focus Group Discussion (FGD), ten participants were selected. These included one representative from each of the nine selected villages making up part of the study's sample size and one public health officer representing the entire sub-County, who participated as a key informant rather than as part of the sample population.

3.6 Eligibility criteria

In this study investigating influence of psychosocial factors on adoption of community-led total sanitation in Turkana County, eligibility criteria, encompassed both inclusion and exclusion criteria, which were established to ensure the relevance and validity of the research findings.

3.6.1 Inclusion criteria

The study participants were individuals or households' heads from the selected wards, were both male and female and older than eighteen. The participants studied had lived in Turkana central sub-county for at least six months to be familiar with the local sanitation practices. They had been exposed to CLTS interventions in their community, such as community meetings, triggering, or follow-up visits, participants either adopted CLTS or did not adopt. They were willing to provide information on their attitudes, beliefs, perception, and experiences related to sanitation and CLTS, and finally, those whose consent to participate had been validated.

3.6.2 Exclusion criteria

The study aimed to investigate the factors influencing the adoption of CLTS in Turkana central sub-county. Therefore, individuals who had not resided for the last six months in the area were excluded from the study. The study focused on a particularly to Kalokol and Lodwar township, therefore, individuals who did not belong to the two wards were excluded from the study. Individuals who had not been exposed to CLTS or are unaware of it were excluded from the study. Participants who did not provide informed consent due to such as those aged below 18 years, and those with cognitive impairment were excluded and finally, participants who refused to participate or withdrew from the study were excluded.

3.7 Research Instruments

This research employed a multi-dimensional approach to collect data; it utilized questionnaires as primary tools for gathering quantitative data. These questionnaires were structured to ensure the systematic collection of quantitative information. Whereas, for collection of qualitative data, open-ended questions were employed during Focus Group Discussion (FGD), allowing for in-depth investigation of participants' perspective and experiences. The data collection technique encompassed a combination of methodologies including questionnaires, focus group discussion, and document analysis. This approach enabled the researcher to triangulate findings and gain a comprehensive understanding of the research subject.

3.7.1 Use of questionnaires

Structured questionnaires were designed to collect information on psychosocial factors that influenced CLTS from households. The questionnaires captured community members, perceived health risk, attitudes towards sanitation and hygiene practices, their

beliefs norms about the causes and consequences of poor sanitation, and skills abilities and self-efficacy to maintain good sanitation practices.

3.7.2 Observation checklist

To assess the adoption of CLTS in the study area, an observation checklist was developed to collect data. Trained researcher assistants utilized observation checklists to systematically record and document various aspects of sanitation practices within the community. The checklist included the following items: Presence or absence of functional latrines in the community, superstructure, latrine contributors, distance from household and presence of hand washing apparatus.

3.7.3 Focus group discussion

To collect psychosocial factors that influence CLTS, FGDs were used. It involved ten village representatives, and one public health officer to discuss community norms, beliefs, attitudes, perceptions, and values that affect open defecation practices. The discussions were guided by the researcher to encouraged open dialogue and explored various psychosocial factors that influence individuals' decision-making processes related to sanitation practices. The qualitative data gathered from the FGDs were transcribed into direct quotes and into verbatim, which were then subjected to thematic analysis to identify key themes. These themes were triangulated with quantitative data to validate the interpretation and ensure the robustness of the findings. Subsequently, the insights derived from this analysis were utilized to formulate recommendations.

3.8 Data Collection Procedure

Before data collection, the researcher obtained an introductory letter from Meru University of Science and Technology (MUST) and a research permit from the National Commission for Science, Technology and Innovation (NACOSTI), as attached in the appendix. The researcher also visited the Turkana County Government offices, including

the Governor and County Commissioner, as well as the County Director of Education (CDE), to inform them of the data collection intentions. Permission was also sought from relevant local authorities, including chiefs, sub-chiefs, and village managers. Upon receipt of the necessary permits, fifteen enumerators/research assistants were recruited and trained on using the instruments two days before the actual study.

During data collection, permission was sought from village administrators and community health promoters, given their mandate to report on activities in village units. Research assistants inspected latrines using an observation checklist to record their actual condition upon arrival. Households were identified using a simple random technique, and consent was obtained from selected households with the support of the introductory letter from MUST and County approvals. FGD were conducted among selected participants with the aid of health promoters. Participants were informed in detail about the research purpose, and upon obtaining their consent, discussions were conducted and notes on direct quotes and noting the most important points

3.9 Data Analysis and Presentation

The collected data was edited, coded, and analyses using the Statistic & Data (STATA) Descriptive statistics were used to give a concise overview of the data, including frequencies and percentage counts. The presentation of qualitative data adhered to the study's themes and objectives, narratively reporting key findings. Frequencies and percentage tables were utilized to present quantitative data, ensuring clarity and accessibility. Furthermore, logistic regression analysis was applied to categorical responses related to the dependent variable on factors impacting the adoption of CLTS. Logistic regression was chosen for this analysis due to its appropriateness for binary outcome variables, in this case, the adoption of Community-Led Total Sanitation. Given that psychosocial factors such as attitudes, social norms, and perceived behavioral

control are likely to influence the decision to adopt CLTS, logistic regression allows for the estimation of the odds of adoption in relation to these predictors. Additionally, this method handles both continuous and categorical predictors effectively, provides clear interpretations through odds ratios, and allows for the control of confounding variables. This analysis ensured a comprehensive examination of the data and facilitated meaningful interpretation of the findings.

3.10 Pilot Study

Before the main study, questionnaires were pre-tested in Kanamkemer ward, selected for its accessibility and similarity to the study area. Thirty-eight households, randomly sampled (10% of 382), participated, confirming the questions' relevance and respondents' understanding. The recorded completion times suggested an average of thirty minutes, deemed reasonable for answering all questions effectively.

3.11 Validity

According to Golafshani (2003), validity establishes whether research items measure what they are supposed to measure and how factual the study findings are. The researcher in this study sought sanitation expert opinions to ensure content validity from the research supervisors to ensure that the data collection instruments covered all the objectives. Whereas the use of probability sampling technique ensured external validity that yielded generalizable results while pre-testing of tools ensured valid results.

3.12 Reliability

According to Mugenda and Mugenda (2003), reliability refers to the ability of research instruments to provide consistent results and reproducibility of the findings. In this study, reliability was assessed using test-retest reliability technique. The method involved giving same test to the same respondent which were done on the first week (T1) and second treatment after second week (T2) and the scores on the two occasions (T1+T2)

were then correlated, the closer respondent score, the more reliable the test measure. The result yielded a coefficient of 0.8 and according to Creswell (2008), the coefficient of 0.7 and above suggests significance reliability of the instrument.

3.13 Logistical and Ethical Consideration

The researcher pursued a research permit from NACOSTI, which is appended, as well as an introduction letter from the institution. All respondents gave their informed consent to verify that they participated voluntarily, and the researcher guaranteed the confidentiality and privacy of the information they submitted. The purpose of the study was explained to the respondent as being intellectual in nature.

CHAPTER FOUR: RESULTS AND DISCUSSION

4.1 Introduction

This chapter provides an overview of the results, findings, analysis, and interpretation derived from the study. It encompasses various key aspects including demographic factors, the correlation between knowledge levels and vulnerability/susceptibility to sanitation-related diseases such as cholera, awareness and understanding of CLTS to its adoption, perceived attitudes, norms, ability factors and self-regulation factors on adoption of CLTS. A total of 382 questionnaires were administered to household heads residing in Lodwar Township and Kalokol Wards within Turkana Central Sub-County, Turkana County with 100% response rate. These questionnaires served as the primary means of data collection, enabling the study to capture a broad spectrum of insights into psychosocial factors and adoption of community led total sanitation

4.2 Demographic Characteristic of Respondents

The study sought to find how gender is distributed in sanitation activities. The question was important to ascertain percentage representation and understanding of CLTS principles across the genders and results were presented as shown in table 4.1 below.

4.2.1 Distribution by gender

Table 4. 1

Distribution by gender

Gender	Frequency	Percentage (%)	Total
Female	234	61.26	61.26
Male	148	38.74	38.74
Total	382	100	100%

Source: Researcher, (2023)

The findings from table 4.1 revealed a notable gender disparity within the study population, with 38.74% being males and 61.26% being females. The gender disparity

suggested potential correlation between gender and participation in sanitation activities, particularly within household settings. It was observed that females comprise the majority of the population, which could be attributed to their involvement in chores related to sanitation, such as maintaining cleanliness and hygiene within the household. Gender roles are clearly established in the Turkana culture, where women are typically responsible for duties like building traditional huts (manyatta) and latrines, particularly in rural areas. As a result, the larger proportion of females in the study population is indicative of their increased knowledge of and participation in community-led comprehensive sanitation programs. The results is consistent with the analysis of water and hygiene strategies carried out by (WHO & UNICEF, 2016), which emphasized the widespread gender disparities in the water, sanitation, and hygiene (WASH) sectors. According to the research, women and girls are disproportionately affected by poor sanitation, which makes them more vulnerable and insecure. The disproportionate share of the load when it comes to maintaining sanitation and hygiene is a reflection of larger cultural norms and systemic injustices that support gender inequities.

4.2.2 Distribution by marital status

The study sought to establish the marital status of the participants in relation to adoption of community- led total sanitation in Lodwar and Kalokol ward. Demographic characteristics of respondents is crucial in assessing the adoption of community-led total sanitation (CLTS) practices. Marital status is a significant demographic variable that may influence individual behavior and decision-making regarding sanitation practice. The results were tabulated as shown on table 4.2 below.

Table 4. 2

Distribution by marital status

Ward	Marital status				
	Divorced	Married	Widowed	Single	Total
Kalokol	10	104	6	7	127
	2.62%	27.23%	1.57%	1.87%	33.25%
Lodwar	12	192	21	30	255
	3.14%	50.25%	5.50%	7.85%	66.75%
Total	5.76%	77.48%	7.07%	9.72%	100.00%
	22	296	27	37	382

Source: Researcher, (2023)

The results on table 4.2 illustrates the distribution of respondents by marital status. The results indicated that the majority of respondents, comprising 296 individuals 77.48%, were married. Following married respondents, the distribution includes 37 individuals 9.69% who were single, 27 individuals 7.07% who were widowed, while 22 individuals 5.76% who were divorced.

The dominance of married respondents in the study sample suggested that marital status could play a significant role in the adoption of CLTS practices. Married individuals often have shared responsibilities within households, which could influence decisions related to sanitation and hygiene such as provision of hand washing, thorough cleaning of food before cooking and covering against the flies. Moreover, married respondents could likely engage in collective action within their households and communities to implement CLTS initiatives. The findings is affirm by Jenkins *et al*. (2007) who opine that families has collective responsibility to handle sanitation issues since a single sanitation problem to a family member affects the whole family.

4.2.3 Distribution by age

The study sought to establish how age relates to the adoption of community-led total sanitation with the study area. The participants were asked to state their age bracket and the results were tabulated as shown on table 4.3 below.

The demographic profile of respondents is essential for assessing the adoption of CLTS practices. Age plays a crucial role in shaping individuals' attitudes, behaviors, and decision-making processes regarding sanitation and hygiene practices. According to table 4.3 age distribution of respondents revealed a significant proportion of respondents fell within the age range of 36-50, with 190 individuals representing 49.74% of the total sample. Following this age group, 137 respondents (35.86%) belonged to the age range of 18-35, while the smallest proportion of respondents, comprising 55 individuals (14.4%), were aged 51 and above.

Table 4. 3

Distribution by age

Ward		Age		
	18 -35	36 – 50	51 & above	Total
Kalokol	43	64	20	127
	11.26%	16.75%	5.24%	33.25%
Lodwar	94	126	35	255
	24.61%	32.98%	9.16%	66.75%
Total	137	190	55	382
	35.86%	49.74%	14.40%	100.00%

Source: Researcher, (2023)

The ascendency of respondents aged 36-50 in the study sample suggested that middle-aged individuals played a pivotal role in the adoption of CLTS practices in Lodwar Township and Kalokol Ward. Middle-aged individuals often serve as household heads or decision-makers, exerting considerable influence over sanitation-related decisions within their families and communities. Their active participation in CLTS initiatives could contribute to the promotion of sanitation and hygiene behaviors and the sustainability of sanitation interventions. Furthermore, the presence of a substantial number of younger respondents aged 18-35 highlighted the importance of engaging youth in CLTS efforts.

Though respondents aged 51 and above constituted the smallest proportion, their inclusion in CLTS interventions remains crucial, older individuals often possess traditional knowledge and cultural practices related to sanitation and hygiene, which could inform and complement modern CLTS approaches.

4.2.4 Distribution by level of Education

The study further sought to establish how do level of education impacts the adoption of community-led total sanitation in Lodwar and Kalokol ward of Turkana central sub-county. The study participants recorded their level of education as tabulated in table 4.4 below.

Table 4. 4

Distribution by education

Ward	Education level				
	College	No formal education	Primary	Secondary	Total
Kalokol	9	73	34	11	127
	2.36%	19.11%	8.90%	2.88	33.25%
Lodwar	53	74	64	64	255
	13.87%	19.37%	16.75%	16.75%	66.75%
Total	62	147	98	75	382
	16.23%	38.48%	25.65%	19.63%	100.00%

Source: Researcher, (2023)

Individuals' knowledge, attitudes, and behaviors including how they approach sanitation practices are significantly shaped by their education. The distribution of respondents by educational attainment is shown in table above. 147 respondents, or 38.48% of the total, residents without a formal education made up the highest percentage. Out of the total responses, 98 persons or 25.65% had completed their primary schooling. There were 75 respondents who had completed secondary school, or 19.63% of the total. Sixty-two individuals, or 16.23% of the sample, reported having completed college or university education. The study revealed a diverse education distribution among respondents, with a significant gap in access to formal education, highlighting the importance of education in

influencing knowledge and adoption of improved sanitation, the finding is affirmed by Kasiva (2023) that literacy level of a population has implication of adoption of sanitation practices, while Nanyim *et al*. (2022) found out that those with tertiary education were six times likely to have latrine compared with no education.

4.2.5 Distribution by per household size

The study pursued to underscore the relationship regarding awareness of the principles of community-led total sanitation between household size and the adoption of the intervention. Households' heads were asked to state the household size and the results were presented on the table as shown on table 4.5 below.

Table 4. 5

Distribution of respondents per household size

Ward	Household size			
	1 – 5	6 – 10	11 & above	Total
Kalokol	50	70	7	127
	13.09%	18.32%	1.83&	33.25%
Lodwar	163	90	2	255
	42.67%	23.56%	0.52%	66.75%
Total	213	160	9	382
	55.76%	41.88%	2.36%	100.00%

Source: Researcher, (2023)

Results in table 4.5 regarding awareness of CLTS by household size, it was observed that households with 1-5 members have the highest awareness 55.76%, followed by households with 6-10 members 41.88%, and households with 11 members or more 2.36%. The findings suggested that awareness of CLTS tends to decrease as household size increases, which could attribute to lack of ownership responsibility especially when cost of maintenance is heavily and dependent among the few earning in the family. Wasonga *et al*. (2016) suggest that smaller households typically face fewer sanitation issues compared to larger families, where the limited number of available toilets often leads to difficulties in sharing these facilities.

4.2.6 Distribution by Income

In this study, income data was collected through a structured questionnaire that included predefined income categories. Respondents were asked to estimate their average monthly income and select the range that best represented their situation. This approach was intentionally chosen to accommodate individuals, particularly pastoralists, whose earnings may be irregular, seasonal, or derived from non-salaried sources such as livestock sales, barter, or informal trade.

To address the variability and potential in-kind nature of income among pastoralists, enumerators were trained to explain the question in practical terms. They encouraged respondents to reflect on the average value of their earnings or resources over time, including livestock sales, milk sales, charcoal burning, casual labor, and remittances, and then to assign these to the most appropriate income bracket provided. This method allowed for a more consistent and comparable categorization of income across diverse livelihoods without demanding exact monetary figures, which may not be feasible or meaningful for all respondents. Additionally, using income ranges rather than exact amounts helped minimize respondent discomfort or confusion, and improved response rates. This procedure aligns with best practices in socio-economic surveys involving informal or subsistence-based economies. The response was tabulated as follows on table 4.6 below.

Table 4. 6

Distribution of respondent per income

Ward	Income				
	< 10,000	10,001 – 20,000	20,001 – 30,000	Above 30,000	Total
Kalokol	94	22	8	3	127
	24.61%	5.76%	2.09%	0.79%	33.25%
Lodwar Township	122	62	26	45	255
	31.94%	16.23%	6.81%	11.78%	66.75%
Total	216	84	34	48	382
	56.54%	21.99%	8.90%	12.57%	100.00%

Source: Researcher, (2023)

Notable patterns in the participants' monthly income distribution are seen in table 4.6. 56.54% of the sample, or the majority of respondents, stated that their monthly income was less than 10,000 Kenyan Shillings. After this category, 21.99% of respondents said their monthly income was between 10,000 and 20,000 Kenyan Shillings. A lesser percentage of the sample 12.57% said they made between 20,000 and 30,000 Kenyan Shillings a month. With only 8.9% of the sample size, respondents making 30,000 Kenyan Shillings or more were the least represented category. The results implies that adoption and execution of CLTS activities within the community could be impacted by these income distributions, which offer insightful information on the financial situation of the people polled, the findings is affirmed further by Nanyim *et al*. (2022) that occupants with secure jobs with regular incomes then to be confident to construct and maintained the latrines. Additionally Busienei, Ogendi, and Mokua (2019) in a study in Turkana, found out that families with low income and less education are not likely to own toilets.

4.2.7 Distribution by per village unit

The study sought to find out distribution of knowledge on community-led total sanitation principles per village units within Lodwar Township and Kalokol and the results is a sated-on table 4.7 below.

Table 4. 7

Distribution of respondents per village units within the two wards

Ward	Village Units	Frequency(N)	Percent (%)
Kalokol	Kalokol township	101	26.44
	Kapua	16	4.19
	Namadak	6	1.57
	Nabwel Ekorot	4	1.05
Sub-total		n=127	33.25%
Lodwar township	Nakwamekwi	79	20.68
	Kawalase	58	15.18
	Napetet	56	14.66
	Lodwar township	42	10.99
	Kakwanyang	20	5.24
Sub-totals		n=255	66.75%
Total		n=382	100.00%

Source: Researcher, (2023)

According to table 4.7 which breaks down distribution of respondents by village unit, Kalokol Township had the greatest respondent's rate 26.44%, followed by Nakwamekwi 20.68%, Kawalase 15.18%, and Napetet 14.66%. The varying responses rates across the various village units point to possible variations in how CLTS information is received or distributed in these communities. Furthermore, according to ward-specific data on CLTS, Lodwar Township has the highest awareness 66.75%, followed by Kalokol 33.25%. The findings implied that compared to Kalokol, Lodwar had a higher level of CLTS awareness. Despite of Lodwar leading with latrine ownership study by Busienei *et al*. (2019) asserted that latrines materials used for construction were weak which occasioned to collapsing thus necessitating residents going back to OD.

4.3 Descriptive statistics

This section describes responses on perceived health risk factors, attitudes, social norms, ability factors and self-efficacy factors influencing adoption of community-led total sanitation in frequencies and percentages. The results are presented in tables, pie-charts and graphs.

4.3.1 Perceived risk factors on adoption of community-led total sanitation

The study pursued to investigate the respondent's perception on knowledge, awareness and understanding on the health risk associated with sanitation related to underscore their vulnerability and susceptibility and how do the health risk relate with adoption of community-led total sanitation. The question was framed in Likert scale to capture level of their perception, on the Likert scale 'Agree (A) has value of (4), 'Strongly Agree (SA) (5), Disagree (D) (2), Neutral (N) (3) and Strongly Disagree (SD) (1). The response is as presented on the table 4.8 below.

Table 4. 8

Cross-tabulation on distribution on health risk factors on sanitation related disease

Risk factors influencing adoption of community led total sanitation							
Perceived risk factors	SA	A	N	D	SD	x	Sd.
Understanding ways which cholera is transmitted	146 38.22%	149 39.01%	34 8.9%	43 11.26%	10 2.62%	3.99	1.08
Awareness of risk factors associated with cholera	139 36.39%	178 46.6%	23 6.02%	34 8.9%	8 2.09%	4.06	0.98
Knowledge about maintenance of good health	113 29.58%	196 51.31%	33 8.64%	36 9.42%	4 1.05%	3.99	0.92

Source: Researcher, (2023)

The findings from table 4.8 above and figures 4.1 below to figure 4.3 on the survey on risk factors influencing the adoption of Community-Led Total Sanitation (CLTS) revealed insightful patterns among respondents. Understanding how cholera is transmitted garnered a significant agreement from participants, with 38.22% strongly agreeing and 39.01% agreeing. However, a notable proportion, 11.26%, expressed

disagreement with this understanding, while a smaller percentage, 2.62%, strongly disagreed. A relatively small percentage, 8.9%, remained neutral on this aspect. Regarding the awareness of risk factors associated with cholera, 36.39% of respondents strongly agreed, while 46.6% agreed, respondents with disagreement were 8.09% disagreed. A minority, 6.02%, were neutral, and even fewer, 2.09%, expressed strong disagreement.

