INFLUENCE OF SOCIAL, CULTURAL AND HOUSEHOLD ABILITY FACTORS ON ADOPTION OF COMMUNITY-LED TOTAL SANITATION (CLTS) IN LAISAMIS SUB COUNTY, MARSABIT COUNTY, KENYA

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DECLARATION

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

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DEDICATION

I dedicate this thesis to my dear wife, Saisan Kopir and chidren, Deraso, Hamad, and Malabey.

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ABBREVIATIONS AND ACRONYMS

CLTS	Community Led Total Sanitation.
GoK	Government of Kenya.
HH	Households.
KDHS	Kenya Demographic Health Survey.
KIIs	Key Informant Interviews.
KNBS	Kenya National Bureau of Statistics.
MoH	Ministry of Health.
OD	Open defecation.
ODF	Open Defecation Free.
SDGs	Sustainable Development Goals.
UNICEF	United Nations Children's Fund.
WASH	Water Sanitation and Hygiene.
WHO	World Health Organization.

OPERATIONAL DEFINITION OF TERMS

Ability factors	Capacities of households that affect people's potential in adopting the desired behaviours or practices
Community-Led: Total Sanitation	An integrated approach to achieving and sustaining open defecation-free (ODF) status. It entails the facilitation of the community's analysis of their sanitation profile, their practices of defecation and the consequences, leading to collective action to become ODF
Cultural factors	Behaviours, customs, beliefs, and traditions of a community that shape people's identity and influence their perception towards sanitation matters
Latrine/toilet	This is a simple toilet facility used for the disposal of human waste. It typically consists of a hole in the ground or a pit, which is covered by a toilet seat or a squatting platform
Natural Leaders	Are activists and enthusiasts who emerge and take the lead during clts processes. Men, women, youths and children can all be natural leaders. Some natural leaders become community consultants, and trigger and provide encouragement and support to communities other than their own
Open defecation	Defecating in the open and leaving feaces and urine exposed
Open defecation-free community	A community that does not defecate in the open
Pit-latrine	Type of a latrine that consists of a hole in the ground or a pit lined with concrete or other materials. It's a common type of a toilet facility used in areas without access to modern plumbing and sewerage systems, such as rural areas, refugee camps and emergency situations
Social factors	Aspects in a community that influence people's lifestyles

Household	A unit where a group of people live together and share a common compound

ABSTRACT

Community-Led Total Sanitation (CLTS) is a behaviour change approach designed to promote sustainable and equitable access to sanitation and hygiene. Despite more than a decade of CLTS implementation in Kenya, open defecation persists, particularly in low-income and pastoralist communities. This study investigated the influence of social, cultural, and household ability factors on the implementation of CLTS in Laisamis Sub-County, Marsabit County, Kenya. A descriptive study design employing a mixed-methods approach was used. The sample comprised 393 randomly selected household heads across five wards in the sub-county, treated as strata. Quantitative data were analyzed using descriptive and inferential statistics, while qualitative data from focus group discussions were thematically analyzed and presented narratively. Findings revealed that natural leaders played a critical role in mobilizing communities to construct latrines following CLTS interventions (Unadjusted OR = 1.576; 95% CI: 1.245–3.476; p = 0.042). Although 63.3% of participants reported increased awareness of the health risks associated with open defecation, the practice remained prevalent. This was largely attributed to pastoralist livelihoods, where herders spent extended periods in grazelands lacking toilet facilities (Unadjusted OR = 4.094; 95% CI: 0.145–2.856; p = 0.000). Cultural taboos surrounding toilet sharing between adults and children also hindered utilization (OR = 0.67; 95% CI: 0.345–4.567; p = 0.002). While CLTS encouraged latrine construction, many of the facilities were poorly constructed from weak, locally available materials. Household income levels significantly influenced latrine quality, with lower-income households being 63.4% less likely to construct durable facilities. Additionally, over 90% of participants perceived human fecal matter as no more harmful than animal waste, undermining sanitation behaviour change. Gender roles further complicated implementation, with women bearing responsibility for toilet construction while men, often in the field, showed limited engagement with sanitation improvements. The study concludes that although CLTS has contributed to increased awareness and some behavioural change, its effectiveness is constrained by socio-cultural norms, economic limitations, and gendered responsibilities. To enhance outcomes, CLTS programs should be tailored to the local context and include both men and women in triggering events and behaviour change communication strategies aimed at eliminating open defecation across all environments.

CHAPTER ONE:INTRODUCTION

This chapter gives the background of the study, stating the problem, objectives, research questions, justification of the study, its significance, assumptions, limitation and delimitation.

1.1 Background of the Study

Access to adequate sanitation and hygiene remains a critical global development priority. Sustainable Development Goal (SDG) 6.2 aims to achieve universal access to equitable sanitation and hygiene and eliminate open defecation (OD) by 2030 (United Nations, 2015). Despite ongoing global efforts, progress has been uneven. The WHO/UNICEF Joint Monitoring Programme (JMP, 2021) reports that approximately 3.6 billion people still lack access to safely managed sanitation, and 494 million continue to practice open defecation. This situation contributes significantly to the burden of sanitation-related diseases, including cholera, typhoid, and diarrheal illnesses, which collectively account for an estimated 760,000 deaths annually (Kouassi *et al*., 2023).

Regionally, sub-Saharan Africa and parts of South and Central Asia face severe sanitation challenges. In these areas, 92% of individuals who practice OD live in rural communities where traditional beliefs, environmental constraints, and poverty hinder the uptake of improved sanitation systems such as Community-Led Total Sanitation (CLTS) (WHO/UNICEF, 2021). CLTS is a community-driven behaviour change strategy designed to eliminate OD through collective triggering activities that evoke emotions such as shame, fear, and disgust to motivate community action (Kouassi *et al*., 2023).

In Kenya, 9% of the population still practices OD, and only 33% of households use toilets that effectively separate human excreta from contact (WHO/UNICEF, 2021). The

limited adoption of CLTS in Kenya has been attributed to various factors, including economic constraints and household-level barriers. The inability to afford construction materials is a significant challenge, with 27% of households identifying cost as the primary reason for not adopting improved sanitation. Additionally, slippage where communities revert to OD even after being declared open defecation free remains a persistent challenge (Jerneck *et al.,* 2016).

While CLTS has recorded success in certain contexts, evidence suggests that knowledge alone is insufficient to drive sustained behavioural change. In Ghana, Harter *et al.* (2019) found that despite triggering activities, OD persisted due to deeply rooted cultural norms and a lack of technical skills for latrine construction. Complementary interventions, such as training community leaders in latrine building and addressing cultural barriers, were found to be essential. Similarly, Crocker et al. (2016) reported that training natural leaders in Ghana led to a 19.9 percentage-point reduction in OD, although 64% of participants still faced sociocultural constraints.

Economic limitations further hinder sanitation adoption. In Haiti, Paul *et al*. (2022) reported that low-income households were 2.1 times more likely to engage in OD than their wealthier counterparts. In Siaya County, Kenya, Wasonga *et al.* (2023) identified cost as a primary obstacle to toilet construction, especially among economically disadvantaged groups. Inadequate sanitation infrastructure exposes communities to human waste, increasing their vulnerability to enteric diseases.

Despite CLTS's contribution to improving sanitation behaviours, its strict zero-subsidy model raises questions about its suitability for extremely poor communities. Without external support, many households struggle to construct durable toilets. This study,

therefore, examines the extent to which household ability factors including income, material availability, and labour influence the implementation and sustainability of CLTS. Cultural norms also significantly affect sanitation behaviour. Among the Mijikenda in Kwale County, Kenya, for instance, sharing toilets with respected relatives is considered taboo, which reinforces the persistence of OD (Omar, 2021). Similarly, Paul *et al.* (2022) found that cultural beliefs prohibiting toilet sharing were associated with a 1.5-fold increase in OD in Haiti. Such beliefs perpetuate sanitation challenges, particularly in marginalized communities, where recurring illness due to poor hygiene diverts scarce resources and deepens poverty.

Understanding the influence of context-specific sociocultural and household-level factors is critical for improving the design and impact of CLTS interventions. In northern Kenya, pastoralist communities such as those in Laisamis Sub-County, Marsabit County face unique constraints, including seasonal mobility, communal land use, and strong traditional practices. These factors may hinder effective adoption of sanitation initiatives. Accordingly, this study investigates how sociocultural and household ability factors influence the implementation of CLTS in this specific local context.

1.2 Problem Statement

The Ministry of Health introduced Community-Led Total Sanitation (CLTS) in Kenya in 2017 as a key strategy to eliminate open defecation and improve sanitation outcomes. However, the implementation of CLTS in Marsabit County has achieved only limited progress. According to the County Government of Marsabit (2020), only 34% of the community facilitators designated to oversee CLTS implementation were trained, reflecting significant capacity gaps. Furthermore, due to a shortage of adequately trained

personnel, the ratio of community facilitators to villages remains low, making effective execution of CLTS programs difficult (County Government of Marsabit, 2020). Data from the Ministry of Health (2017) indicates that only 22% of villages in Marsabit County have been triggered to initiate CLTS activities.

The predominantly pastoralist lifestyle of Marsabit County residents presents additional challenges for sustaining proper sanitation practices. Frequent mobility, traditional settlement patterns, and limited access to sanitation infrastructure hinder the adoption of permanent latrine facilities. Moreover, sociocultural norms and taboos among pastoralist communities have been identified as significant barriers to CLTS adoption, particularly with regard to toilet use and sharing.

As a result, the low uptake of CLTS has contributed to persistent open defecation and poor sanitation practices, which expose communities to a heightened risk of sanitation-related diseases. According to WHO/UNICEF (2022), these diseases remain among the leading causes of child morbidity and mortality in low-income countries, where children's immune systems are often already compromised. Despite CLTS being promoted globally as an effective and participatory approach to ending open defecation, its implementation success varies greatly depending on local context (Abebe & Tucho, 2020). In pastoralist settings such as Laisamis Sub-County, the interplay of socio-cultural norms, traditional beliefs, and household-level constraints plays a critical role in determining CLTS outcomes.

Currently, there is limited empirical research that specifically explores the social, cultural, and household-level factors influencing the adoption of CLTS in Laisamis Sub-County. While some studies have examined general implementation challenges across Kenya, few

have provided in-depth analysis of the unique barriers faced by pastoralist communities in this region. This lack of localized data presents a significant gap in the understanding of CLTS adoption dynamics in Marsabit County.

This study therefore seeks to address this gap by examining the influence of social, cultural, and household ability factors on the implementation of CLTS in Laisamis Sub-County. The findings are expected to generate context-specific insights that can inform the design of more effective, culturally sensitive, and sustainable sanitation interventions not only in Marsabit County but also in other rural and pastoral regions facing similar challenges across Kenya and beyond.

1.3 Research Objectives

This section outlines the research's main and specific objectives

1.3.1 Main objective

To examine the influence of social, cultural, and household ability factors on adoption of community-led total sanitation (CLTS) in Laisamis sub-county, Marsabit County, Kenya**.**

1.3.2 Specific objectives

The study was guided by the following specific objectives:

i. To establish the influence of social factors on adoption of Community-led total sanitation (CLTS) in Laisamis sub-county, Marsabit County, Kenya.
ii. To examine the influence of cultural factors on adoption of Community-led total sanitation (CLTS) in Laisamis sub-county, Marsabit County, Kenya.
iii. To determine the influence of household ability on adoption of community-led total sanitation (CLTS) in Laisamis sub-county, Marsabit County, Kenya.