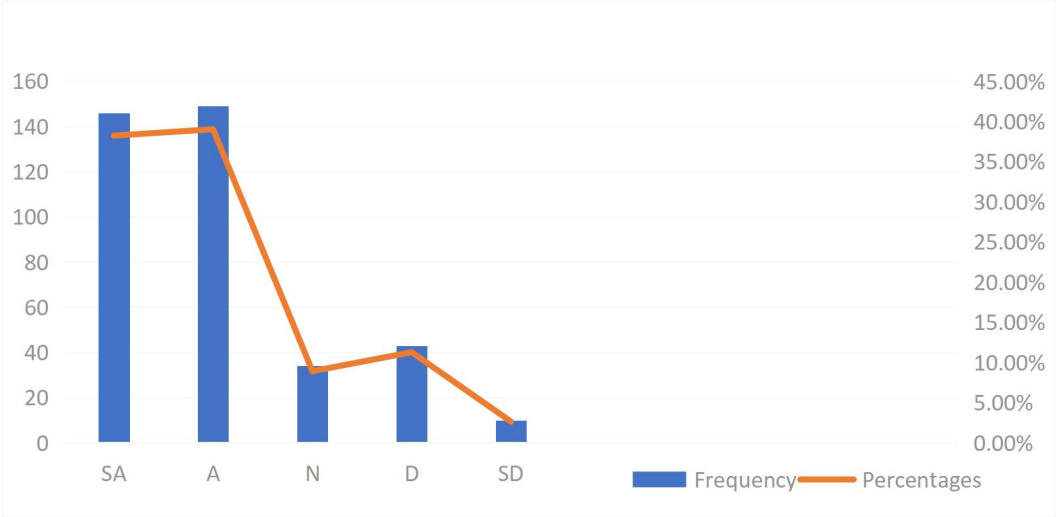
A majority of respondents demonstrate familiarity with the principles of maintaining good health, 51.31%, agreed, with an additional 29.58% strongly agreeing. Only 9.42% disagreed, and 8.64% remained neutral. A mere 1.05% strongly disagreed with this aspect. The awareness of community-led total sanitation, particularly the presence of latrines, was quite high among respondents, with 303 affirming its presence compared to 79 respondents who reported its absence. The results suggested a strong awareness and agreement among respondents regarding the transmission of cholera, risk factors associated with it, and the importance of maintaining good health. However, there are pockets of disagreement and neutrality, indicating areas where further education or intervention may be necessary to bolster the adoption of CLTS practices.

A study by Notoatmojo (2011) highlighted importance of cognitive knowledge to human behavior and further asserted the importance of having toilet at home which in turn reduce health risk factor associated with open defecation. This study assesses the influence of health risks on adoption of CLTS an approach that aims to eradicate OD. The knowledge on oral fecal contamination is of importance in containing the infection of sanitation related disease. The first objective of the study is on the health risk factors which is in line with the Health Belief Model (HBM) which alludes the process of behavior change is contingent upon an individual's views pertaining to the severity of a health hazard and vulnerability to said threat. The findings of this study revealed that increased knowledge regarding sanitation and hygiene practices could enhance

individuals' understanding of the importance of proper waste disposal, toilet usage, and hand washing, consequently fostering positive attitudes towards adopting these behaviors. The study delves into knowledge concerning knowing importance of having and maintaining good hygiene and consequently impacts of unhygienic conditions which thus exposes entire community to be vulnerable and susceptible to infection. It underscores the intimate connection between knowledge and behavior, particularly emphasizing how understanding the usage of family latrines can profoundly influence one's actions. A key aspect of this knowledge pertains to the purpose of latrines, which plays a pivotal role in shaping individual behavior.

Figure 4. 1

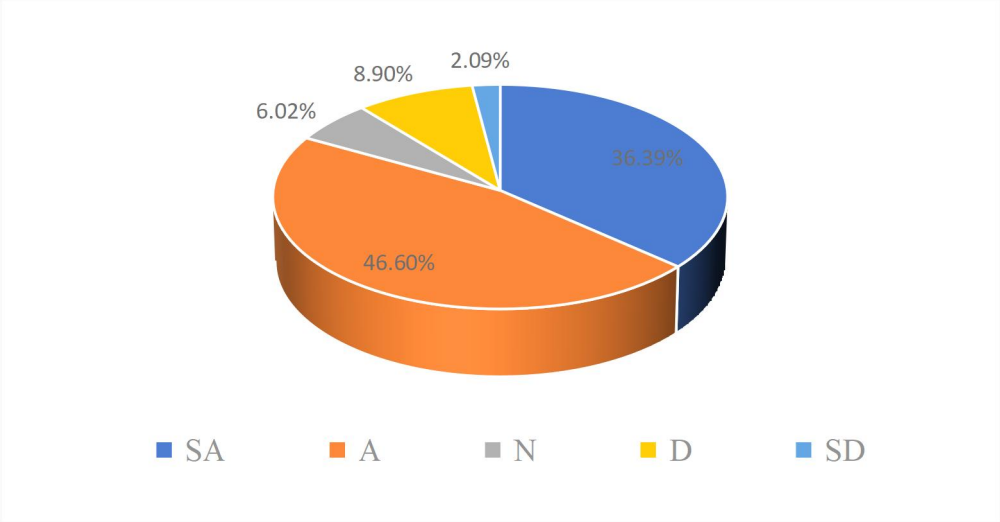
Understanding ways in which sanitation diseases are transmitted



Source: Researcher, (2023)

Figure 4. 2

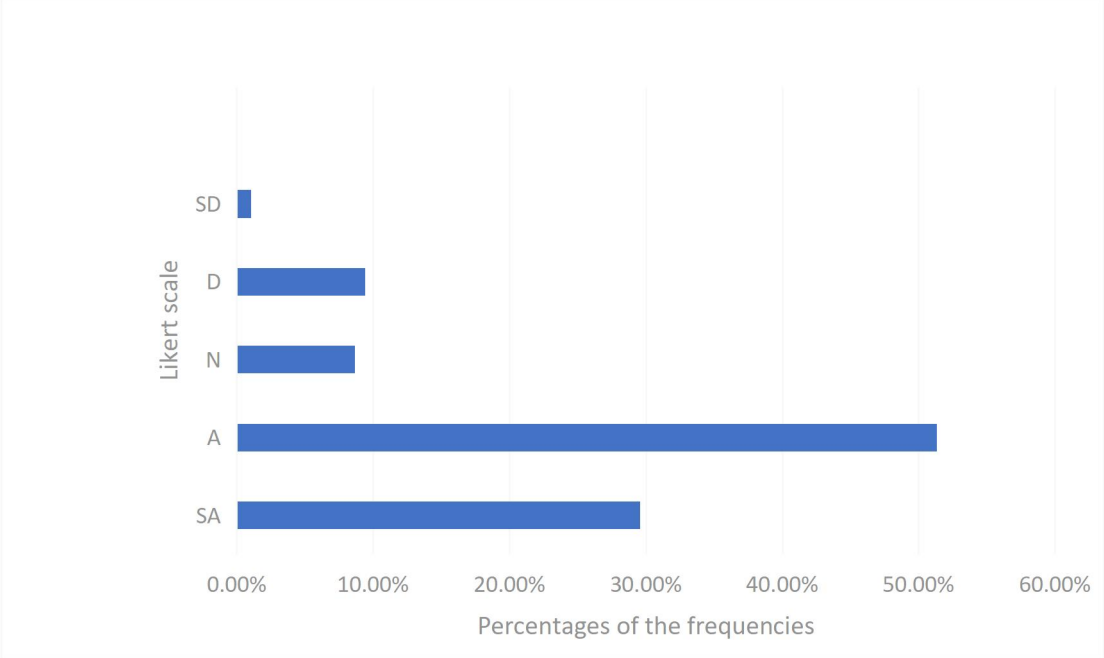
Awareness of risk factors associated with sanitation diseases



Source: Researcher, (2023)

Figure 4. 3

Knowledge on the importance of good health hygienic practices



Source: Researcher, (2023)

4.4 Logistic Regression

The study further ascertain significance between association of the indicator to the dependent variable, logistic regression analysis which utilized binary regression was

conducted on the risk factors influencing adoption of community led total sanitation, specifically focusing on knowledge, understanding, and awareness related to infection of sanitation related diseases such as cholera on the level of vulnerability and susceptibility of community members to adoption of community-led total sanitation using latrine presence as a measure.

The regression model as shown on table 4.9 below, produced an R-squared value of 0.031, indicating that approximately 3.1% of the variability in latrine presence could be explained by the independent variables - understanding, awareness, and knowledge. The findings suggested that although these factors play a role, they collectively had a limited explanatory power regarding the presence of latrines in the community. After adjusting for the number of predictors in the model, the adjusted R-squared value stands at 0.023, suggesting a slight decrease in explanatory power, accounting for model complexity.

A logistic equation for the analysis was formulated and given as Latrine Presence= 0.3702+0.0149* Understanding-0.0759* Awareness+ 0.1313*Knowledge. This model estimated the likelihood of latrine presence in a household based on three factors: Understanding; for every one-unit increase in the respondent's understanding, latrine presence increases by 0.0149 units (small and not statistically significant). Awareness; for every one-unit increase in awareness, latrine presence decreases by 0.0759 units (also not statistically significant) and knowledge; for every one-unit increase in knowledge, latrine presence increases by 0.1313 units, and this relationship is statistically significant ($p = 0.005$), meaning knowledge has the strongest and most reliable effect in this model. The summary of the model is a showed table 4.9 below.

Table 4. 9

Logistic regression analysis for health risk factors of sanitation-related diseases

Ordinary Least Squares (OLS) analysis						
Dependent variable						
Latrine presence	R-square				0.031	
	AOR				0.023	
	Least squares F- F-statistic 4.044					
	Probability (F-statistic)				0.00753	
	Co-efficient	Std. err	t	p>|t|	0.025	0.975
Independent variables						
Const.	0.3702	0.112	3.292	0.001	0.149	0.591
Understanding	0.0149	0.046	0.327	0.744	-0.075	0.105
Awareness	-0.0759	0.050	-.1531	0.127	-.0173	0.022
Knowledge	0.1313	0.047	2.820	0.005	0.040	0.223

Source: Researcher, (2023)

From the analysis of variance, an F-value of 0.00753 was obtained, denoting statistical significance. This result implies that at least one of the independent variables is significantly related to the dependent variable. The value of the intercept, which indicated the presence of latrines when all other independent variables were zero, was determined to be 0.3702. Understanding had a coefficient of 0.0149, although it was not statistically significant (p-value > 0.05), suggesting that understanding changes have little effect on latrine presence. Comparably, the awareness coefficient was -0.0759, which did not reach statistical significance (p-value > 0.05). It suggested that variations in awareness do not have a significant impact on the presence of latrines. Conversely, the coefficient for knowledge was found to be 0.1314, which is statistically significant (p-value < 0.05). It indicated that a greater knowledge of health risks is linked to a greater probability of latrine presence in the community with respect to the implementation of CLTS intervention.

The findings align with research conducted by Linggar, Rantetampang, Tingginehe, Mallongi, and Research (2019), who found a statistically significant association between defecation knowledge within the community and latrine usage subsequent to

interventions in the Manokwari District. The chi-square on their test yielded a p-value of 0.014 ($p < \alpha$, 0.05), demonstrating a discernible influence of defecation knowledge on latrine usage. Specifically, individuals with better knowledge were found to be significantly less inclined, by a factor of 2.496, to engage in non-latrine defecation compared to their less informed counterparts.

Moreover, the current study's findings line up with qualitative data presented by BOKEA (2020), who also suggested a significant association between knowledge levels and the implementation of community-led total sanitation. The Chi-square analysis indicated a statistically significant relationship between knowledge level and the adoption of sanitation practices among respondents. Additionally, the results of this investigation are in agreement with the conclusions drawn by Mukadi (2016), who similarly found that knowledge impacts the adoption of sanitation practices. This study revealed a p-value of 0.005 supporting the view that knowledge plays a crucial role in influencing the adoption of sanitation practices. The results of the study reinforce previous research findings by demonstrating the importance of knowledge in driving positive sanitation behaviors within communities, particularly regarding latrine usage and the adoption of sanitation approaches.

Although the regression model as a whole was statistically significant, it only explained a small proportion of the variance in latrine presence as an indicator of CLTS adoption, evident by the R-square value of 0.031, which explains 3.1% of latrine presence. Among the factors examined, only knowledge emerges as a significant predictor, indicating its importance in influencing latrine presence within the community, thus adoption of the community-led total sanitation program to achieve open defecation-free status. Though the model indicates knowledge significantly impacts the presence of latrines, which is a measure of CLTS adoption, its overall explanatory power is quite limited.

This suggests that there may be other factors not captured in the model that also influence the presence of latrines about the health risk posed by sanitation diseases. The result further highlights the need for targeted interventions aimed at enhancing knowledge regarding health risk factors that make the community vulnerable and susceptible to sanitation-related diseases, thus promoting better sanitation practices, ultimately contributing to improved public health outcome. The summary of the metrics is as shown on table 4.10 below.

Table 4. 10

Summary metric of regression model

Dependent variable	RMSE	$R\text{-}_{sq}$	F	P- value
Awareness	0.9156	0.1332	7.040	0.000
Understanding	0.9832	0.1612	8.811	0.000
Knowledge	0.8593	0.1242	6.501	0.000

Source: Researcher, (2023)

All models are statistically significant with p-values less than 0.05, indicating that the independent variables collectively explain a significant portion of the variance in the dependent variables. However, the relatively low R_{sq} values suggest that other factors not included in the models may also play a substantial role. The results from the focus group discussion further indicated different notions on perceived health risk factors, taking into account the knowledge, understanding, and awareness indicators amongst the residents as revealed by FGD. Though cholera remains prevalent among children, despite ongoing treatment efforts, a participant in the focus group discussion mentioned that the elderly typically attribute diarrhea to dietary factors, such as consuming inferior food.

Cholera is a common illness among children, it is uncommon for elderly people to experience diarrhea, and when we do, they tend to blame the diet. Most speculate that it

could be a result of eating food with more additives, which caused an adverse stomach reaction. (Men elder)

4.4.1 Attitude on adoption of community-led total sanitation

According to Richard (2006) attitude is an innate psychological construct that includes both affective and cognitive aspects. It represents a person's propensity toward a particular value or belief and changes over time as a result of experiences. As a result of response reactions to a variety of stimuli, such as people, places, things, or events, attitudes evolve and eventually impact a person's thoughts and behavior (Wikipedia, 2017). Ever since the beginning of attitude research, academics have struggled to comprehend how attitudes and behaviors are related. The goal of the CLTS intervention method is to make people feel ashamed and repulsed in order to encourage them to adopt recommended hygiene habits and alter their behavior.

a) Distribution of attitudes about the cost of open defecation

The study sought to examine respondents' attitudes of open defecation and how it relates to ending OD and consequently adoption of community-led total sanitation; their responses is as indicated in the table 4.11 below.

Table 4. 11

Distribution by cost of open defecation

Attitudes on OD		(N)	(%)
Attitude about cost	No investment	213	55.76
	Socially accepted in my community	76	19.9
	Saves time	56	14.66
	OD has minimal health risk	37	9.69
Sub-total		382	100.00
Perceived benefit	Traditional practice in my community	197	51.57
	Save water	80	20.94
	Way to maintain personal privacy	57	14.92
	OD is a way to connect with nature	48	12.57
Sub-total		382	100.00
Perceived social benefit	Appreciated by others	148	38.74
	OD is a social norm in my community	131	34.29
	OD is seen as a sign of status in my community	72	18.85
	People who practice OD are highly respected	31	8.12
Sub-totals		382	100.00
Feeling when think of OD	Disgusted	237	62.04
	Proud	41	10.73
	Anxious	36	9.42
	Joyful	35	9.16
	Indifferent	33	8.64
Sub-totals		382	100.00
Feelings towards consequences of OD	Negative	145	37.96
	Very negative	136	35.60
	Positive	45	11.78
	Unaffected	32	8.38
	Very positive	24	6.28
Sub-total		382	100.00
Emotion while practicing OD	Guilty	177	46.34
	Embarrassed	112	29.32
	Content	50	13.09
	Relaxed	35	9.16
	Unaffected	8	2.09
Sub-total		382	100.00
Community approval or disapproval on	Disapproval	226	59.16
	Stigma	56	14.66
	Approval	38	9.95
	Respected	35	9.16
	Indifference	27	7.07
Sub-total		382	100

Note: Distribution of respondent's attitudes towards OD, sub-total and frequencies adds to

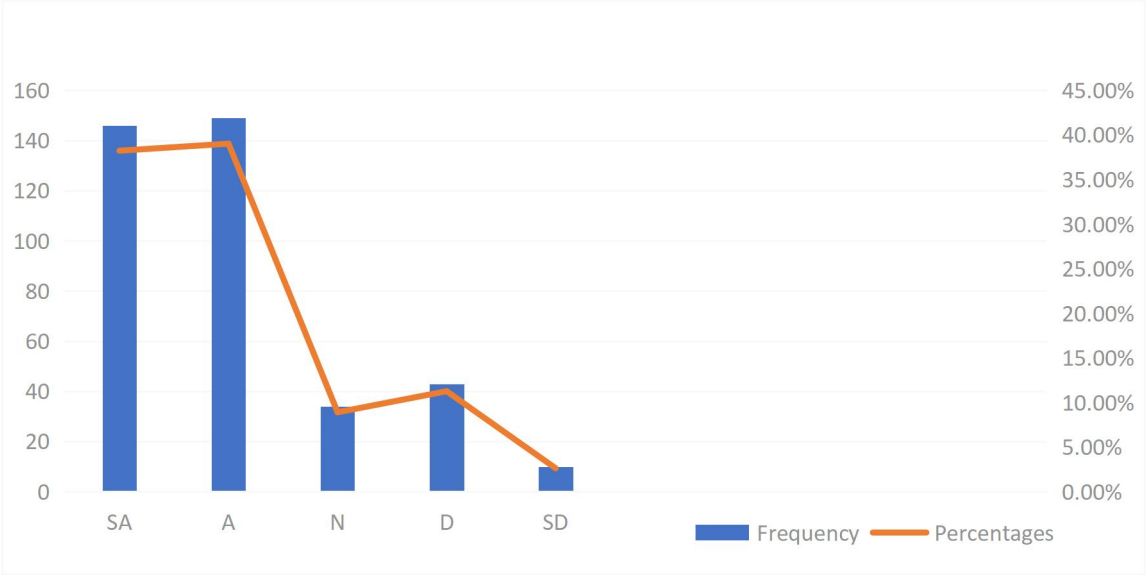
100.00%. Source: Researcher, (2023)

Results in table 4.11 and on figure 4.4 shows the findings of attitudes towards cost in relation to open defecation. The majority of respondents, constituting 55.76%, perceive open defecation as cost-effective due to its minimal requirement for investment in toilets. Additionally, a significant portion, 19.9%, reported that open defecation is socially accepted within their community which implied that no one felt disgusted, after triggering process of the intervention this findings is affirmed by O'Reilly *et al*. (2017) who found out that open defecation in India was a common community practice attached to nature and members felt better as it further served as time for tales and other community updates. Convenience emerged as a key factor among 14.66% of respondents, underscore by the efficiency gains associated with eliminating the need to open and secure doors, thereby obviating queuing and time wastage inherent in OD practices.

Despite a smaller proportion (9.69%) expressing minimal health concerns linked to OD, the findings of the UNICEF report (2020) underscore a stark reality of a confounding 673 million people lack access to basic toilet facilities globally. This deprivation not only poses profound health risks but also bears significant economic repercussions. In tandem with results findings emphasis is on convenience which is a key factor driving alternatives to open defecation, it becomes evident that OD is not a viable or sustainable solution. The study's revelation that inadequate sanitation has led to thousands of deaths and substantial financial expenditures underscores the urgent need for targeted interventions. The study results show varied attitudes toward the economic aspect of OD which need to be addressed as it is crucial in promoting informed decision-making and facilitating the adoption of improved sanitation behaviors.

Figure 4. 4

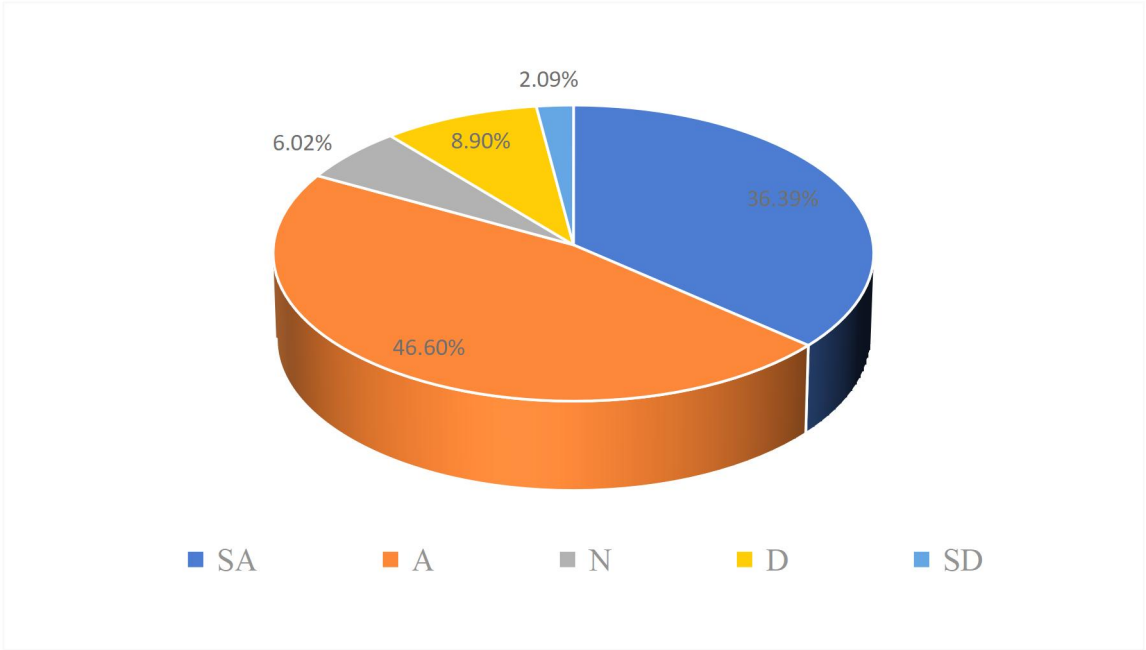
Understanding ways in which sanitation diseases are transmitted



Source: Researcher, (2023)

Figure 4. 5

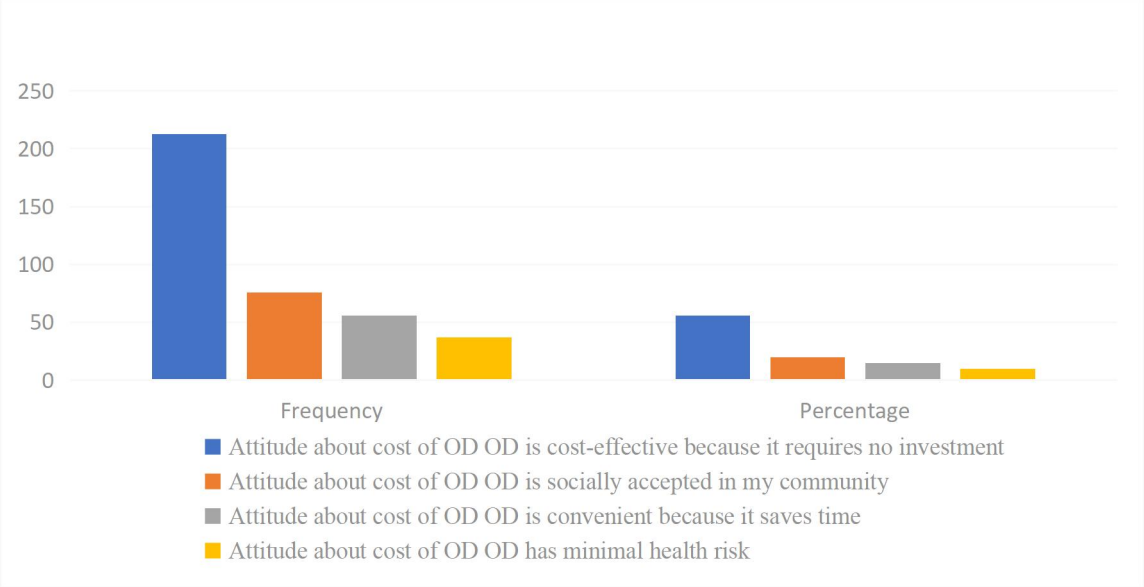
Awareness of risk factors associated with sanitation diseases



Source: Researcher, (2023)

Figure 4. 6

Attitude towards cost of open defecation



Source: Researcher, (2023)

b) Distribution of respondents on attitudes towards perceived benefits of open defecation

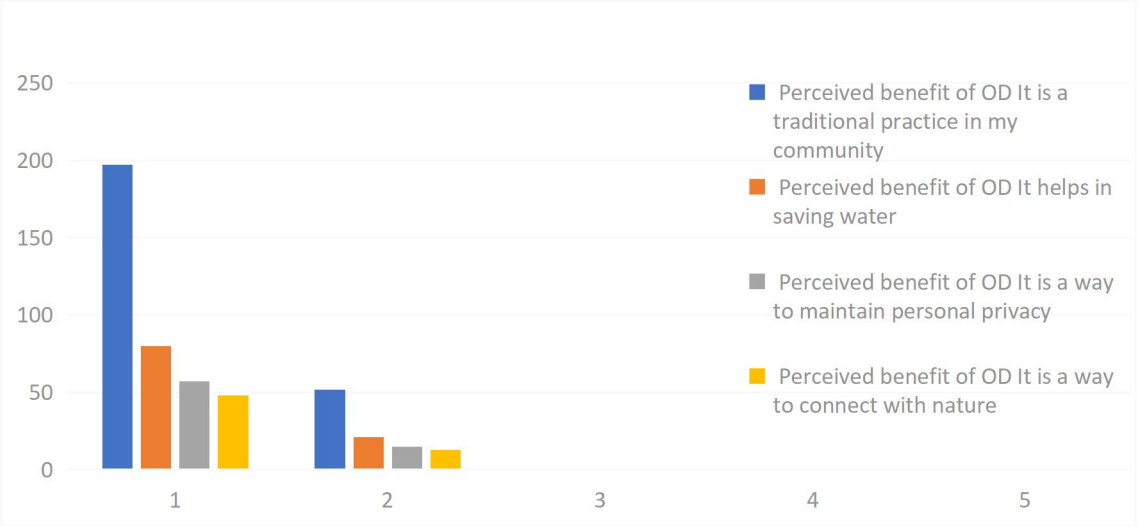
The study sought to examine respondents' attitude on their perceived benefits of open defecation practice and the influenced to adoption of community-led total sanitation. The results in table 4.12 and on figure 4.5 revealed various attitudes towards the perceived benefits of OD within the community. A significant majority, comprising 51.57% of respondents, view open defecation as a traditional practice deeply rooted within their community, this implies that great effort is needed to be mainstream to sort tradition perception, study by Busienei *et al*. (2019) asserted that OD is the worst form of unimproved sanitation that not only deprive human dignity of health life but also pollutes the environment. The assertion that practices of open defecation is community traditional practice will continue to deprive community rights to dignified lives and extorted county funds to manage sanitation consequences.

Despite 20.94% of participants believing that OD conserves water, Karanja *et al*. (2018) highlight the challenges of water scarcity in Turkana County, an arid region with limited access to water resources. The absence of proper sanitation infrastructure exacerbates the issue, with many peri-urban areas lacking sewer connections and adequate water for flushing toilets. Moreover, the requirement of a minimum of 6 litres of water for effective flushing as outlined by Tilley *et al*. (2014), underscores the impracticality of OD as a water-saving measure.

Ultimately, the notion that OD saves water is misguided, often driven by the scarcity of water resources and the prioritization of other needs over proper sanitation practices. The idea that OD conserves water is frequently associated with insufficient access to water, even though communities must have sufficient sanitation facilities, including water-filled hand washing stations as guided by CLTS handbook. Residents who believe that OD is the only practical choice in some situations may prioritize giving water to animals over maintaining their personal hygiene and health.

Figure 4. 7

Perceived benefits of open defecation



Source: Researcher, (2023)

Additionally, a notable proportion, 14.92%, consider it as a means to maintain personal privacy this revelation contradicts with meta-analysis by (Ntaro, Owokuhaisa, Isunju, Mulogo, & Ssempebwa, 2022) that presence of latrines enhance privacy. Moreover, 12.57% of respondents see OD as a way to connect with nature. O'Reilly *et al*. (2017) Also found that castes in India regarded OD as a way of connecting with nature. This notion is wrongly guided as OD has caused millions of deaths.

This finding shows the complex interplay of beliefs and environmental perceptions regarding OD within the community. Although a significant portion sees it as a tradition and some perceive benefits such as water conservation or personal privacy, addressing these attitudes will require a multifaceted approach that combines cultural sensitivity with education on sanitation which is affirmed by Harter *et al*. (2019) that implementation of CLTS should consider cultural and taboos for appropriateness.

c) Respondents on attitudes towards social benefits of open defecation on community

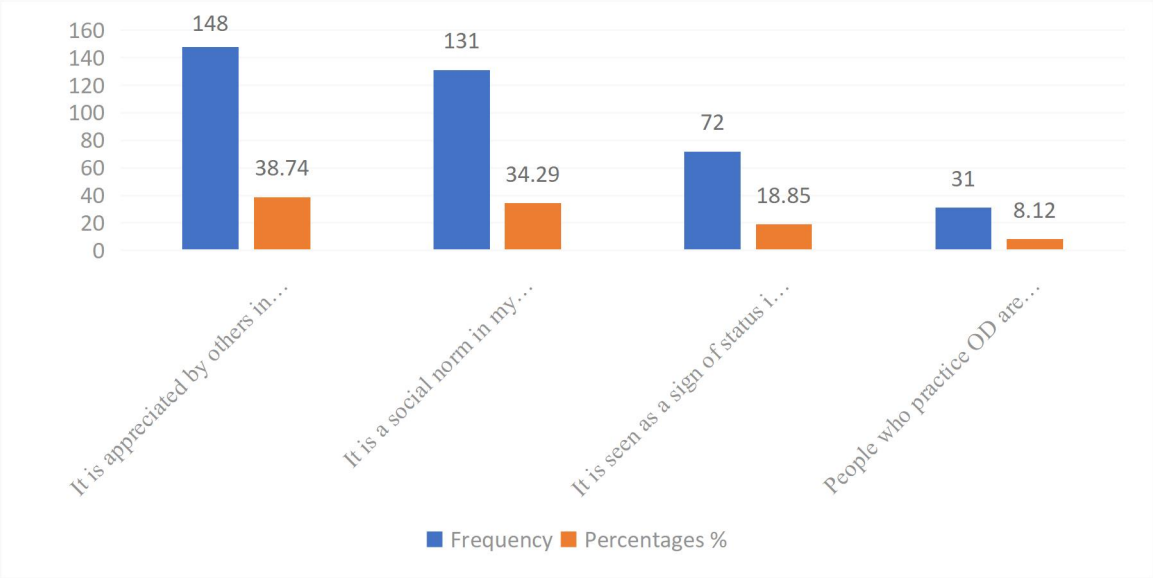
The study further sought to examine community attitudes on the social benefits of open defecation practice within the community and the responses are as indicated on the table 4.12 and figure 4.8. The results indicated varied attitudes towards the social benefits associated with OD within the community. A significant portion, accounting for 38.74% of respondents, perceive OD as being appreciated by others in a study by Alemu *et al*. (2018) they established that community and peers have influence over individual behavior it is also agreed by Rimal and Real (2005) that either descriptive or injunctive norms determines community or individual behavior in this context is the practice of open defecation.

Additionally, 34.29% consider it a social norm within their community. Furthermore, a notable minority, comprising 18.85% of participants, view open defecation as a sign of status. However, only a small proportion, 8.12%, believe that people who practice open

defecation are highly respected. These results illustrate differing perspectives on the social implications of OD, accentuating the complexity of addressing cultural attitudes and norms in promoting improved sanitation practices as suggested by Harter *et al.* (2019) that community leaders have an impacted in shaping community behaviors that are embedded to cultures and norms.

Figure 4. 8

Perceived Social benefits of open defecation



Source: Research (2023)

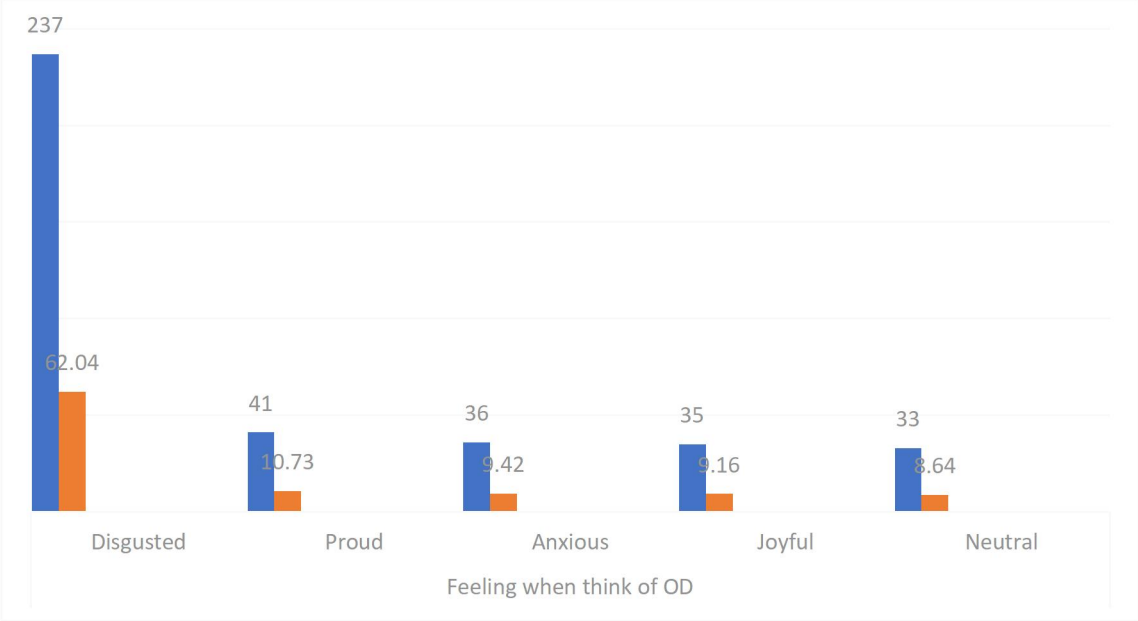
d) Distribution of respondent's attitudes towards feelings associated with open defecation

The study sought to establish respondents' attitudes feelings towards open defecation practice, they were asked what do they feel when they think of open defecation. The responses were recorded as presented on table 4.12 and on figure 4.9. The results demonstrated a range of feelings within the community. A majority of respondents, comprising 62.04%, reported feeling disgusted about open defecation. In contrast, a smaller proportion, representing 10.73%, expressed feelings of pride. Additionally, 9.42% of participants reported feeling anxious, while 9.16% reported feeling joyful. A

minority, constituting 8.64% of respondents, indicated a neutral emotional response towards OD. These results highlighted the diversity of emotional reactions towards this practice, underscoring the importance of addressing underlying perceptions and attitudes to promote healthier sanitation behaviors, the results implies that individual emotion towards OD affects the entire community. According to a study by Jenkins *et al*. (2007) neatness and cleanliness are salient motivators to good hygiene. The hygienic behaviors are embedded in attitudes and perceptions in an individual or within a social construct in the community which dedicates approval or disapprovals of open defecation practices.

Figure 4. 9

Feeling when thinking about open defecation



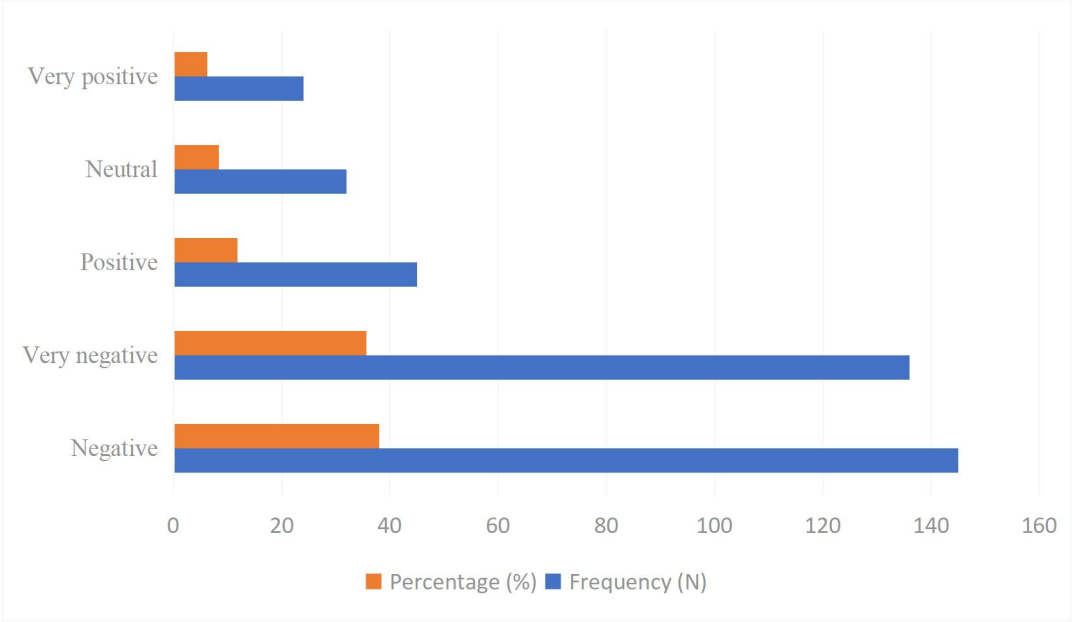
Source: Researcher, (2023)

e) Perception of the consequences of open defecation to environment and their health

The study sought to establish respondent attitudes on the consequences of open defecation and how it impacts their environment and health. The respondents were asked what they felt about the consequences of OD. The findings in Table 4.12 and in Figure 4.8 revealed varying perceptions of the consequences of OD within the community to the environment and consequently impact on their health. A significant majority, comprising 73.56% of respondents, reported negative or very negative consequences associated with OD, with 37.96% describing them as negative and 35.6% as very negative. Conversely, a minority, accounting for 18.06% of participants, perceived positive or very positive outcomes, with 11.78% reporting positive consequences and 6.28% indicating very positive ones. Additionally, 8.38% of respondents expressed a neutral stance regarding the consequences of open defecation. The results implied the prevalence of negative perceptions surrounding OD and highlighted the need for interventions to address its adverse effects on community well-being. Negative attitudes towards OD affect effective implementation of CLTS, despite the triggering process in the community; there were still those supporting the OD practices, which put the entire population at risk of infection. However, a study by Sari, Setiadi, Sanjaya, and Raksanagara (2019) indicated that an increase in individual or community attitude or knowledge does not mean a behavior change; this therefore needs firm intervention to deal with varied attitudes among communities.

Figure 4. 10

Feeling towards consequences of open defecation



Source: Researcher, (2023)

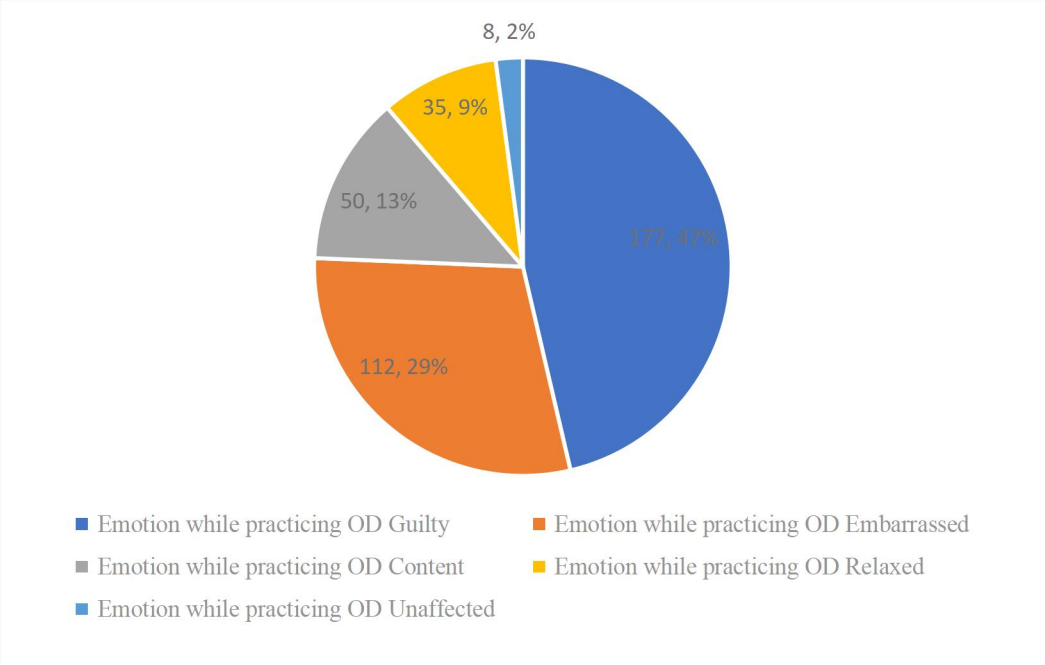
f) Distribution of respondent's emotion while practicing open defecation

The study pursued to establish the emotion of the respondents when individual practice OD. The study aimed to understand how concepts of community-led total sanitation infiltrated into oneself behavior towards practice of OD. Respondents were asked what individual feels when practicing OD and their responses are tabulated as shown on table 4.10. The results in figure 4.9 shaded light on the emotional states experienced when practicing OD. The majority of respondents, accounting for 75.66% of participants, reported negative emotions associated with this practice. Specifically, 46.34% expressed feeling guilty, while 29.32% reported feeling embarrassed. In contrast, a minority, comprising 24.34% of respondents, indicated positive emotional states, with 13.09% feeling content and 9.16% feeling relaxed. Moreover, a small proportion, representing 2.09% of participants, reported feeling unaffected emotionally while practicing OD. The results implied the prevalence of negative emotions linked to OD and suggested the need for interventions to address associated psychological discomfort and promote healthier

sanitation practices. The intention of CLTS program is to change an individual or community behavior on matters OD, behavior is embedded in psychology of a person as indicate as reported by Sari *et al*. (2019) findings which shown that knowledge is important in understanding health implication but does not guarantee behavior change. Similarly, Ntaro *et al*. (2022) found out that negative attitude is on psychological factors that influence attainment of open defecation free status.