1.4 Research Questions

The following research questions which were formulated based on objectives guided the study:

i. How do social factors influence adoption of community-led total sanitation (CLTS) in Laisamis sub-county, Marsabit County, Kenya?

ii. What is the influence of cultural factors on adoption of community-led total sanitation (CLTS) in Laisamis sub-county, Marsabit County, Kenya?

iii. How do household ability factors influence adoption of community-led total sanitation (CLTS) in Laisamis sub-county, Marsabit County, Kenya?

1.5 Justification of the Study

Community-Led Total Sanitation (CLTS) was introduced in Laisamis Sub-County as a community-driven approach aimed at eradicating open defecation and improving sanitation without relying on hardware subsidies. Despite its introduction, there has been limited research and documentation on how this approach has been implemented and sustained at the sub-county and village levels. This lack of localized evidence constrains efforts to assess the impact of CLTS in the region and identify the factors influencing its success or failure.

Laisamis Sub-County, located in Marsabit County, is a semi-arid region characterized by low and erratic rainfall, limited access to clean water, and predominantly pastoralist livelihoods. These environmental and socio-economic challenges contribute to poor sanitation practices and a high prevalence of waterborne diseases such as diarrhea. Although CLTS offers a low-cost, participatory solution to sanitation issues, the

persistence of open defecation and inadequate sanitation coverage suggests that its effectiveness in Laisamis has not been fully realized.

Most existing studies on CLTS in Kenya have focused on national or county-level implementation, with little attention paid to the specific experiences of marginalized, arid regions like Laisamis. As such, there is a critical gap in knowledge regarding how social, cultural, and household-level factors influence the uptake and sustainability of CLTS interventions in this unique context.

This study is therefore justified by the need to produce context-specific, evidence-based insights into the barriers and enablers of CLTS adoption in Laisamis Sub-County. The findings are expected to contribute to academic literature on sanitation in resource-constrained environments and provide practical recommendations for policymakers, development partners, and public health practitioners working to improve sanitation outcomes in arid and underserved regions of Kenya and beyond.

1.6 Significance of the Study

The findings of this study are expected to contribute meaningfully to the development of evidence-based policies and implementation strategies related to sanitation and Community-Led Total Sanitation (CLTS) at both county and national levels in Kenya. By identifying and examining the specific social, cultural, and household factors influencing the adoption of CLTS in Laisamis Sub-County, the research provides critical insights that policymakers can use to tailor interventions more effectively. This can support more strategic and efficient allocation of resources, thereby enhancing the impact and sustainability of CLTS initiatives.

Moreover, the study offers practical value to sanitation practitioners working in Laisamis Sub-County and in similar arid and underserved regions. By illuminating the socio-cultural dynamics that shape sanitation behaviors in the community, the findings can inform the design of culturally appropriate, participatory, and context-specific interventions. These insights will assist in developing effective community engagement strategies, behavior change communication approaches, and sanitation infrastructure plans that are better aligned with the lived realities of the target population.

In addition to informing policy and practice, the study contributes to the existing body of research methodology on CLTS and sanitation programming. By exploring how social, cultural, and household variables interact with sanitation adoption, the research highlights effective tools for data collection, survey design, and analysis. These methodological contributions can guide future researchers in designing more robust and context-sensitive studies on sanitation behavior.

Furthermore, the study's findings can be disseminated to a broader audience of researchers, development practitioners, and public health stakeholders through academic publications, conferences, policy briefs, and stakeholder workshops. This will facilitate knowledge sharing and foster a collective understanding of the critical enablers and barriers to CLTS adoption. In doing so, the study supports a more holistic, evidence-driven approach to improving sanitation programming not only in Laisamis Sub-County, but also in other marginalized regions facing similar challenges.

Overall, the significance of this study lies in its potential to bridge the gap between theory and practice. By informing policy, guiding implementation, and advancing research

methodology, the study contributes to more effective, inclusive, and sustainable sanitation improvements in Kenya and comparable contexts.

1.7Assumptions of the Study

This study was conducted under several fundamental assumptions that were necessary to facilitate valid and reliable outcomes. Firstly, it was assumed that the respondents selected for participation would cooperate fully and provide responses that were honest, accurate, and reflective of their actual experiences and perceptions. The integrity of the data collected was dependent on the willingness of participants to engage meaningfully with the research tools.

Secondly, it was assumed that the sample selected for the study was representative of the wider population of Laisamis Sub-County. This assumption was important to ensure that the findings could be generalized to the broader community and not limited only to those who participated in the study.

Thirdly, the study assumed that the participants had adequate knowledge and awareness of sanitation issues, including Community-Led Total Sanitation (CLTS) activities and related social, cultural, and household dynamics. This was necessary to ensure that their responses were informed and relevant to the research objectives.

Lastly, it was assumed that the findings of the study would generate evidence-based insights capable of informing intervention programs aimed at improving sanitation practices. The study anticipated that these insights would support policy formulation, enhance community-level engagement, and contribute to the overall effectiveness and sustainability of CLTS initiatives in Laisamis Sub-County.

1.8 Study Limitations

The findings of this study have limited generalizability beyond the specific context of Laisamis Sub-County. Social, cultural, and household factors influencing sanitation practices may vary significantly across different regions, and as such, the results may not be directly applicable to other sub-counties, counties, or countries without considering the specific contextual dynamics of those areas.

Furthermore, the study may be subject to limitations associated with qualitative research, including potential biases in data interpretation. The subjective nature of social and cultural factors means that the perceptions of respondents, as well as the researchers' own perspectives, could influence the processes of data collection, analysis, and interpretation. Although every effort was made to minimize these risks through the use of a rigorous methodology, triangulation of data sources, and adherence to ethical research standards, some degree of subjectivity remains inherent in the research process.