Figure 4. 11

Emotions while practicing open defecation



Source: Researcher, (2023)

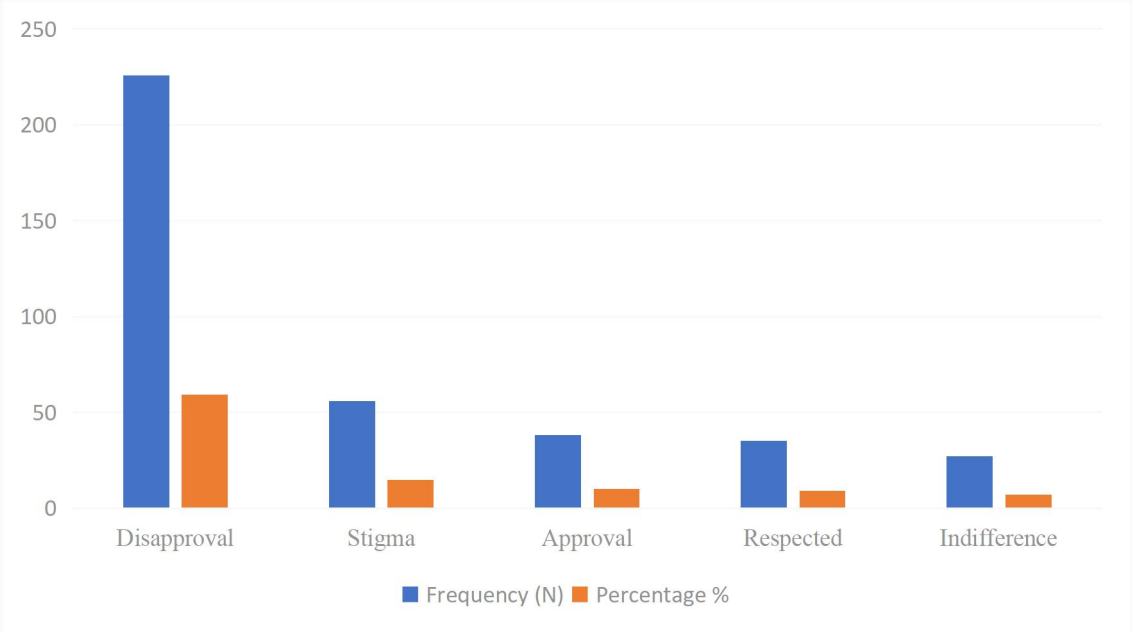
g) Distribution of community attitudes towards individual open defecation behavior

The study further hunted to establish community attitudes towards individual behavior on OD. The respondents were asked how the community members perceive individual behavior on practice of OD, the results are as shown on table 4.12. The results on figure 4.10 present a range of perspectives from community members regarding the practice of OD. A significant majority of respondents, comprising 73.82% of participants, reported

negative or disapproving attitudes towards this practice. Specifically, 59.16% of respondents stated that others in the community disapproved of OD, 14.66% of participants reported experiencing stigma due to this behavior. Conversely, a minority, representing 26.18% of respondents, indicated positive attitudes towards OD, with 9.95% reporting approval and 9.16% reporting feelings of respect from others. Moreover, a substantial proportion 82% of the Turkana people exhibit a customary practice of OD as reported by Busienei *et al*. (2019), with 7.07% expressing apathy towards altering their sanitation habits. These findings emphasize the widespread negative attitudes towards OD in the Turkana community, highlighting the urgent need for targeted interventions to promote healthier sanitation practices which includes hand washing as guided by handbook by (Kar & Chambers, 2008).

Figure 4. 12

Community disapproval or approval on open defecation practice



Source: Researcher, (2023)

4.4.2 Logistic regression analysis for perceived attitudes towards open defecation

The study further sought to underscore the relationship between independent variables in relation to the binary adoption of the community-led total sanitation. The study

conducted logistic regression using ordinary least squares, which produced- F-value of 7.264, while the dependent variable of latrine presence gave an R-square value of 0.253, and while AOR was 0.218. The analysis revealed significance relationship of the variable to the dependent indicator as shown on table 4.13.

Three variables stood out as statistically significant predictors: Feeling disgusted, this variable exhibited a p-value less than p= 0.000< 0.05 at 95% confidence interval, indicating its statistical significance. The feeling of disgust plays a crucial role in influencing individuals' behavior towards the adoption of CLTS practices, the intention of triggering process is to instill shame and disgust in order for individual to change own behavior, as prescribed by CLTS handbook by (Kar, 2008). The aversion to unhygienic conditions and the recognition of the importance of sanitation in preventing disease transmission might motivate individuals to take action in improving sanitation facilities.

Similarly, feeling fair-minded had the p-value less than 0.05, highlighting its significance. The neutral feelings towards sanitation practices suggested a lack of aversion or enthusiasm, but their inclusion as a significant predictor implies that even neutral attitudes can impact adoption behavior, the underlying reasons for neutral attitudes could provide valuable insights for targeted interventions. Although attitude perceived towards benefits of OD as a traditional practice had p-value below the 0.05 threshold, this variable emerged as another significant predictor. The results suggested that the perceived benefits of traditional sanitation practices influence individuals' decisions regarding the adoption of CLTS.

The results findings are in line with recommendation by Mulopo *et al*. (2020) who allude that attitude in one of behavioral determinants that influence successful implementation of an intervention. In Turkana there is need to understands the importance of community attitude which a collective behavior in order to tailor behavior changes communication strategies to help antagonizes the existing notion of negatively as indicated by results on

table 4.2.13 below. The equation of the analysis is given as Latrine Presence= β_0-0.3895*Feeling Disgust-0.7962*Feeling Indifferent-0.2184* OD as Traditional Practice. Feeling Disgust (-0.3895) showed that one-unit increase in feeling disgust toward OD is associated with a decrease of 0.3895 in latrine presence. Surprisingly, stronger disgust correlates with *lower* likelihood of latrine presence. This might suggest social or infrastructural limitations that prevent latrine adoption despite negative feelings toward OD. Feeling Indifferent (-0.7962): A one-unit increase in indifference toward OD leads to a significant decrease of 0.7962 in latrine presence. This is a strong negative association, indicating that indifferent attitudes greatly reduce the likelihood of having a latrine. Open defecation as Traditional Practice (-0.2184): A one-unit increase in the belief that OD is a traditional practice reduces the likelihood of latrine presence by 0.2184 units, which suggests that cultural norms discourage latrine adoption.

Table 4. 12

Logistic regression analysis on attitudes towards open defecation

Ordinary Least of Squares regression analysis of perceived attitudes towards OD

Dependent variable. Latrine presence		R-squared	0.253			
		AOR	0.218			
		F-statistic	7.264			
Independent variable	Co-eff	Std err	t	p>|t|	0.025%	0.975%
Feeling disgust	-0.3895	0.082	-4.757	0.000	-0.551	.229
Feeling indifferent	-0.7962	0.120	-6.612	0.000	-1.033	.559
OD as traditional practices	-0.2184	0.061	-3.553	0.000	-0.339	.098

Source: Researcher, (2023)

The significance of feeling disgusted, feeling neutral, and traditional belief practices as predictors in the regression model highlighted the multi-dimensional nature of attitudes towards sanitation practices. The findings implied the importance of psychosocial factors in shaping individual behaviors and decision-making processes related to sanitation

which are in agreement with Ntaro *et al*. (2022) that psychosocial shapes behavior in a community. The feeling of disgust, whether towards unsanitary conditions or traditional practices, could serve as a powerful motivator for change. Similarly, recognizing the influence of neutral attitudes emphasizes the need for nuanced approaches that address underlying perceptions and beliefs.

Moreover, the significance of perceived attitudes towards benefits and costs associated with traditional practices highlighted the complex interplay between attitudes and interventions. This study aligns with the findings of Alemu *et al*. (2018), whose adjusted logistic regression analysis identified significant predictors of consistent latrine use. (Alemu *et al*., 2018) found that individuals with a positive attitude, ownership of a latrine with a superstructure, maintenance of a clean latrine, and possession of a latrine with a protected door were significantly associated with consistent latrine utilization.

The multiple regression model explained approximately 25.3% of the variance in latrine usage (R-squared = 0.253). Significant predictors included feel disgust, feeling neutral, and benefit tradition practice, which all had negative associations with latrine usage. The results suggested negative emotions and traditional practices could play a critical role in influencing latrine usage behavior. Further studies might explore the underlying causes of these associations and consider interventions targeting these specific predictors to improve latrine usage. When key respondents were asked to how individuals or community perceived attitudes towards OD, one of the respondents from FGD was noted saying.

"Many households spend more money treating of typhoid, malaria and sometimes we are told we have amoeba which is a rare in our village, those who have toilets and maintain good hygiene do not go to clinics many times compared as us''(Men elder)

The discussion noted that families investing in toilets and practicing good hygiene experience fewer instances of illnesses, pointing significant health benefits. The absence

of latrines facilities exposes individuals to infectious diseases, this present critical need for complete sanitation infrastructure to safeguard health implication. The findings resonates with the study conducted by Degu, Girma, and Melese (2022) that inadequate use of latrines in the home raises the risk of disease transmission and the main risk factors for morbidity and death. The results findings establishes that toilet ownerships bring pride and respect within the community, often associated with employment status, which indicates the societal value placed on both sanitation infrastructure and economic stability.

4.4.3 Social norms on adoption of community-led total sanitation

Human behavior is greatly influenced by social conventions, especially when it comes to cleanliness and hygiene habits. According to Contzen and Mosler (2012), the RANAS model offers a thorough framework for comprehending the variables impacting behavior change in these domains. Thus, the norms stand for the perceived social pressure to engage in or refrain from a particular activity. Norms can be injunctive, expressing what is deemed to be socially acceptable or unacceptable, or descriptive, reflecting views of what others typically do or both can be congruent as allude by (Rimal & Real, 2005). The importance of social norms in influencing people's decisions regarding sanitation practices was highlighted in a study by Jenkins *et al*. (2007) and Harter *et al*. (2019) investigating the psychosocial factors influencing the adoption of Community-Led Total Sanitation (CLTS). This highlights the need to address both descriptive and explanatory factors in this regard.

According to SCT, people's attitudes, perceived behavioral control, and subjective norms—the idea that one is under societal pressure to act in a particular way—all have an impact on how they behave. In the SCT, norms play a crucial role in determining the intentions and subsequent behaviors of agents. This highlights how important social forces are in changing behavior, especially norms. Designing successful CLTS

interventions to encourage changes in sanitation and hygiene behavior requires an understanding of and attention to the norms within the RANAS model. Interventions could leverage social dynamics within communities to promote beneficial behaviors. Additionally, by focusing on both injunctive norms (what is socially acceptable) and descriptive norms (what others do), interventions can match individual behaviors with prevalent.

a) Distribution of response on observing open defecation in the neighborhood

The study sought to find out community engagement in practice of OD. Respondent were asked if they observe their community members practicing OD and their response were tabulated as shown on table 4.13 below.

Table 4. 13

Responses of social norms individual and community disapproval on open defecation

Observing community members practicing OD	Likert scale Strongly Agree (5), Strongly Disagree (1)	Frequency	Percent
	SA	14	3.66
	A	250	65.45
	N	30	7.85
	D	73	19.11
	SD	15	3.93
Sub-total		n=382	100.00
Community respondents on approval or disapproval of OD practices	SA	22	5.76
	A	254	66.49
	N	54	14.14
	D	50	13.09
	SD	2	0.52
Sub-total		n=382	100.00
Community responses on discouraging OD	SA	17	4.45
	A	248	64.92
	N	72	18.85
	D	36	9.42
	SD	9	2.36
Sub-total		n=382	100.00

Source: Researcher, (2023)

The results from table 4.14 revealed varied sentiments among respondents. A significant majority, comprising 65.45%, agreed with the occurrence of OD in their locality as shown in figure 4.11. Conversely, a smaller but notable proportion, accounting for

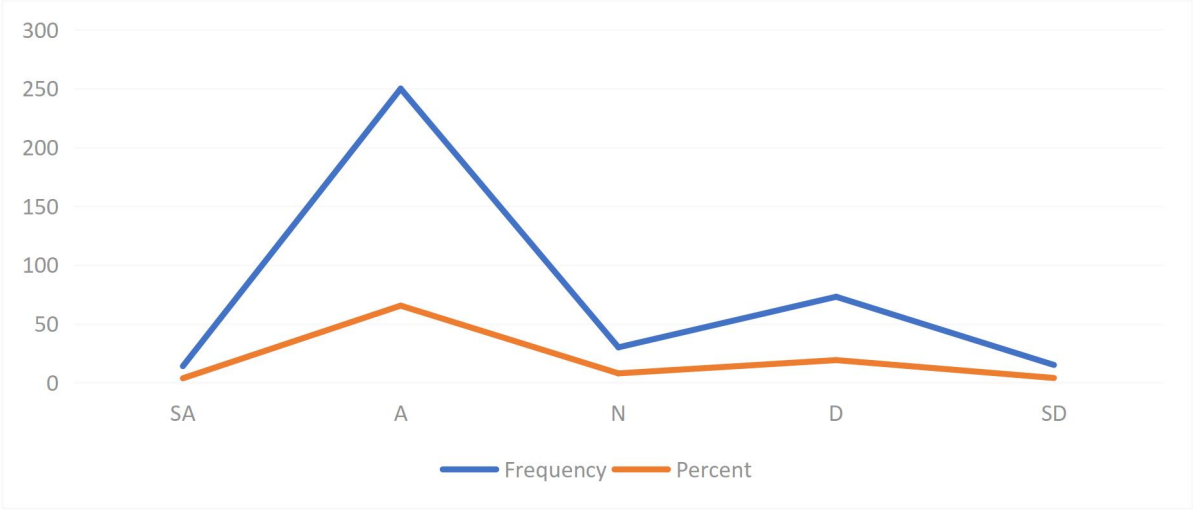
19.11%, voiced disagreement with this practice. A fraction of respondents, constituting 7.85%, remained neutral on the issue, neither endorsing nor opposing it. Furthermore, a minority, consisting of 3.66%, strongly agreed with the presence of open defecation, while an almost equivalent percentage, at 3.93%, strongly disagreed with it.

The findings suggested acceptance or resignation towards the occurrence of OD within the community. However, the presence of notable percentages who disagree or remain neutral indicates a diversity of standpoints and potentially differing levels of awareness regarding this sanitation issue. The findings implied that community has little ability to strongly discourage open defecation since higher percentage is accustomed to the culture, results further asserts relationship of norms perceptions towards OD within the community. Although a sizable portion seems accepting or indifferent towards this behavior, there are notable segments that oppose it, albeit to varying degrees.

According to a survey study by Aluoch, Asweto, and Onyango (2022) found that households that exhibited social norms were less likely to attained open defecation free status similarly findings by Lawrence *et al*. (2016) asserted that social norms is a major challenge to successful implementation of CLTS. This is in spite of efforts done by Turkana County government which includes deploying health volunteers to help shape the norms and the budg*et al*location to sanitation department. However as assert by Lawrence *et al*. (2016) that social norms paradoxically inhibit and encourage sanitation behavior, this is confirmed by varied results towards OD practice in Turkana.

Figure 4. 13

Observing community members practicing open defecation



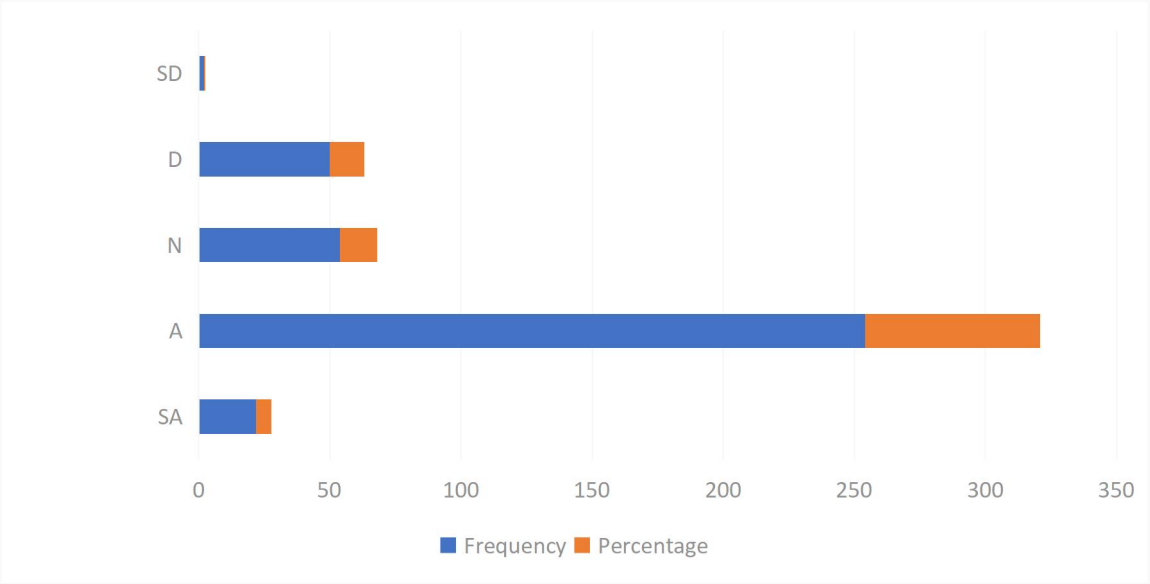
Source: Researcher, (2023)

Distribution of response on family disapproval or approval of open defecation

The study pursued to understood community descriptive norm to what percentage do they disapprove OD practice, this question was important since it translates to adoption of an intervention. Participants were asked whether community members or relatives disapprove the practice and the response as shown on table 4.14. The results in figure 4.12 disclosed that the majority of community, constituting 66.49%, agree with the notion of disapproving OD within their families. A smaller percentage, 13.09%, disagree, while 14.14% remain neutral. A minority, 5.76%, strongly agree with family disapproval, and only 0.52% strongly disagree. Overall, out of 382 respondents, attitudes toward family disapproval of OD are predominantly in favor of discouraging the practice.

Figure 4. 14

Community respondents on disapproval of open defecation practices



Source: Researcher, (2023)

The data suggested a notable cultural norm within the surveyed population regarding the disapproval of OD within the family unit. Results implied that there is a prevailing sentiment toward promoting sanitary behaviors and potentially embracing initiatives aimed at addressing OD. However, the presence of some respondents who remain neutral or disagree suggests a variance in attitudes, possibly influenced by factors such as cultural beliefs, accessibility to sanitation facilities, or education on hygiene practices. Further exploration could shed light on these factors and aid in the development of targeted interventions to reinforce positive norms. this is in line with a recommendation by Aluoch *et al*. (2022) that instilling social norms, which is a collective action, while promoting good sanitation practices.

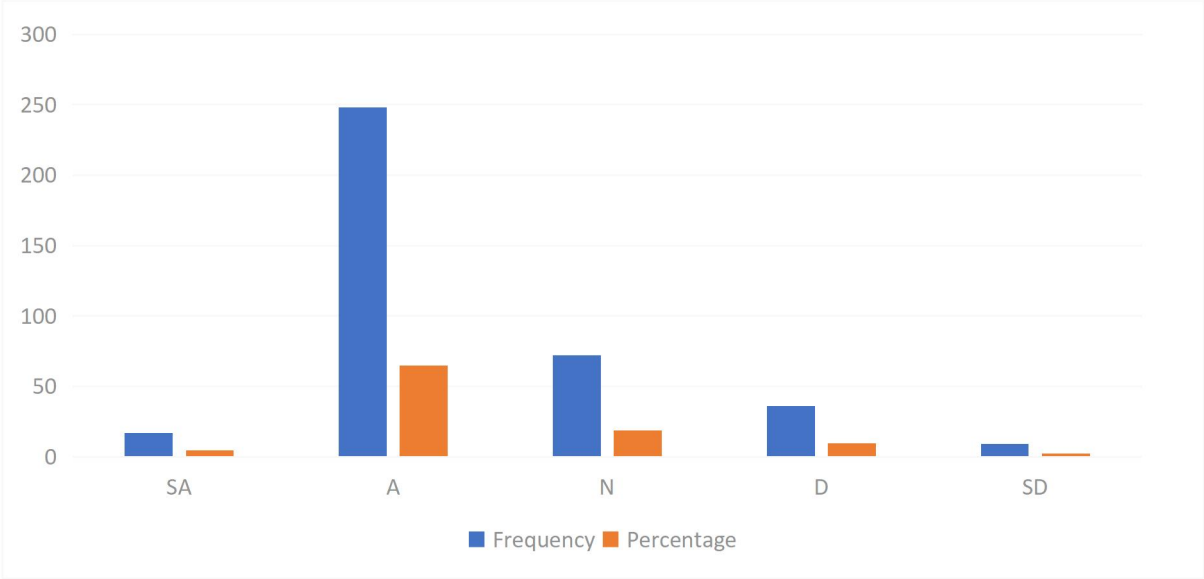
Distribution of response on relation community leaders in discouraging (OD)

The study aimed to establish the community leader's role in discouraging the sanitation behavior. Participants were asked if community leaders take a role in discouraging OD practice, and the results in Table 4.14 and on figure 4.13 shown that the majority of

participants, comprising 64.92%, agree that leaders in their community discourage OD. A smaller proportion, 9.42%, disagree with this notion, while 18.85% remain neutral. Only 4.45% strongly agree that leaders discourage OD, and 2.36% strongly disagree. The results suggest a mixed perception among the respondents regarding the role of leaders in discouraging OD which implied effort done by community health promoters in the county has progressively bear fruits and individuals could likely adopt the intervention. Whereas a significant portion agrees with their efforts, there are also notable percentages who either disagree or remain neutral. It indicated a potential gap in communication or effectiveness in conveying the message about sanitation practices within the community this is in line with qualitative data Ntaro *et al*. (2022) that leaders appreciated includes who followed the progress and attain ODF status, similarly the study through observation checklist confirm the assertion that those with clean latrines did not hesitated to welcome the researchers during study period.

Figure 4. 15

Community responses on discouraging open defecation



Source: Researcher, (2023)

The findings reflect the varying descriptive, injunctive norms within the community towards OD and the influence of community leaders in shaping these norms. Although some individuals may perceive community leaders as actively discouraging OD, others may not perceive their efforts as significant or effective, this study agree with the findings from Crocker, Fuente, Bartram, and health (2021) that show that leaders have the influence of changing perceived norms and behavior.

The study highlighted the importance of understanding the dynamics of community norms and the role of key influencers, such as religious leaders, in promoting behavioral change towards improved sanitation practices. The study concurs with the findings from a study conducted by Harter *et al*. (2019) that the success of CLTS is embedded in social norms. Efforts to address OD to consider these diverse perceptions and engage with community leaders, especially in the context of this study, where the smallest rank of leadership is highly respected, thus enhancing their role as advocates for sanitation and hygiene within the community.

4.4.4 Logistic regression of social norms influencing adoption of community-led total sanitation

To further ascertain categorical responses as regards the decision model, whether higher or lower adoption rates of CLTS. The study conducted logistic regression analysis which provided insights into the relationship between independent variable to latrine presence as presented on table 4.14 below.