1.9 Study Delimitations

This study was delimited to the examination of social, cultural, and household ability factors influencing the adoption of Community-Led Total Sanitation (CLTS) within Laisamis Sub-County, located in Marsabit County, Kenya. The scope of the research was confined to this specific geographical area and did not include assessments of CLTS implementation in other counties or national-level comparisons.

The study focused exclusively on the local context of Laisamis Sub-County and was limited to the period during which data was collected. As such, it does not capture potential changes in CLTS adoption or influencing factors that may occur beyond the research timeframe. Additionally, the study concentrated on community-level dynamics

and did not include broader institutional, policy, or infrastructural dimensions that may also impact sanitation adoption.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter included an empirical literature review, a conceptual framework, and a summary of the chapter. The empirical review encompassed scholarly literature from diverse disciplines such as public health, sociology, anthropology, and development studies, among others. It included studies that examined social and cultural factors, household dynamics, and the adoption of sanitation practices in rural settings. The review also encompassed studies that explored the efficacy and challenges of CLTS interventions in different contexts.

2.2 Adoption of Community-Led Total Sanitation

Community-led total sanitation is a participatory approach developed in the early 2000s as an alternative to conventional, hardware-focused sanitation interventions. It was introduced by Kamal Kar in Bangladesh, with the aim of empowering communities to collectively recognize and address the health and social consequences of open defecation (Kar and Chambers, 2008). This approach relies on local triggering methods to initiate behavioral change through collective awareness, often evoking feelings of shame, pride, and responsibility. Its emphasis on low-cost, community-driven action has made it widely applicable in low-income, rural settings where access to formal sanitation infrastructure is limited.

Over the years, scholarly interest in the adoption and sustainability of this approach has grown. Sigler, Mahmoudi, and Graham (2014) analyzed the theoretical underpinnings of the model and emphasized the role of community behavior, social norms, and peer accountability in driving long-term change. The authors also noted that measuring

success is complex due to the varied definitions of sanitation coverage and the social dynamics within different communities.

Donkor (2022), in a study conducted in Ghana, explored the determinants of uptake and sustainability in the Sagnarigu Municipality. The research found that while initial participation was high, long-term sustainability was often undermined by weak institutional support, lack of follow-up monitoring, and inadequate integration with local governance structures. These findings point to the importance of sustained community engagement and government involvement beyond the triggering phase.

Mariwah, Drangert, and Adams (2022) expanded on the sustainability aspect by investigating the integration of composting toilet technologies within community-led sanitation programs. Their study, conducted in Ghana, highlighted how the adoption of ecological sanitation options could complement community-led efforts, especially in areas where pit latrines were unsuitable due to environmental constraints. The authors argued that incorporating technical innovations can enhance program durability if they are socially acceptable and economically viable.

In Burkina Faso, Kouassi *et al.* (2023) examined the factors influencing the acceptance of social norms promoted through community-led sanitation. The study found that trust in facilitators, respect for community leadership, and shared responsibility significantly influenced acceptance. The authors emphasized that beyond technical knowledge, successful adoption depended on community cohesion and the perceived legitimacy of the intervention process.

Bagaja (2024) assessed the uptake of community-led sanitation in Isiolo County, Kenya. The study revealed that household economic status, gender roles, access to water, and the

presence of respected community leaders played a significant role in influencing adoption. The research stressed that program effectiveness is highly contingent on the socioeconomic and cultural characteristics of target populations.

Cha (2024), in an evaluation of a rural sanitation program in Ethiopia, found that while triggering sessions initially led to widespread latrine construction, relapse into open defecation was common in areas where follow-up was weak and community leadership lacked consistency. This underlines the importance of ongoing institutional support and post-triggering activities.

Muktar, Saba, and Adzo (2024) conducted a study in northern Ghana focused on knowledge, attitudes, and practices related to community-led sanitation. The findings indicated a gap between awareness and actual behavioral change, driven by competing livelihood priorities, lack of access to sanitation materials, and minimal government support. The study recommended integrating sanitation initiatives with broader development programs to address such structural barriers.

Asantewaa-Tannor, Emuze, and Das (2024) investigated stakeholder perspectives on the sustainability of community-led sanitation programs in Ghana. Their findings suggested that while the initial outcomes were promising, sustained improvements were limited by fragmented institutional coordination, insufficient funding, and weak infrastructure planning. The study called for a multi-level approach that links community behavior with broader sanitation governance systems.

Taken together, the literature highlights that while the community-led total sanitation approach is effective in mobilizing communities and initiating behavior change, its success is highly dependent on social, economic, cultural, and institutional contexts.

Sustainable adoption requires continuous engagement, reinforcement of social norms, and integration with supportive infrastructure and governance mechanisms. The reviewed studies consistently point to the need for context-specific adaptations and stronger post-triggering support systems to ensure long-term success.

2.3 Social Factors Influencing Adoption of Community-Led Total Sanitation (CLTS)

Community-Led Total Sanitation (CLTS) is rooted in the principle that sustainable sanitation change must be driven by the community itself, without external subsidies for sanitation hardware such as pit latrines or handwashing facilities. Instead, Community-Led Total Sanitation employs emotional triggers—such as shame, disgust, and pride—to catalyze behavior change and eliminate open defecation (OD).

However, the successful adoption of CLTS practices is significantly influenced by a range of social factors, including education, gender, income, age, social norms, and communal support structures.

Dyalchand et al. (2017) questioned the effectiveness of triggering in isolation, noting that CLTS often fails to influence more than 10–20% of a village's population in India. This limited impact was attributed to insufficient follow-up and a lack of well-trained facilitators to maintain post-trigger engagement. Sigler and Graham (2017) emphasized the importance of behavioral communication techniques in CLTS, such as the demonstration of the Five Fs (food, fingers, flies, fluids, and fields) to illustrate disease transmission routes and reinforce disgust associated with open defecation.