Table 4. 14

Logistic regression for social norms influencing adoption of community-led total sanitation

Ordinary Least of Squares regression analysis of social norms towards OD						
Dependent variable.	Latrine presence	R-squared	0.240			
		AOR	0.180			
		F-statistic	3.984			
Independent variable	Co-efficient	Std error	t	p>|t|	0.025%	0.975%
Community disproval	0.1583	0.667	2.346	0.020	0.026	0.291
Friends' disapproval	-0.3446	0.097	-3.557	0.000	-0.535	-0.154
Guidelines in favor	0.2214	0.097	2.288	0.023	0.031	0.412
Guidelines strongly in favor	0.3858	0.160	2.416	0.016	0.072	0.700

Source: Researcher, (2023)

Latrine Presence=β_0+0.1583(Community disapproval) −0.3446 (Friends' Disapproval) +0.2214(Guidelines in Favor)+0.3858(Guidelines Strongly in Favor+0.1583(Community Disapproval)−0.3446(Friends' Disapproval)+0.2214(Guidelines in Favor)+0.3858(Guid elines Strongly in Favor)

Community Disapproval (+0.1583). A unit increase in perceived community disapproval of OD is associated with a 0.1583 unit increase in latrine presence. This is statistically significant (*p = 0.020*), suggesting that community norms positively influence latrine adoption. Friends' Disapproval (−0.3446).A unit increase in perceived friends' disapproval is associated with a 0.3446 unit decrease in latrine presence. This result is statistically significant (*p = 0.000*), though counterintuitive — it may suggest peer disapproval exists in areas with limited access to latrines or that peer disapproval is ineffective without community-wide enforcement. Guidelines in Favor (+0.2214). A unit increase in exposure to guidelines that favor latrine use is linked to a 0.2214 unit increase in latrine presence. Statistically significant (*p = 0.023*), showing that exposure to

favorable messaging or policies promotes positive behavior change. Guidelines Strongly in Favor (+0.3858). Strong endorsement of guidelines correlates with a 0.3858 unit increase in latrine presence. Also, significant (*p = 0.016*), indicating that strong messaging or enforcement has even greater influence on latrine adoption.

The results on table 4.15 produced an R-squared value of 0.240 indicates that approximately 24% of the variability in the dependent variable latrine presence. The overall model was found to be statistically significant, as indicated by the F-statistic (F = 3.984) with a corresponding p-value of 4.36e-10, suggesting that at least one independent variable significantly predicts the dependent variable. The intercept was statistically significant ($p < 0.05$), indicated that when all independent variables were zero, the value of latrine presence was approximately 0.4997. Some independent variables had statistically significant coefficients ($p<0.05$), such as community disagreement on observing OD practice amongst members, family disapproval on OD practices, Friends disapproving open defecation practices, neutrality towards OD practices, and guidelines in favor on OD.

Other independent variables did not appear to be statistically significant predictors of latrine presence, as their p-values are greater than 0.05. The AOR produced a value of 0.180 suggested that approximately 18% of the variability in latrine presence is explained by the independent variables, adjusted for the number of predictors in the model. Although the model explains a portion of the variance in latrine presence, its predictive ability may be limited, given the relatively low R-squared value and potential issues identified with residual diagnostics. The regression analysis provided insights into the relationship between sub-variables of norms factors and latrine presence.

However, further analysis on the model diagnostics and refinement may be necessary to improve the model's explanatory power and predictive accuracy. Where data or phenomena exist content analysis can be used since of its flexibility nature to retest

findings (Ntaro *et al*., 2022). However, this study based the findings on psychosocial factors which are dynamics depending on level on intervention and support by various partners and Turkana County government to its residents, therefore limiting accuracy of retesting results for accuracy.

Qualitative findings further emphasized that implementation of community-led total sanitation is embedded in community and traditional norms both injunctive and descriptive, as revealed by focus group discussion, that urban residents accustomed to modern sanitation facilities find it disconcerting when visiting rural areas lacking proper toilets, it highlighted disparities in access to and maintenance of hygiene infrastructure between urban and rural communities and the element of disapproval of open defection practices can be determine by close peers.

"Those living in centers when they came to the villages they do not go to the bush to relief themselves, but us in the villages no one cares about it, but we feel guilty when visitors who comes from other places find no toilet or if there is toilet the status is very unhygienic" (Men, village elder).

The study findings coincides with qualitative results by Lawrence *et al*. (2016) that behavior change on open defecation is determined by approval by others, children did not play in households with no toilet fearing that their playing ball can roll on human feces, this therefore transfer the negative attitude to playing partners parents to construct toilets it is further affirm by FGD data by Ntaro *et al*. (2022) that visitors feel very comfortable and can even take food in households with clean toilets.

4.4.5 Ability factors on adoption of community-led total sanitation

The RANAS model provides a wide-ranging framework for considerate the various psychosocial factors influencing behavior change, particularly in the context of sanitation practices. The ability factor within this model plays a role in determining individuals' capability to adopt and maintain desired behaviors (Contzen & Mosler, 2012). Thus, the

ability encompasses both the physical skills and psychological readiness required to enact behavioral change effectively. A research paper by Crocker *et al*. (2021) on psychosocial factors influencing the adoption of CLTS highlighted the significance of ability factors in shaping individuals' sanitation-related behaviors.

a) Distribution of having necessary skills to maintain clean and sanitation practices

The study sought to find out respondent skills to maintain hygienic practice and to establish whether the adoption of community-led total sanitation is effective and self-driven intervention. The respondents were asked if they have necessary skills which they have acquired in order to maintain cleanliness of the facility and maintain good hygienic sanitation practices. The question was ranked into Likert scale, strongly agree as 5 and strongly disagree as 1. The response is as tabulated on table 4.15 below.

Table 4. 15

Distribution of abilities towards adoption of community-led total sanitation

Respondents' necessary skills	Likert scale, strongly agree 5, strongly disagree 1	(F)	%
	SA	74	19.37
	A	218	57.07
	N	56	14.66
	D	33	8.64
	SD	1	0.26
Sub-total		382	100
Ability to teach others.	SA	76	19.90
	A	195	9.69
	N	62	16.23
	D	76	19.90
	SD	12	3.14
Sub-total		382	100
Confidence to follow good sanitation practice	SA	68	17.80
	A	188	49.21
	N	78	20.42
	D	40	10.47
	SD	8	2.09
Sub-total		382	100
Capability handle sanitation problems	SA	70	18.32
	A	175	45.81
	N	79	20.68
	D	49	12.83
	SD	9	2.36
Total		382	100

Source: Researcher, (2023)

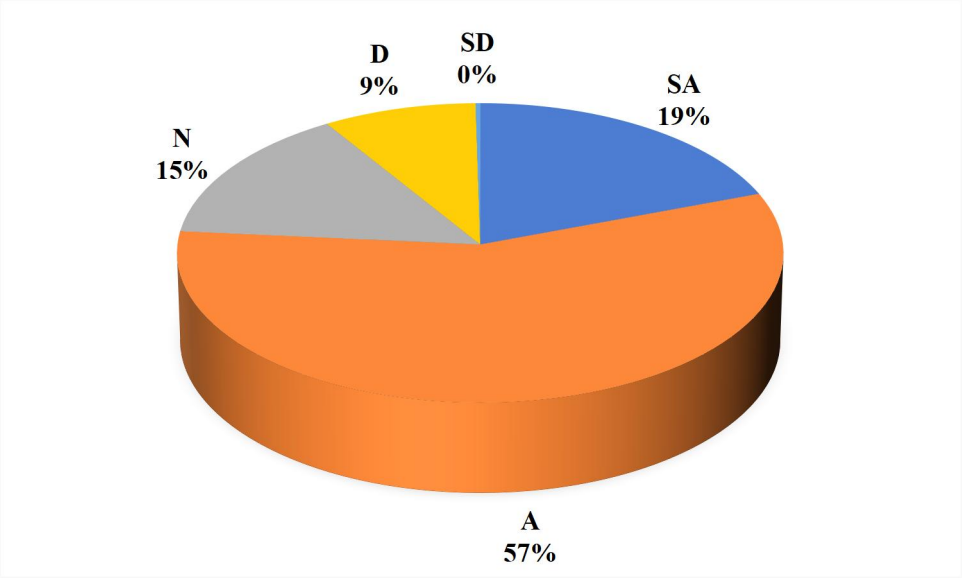
Results findings in table 4.15 shown distribution of responses regarding the necessary skills to maintain clean and hygienic sanitation practices reveals several noteworthy findings. The majority of respondents, comprising 57.07%, agree that they possess the requisite skills. Additionally, 19.37% strongly agree, further indicating a significant portion confident in their abilities. Conversely, a smaller proportion disagrees (8.64%) or strongly disagrees (0.26%), suggesting some skepticism or uncertainty. Notably, a considerable portion remains neutral (14.66%), reflecting a diverse range of opinions or potential ambivalence towards the topic.

Regarding the ability factors influencing skills to maintain cleanliness and hygienic sanitation practices. Those who lack access to proper sanitation facilities could face

challenges in maintaining hygiene standards, leading to health risks and environmental pollution. Factors such as infrastructure availability, education, cultural practices, and socioeconomic status likely play significant roles in shaping individuals' abilities in this regard the findings are in line with a study by Busienei *et al*. (2019) who asserted that despite the few availability of unimproved facilities its likely to be used were very minimal. Characterization of villages using sanitation ladder in rural setting will categorize the entire village units under this study under open defecation level.

Figure 4. 16

Respondents' necessary skills to maintain clean and hygienic sanitation



Source: Researcher, (2023)

"*Our soils are poor or porous and make it susceptible to collapsing, sinking, it is even worse when we heavy downpour, the apertures became wider and scary to be used, children are afraid to use them, the situation is worst at night or when family member has diarrhea" (Men, elder)*

This is affirmed by study conducted by Busienei *et al*. (2019) in Turkana and establishes that peri urban centre in Lodwar had unimproved sanitation facilities only few had basic

taming the aspect of poor infrastructure and designs which make latrines occasionally collapse.

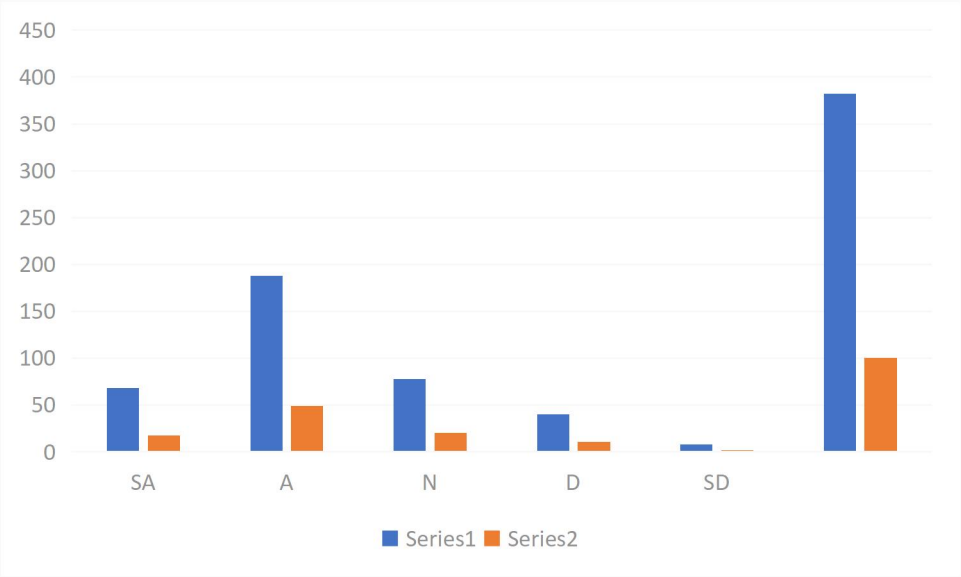
Addressing these factors through targeted interventions, such as improving infrastructure and promoting awareness, can contribute to enhancing skills and reducing reliance on OD practices, thereby improving overall sanitation and hygiene could improve health of the residences and reducing budgetary allocation to sanitation related disease, according to County Integrated Development Plan (CIDP 2023-2027) Turkana has allocated 7 billion to Lodwar county referral hospital to improve health and infrastructure the funds is inclusive of sanitation attributed to OD practices which could be managed by tailoring to psychosocial factors inhibiting adoption of CLTS.

b) Distribution of beliefs to teach others about proper sanitation practices

To establish whether individual transfer acquired knowledge and taught others, the study asked the respondent if they teach other on proper sanitation practices. The questions were presented in Likert scale and response as are shown on table 4.15. The findings suggested that a majority of respondents, accounting for approximately 70.95% combining Agree and Strongly Agree categories, believe they can effectively teach others about proper sanitation practices. Conversely, a smaller percentage, around 12.83% combining Disagree and Strongly Disagree categories, express doubts about their ability to do so. A notable proportion, roughly 16.23%, remain neutral on the matter. The results indicated a general inclination towards confidence in teaching sanitation practices among the respondents, with a significant minority expressing reservations or neutrality. This implies that majority of respondents who incline to teach others are likely to have no latrines or toilets at their households making even harder to teach a colleague.

Figure 4. 17

Believes to teach others about proper sanitation practices



Source: Researcher, (2023)

On factors influencing one's ability to effectively teach others about proper sanitation practices. Personal knowledge and expertise play a crucial role, individuals who possess vast understanding and practical experience in sanitation are more likely to feel confident in their ability to impart this knowledge to others. Communication skills are pivotal to convey information clearly, engage learners effectively, and address queries or concerns can significantly impact teaching efficacy. Additionally, contextual factors such as cultural norms, educational background, and access to resources may influence one's confidence in teaching sanitation practices the findings concurs with a study by Mulopo *et al*. (2020) that non-doers displayed less ability to maintain and use of safer water compared to doers.

"We all aspire to construct toilets but the cost is too higher, the digging of the pit needs concrete materials to reinforce the walls, we do not have versatile skills to construct standard pit latrines, the ones we construct occasionally collapse and hiring skilled labour is also expensive." (Men, elder)

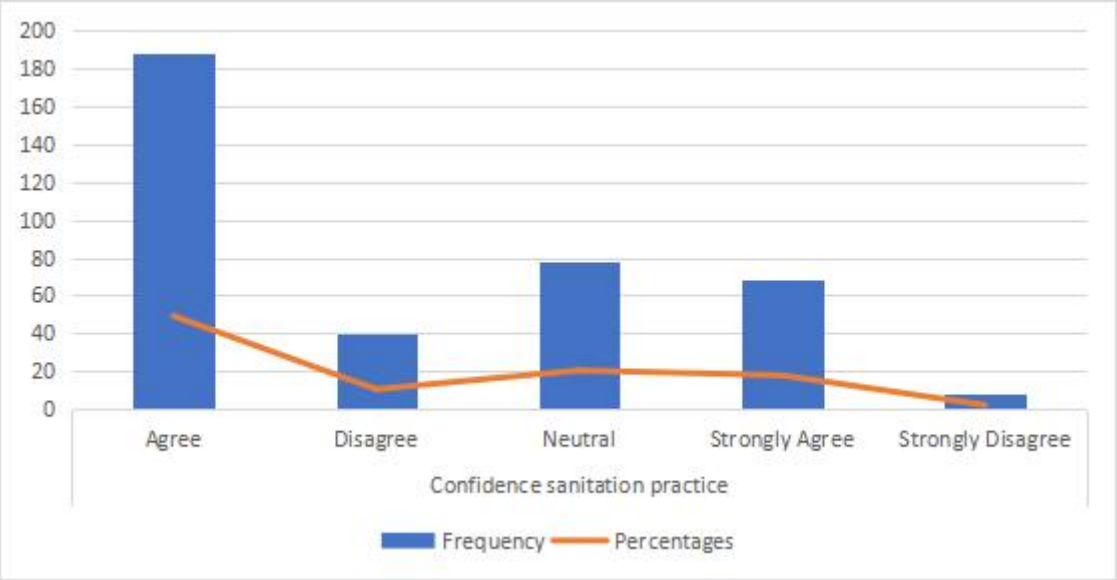
This is both affirmed by Mulopo *et al*. (2020) and Busienei *et al*. (2019) that requisite knowledge on skills are important in designing facilities especially in setting where environmental and cultural factors predominant detects adoption. Both community and Individual attitudes and beliefs towards teaching and public health could shape one's perception of their ability to effectively educate others on sanitation

c) Distribution of confidence to follow good sanitation practices

The study sought to establish confidence among respondents to follow good sanitation practices, the study asked respondents if they had confidence to follow good sanitation practices even if they face obstacles the response as shown on table 4.2.16. The findings indicated that among the 382 respondents questioned, a majority expressed confidence in their ability to follow good sanitation practices. Specifically, 49.21% agreed, while 17.80% strongly agreed. Conversely, a smaller percentage disagreed (10.47%), strongly disagreed (2.09%), or remained neutral (20.42%). The results suggested the willingness of the respondents to confidently follow good hygienic practices, however the few likely have no latrines making them grounded.

Figure 4. 18

Confidence to follow good sanitation practices



Source: Researcher, (2023)

On factors influencing confidence in following good sanitation practices, individuals who feel confident in their knowledge and skills regarding sanitation are more likely to express agreement or strong agreement. The results suggested that education and awareness programs could positively impact confidence levels. Secondly, environmental factors such as access to sanitation facilities and resources might influence respondents' confidence. Those with limited access or resources may be less confident in their ability to maintain good sanitation practices. Cultural and societal norms could play a role, as individuals from findings showed a strong emphasis on hygiene and sanitation and are more likely to express confidence in their abilities, the results resonate with Karanja *et al*. (2018) who asserted that existing cultural practices and socio-economic factors has huge impact on success of implementation of CLTS.

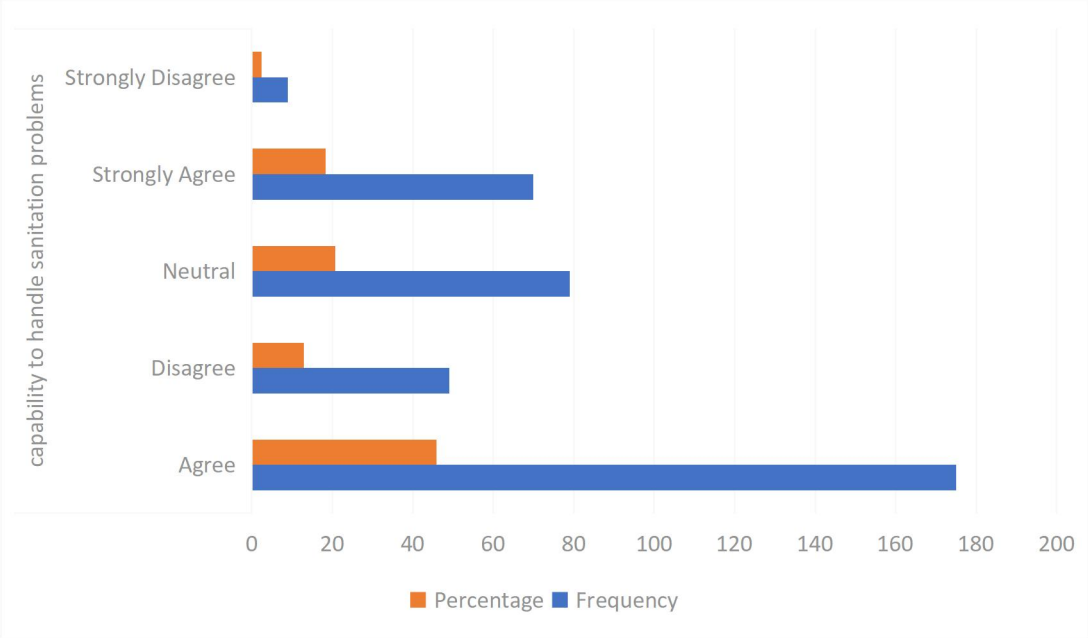
d) Distribution of capability of handling sanitation related problems and emergencies

The study sought to establish capability among respondents to handle sanitation related problem and emergencies, the study asked respondents if they were capable to handle sanitation problems and sanitation emergencies and the response as shown on tabled 4.16. The distribution of responses on table 4.25 shown the perception on the capability of handling sanitation-related problems and emergencies, revealing several insights. Most notably, a significant portion of respondents, accounting for 45.81%, indicated that they agree they feel capable of handling such issues.

Conversely, a smaller percentage, only 12.83%, disagreed with this statement, while 18.32% strongly agreed and 2.36% strongly disagreed. Additionally, 20.68% of respondents expressed a neutral stance on the matter. The findings suggested a mixed sentiment regarding individuals' confidence in dealing with sanitation-related challenges and emergencies the findings resonated with Crocker *et al*. (2021) and Venkataramanan *et al*. (2018b) who found that factors such as communication and access to sanitation facilities, knowledge about proper sanitation practices, and the availability of resources significantly influence individuals' ability to adopt CLTS.

Figure 4. 19

Distribution of capability of handling sanitation related issues and emergencies



Source: Researcher, (2023)

When considering the factors influencing individuals' capabilities in handling sanitation-related problems and emergencies, several aspects come into play. Factors such as education level, access to resources, prior training, and cultural beliefs about hygiene and sanitation can significantly impact one's perceived ability in this regard. Moreover, psychological factors like self-efficacy and resilience may also play a role. These factors are important when tailoring interventions and aimed at enhancing individuals' capacity to effectively manage sanitation issues and respond to emergencies. Additionally, addressing misconceptions and cultural barriers may be crucial in empowering communities to take proactive measures in sanitation management. Therefore, a holistic approach that considers both tangible resources and psychological factors is essential in improving overall capability in handling sanitation-related challenges.

4.4.6 Logistic regression for ability influencing adoption of community-led total sanitation

To further discern categorical responses as regards the decision model, the ordinary least squares regression analysis was conducted to examine the relationship between various factors and latrine presence as indicated on table 4.16 below. The overall model was statistically significant, <0.001, indicating that at least one independent variable significantly affected latrine presence. The sub-variable related to strongly agreeing with consistently following sanitation practices was the only significant predictor, P<0.05. This suggests that individuals who are neutral about consistently following sanitation practices are less likely to have latrine presence, indicating that indifference towards sanitation practices is associated with lower latrine presence rates. The indicator highlighted the importance of promoting consistent sanitation behaviors and discouraging indifference towards hygiene practices. Policy initiatives and public health campaigns should focus on raising awareness, providing education, and incentivizing positive sanitation practices to improve overall sanitation outcomes as regarded by (Tribbe *et al.*, 2021).