Ahmed et al. (2018) described how trigger mechanisms challenge cultural norms by encouraging communities to rethink practices like open defecation through provocative methods—for instance, using food and human waste in the same context to shock

participants into behavioral reflection. Similarly, Mosler et al. (2018) linked poverty to the persistence of open defecation, even in communities with some level of sanitation infrastructure. They argued that access alone is insufficient; sustained behavior change requires addressing deep-rooted social norms and economic barriers.

Nunbogu et al. (2019) highlighted the role of incentives in enhancing adoption, citing India's "Nirmal Gram Puraskar" initiative, which rewarded villages achieving open defecation-free (ODF) status. Zuin et al. (2019) added that providing materials such as pit latrines and iron sheets alongside behavioral change strategies improved sanitation outcomes and reduced mortality associated with poor hygiene.

Purnama and Susanna (2020) reported on a study in Ethiopia showing that social mobilization significantly influenced attitudes toward sanitation practices, with 68% of respondents acknowledging attitude shifts. However, the study also revealed weaknesses in community support structures—51% felt local sanitation committees were ineffective, and support for poor households in constructing latrines was minimal. Gender disparities were also evident, with women and the poor playing a substantial but often under-supported role in CLTS implementation. They further noted that women face disproportionate challenges due to inadequate sanitation, such as harassment risks when defecating in the open, particularly at night.

Okolimong et al. (2020) observed that the uptake of CLTS in Siaya, Kenya, was lower among widows and the elderly due to a lack of social support. Furthermore, educational attainment significantly affected adoption levels, with the highest uptake among individuals with secondary or tertiary education. However, the study also cautioned that formal education alone does not guarantee behavioral change unless accompanied by

targeted community engagement strategies. Similar conclusions were drawn by Akpakli et al. (2018), Budhathoki et al. (2017), O'Connell (2020), and Yimam et al. (2019), all of whom emphasized the positive correlation between education and improved sanitation outcomes.

Nyakwama et al. (2025) conducted a study in Homa Bay County, Kenya, and found that sustaining ODF status required not only initial adoption but continuous social reinforcement and community-level commitment. Their findings echoed Ntaro et al. (2025), who reported from Uganda that local leadership, peer pressure, and communal norms played a pivotal role in achieving and maintaining ODF status.

Muya, Phiri, and Chilimunda (2025) studied CLTS implementation in Zambia and found that challenges related to cultural resistance, community perceptions, and lack of political will affected success. Similarly, Kelly et al. (2024) found in Kilifi County, Kenya, that socio-economic status influenced long-term CLTS adoption. Wealthier households were more likely to sustain latrine use, while poorer ones required sustained community support and government intervention.

Overall, the literature consistently highlights that social cohesion, gender equity, education, leadership, and community-based incentives are central to the success of CLTS. Without deliberate strategies to address these social determinants, CLTS interventions are unlikely to achieve or maintain open defecation-free status.

2.4 Cultural Factors Influencing Adoption of Community-led Total Sanitation

Cultural norms and taboos significantly influence the success or failure of sanitation programs such as CLTS. According to Harter *et al.* (2018), meaningful development in Africa has long been shaped positively or negatively by cultural practices. The 1992

Global Cultural Policies Conference marked a shift in development thinking by redefining culture beyond arts and traditions, recognizing it as a central element in sustainable human development. Cultural values, if properly understood and leveraged, can either support or hinder sanitation behavior change (Harter et al., 2018).

Cultural beliefs can normalize open defecation. In some rural Indian communities, for example, defecating in the open is seen as healthy and natural, while using latrines is considered potentially harmful (Patil et al., 2015). These deeply held beliefs pose a major obstacle to the adoption of CLTS, as community members may see no reason to change their behaviors.

In African settings, socio-cultural taboos often make public discussion of sanitation a sensitive issue. In Ghana, for instance, discussing toilets or defecation in public is considered disrespectful, limiting the effectiveness of health promotion (Crocker et al., 2017). Similar beliefs are found in parts of Asia, where communities view sanitation practices as matters of fate or karma. In Nepal, people believe that sanitation and hygiene are governed by spiritual forces, and poor hygiene could lead to negative karma (Gujja et al., 2018).

A study conducted in Busia County, Kenya, revealed strong cultural taboos that limit latrine sharing. Specifically, 72.4% of respondents stated that in-laws do not share latrines, 22.6% said children do not share with adults, and 14.7% indicated that people with chronic illnesses were excluded from shared sanitation facilities. Additionally, 10.2% reported that visitors were not allowed to use family latrines (Mukwana et al., 2019). Interestingly, some of these cultural exclusions, especially concerning the chronically ill and in-laws, were associated with increased willingness to construct

private latrines highlighting a complex interplay between cultural practice and sanitation investment (Mukwana et al., 2019).

In Turkana County, Kenya, cultural beliefs also affected latrine construction decisions. Most respondents agreed with the statement that feces should be kept far from the home, yet many rejected the idea that defecating in a toilet could invite possession by evil spirits. This suggests that while some traditional beliefs persist, others are evolving or being challenged by CLTS messaging (Mukwana et al., 2019).

In Migori County, Kenya, Connell (2017) found that approximately 40% of participants strongly agreed that open defecation was considered normal in their community. Furthermore, it was reported as taboo to share toilets with in-laws or other respected relatives, reflecting strong intergenerational and gender-based boundaries in sanitation practices.

A report by the Ministry of Health (MoH) in Kenya cited cultural practices in Kwale County as major obstacles to CLTS adoption. According to the MoH, it is considered taboo or even a form of witchcraft for certain family members such as in-laws or respected elders to share toilets. As a result, although some households have constructed latrines to comply with public health requirements, they often continue to practice open defecation (Omar, 2021). The latrines exist merely as symbolic structures, and real behavior change is lacking.

These examples highlight that CLTS cannot succeed without taking local cultural beliefs into account. In many cases, interventions must be adapted to local spiritual, relational, and symbolic worldviews. Programs that fail to address or engage with cultural resistance may encounter superficial adoption without actual behavior change.

2.5 Household Ability Factors Influence on Implementation Community-Led Total Sanitation

Household ability is a critical factor in the success and sustainability of Community-Led Total Sanitation (CLTS) interventions. This ability encompasses the construction and maintenance of latrines, access to water, and overall economic status, all of which influence behavior change related to sanitation and hygiene practices. Water, sanitation, and hygiene (WASH)-related diseases continue to disproportionately affect populations, especially in vulnerable settings. According to the World Health Organization and UNICEF (2012), more than 2,195 children under the age of five die daily due to diarrhea, underscoring the urgent need for improved household-level sanitation practices.

A study by Peletz et al. (2016) in Cambodia demonstrated that the capacity of households to construct and maintain latrines significantly affected the sustainability of sanitation improvements and the achievement of open defecation free (ODF) status. Similarly, Bongartz et al. (2018) found that in Mozambique, household access to water and higher socioeconomic status were strongly associated with the ability to sustain improved sanitation practices over time.

In the Kenyan context, Sharif et al. (2019) conducted a study in Isiolo County examining how household capacity influenced CLTS implementation. Their findings revealed that households earning between KES 10,000 and 20,000 per month were more likely to construct standard latrines with doors that provided privacy. While raw materials were locally available, many families—particularly poor ones—lacked either the manpower or financial capacity to construct latrines, leading to disparities in adoption.

Ahmmed and Mohammed (2020) explored similar household dynamics in Ethiopia, where a study involving 254 households revealed that only 55% had constructed latrines. The primary barriers cited included unaffordable construction materials (reported by 24% of respondents) and lack of space (34%). The study concluded that household ability especially economic and material access plays a pivotal role in determining CLTS adoption rates.

In Ghana, Hendrix et al. (2020) found that households with larger land holdings were more likely to construct latrines and exhibited lower rates of open defecation. These households also had the financial means to pay for public toilet use in urban areas. In contrast, poorer households struggled to meet basic sanitation requirements due to financial constraints and inadequate space.

Tribbe *et al.* (2021) further emphasized the importance of household skills in sanitation adoption through a study in Cambodia. The findings showed that households with members who possessed construction knowledge and skills were 3.5 times more likely to build durable and hygienic facilities, such as latrines and handwashing stations. Skilled individuals also demonstrated greater innovation in adapting sanitation structures to meet their environmental and social contexts, suggesting that technical know-how significantly enhances CLTS adoption and sustainability.

2.6 Theoretical Framework

The study was guided by the theory of diffusion of innovations proposed by Everett Rogers (García-Avilés, 2020). The theory offers insights into factors that could affect the adoption of certain practices. In the context of CLTS, the theory suggests various key elements that could be related to the adoption of the desired ehavior. The theory

suggests that if the community can see the advantages and clear benefits of constructing toilets and avoiding open defecation such as improved health outcomes and resource savings, they are more likely to adopt positive practices. In addition, the theory suggests the essence of compatibility with the practices in existence. Thus Community-Led Total Sanitation interventions need to align with cultural norms, community beliefs and strategies of livelihood inorder to be accepted. The theory also emphasizes observability in behavior change. Communities who have witnessed tangible outcomes or success stories from other people are likely to also wish to succeed. In the context of CLTS, communities who have witnessed neighbours constructing toilets or being declared as open defecation frees are more likely to be inclined to follow the desired procedures inorder to also be recognized and appreciated. The role of opinion leaders and social networks is critical. Trusted figures in communities can facilitate CLTS diffusion by encouraging collective community action. Understanding the interplay between social, cultural, and household ability factors of communities could be essential for the effective and successful adoption and implementation of CLTS.