Table 4. 16

Logistic regression analysis for ability factors influencing adoption of community-led total sanitation

Logistic regression analysis of ability factors influencing adoption of CLTS						
Dependent variable.	Latrine presence	R-squared	0.159			
		AOR	0.122			
		F-statistic	4.311			
Independent variable	Co-eff	Std err	t	p>|t|	0.025%	0.975%
Hygienic sanitation practices	-0.2736	0.093	-2.927	0.040	-0.457	-0.090

Source: Researcher, (2023)

The regression equation as Latrine Presence=β_0 −0.2736 (Hygienic Sanitation Practices). Hygienic Sanitation Practices (−0.2736): A unit increase in hygienic sanitation practices is associated with a 0.2736 unit decrease in latrine presence. This is statistically significant, but the negative direction is counterintuitive. The results suggested a reverse causality that households without latrines may adopt more visible hygienic practices (like hand washing or covering feces) as a compensatory behavior, there is also an element of measurement bias that households may report better practices despite not owning latrines (social desirability bias) and access limitations that even with good hygiene awareness, some households may lack resources to construct latrines, showing a gap between knowledge or ability and action. Although hygienic sanitation practices are expected to support latrine presence, this model suggests that practice alone doesn't guarantee adoption — potentially due to external barriers like poverty, water scarcity, or infrastructure. This highlights a need to complement hygiene behavior change with enabling environments such as technical support

The qualitative results agreed with quantitative findings that success of implementation of community-led total sanitation depends the ability skills of individuals, and the influence of local leaders to guide the process. The CLTS handbook the emerging of natural leaders after the triggering process who could help in faster adoption of the intervention. According to reviews by Venkataramanan *et al*. (2018b) natural community leaders have great impact of adoption of programs in communities. During the community focus group discussion one of the participants said that. "*When you see all those few latrines despite construct with the local available resources such as rock pebbles, our leaders have constantly reminded us" (Elder)*. This results is affirmed by Harter *et al*. (2019) that community leaders have impact to rapid and maintenance of the hygienic sanitation practices.

4.4.7 Self-regulation on adoption of community-led total sanitation

The last block of RANAS model is self-regulation which refers to the process through which individuals monitor, regulate their thoughts, feelings, and behaviors to achieve desired outcomes (Contzen & Mosler, 2012). To evaluate success implementation of CLTS this study grounded self-efficacy as variable under psychosocial factors which influence adoption. Building an idea on self-regulation on an individual or community to advance through these stages towards sustained behavior change by learning and adopting new principles. The acquired sets of behavior is complimented by SCT which emphasizes the reciprocal interaction between individuals, their environment, and their behaviors(Wood & Bandura, 1989). The study is influenced by personal factors such as self-efficacy, environmental factors such as social norms, and behavioral factors such as goal setting.

a) Distribution of response on plan to overcoming obstacles impeding goal setting

The study sought to establish plans to overcome obstacles on goal setting, the study asked respondents if they had plans to overcome obstacles on setting their goals, response on table 4.18 below.

The findings presented in table 4.18 showed the distribution of responses regarding individuals' plans to overcome obstacles that could impede their goals. From the sample of 382 respondents, the highest percentage 42.67% agreed with having a plan to overcome obstacles, followed by 25.39% who disagreed, 17.28% who were unaffected, 11.52% who strongly agreed, and 3.14% who strongly disagreed. This implied that those who agreed or strongly agreed likely possess a higher degree of plan, indicating a proactive approach to identifying and addressing obstacles which meant that triggering process of CLTS was positively received shown by those who agreed and strongly agreed which is support by (Wood & Bandura, 1989) theory that knowledge and skills are learnt through experiences which is in line with CLTS phases.

Table 4. 17

Distribution of self-efficacy and monitoring to ensure good sanitation practices

Plan to overcome obstacles impeding goal setting	Likert scale, strongly agree 5, strongly disagree 1	(Frequency, F)	(Percent, %)
	SA	44	11.52
	A	163	42.67
	N	66	17.28
	D	97	25.39
	SD	12	3.14
Sub-total		382	100
Ability to prevent OD practice	SA	53	13.87
	A	174	45.55
	N	73	19.11
	D	81	21.20
	SD	1	0.26
Sub-total		382	100
Ability with others about health topics	SA	72	18.85
	A	191	50.00
	N	79	20.68
	D	36	9.42
	SD	4	1.05
Sub-total		382	100
Sense of responsibility to end OD	SA	63	16.49
	A	212	55.50
	N	62	16.23
	D	44	11.52
	SD	1	0.26
Sub-total		382	100
Commitment in making positive change to end OD	SA	70	18.32
	A	203	53.14
	N	74	19.37
	D	34	8.90
	SD	1	0.26
Sub-total		382	100

Source: Researcher, (2023)

On the other hand, those who disagreed or strongly disagreed may struggle with goal setting, potentially lacking effective strategies to overcome obstacles, poverty and education could be factors impeding their ability to overcome challenges the results rhyme with (Tristl, 2023) that poverty put the poor to the bottom of sanitation ladder. The neutral group may require further investigation to understand their specific plan challenges and how they could be supported in developing effective strategies. The

results highlighted the importance of self-efficacy in maintaining good sanitation practice.

b) Distribution of remembrance ability to prevent open defecation practice

The study quested to establish remembrance ability to prevent OD practice among the participants, the study asked respondents if they can remember to prevent OD during key situation, which include loneliness in an open place and the response as shown on table 4.18. The findings from indicated that among the 382 respondents, the majority 45.55% agreed that they found it easy to remember to practice OD prevention. Additionally, 21.20% disagreed, 19.11% were neutral, 13.87% strongly agreed, and only 0.26% strongly disagreed. The findings suggested that individuals who strongly agreed possess high levels of self-discipline and motivation, making it easier for them to adhere to preventive measures consistently. Conversely, those who disagreed lack effective self-regulation strategies or face barriers such as forgetfulness or lack of motivation. The neutral responses suggested a need for further exploration into the specific factors influencing individuals' ability to remember and practice OD prevention. Factors such as environmental cues, habit formation, and social norms plays significant roles in shaping individuals' behaviors this is in with study by Ntaro *et al*. (2022) that social norms are determinants of latrine use and its maintenance, similarly Mulopo *et al*. (2020) suggested that self-monitoring behavior in sanitation is influenced by habitual cues determinants. The interventions aimed at promoting OD prevention should consider these self-regulation factors to effectively target and support behavior change.

c) Distribution of communication with others about health and hygiene related topics

The study pursued to examined role of community in communicating with others to shared knowledge about health and hygiene related topic to establish whether natural leaders emerging from triggering process of CLTS has impact on upholding sanitation

virtues, the study asked respondents level of agreement on communicating within themselves on sanitation matters and the response are as recorded as shown on table 4.18. The results in table that there is a diverse range of responses regarding actively communicating with others about health and hygiene related topics. Approximately half of the respondents 50% agree with engaged in such discussions, while a smaller percentage disagreed (9.42%).

A significant portion of respondents remained neutral (20.68%), while a considerable number strongly agreed (18.85%). Only a minimal percentage strongly disagreed (1.05%). The results implied that substantial proportion of individuals are open to discussing these topics, as indicated by the combined percentages of agree and strongly agree responses which suggested a potential willingness to engage in conversations aimed at promoting better health practices to curb open defecation. The efforts shown the role of natural leaders who emerge during CLTS activation, opinion leaders has desirable outcomes in an intervention as evident by study in Madeya in South Africa on influence of contextual factors on use of safe drinking water by (Mulopo *et al*., 2020).

d) Distribution of on sense of responsibility to the community to end OD

The study sought to establish sense of responsibility among community members to end OD, respondents were asked level of agreement with sense of responsibility, and answers were presented in Likert scale and the response as shown on table 4.18. The findings suggested that a significant proportion of respondents felt a sense of responsibility towards their community to end OD. Specifically, 55.50% of respondents agreed, and 16.49% strongly agreed with this notion. Conversely, a smaller percentage disagreed (11.52%), while a notable portion remained neutral (16.23%). The extremely low percentage (0.26%) of respondents who strongly disagreed indicates a minimal opposition to the idea of ending open defecation within the community.

The substantial percentage of respondents who agreed or strongly agreed suggested an internalized sense of duty or moral obligation towards communal hygiene, these findings resonates with Lewis (2018) study that whole community is responsible with individual effort to end defecation. This reasoning proves that no one is safe even if an individual defecates in a whole area, chance of getting infection is presence however the negligence significance of microbe's levels. The presence of neutral responses indicated a potential lack of awareness or ambiguity regarding the role individuals can play in addressing OD. The small but present disagreement stem from various factors such as cultural norms, lack of resources, or disbelief about the effectiveness of community action in addressing this issue.

Further research could delve deeper into these self-regulation factors to inform targeted interventions aimed at fostering a greater sense of responsibility and action within the community to end open defecation practices. The study by Mulopo *et al*. (2020) failed to analyses the self-regulation factors citing small sample size and the fact that non-doers cannot respond to adoption with absence of latrines. This study also analyzed data on the presence of latrines, the question was designed to end once respondent answered no latrine presence and confirmed by the observation checklist.

e) Distribution of commitment in making positive change to end open defecation

The study pursued to examined community and individual commitment in making positive changes to end OD and how it relates to long term goals, the study asked respondents how committed they were in making positive changes and the response as shown on table 4.18. The results revealed key insights. Among the 382 respondents, the majority 53.14% agreed with the notion of making a positive change, while a smaller proportion (8.90%) disagreed. A notable portion (19.37%) expressed a neutral stance, and a significant number (18.32%) strongly agreed. However, only a minimal fraction (0.26%) strongly disagreed with the idea. These findings suggested that there is overall

support for the initiative to end OD, with a notable portion showing strong commitment. When considering the self-regulation factors influencing the sense of making a positive change to end OD practices, several implications arise from the distribution of responses. The high percentage of respondents who agreed or strongly agreed with the commitment suggested a strong intrinsic motivation to contribute to the cause. Factors such as personal values, community norms, and perceived benefits of ending open defecation likely play a significant role in shaping this commitment. Additionally, the presence of a considerable neutral stance indicates potential barriers or uncertainties that may hinder individuals' willingness to actively engage in efforts to end open defecation.

4.4.8 Logistic regression on self-regulation factors influencing adoption of community-led total sanitation

To further attest the responses as regards in the decision model, logistic regression analysis was conducted to explore the relationship between independent variables under self-regulation factor and the dependent variable latrine presence as shown on table 4.19. The model exhibits statistical significance (F-statistic: 4.216, p-value: 6.58e-12), suggesting that at least one independent variable significantly affects latrine presence. The model explained approximately 27.9% of the variability in latrine presence, as indicated by the R-squared value of 0.279. However, AOR value of 0.213 suggests a slight reduction in the model's explanatory power when accounting for the number of predictors. Among the independent variables, reminders for OD prevention which was disagree by respondents with 81 (21.20%), self-obligation to stop OD which respondents were neutral about it, and community obligation to stop OD which respondent disagree show statistical significance ($p<0.05$), indicating their impact on latrine presence, for instance, a one-unit increase in self-obligation to stop OD with a neutral attitude is associated with a decrease of approximately 0.4403 units in latrine presence.

Table 4. 18

Logistic regression analysis on self-regulation influencing Adoption of community-led total sanitation

Dependent variable. Latrine presence		R-squared 0.279 AOR 0.213 F-statistic 4.216				
Independent variable	Co-eff	Std err	t	p>|t|	0.025%	0.975%
Remembering OD prevention	-0.9139	0.456	-2.003	0.046	-1.811	-0.017
Reminders for OD prevention	-0.2292	0.096	-2.395	0.017	-0.417	-0.041
Self-obligation to stop OD	0.4403	0.104	-4.231	0.000	-0.645	-0.236
Community obligation to stop OD	-0.2803	0.134	-2.095	0.037	-0.543	-0.017

Source: Researcher, (2023)

The regression equation for self-regulation on adoption of community-led total sanitation was given as Latrine Presence= β_0- 0.9139 (Remembering OD prevention)- 0.2292 (Reminders for OD Prevention)+ 0.4403 (Self-Obligation to stop OD)-02803 (Community Obligation to stop OD). Remembering OD Prevention (−0.9139), a unit increase in the ability to remember OD prevention is associated with a 0.9139 unit decrease in latrine presence. Statistically significant ($p = 0.046$), but counterintuitive. Suggested that people without latrines tend to focus more on remembering preventive messages as a coping mechanism. Reminders for OD Prevention (−0.2292), regular exposure to reminders is linked with a decrease in latrine presence by 0.2292 units. Also, significant ($p = 0.017$), possibly indicating that reminders are more common in areas where OD is still prevalent in lower latrine coverage.

Self-Obligation to Stop OD (+0.4403), a unit increase in internal motivation (self-obligation) correlates with a 0.4403 unit increase in latrine presence. Highly significant ($p = 0.000$), showing that personal accountability is a strong positive predictor of adopting latrine use. Whereas, community Obligation to Stop OD (−0.2803), a unit

increase in perceived external or community pressure corresponds to a 0.2803 unit decrease in latrine presence. Significant ($p = 0.037$), but again, the negative sign is unexpected, possibly suggesting that external pressure alone is ineffective without internal commitment or enabling conditions.

The findings suggested that although several variables appear to influence latrine presence, some variables like reminders for OD prevention which was disagreed by respondents, self-obligation to stop OD which respondents were neutral about it, and community obligation to stop OD which was disagreed stand out as principally impactful. These variables indicated an essential link between behavioral of self-efficacy and the presence of latrines. The analysis provided valuable insights that could guide interventions aiming to increase latrine usage. Focusing on factors such as reminders for OD prevention, individual self-obligation, and community obligation could lead to more effective strategies in promoting latrine usage, thus contributing to improved sanitation and public health outcomes the findings are in line with a study by (Ntaro *et al*., 2022).

Further research could delve into the specific mechanisms through which these variables influence latrine presence, allowing for more targeted and effective interventions. Qualitative results further ascertain that self-efficacy is vital in declaring a community to be an open defecation free, while quantitative date showed that consistent following good sanitation was the only significant predictor which is also agreed by qualitative data collected during FGD discussion, one of the village elders was noted saying.

"We know that it is hygienic to wash hands after visiting toilets, we were taught by officers, but it is hard to keep buying soap because the cost of living is hard, additional water scarcity is a major challenge here. We cannot allow young goats and sheep to die of thirst since they cannot walk long distance just because to wash hands''. (Men Elder).

CHAPTER FIVE: CONCLUSION, RECOMMEDATIONS AND PUBLICATION

5.1 Introduction

This chapter provided a summary of the study findings based on psychosocial factors influencing adoption of CLTS where latrine presence was used as a measure of adoption. The psychosocial factors were treated as independent variable with various sub-variables as discussed in chapter four and adoption of community-led total sanitation as dependent variable, this chapter further present conclusion and recommendation based on the findings.

5.2 Summary of RANAS model

The study applied the RANAS behavior change model—comprising Risk, Attitude, Norms, Ability, and Self-regulation—to explore factors influencing sanitation practices, revealing key findings across all five blocks. Notable results included significant roles of knowledge on health risks, neutral attitudes toward open defecation, strong injunctive social norms, individuals' ability to maintain hygiene, and self-efficacy in remembering and practicing proper sanitation. While the model provided a structured framework for analyzing behaviors, its application highlighted challenges such as reliance on self-reported data and the resource-intensive nature of data collection. The study emphasized that for interventions to be effective and sustainable, they must address the identified behavioral drivers while being context-specific and culturally sensitive.

Table 5. 1

RANAS Model description

RANAS BLOCK	
Block	Description
Risk	Perception of Health Risks associated with Poor Sanitation
Attitude	Individual Beliefs and Feelings Towards Sanitation Practice
Norms	Social and Cultural Influences Shaping Sanitation Practices
Ability	Individual Capacity and Skills to Perform Sanitation Behaviors
Self-Regulation	Control Mechanism and Monitoring of Sanitation Practices

Source: Mosler,H.J (2012)

5.2.1 Health risk factors on adoption of community-led total sanitation

The first objective of this study was to investigate the influence of perceived vulnerability and susceptibility to sanitation-related diseases on the adoption of community-led total sanitation in Turkana Central Sub-County, Turkana County. The results from analysis yielded a statistically significant p-value of 0.00753, which suggested that at least one independent variable significantly relates to the presence of latrines within the community. Although understanding and awareness failed to reach statistical significance, an increase in knowledge regarding cholera vulnerability and susceptibility is associated with a higher likelihood of latrine presence within the community. Although the regression model as a whole was found to be statistically significant, it explains only a small proportion of the variance in latrine presence of 3.1% an indicator of CLTS adoption. Among the factors examined, only knowledge emerges as a significant predictor with p=0.005, underlining its importance in influencing latrine presence within the community, and thus the adoption of community-led total sanitation programs to achieve open defecation-free status. Additionally, multiple regression analysis shown that demographic characteristic such as education had impact on knowledge, awareness and understanding with a p=0.000.

In conclusion the analysis reveals that among the behavioral factors examined—understanding of disease transmission, awareness of sanitation-related risks, and knowledge of good hygiene—only knowledge significantly influences the presence of latrines in Turkana Central Sub- County. This underscores that while awareness and understanding are necessary, they are not sufficient to drive the adoption of improved sanitation practices unless translated into practical, actionable knowledge. Therefore, efforts to promote latrine adoption under the CLTS approach should prioritize enhancing community knowledge on hygiene, as this has a demonstrable impact on behavior

change and the uptake of safe sanitation facilities. Thus, it is recommended that CLTS interventions place a particular focus on knowledge enhancement, ensuring that communities are better informed, which can lead to a higher likelihood of adopting improved sanitation practices, thereby reducing the prevalence of open defecation and related health issues.

5.2.2 Attitude on adoption of community-led total sanitation

The second objective of this study was to examine the influence of attitude on adoption of community-led total sanitation in Turkana central sub-county, Turkana County. The results from logistic regression analysis reveals that three variables, feeling disgusted, feeling neutral, and attitude towards the benefits of OD which respondents said it is a traditional practice, stand out as statistically significant predictors ($p < 0.05$) of CLTS adoption. The feeling of disgust invoked by the CLTS triggering process is crucial in influencing individuals' behavior towards adopting CLTS practices, as recognizing the importance of sanitation in preventing disease can motivate improvements in sanitation facilities. Conversely, a neutral attitude towards sanitation practices indicates a lack of strong feelings but still impacts adoption behavior. The significance of attitudes towards the benefits of open defecation suggests that perceived benefits of traditional sanitation practices influence the adoption of CLTS, highlighting the need to understand local contexts and traditional practices in sanitation interventions

The significance of feeling disgusted, feeling unaffected, and attitudes towards the benefits of OD as predictors in the regression model highlights the multi-dimensional nature of attitudes towards sanitation practices. It underscores the importance of psychosocial factors in shaping individual behaviors and decision-making processes related to sanitation. The feeling of disgust, whether towards unsanitary conditions or traditional practices, can serve as a powerful motivator for change.

In conclusion given that psychological elements differ among groups, the importance of perceived attitudes toward costs, benefits, and traditional beliefs emphasizes the necessity for promoters to employ culturally appropriate techniques. It is recommended that promoters should focus on attitudes because they have a big influence on adoption. They can do this by teaching communities about the advantages and encouraging the ownership of clean, well-maintained latrines with privacy features. By concentrating on these elements, positive attitudes and regular latrine usage can be promoted.

5.2.3 Social norms on adoption of community-led total sanitation

The third objective of this study was to assess the influence of community norms perception on adoption of community-led total sanitation. The regression analysis model exhibited statistical significance ($F = 3.984$, $p = 4.36e\text{-}10$), indicating predictive capability. An R-squared of 0.240 suggested that 24% variability in latrine presence. The significant predictors included community disagreement, family and friends' disapproval, neutrality, and guideline attitudes. However, some variables lack significance ($p > 0.05$). Adjusted R-squared (0.180) accounts for predictors. Despite explaining variance, limitations exist in predictive ability due to residual diagnostics. Although R-squared value is limited R-sq 0.240 it necessitating caution in predictions. Additional analysis and model refinement are crucial for enhancing predictive accuracy and understanding nuanced influences on latrine adoption.

The study recommends that to enhance understanding and effectiveness in promoting latrine presence, the promoters to conduct further analysis to reconnoiter non-significant predictors could unearth hidden influences on latrine adoption, this will provide valuable intuitions for targeted interventions. Additionally, thorough model diagnostics are essential to identify and rectify any inadequacies, ensuring the robustness of predictions. To advance the model by incorporating additional variables to capture complex

dynamics influencing latrine adoption, taking into account that community plays an important role in in shaping cultural and social factors influencing latrine adoption, facilitating the development of tailored interventions.

5.2.4 Ability factors on adoption of community-led total sanitation

The fourth objective of this study was to establish the influence of ability factors on adoption of community-led total sanitation. The findings reveal that at least one independent variable under the ability factor had a substantial impact on the presence of latrines, according to the OLS regression analysis which showed that the model is statistically significant with a relatively high F-statistic and a very low associated p-value (9.48e-08). Consistently indifferent toward sanitation techniques is the distinctive variable that showed up as a significant predictor with a p-value of less than 0.05. It implied that there would be fewer latrines in the homes of those who do not care to regularly exercise good hygiene.

In conclusion the impassive towards regular sanitation practice gives notion to be associated with absence of latrine. This therefore underscore the need to advocate and encourage regular practice of good sanitation behaviors. Based on the findings therefore, the study recommends that policy makers and promoters to develop public health campaigns that target raising of awareness and importance of consistent practice of good sanitation practices. Additionally, implement educational programs to inform individuals about the benefits of proper sanitation and hygiene habits.