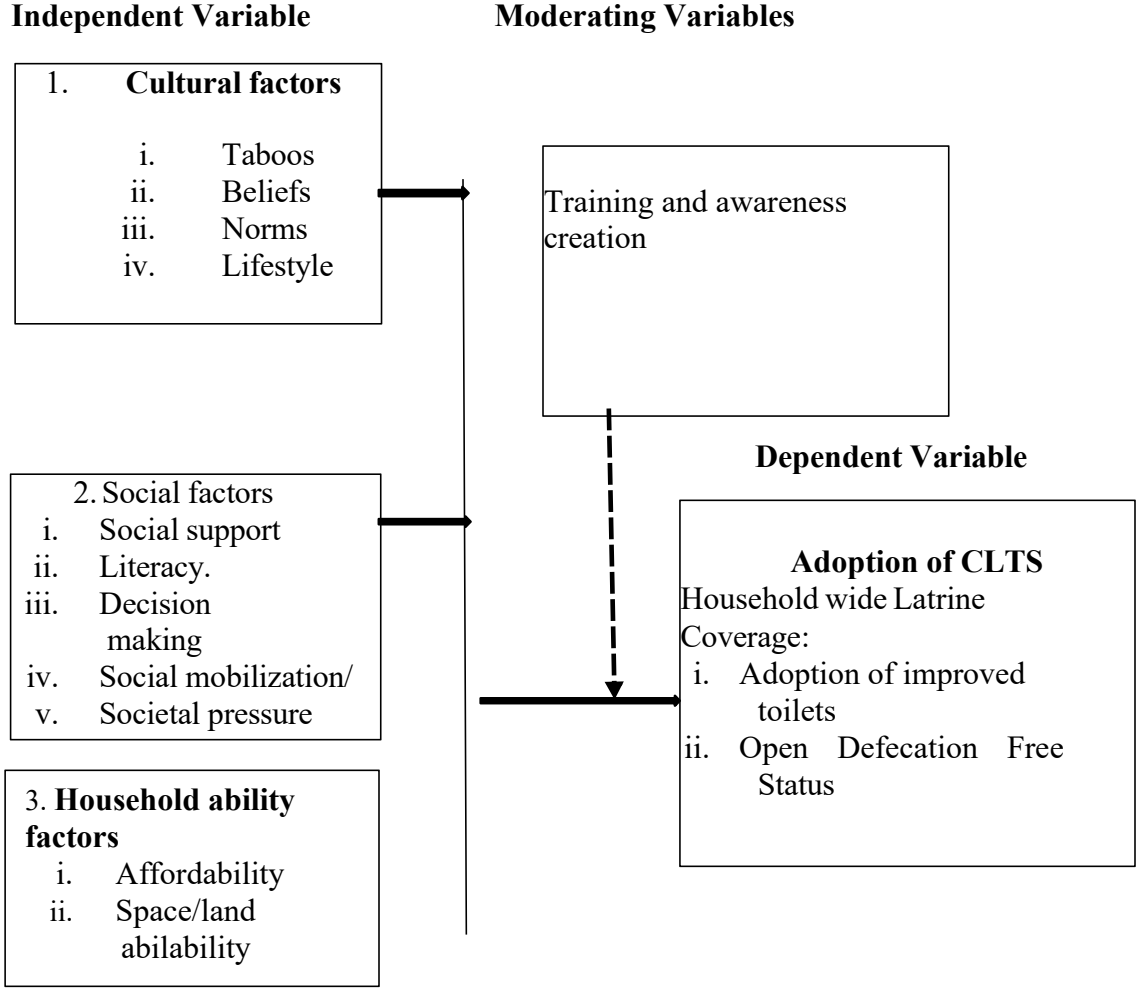
2.7 Conceptual Framework

The study encompassed a set of independent variables that could influence the dependent variable, which was the adoption of Community-Led Total Sanitation (CLTS) practices within Laisamis Sub County. The adoption of CLTS was examined in terms adoption of improved latrines and attainment of open defecation-free status as shown in Figure 2.1. The independent variables included social factors, reflecting the community's social support, knowledge, decision-making roles and social mobilization or societal pressure. Cultural factors encompassed cultural beliefs, taboos and traditions

regarding sanitation, as well as lifestyle. Additionally, household ability factors, affordability, availability of space or land for toilet construction were considered. The relationships between these independent variables and the dependent variable (adoption of CLTS) were examined to understand the extent to which the factors influenced the adoption of CLTS practices in the study area.

Figure 2.1

Conceptual framework



Source:literature review(2025)

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

In this chapter, the study explains the methods that were used to carry out the study. It was divided into sections which were study area, study design, study population, sampling, variables, data management, pretesting of the questionnaire, and ethical considerations.

3.2 Study Design

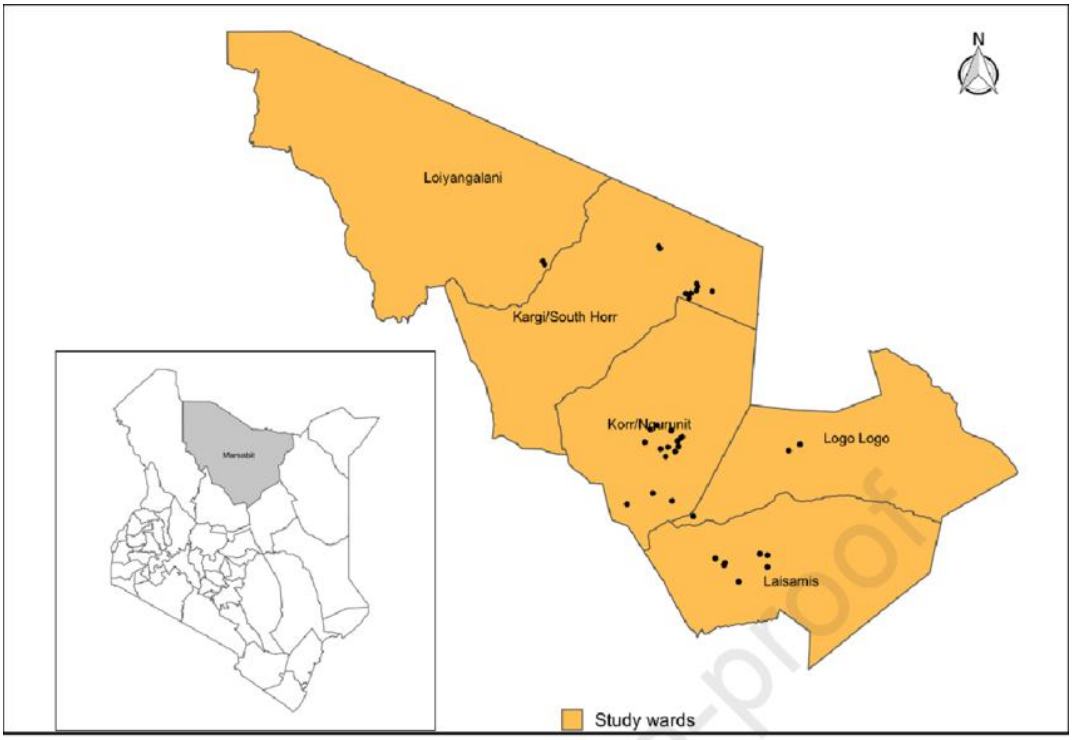
The study adopted a cross-sectional research design. A cross-sectional design allowed the researcher to collect data at a single point in time, providing a snapshot of the current situation regarding CLTS adoption and the factors influencing it. This was particularly useful for understanding the prevalence of CLTS practices and the presence of social, cultural, and household factors in the community at a specific moment. Cross-sectional studies were also generally more time and cost-effective compared to longitudinal designs. The study design enabled the acquiring of information on the relationship between social, cultural, and household ability factors on the adoption of community-led total sanitation (CLTS) in Laisamis location, Marsabit County, Kenya**.**

3.3 Study Area

The study was conducted in Laisamis Sub-County, located in Marsabit County, Kenya. Situated in the upper eastern part of the country, the sub-county is predominantly inhabited by the Rendile, Samburu, Turkana, and Somali communities. The primary economic activity in the area is pastoralism, with residents frequently moving in search of pasture and water for their livestock. The region experiences a hot and arid climate, which influences the mobility and livelihoods of its inhabitants.