5.2.5 Sanitation practices on adoption of community-led total sanitation

The last objective of the study was to examine the influence of sanitation practices on adoption of community-led total sanitation. The regression analysis reveals significance of the model with F- statistic of 4.216, p value of 6.58e-12, explaining 27.9% variability in latrine presence, with significant predictors which included reminders for open

defecation prevention, community obligation, self-obligation and attitude towards OD which all had a p value less than 0.05. This study concludes by pointing out variables under self-regulation influencing adoption of CLTS, among vital variable are reminders for open defecation prevention, individual self-efficacy and community obligation. The findings highlight the need of custom-made interventions targeting these factors to promote latrine usage, thereby enhancing sanitation and public health outcomes. Based on the findings, this study recommends that actors to prioritize interventions which will focused on reminders for open defecation prevention.

5.3 Suggestion for Future Research

Future research should explore additional factors influencing the adoption of Community-Led Total Sanitation (CLTS). It is important to investigate how these factors interact with psychosocial variables to gain a more comprehensive understanding of latrine construction and consistent use. The regression model used in this study demonstrated low predictive power, suggesting that future studies could employ alternative models and incorporate additional variables to better explain the adoption of sanitation interventions. Although this study utilized the RANAS model as a behavioral framework, there are several other models that researchers can apply in future studies to assess the effectiveness of intervention implementation more thoroughly.

5.4 Publication

Kibet, J.,& Kirimi, L.M.(2024). Influence of Perceived Health Risk Factors on Adoption of Community-Led Total Sanitation: A Case of Turkana Central Sub-County, Turkana County, Kenya. International Journal of Innovative Science and Research Technology (IJISRT), 9(9) 181-188.https:doi.org/10.38124/IJISRT24SEP284

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APPENDICES

Appendix A Publication

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Influence of Perceived Health Risk Factors on Adoption of Community-Led Total Sanitation: A Case of Turkana Central Sub-County, Turkana County, Kenya

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Abstract:- The primary objective of Sustainable Development Goal 6 target 2 is to achieve widespread accessibility to sufficient sanitation and hygiene facilities, therefore eliminating the practice of open defecation by the year 2030. One strategy for achieving this objective involves the implementation of Community-Led Total Sanitation (CLTS), a participatory method that allows communities to take on accountability for their sanitation behaviors. However, sustaining favorable changes after the implementation of the intervention continues to be a significant obstacle. The objective of this study was to investigate the influence of perceived health risk factors on adoption of Community-Led Total Sanitation. The study was carried out on the household members of Lodwar township and Kalokol ward, targeting a sample size of 382 respondents The research utilized a convergent design methodology, which combined quantitative and qualitative data collection methods, enabling the simultaneous gathering of both types of data. Quantitative data were collected using structured questionnaires and observation checklist, while qualitative data were collected from Focus Group Discussions. A stratified sampling technique was applied to group the village units into strata and simple random sampling used in selection of household heads. Qualitative results were structured into themes and direct quotes. The study determined that an increase in perceived knowledge regarding health risks was associated with a higher likelihood of latrine presence (p-value< 0.05). Findings from multiple regression analysis also showed that education level was a significant predictor for awareness, understanding, and knowledge (p=0.000<0.05), while gender demonstrated a significant negative relationship with awareness and understanding p= -0.2573, suggested males score lower in these areas compared to females. Age correlated positively with awareness and was marginally significant for understanding (p=0.043), indicating that older individuals had higher scores. The study concluded that increased knowledge regarding health risk in terms of vulnerability and susceptibility influenced latrine presence at the households and thus the adoption of community-led total sanitation programs in Turkana Central Sub-County. The study highlighted the critical role of knowledge in achieving open defecation-free status in the area. The study recommended that CLTS interventions by the Ministry of Health and sanitation implementers place a particular focus on knowledge enhancement, to ensure that communities are better informed, which could lead to a higher likelihood of adopting improved sanitation practices, thereby reducing the prevalence of open defecation and related health issues.

Keywords:- *Sustainable Development Goals, Community-Led Total Sanitation, Open Defecation, RANAS.*

I. INTRODUCTION

Community-Led Total Sanitation (CLTS) presents an inventive and participatory approach for addressing the pressing challenges of sanitation and hygiene within communities, particularly those located in rural and low-income areas (Larionova, 2020). The primary objective of CLTS is to attain the significant condition of having communities that do not practice open defecation through the facilitation of behavior change, heightened awareness, and the empowerment of communities to undertake collective actions that enhance sanitation practices. Through fostering a sense of ownership and intervention, Community-Led Total Sanitation guides communities towards autonomous development in sanitation, thereby cultivating enduring shifts in behavior and augmenting overall health and well-being. This approach harnesses the communal strength of societies to engender sustainable advancements in both sanitation and hygiene behaviors. Fundamental to this methodology is the creation of awareness, the instigation of behavioral shifts, as well as ending the practice of defecation without using the toilet through the mobilization and empowerment of communities (Venkataramanan, Crocker, Karon, & Bartram, 2018).

Appendix B. Household survey questionnaire

Dear Participant,

The researcher is conducting a questionnaire to investigate the influence of psychosocial factors on the adoption of Community-Led Total Sanitation (CLTS) initiatives. Your participation is highly valuable in helping us understand the role that psychosocial factors play in shaping individual and community decisions regarding sanitation practices. Community-led total sanitation is a community-based approach aimed at achieving sustainable sanitation improvements by empowering communities to take collective action. Psychosocial factors encompass a wide range of emotional, social, and psychological aspects that may influence the adoption or rejection of CLTS practices within communities.

Your responses will be treated with the utmost confidentiality, and no identifiable information will be disclosed. The data collected will be used solely for research purposes to gain insights into how psychosocial factors impact the adoption of CLTS initiatives. The questionnaire will cover various aspects, including individual beliefs, social norms, community dynamics, and perceptions related to sanitation practices. Your honest and thoughtful answers will help us identify potential barriers and facilitators that can inform the development of more effective strategies for promoting sanitation behavior change. By participating in this study, you will contribute to the advancement of knowledge in the field of public health and community development. Additionally, the findings may guide policymakers, practitioners, and organizations in implementing more targeted interventions to improve sanitation practices and overall community well-being.

Thank you for your time and willingness to take part in this survey. Your input is highly valuable, and together, we can make a positive impact on sanitation practices and community health.

If you have any questions or concerns about the questionnaire or the study, please do not hesitate to contact us.

Sincerely,

Kibet Jackson
Meru University of Science and Technology
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Tick in the box or fill where appropriate.

Section A: Personal details and Demographic Information.

1. What is your Gender?
   Male
   Female
   Other_____
2. How old are you?
   18-35
   36-50
   51& above
3. What is your marital status:
   - Single
   - Married
   - Divorced
   - Widowed
   - Other (please specify): _____
4. What is your highest level of education completed?
   - No formal education,
   - Primary education,
   - Secondary education,
   - Diploma level
   - Degree level
   - Maters
   - PhD level
5. Ability to Read/Write:
   - Can read and write
   - Can only read
   - Can only write
   - Cannot read or writ
5. What is your religion:
   - Catholic
   - Protestant
   - Muslim
   - Other (please specify): _____
6. Household Information:

How many people live in your households?

   - 1-5,
   - 6-10
   - 11and above
7. What is your average monthly income of the Family (in KES):
   - 3000 and below
   - 3001-15000
   - 1501-2500
   - 25000 and above
8. Environmental Factors:
   Risk of Flooding:
   - High
   - Moderate
   - Low
   - No risk

Soil Condition:

a. Clay:
   - Present
   - Not present
b. Rocky:
   - Present
   - Not present

Additional Information:

11. Any constant or fixed factors that may impact your living conditions or situation (please specify): _____

Section B: RANAS MODEL

- Risk factors; influence of perceived vulnerability and susceptibility to sanitation-related diseases.

Health Knowledge:

Please rate the following statements based on your level of agreement or understanding using a scale from 1 to 5, where 1 represents "Strongly Disagree" and 5 represents "Strongly Agree."

Circumstances and Possibilities of Contracting a Disease:

I understand the ways in which cholera can be transmitted.

- Strongly Disagree (1)
- Disagree (2)
- Neutral (3)
- Agree (4)
- Strongly Agree (5)

I am aware of the risk factors associated with contracting cholera.

- Strongly Disagree (1)
- Disagree (2)
- Neutral (3)
- Agree (4)
- Strongly Agree (5)

I know the preventive measures recommended for avoiding cholera

- Strongly Disagree (1)
- Disagree (2)
- Neutral (3)
- Agree (4)
- Strongly Agree (5)

I am knowledgeable about how to maintain good health and hygiene practices.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

Behavior and Disease Relationship:

I am knowledgeable about how open defecation can lead to the development of cholera.

- Strongly Disagree (1)
- Disagree (2)
- Neutral (3)
- Agree (4)
- Strongly Agree (5)

Vulnerability:

Please rate the following statements based on your perception of personal risk using the scale from 1 to 5, where 1 represents "Not at all Vulnerable" and 5 represents "Very Vulnerable."

Assessment of Personal Risk:

I believe that I am at risk of contracting cholera or typhoid.

- Not at all Vulnerable (1)
- Slightly Vulnerable (2)
- Neutral (3)
- Moderately Vulnerable (4)
- Very Vulnerable (5)

- Severity:

Please rate the following statements based on your perception of disease severity using a scale from 1 to 5, where 1 represents "Not Severe" and 5 represents "Extremely Severe."

Arousal of Fear:

I am deeply concerned about the severity of the consequences of contracting diarrhea.

- Not Severe (1)
- Slightly Severe (2)
- Neutral (3)
- Moderately Severe (4)
- Extremely Severe (5)

Causes of Diarrhea.

Please rate the following potential causes of diarrhea on a scale from 1 to 5, with 1 being "Not a cause" and 5 being "Definitely a cause."

Water contaminated by bacteria

- 1 (Not a cause)
- 2 (Slightly a cause)
- 3 (Neutral)
- 4 (Cause)
- 5 (Definitely a cause)

Mosquito bite

- 1 (Not a cause)
- 2 (Slightly a cause)
- 3 (Neutral)
- 4 (Cause)
- 5 (Definitely a cause)

Spicy food

- 1 (Not a cause)
- 2 (Slightly a cause)
- 3 (Neutral)
- 4 (Cause)
- 5 (Definitely a cause)

Raw water

- 1 (Not a cause)
- 2 (Slightly a cause)
- 3 (Neutral)
- 4 (Cause)
- 5 (Definitely a cause)

Attitude factors: Influence of Attitude on adoption of Community-Led Total Sanitation

Beliefs about Costs and Benefits:

Please indicate your level of agreement with the following statements about the costs on open defecation:

- Open defecation is convenient because it saves time.
- Open defecation is cost-effective because it requires no investment in toilets.
- Open defecation has minimal health risks.
- Open defecation is socially accepted in my community.

Please indicate your level of agreement with the following statements about the benefits of open defecation:

- Open defecation is a traditional practice in my community.
- Open defecation is a way to connect with nature.
- Open defecation helps in saving water.
- Open defecation is a way to maintain personal privacy.

Please indicate your level of agreement with the following statements about the social benefits of open defecation:

- Open defecation is seen as a sign of status in my community.
- People who practice open defecation are highly respected.
- Open defecation is appreciated by others in my community.
- Open defecation is a social norm in my community.

Feelings:

When I think about open defecation, I feel:

- Joyful
- Proud
- Disgusted
- Anxious
- Neutral

How do you feel about the consequences of open defecation in your community (e.g., environmental impact, health consequences)? Please rate your feelings using the following scale:

- Very Positive
- Positive
- Neutral
- Negative
- Very Negative

How would you describe your emotional state when you practice open defecation?

- Relaxed
- Embarrassed
- Content
- Guilty
- Unaffected

How do you think others in your community perceive your open defecation behavior? Please rate the following emotions:

- Approval
- Disapproval
- Respect
- Stigma
- Indifference

Norm factors: influence of community norms perception on adoption of community-led total sanitation

Perceived Social Pressure towards Open Defecation - Others' Behavior

Please rate the following statements on a scale of 1 to 5, with 1 being "Strongly Disagree" and 5 being "Strongly Agree."

People in my community often engage in open defecation.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

I frequently observe others practicing open defecation in my neighborhood.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

It is common for people in my community to defecate openly in public spaces.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

Others' (Dis) approval

Perceived Social Pressure Towards Open Defecation - Others' (Dis)approval

Please rate the following statements on a scale of 1 to 5, with 1 being "Strongly Disapprove" and 5 being "Strongly Approve."

My relatives or family members strongly disapprove of open defecation.

- Strongly Disapprove
- Disapprove
- Neutral
- Approve
- Strongly Approve

Most of my friends do not support the practice of open defecation.

- Strongly Disapprove
- Disapprove
- Neutral
- Approve
- Strongly Approve

Religious leaders in my community discourage open defecation.

- Strongly Disapprove
- Disapprove
- Neutral
- Approve
- Strongly Approve

Institutional Norms

Perceived Social Pressure towards Open Defecation - Institutional Norms

Please rate the following statements on a scale of 1 to 5, with 1 being "Strongly Against" and 5 being "Strongly in Favor."

There are clear guidelines from village or tribal authorities regarding open defecation.

- Strongly Against
- Against
- Neutral
- In Favor
- Strongly In Favor

My community has established rules and regulations against open defecation.

- Strongly Against
- Against
- Neutral
- In Favor
- Strongly In Favor

Recognized institutions in my community actively promote the use of proper sanitation facilities.

- Strongly Against
- Against
- Neutral
- In Favor
- Strongly In Favor

Ability factors: Influence of Ability Factors on Adoption of Community-Led Total Sanitation

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Perceived Physical Abilities:

I believe I have the physical ability to properly dispose of waste in a sanitary manner.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

I feel confident in my ability to use sanitation facilities correctly.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

Perceived Skills:

I have the necessary skills to maintain clean and hygienic sanitation practices.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

I believe I can effectively teach others about proper sanitation practices.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

Self-Efficacy:

I am confident that I can consistently follow good sanitation practices, even when faced with challenges.

- Strongly Disagree

- Disagree
- Neutral
- Agree
- Strongly Agree

I feel capable of handling sanitation-related problems and emergencies.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

Resources and Access:

I have easy access to the necessary tools and resources for proper sanitation.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

I believe that the sanitation facilities available to me are adequate for maintaining good hygiene.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

Social Support for Abilities:

My friends and family encourage and support me in practicing good sanitation habits.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

I feel that my community values and supports individuals who take responsibility for sanitation.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

Self- regulation: Role of Self-Regulation Factors on Adoption of Community-Led Total Sanitation.

Please rate your agreement with the following statements on a scale of 1 to 5, where 1 represents "Strongly Disagree" and 5 represents "Strongly Agree."

I have a clear plan for when I will stop open defecation.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

I have a clear plan for where I will stop open defecation.

- o Strongly Disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly Agree

I have a clear plan for how I will stop open defecation.

- o Strongly Disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly Agree

I have identified specific steps to take to stop open defecation.

- o Strongly Disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly Agree

Please rate your agreement with the following statements on a scale of 1 to 5:
I regularly monitor my progress toward ending open defecation.

- o Strongly Disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly Agree

I make corrections to my behavior when I realize I am not following my plan.

- o Strongly Disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly Agree

I am aware of when I deviate from my goal to stop open defecation.

- o Strongly Disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly Agree

Barrier Planning (Overcoming Obstacles)
Please rate your agreement with the following statements on a scale of 1 to 5:
I have identified potential obstacles that might hinder me from ending open defecation.

- o Strongly Disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly Agree

I have a plan in place to overcome obstacles that could impede my goal.

- o Strongly Disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly Agree

I am confident in my ability to overcome barriers to stopping open defecation.
Remembering (Recall of Behavior)
Please rate your agreement with the following statements on a scale of 1 to 5:
I find it easy to remember to practice open defecation prevention in key situations.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

I have reminders or cues in place to help me remember to stop open defecation.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

Commitment (Obligation)
Please rate your agreement with the following statements on a scale of 1 to 5:
I feel a strong obligation to myself to stop open defecation.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

I feel a sense of responsibility to my community to end open defecation.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

I am committed to making a positive change in ending open defecation.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

Communication:
I actively communicate with others about health and hygiene-related topics.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

Thank you for participating in this questionnaire.
Your responses will be kept confidential and will only be used for research purposes.

Appendix C. Focus group guide questions

Focus group discussion guide questions

Dear Participant,
Welcome to this Focus Group Discussion, where I aim to explore and gather valuable insights on the influence of psychosocial factors on the adoption of community-led total sanitation (CLTS). Your participation in this research is highly appreciated, and your input will contribute significantly to advancing our understanding of this critical area. As researcher, I recognize the importance of community-led total sanitation in promoting sanitation practices and improving public health. However, I also understand that the success and sustainability of CLTS initiatives can be greatly affected by various psychosocial factors. These factors may include individual beliefs, attitudes, social norms, cultural practices, and perceptions related to sanitation and hygiene.
Throughout this discussion, I encourage you to openly share your experiences, thoughts, and opinions regarding CLTS and how psychosocial factors might play a role in its adoption within your communities. Your firsthand knowledge and unique perspectives are invaluable in shedding light on the challenges and opportunities related to this issue. I will maintain a respectful and inclusive environment during the discussion, ensuring that everyone has an equal opportunity to voice their thoughts. Please feel free to elaborate on your experiences and provide concrete examples, as this will enrich our understanding of the topic. The insights gained from this discussion will help inform policymakers, organizations, and practitioners working in the field of sanitation and public health. By identifying the key psychosocial factors influencing the adoption of CLTS, we can develop more targeted and effective strategies to promote sustainable behavior change.
Before we begin, I want to emphasize that your participation is entirely voluntary, and your responses will be kept confidential and anonymized. If there are any questions or concerns at any point during the discussion, please don't hesitate to let me know. Once again, thank you all for joining this Focus Group Discussion. Your contributions will undoubtedly make a significant impact on our research and, ultimately, on the well-being of communities worldwide.
Let's commence the discussion and explore the intriguing dynamics between psychosocial factors and the adoption of community-led total sanitation.
Thank you.

1. What is the perceived health risk associate with sanitation which influence the adoption of CLTS?
2. What are community attitudes towards open defecation in your area that influence adoption of CLTS initiatives?
3. How can social norms and peer pressure play a role in influencing the adoption of CLTS practices?
4. What role do community empowerment and participation play in overcoming psychosocial barriers to CLTS adoption?

Appendix D. Observational checklist question

Introduction

Introduce yourself to households. Explain purpose for observation and obtain necessary permission. The purpose of this observation checklist is to systematically collect valuable information on the adoption of Community-Led Total Sanitation (CLTS) within a Kalokol and Lodwar township residents. This observation aims to gain insights into the level of acceptance, progress, challenges, and overall impact of CLTS initiatives on the community's sanitation practices.

Instructions for Researchers Assistants:

1. Familiarize yourself with the principles and objectives of Community-Led Total Sanitation (CLTS) to understand its essence and intended outcomes.
2. Ensure objectivity and avoid biases during data collection by maintaining a neutral and open mindset.
3. Record your observations in a structured manner, focusing on the key indicators outlined below.
4. Respect the privacy and cultural sensitivities of the community members throughout the process.

Latrine condition, structure, and design in various households within Kalokol and Lodwar Township.

S/No.	Characteristic	Responses	Code
1.	Latrine presence	Yes No	1 2
2.	Type of toilet facility the household has	Pit latrine without a Slab Pit latrine with slab VIP Flush Others	1 2 3 4 5
3.	Latrine wall construction material	Cement Iron sheet Wood Mud Mats and Polythene Stones Grass	1 2 3 4 5 6 7
4.	Latrine construction contributors	Individual household Government Joint community Developing partners (Mention any)	1 2 3 4
5.	Latrine sharing	Yes No	1 2
6.	Latrine shared by households	2-4	1

		5-9 10-15 16 above	2 3 4
7.	Feces visible inside the latrine	Yes No	1 2
8.	Presence of a fresh footpath leading to the latrine and a splash of urine or water on the latrine slab/floor	Yes No	1 2
9.	Cleanliness of the latrine	Clean Not clean	1 2
10.	Latrine cleaning time	Daily 2-5 days Weekly Monthly No cleaning	1 2 3 4 5
11.	Cleaning material present in the latrine	Yes No	1 2
12.	Does the latrine need urgent maintenance?	Yes No	1 2
13.	Latrine superstructure (Tick all that apply)	Wall Roof Door Window Pit slab	1 2 3 4 5
14.	Does the latrine have good illumination?	Yes No	1 2
15.	Distance of latrine from the living room (meter)	0-5 5-10 10-15 15-20 20 above	1 2 3 4 5
16.	Presence of a latrine cover on the squatting hole	Yes No	1 2
17.	Distance between the water source and latrine (meter)	< 10 ≥10	1 2
18.	Is water available for toilet use inside/near the latrine?	Yes No	1 2
19.	Presence of a handwashing facility near the latrine	Yes no	1 2
20.	Presence of water and detergent in the hand-washing facility.	Yes No	1 2

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Appendix E. Introductory letter Meru University of science and Technology

MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY
P.O. Box 972-60200 – Meru-Kenya.
Cell phone: +254 712 524293, +254 799 529958, +254 799 529959
Website: www.must.ac.ke Email: info@must.ac.ke

SCHOOL OF ENGINEERING AND ARCHITECTURE

DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

TO: Whom It may concern **DATE:** 18th October, 2023

Dear Sir/Madam,

RE: INTRODUCTORY LETTER FOR KIBET JACKSON TUWEI, REG NO. EG407/201425/21

The above-named, is a student in the Department of Civil and Environmental Engineering at Meru University of Science and Technology, pursuing a Master's degree in Sanitation. He has been approved to conduct research on **"Influence of Psychosocial Factors on Adoption of Community-Led Total Sanitation: A Case of Turkana Central Sub-County"** aimed at completing his studies. This is therefore, to request that you grant him any assistance needed to enable him meet the program requirements for his graduation.

Kindly contact us for any further enquiries.

Thank you

Mirara Simon W.
Chair of Department, Civil and Environmental Engineering
Meru University of Science and Technology

Email: CODcivilengineeing@must.ac.ke
Smirara@must.ac.ke

MUST IS ISO 9001:2015 CERTIFIED

Appendix F. National Commission for Science, Technology and Innovation License No. NACOSTI/23/30885

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **938162**

Date of Issue: **13/May/2024**

RESEARCH LICENSE

This is to Certify that Mr.. KIBET JACKSON of Meru University of Science and Technology, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Turkana on the topic: INFLUENCE OF PSYCHOSOCIAL FACTORS ON ADOPTION OF COMMUNITY-LED TOTAL SANITATION: A CASE OF TURKANA CENTRAL SUB-COUNTY for the period ending : 13/May/2025.

License No: **NACOSTI/P/24/30885**

938162

Applicant Identification Number

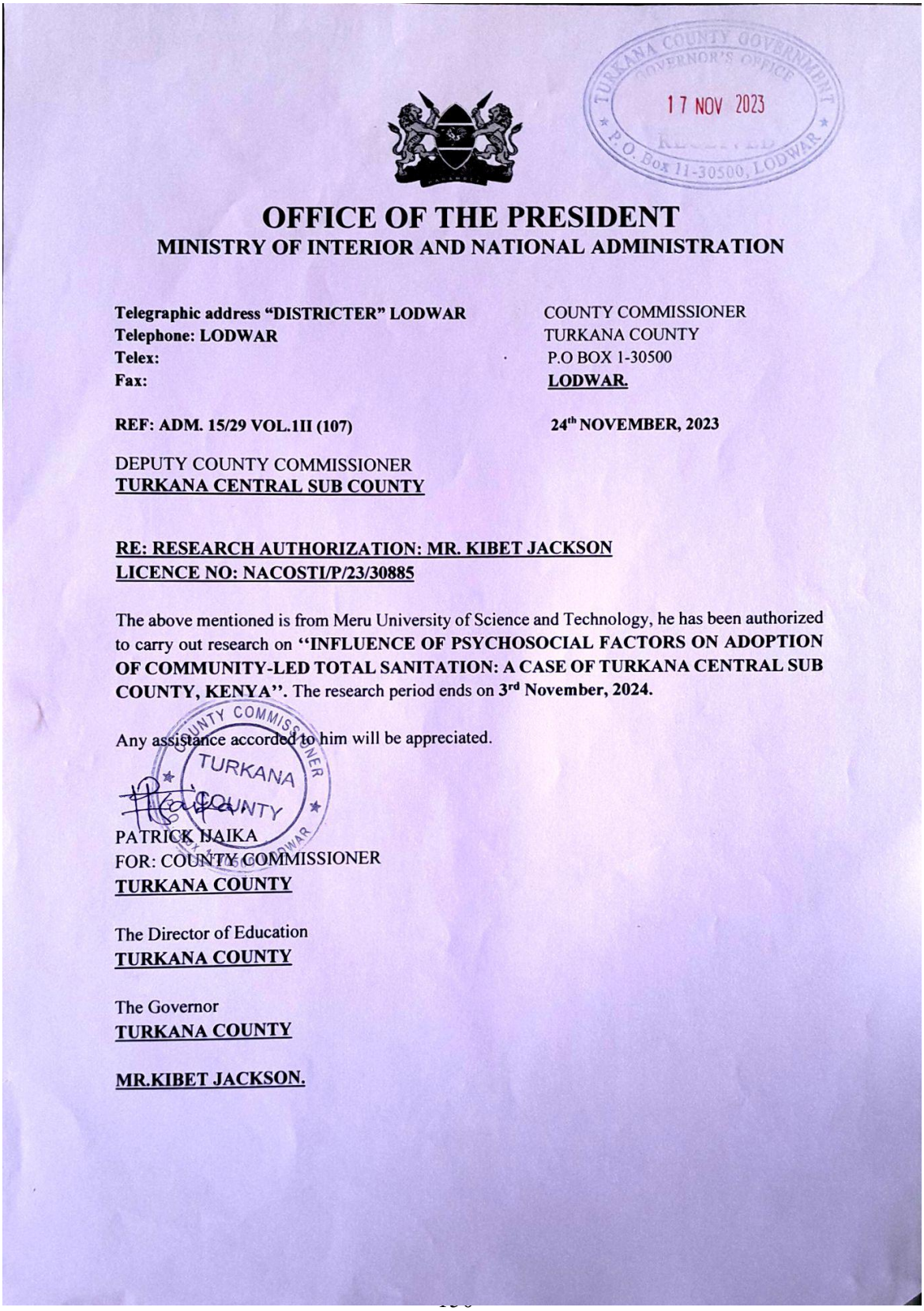
Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

See overleaf for conditions

Appendix G. Approval letter from office of the Governor and County Commissioner Turkana County



TURKANA COUNTY GOVERNMENT
GOVERNOR'S OFFICE
17 NOV 2023
RECEIVED
P.O. Box 11-30500, LODWAR

OFFICE OF THE PRESIDENT
MINISTRY OF INTERIOR AND NATIONAL ADMINISTRATION

Telegraphic address "DISTRICTER" LODWAR
Telephone: LODWAR
Telex:
Fax:

COUNTY COMMISSIONER
TURKANA COUNTY
P.O BOX 1-30500
LODWAR.

REF: ADM. 15/29 VOL.1II (107)

24th NOVEMBER, 2023

DEPUTY COUNTY COMMISSIONER
TURKANA CENTRAL SUB COUNTY

RE: RESEARCH AUTHORIZATION: MR. KIBET JACKSON
LICENCE NO: NACOSTI/P/23/30885

The above mentioned is from Meru University of Science and Technology, he has been authorized to carry out research on **"INFLUENCE OF PSYCHOSOCIAL FACTORS ON ADOPTION OF COMMUNITY-LED TOTAL SANITATION: A CASE OF TURKANA CENTRAL SUB COUNTY, KENYA".** The research period ends on **3rd November, 2024.**

Any assistance accorded to him will be appreciated.

COUNTY COMMISSIONER
TURKANA
COUNTY
P.O. BOX 1-30500, LODWAR

PATRICK IJAIKA
FOR: COUNTY COMMISSIONER
TURKANA COUNTY

The Director of Education
TURKANA COUNTY

The Governor
TURKANA COUNTY

MR.KIBET JACKSON.

Appendix H. Approval letter from Director of Education, Turkana County

REPUBLIC OF KENYA
MINISTRY OF EDUCATION
STATE DEPARTMENT OF BASIC EDUCATION

Telegram 'ELIMU', Lodwar
OFFICE,
Telephone 'Lodwar'054 21076
Fax/No: 054 21076
Email: cdeturkana@gmail.com
When replying please quote

TURKANA COUNTY EDUCATION
P.O. BOX 16- 30500,
LODWAR.

17TH NOVEMBER,2023

REF: ED/TUR/ADMIN/42

RE: RESEARCH AUTHORIZATION: MR. KIBET JACKSON
LICENSE NO: NACOSTI/P/23/30885.

This is to authorize Mr. Kibet Jackson a student from Meru University of Science and Technology, License No: **NACOSTI/P/23/30885** to carry out research on ***"INFLUENCE OF PYSCHOSOCIAL FACTORS ON ADOPTION OF COMMUNITY-LED TOTAL SANITATION: A CASE STUDY OF TURKANA CENTRAL SUBCOUNTY, KENYA."*** The research period ends on **3rd November, 2024.**

Accord him the necessary assistance.

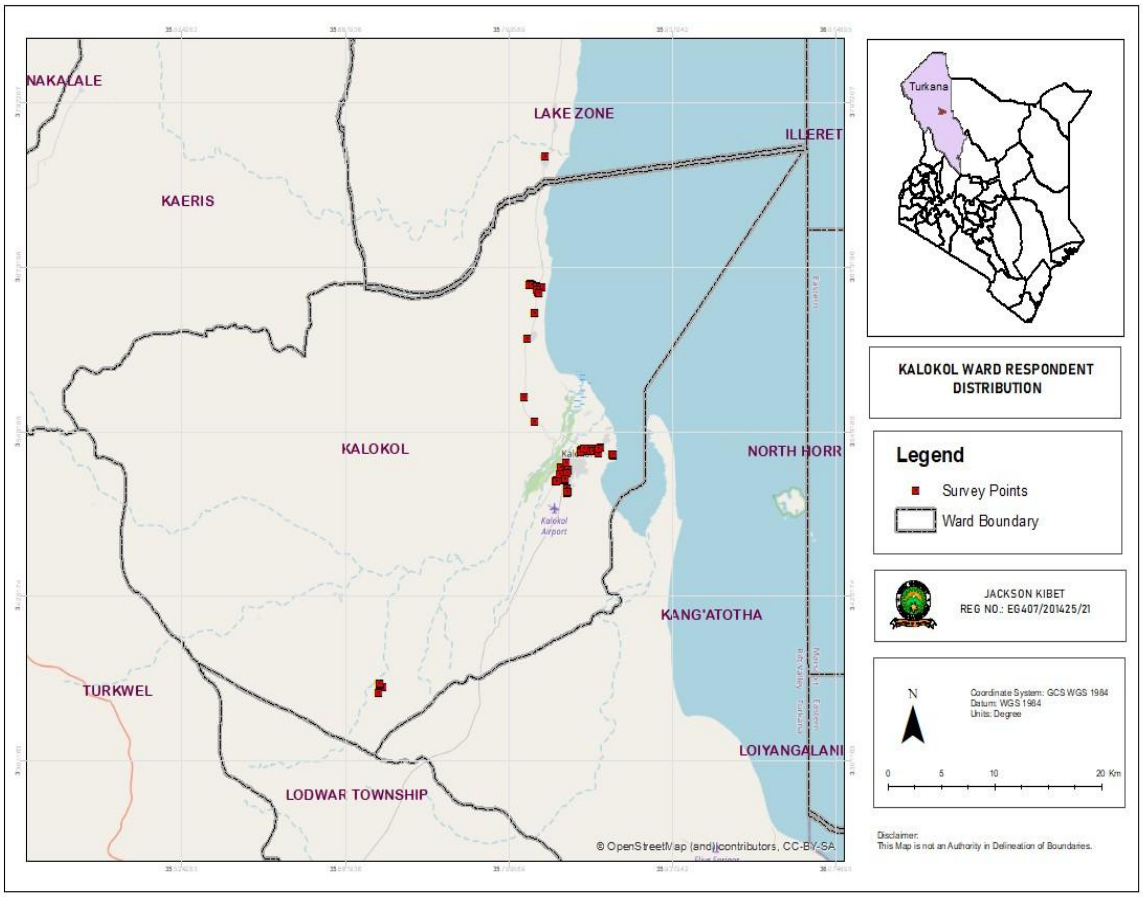
Thanks in advance.

MR. HENRY A. LUBANGA
COUNTY DIRECTOR OF EDUCATION
TURKANA COUNTY

COUNTY DIRECTOR OF EDUCATION
TURKANA COUNTY
P. O. Box 16 - 30500,
LODWAR

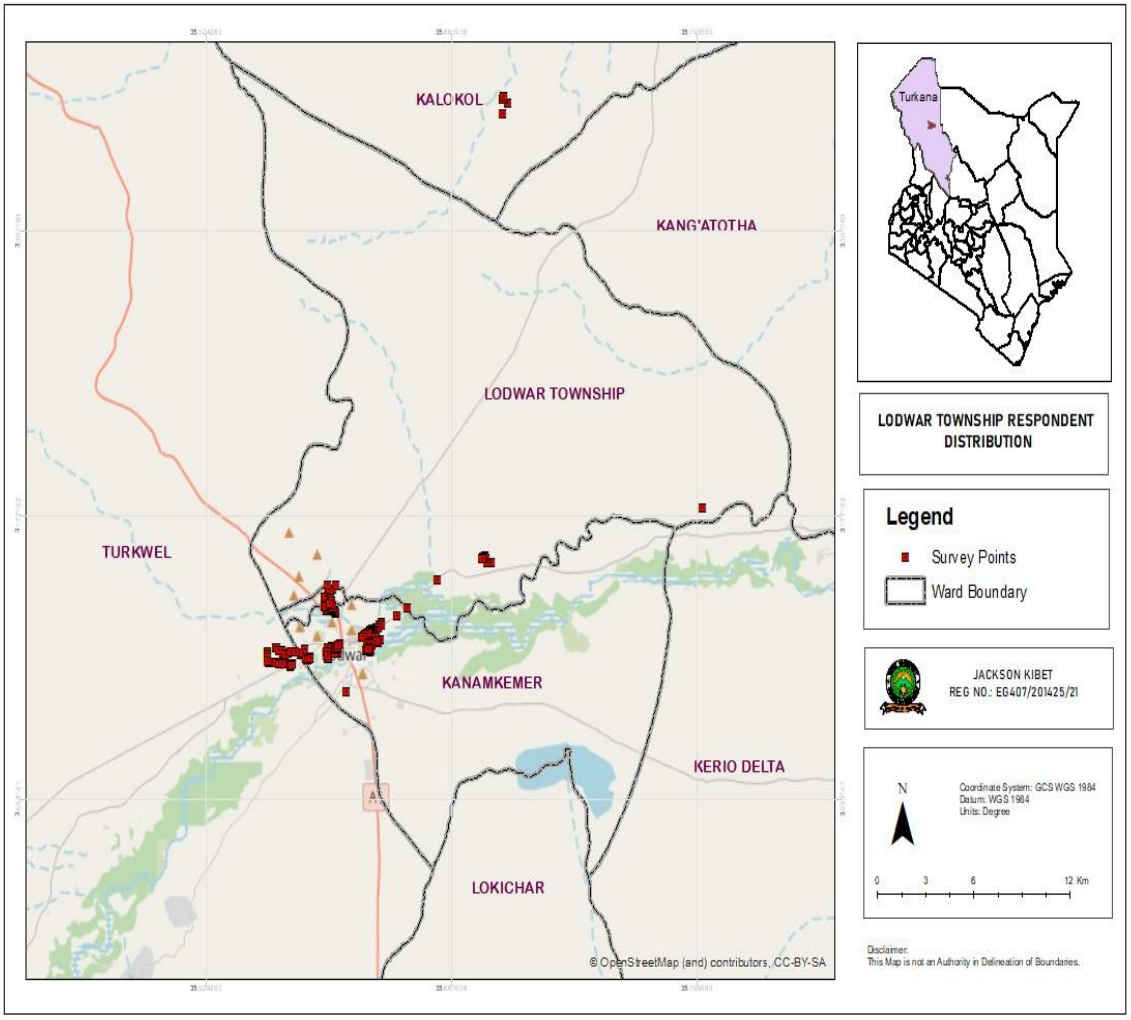
CC -**The County Commissioner Turkana County.**
- **Director General**
NACOSTI

Appendix I. Spatial distribution of respondents at Kalokol ward



Source: Researcher, (2023)

Appendix J. spatial distribution of respondents at Lodwar Township ward



Source: Researcher, (2023)

Appendix K. Qualitative data analysis of perceived health risk factors

RANAS model categories	*RANAS model sub categories*	*Description of the codes*	*Quotes Statement for adopting CLTS*	*Narration and themes.*
Risk factors	*perceived health risks*	*Diseases associated with individuals not living in an ODF environment*	*''The most prevalent illness is typhoid and sometimes cholera, but the issue in this area is that instead of getting tested to determine what illness a person has, they just go to the clinic and beg for medication when they feel sick'' are experiencing''. (Participant in FGD)*	*In the areas plagued by frequent outbreaks of typhoid and occasional cholera, residents often forego proper diagnosis and simply plead for medication at the clinic when they fall ill. This prevailing challenge presents a theme of healthcare accessibility and*

			reliance on symptomatic treatment over diagnosis in the community.
Perceived vulnerability	*Children were perceived as the ones most affected by the OD.*	*"Cholera is a common illness among children, despite efforts to provide treatment." (FGD, participant)* *"It is uncommon for elderly people to experience diarrhea, and when they do, they tend to blame their diet. Most speculate that it could be a result of eating or drinking subpar food or porridge, which caused an*	*Cholera remains prevalent among children, despite ongoing treatment efforts, according to a participant in the focus group discussion.* *Meanwhile, the elderly typically attribute diarrhea to dietary factors, such as consuming inferior food or porridge, suggesting a theme of perceived causes*

		adverse reaction in their stomach." (FGD, individual).	*and attributions of illness within the community.*
Perceived severity	*Low perceived severity if you live in a household without the ODF status*	*''Very few people sleep under mosquito nets and are aware that malaria may be fatal, but they are unaware that infections contracted from the toilet can also be fatal. They simply contract worms, take medicine, and recover. (FGD, individual)''.*	*During the FGD, it was noted that despite the awareness that malaria is lethal, few individuals in the community sleep under the mosquito net, highlighting a theme of limited understanding of the various risks of infections within the community.*

Appendix L. Qualitative data analysis of attitudes and norms factors

RANAS MODEL CATEGORIES	*RANAS model sub categories*	*Description of the codes*	*Quotes Statement for adopting CLTS toward ODF*	*Narration and themes.*
Attitude factors	*Positives and negatives: Costs/benefits for OD behavior*	*Importance attached to ODF components such as hand washing facility and latrine cover*	*"Few of those who have toilets do not have other components such has hand washing and superstructure such has pit cover also expose them to infectious".*	*The absence of latrines facilities exposes individuals to infectious diseases, this present critical need for complete sanitation infrastructure to safeguard public health.*
		Economic benefits attached to living in ODF environment and	*''Many households spend more money treating of typhoid, sometimes we are*	*Families investing in toilets and practicing good hygiene experience fewer instances of illnesses, pointing*

		health benefits attached to an ODF environment	*told there are amoeba, those who have toilets and maintain good hygiene do not go to clinics many times compared to us''.*	*significant health benefits of sanitation infrastructure and cleanliness practices.*
	Affective aspect	*Peaceful feeling when living in an ODF household*	*"Those who have toilets feel very proud and are respected in the community, but majority of them have jobs".*	*Toilet ownerships bring pride and respect within the community, often associated with employment status, indicating the societal value placed on both sanitation infrastructure and economic stability*
Norms factor	*descriptive norm (perceptions of ODF status by others)*	*Individuals living in households with ODF status were perceived to*	*"Those living in centers when they came to the villages they do not go to the bush to*	*Urban residents adapted to modern sanitation facilities find it disconcerting when visiting rural*

	Injunctive norm (perceptions of OD approved by important others	*be more educated. Individual washing hands after using toilet perceived as washing scanty resource of water on non-important things.*	*relief themselves, but us in the villages no one cares about it, but we feel guilty when visitors who comes from other places find no toilet or if there is toilet the status is very unhygienic".*	*areas lacking proper toilets, this highlights disparities in access to and maintenance of hygiene infrastructure between urban and rural communities.*

Appendix M. Qualitative data analysis for ability and self-regulation factors

RANAS MODEL CATEGORIES	*RANAS model sub categories*	*Description of the codes*	*Quotes Statement for adopting CLTs.*	*Narration and themes.*
Ability factors	*Confidence to achieve ODF Action knowledge for ODF items e.g. latrine items.*	*High confidence*	*''We have materials such as rock pebbles, Doum palm leaves, Prosopis sticks for roofing but we skills to construct are among the few and majorly men''.*	*In an area abundant with raw materials construction rests in the hands of a select few, primarily men. Set against the backdrop of nature's bounty and human ingenuity, a theme of harmony, tradition, and the triumph of skill.*

Self-regulation factors	*Capability to plan and self-monitor including managing contradictory goals and distractions*	*Discouragement related to loss or destruction of an ODF component Commitment to replacing destroyed or missing ODF components such as hand washing facility.*	*‘‘our soils are poor, sandy soils, constructing toilet here need extra lining with cement from the bottom pit, the cost of constructing a single pit goes beyond 50,000 therefore expensive to maintain thus people goes back to OD once the construct collapse, exhausts do not exhaust pits because they say there are solid materials that will clog their*	*The community grappling with poor sandy soils and high construction costs for toilets, the cycle of OD persists as structures collapse. Despite knowledge of hygiene practices, the struggle for basic necessities like soap and water underscores the harsh*

		equipment's''. ''We know that it is hygienic to wash hands after visiting toilets, we were taught by officers, but it is hard to keep buying soap because the cost of living is hard, additional water scarcity is a major challenge here. We cannot allow young goats and sheep to die of thirst since they cannot walk long distance just because to wash hands''. (FDG participant from	*reality of balancing human needs with resource scarcity. Theme of Intersection of Hygiene and Livelihood: Crossing Challenges in Sanitation amongst resource limitations.*

Kakwanyang).

Appendix N. Plagiarism report

DrillBit

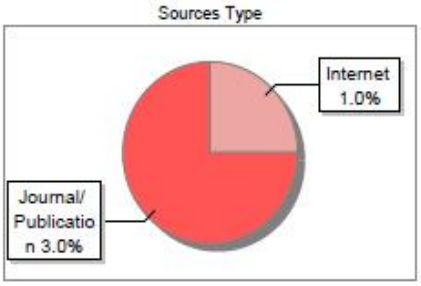
The Report is Generated by DrillBit Plagiarism Detection Software

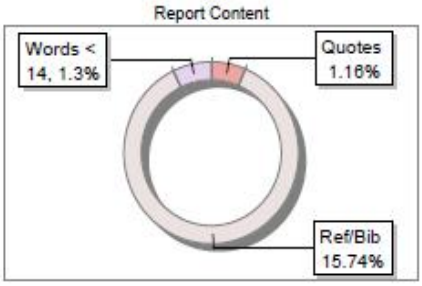
Submission Information

Author Name	KIBET JACKSON
Title	INFLUENCE OF PSYCHOSOCIAL FACTORS ON ADOPTION OF COMMUNITY-LED TOTAL SANITATION: A CASE OF TURKANA CENTRAL SUB-COUNTY
Paper/Submission ID	1852755
Submitted by	mmusungu@must.ac.ke
Submission Date	2024-05-22 18:45:02
Total Pages, Total Words	150, 37903
Document type	Thesis

Result Information

Similarity 4 %





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