Figure 3. 1

Map of Study Area



Source: Wikipedia (2024).

Left: Kenya showing Marsabit County

Right: Detailed view of Laisamis Sub-County within Marsabit County

3.4 Study Population

The target population for this study comprised household heads residing in Laisamis Sub-County. According to the 2019 Kenya Population and Housing Census, the sub-county had a total population of 23,912, with an average household size of four members (KNBS, 2019). The study focused on households from the five administrative wards within the sub-county, namely: Kargi (3,009 households), Korr/Ngurunit (8,985 households), Laisamis (4,142 households), Loglogo (1,984 households), and Loiyangalani (5,792 households). Additionally, participants from Key information informants included chiefs,

Public Health Officers, Community Health Volunteers (CHVs), natural leaders, religious leaders, and Community total led sanitation implementers from non-governmental organizations (NGOs).

3.5 Eligibility criteria

This section outlines the specific conditions and characteristics that determined participant eligibility for the study.

3.5.1 Inclusion criteria

Participants included household heads residing in Laisamis Sub-County who had lived in the area for at least six months. Eligible participants were aged 18 years and above and provided informed consent to participate in the study.

3.5.2 Exclusion criteria

Individuals who were non-residents of the area or below 18 years of age were excluded from the study, in accordance with ethical research standards. Additionally, individuals who did not provide informed consent or who were absent from their households during the data collection period were also excluded. These criteria may have affected the final sample size, particularly in cases where eligible participants were unavailable during data collection.

3.6 Sampling Method and Sample Size Determination

The required sample size was calculated using Yamane‘s (1967) formula with a margin of error of 5% as follows:

$$n = N/1+N(e)_2 \quad (1)$$

Where: n = the desired sample size

N = Population (23912 household heads)

e = Margin of error (taken as 5% in this study)

n=23912 / (1+ 23912 (0.05)) ²

= 393 household heads

3.7 Sampling Techniques

The wards in the Sub-County were divided into five stratus namely, Kargi (3009 households), Korr/Ngurunit (8985 households), Laisamis (4142 households), Loglogo (1984 households) and Loiyangalani (5792 households) and household heads drawn from each ward. To sample households in the area, a simple random sampling technique which was proportionate to size was employed because the participants were from an unevenly distributed population. To obtain the number of household heads to be engaged in the study from each Ward, the product of the number of households per Ward and the desired sample size was divided by the total number of households in the Sub-County. The number of participants targeted from each ward or strata were as shown in Table 3.1.

Table 3. 1

Sample size

Stratus	No. of households	Sample targeted
Kargi	3009	49
Korr/Ngurunit	8985	148
Laisamis	4142	68
Loglogo	1984	33
Loiyangalani	5792	95
Total	**23912**	**393**

Research data (2024).

Household heads were considered because the researcher believed that they understood matters regarding their households better. Respondents for the focus group discussion

who included: a Public Health Officer, a chief, 2 Community Health Volunteers, 2 natural leaders, 2 religious leaders, and 2 CLTS implementers from Non-Governmental Organizations (NGOs) were purposively sampled.

3.8 Data Collection

The study involved both quantitative and qualitative data. Quantitative data was collected from household heads within the households in the stratas using structured questionnaires. The questionnaires contained sections on the demographic characteristics of participants, the adoption of CLTS, and the influence of social factors, cultural factors and household ability factors on the adoption of CLTS. The questionnaires were distributed to the households with the help of 5 research assistants who had been trained in the data collection process prior to the exercise. Research assistants were selected based on the criteria that they had graduated from University and had pursued Health Sciences as such would understand the subject under investigation. Qualitative data was collected from a focus group consisting of 10 participants who were believed to have in-depth information regarding community sanitation matters. The focus group discussion aimed to obtain comprehensive information regarding the adoption of CLTS and related factors to complement findings from the quantitative data.

3.8.1 Pilot study

Pretesting of the instruments was carried out on randomly selected households from Saku area in Saku Sub-County. The area had similar characteristics as the study area. A sample of 10% of the total sample size (40 household heads) were targeted for the pilot study (Connelly, 2008). The pilot study aimed to test whether the instruments would be effective in data collection and to correct any errors before the actual process of data

collection. It helped identify any ambiguities and confusing questions enabling necessary refinements before the main data collection. During the pilot study, the researcher could identify potential logistical, operational, or ethical challenges they might encounter in the main study.

3.8.2 Validity and reliability of research instruments

It was necessary to establish the extent to which the instruments measured what they were intended to measure and accurately represented the constructs or variables under investigation. To ensure validity, the researcher sought expert opinions from the research supervisors and 3 other experts with public health, sanitation and nursing grounding as they understood the matter in question. The use of probability sampling technique ensured external validity that yields generalizable results while pre-testing of tools ensured valid results. To test validity, questionnaires were distributed to the selected participants in two different instances to check whether the results obtained would be similar. A Cronbach's alpha coefficient of 0.7 or more would mean that the instruments were reliable. The pretesting results yielded a Crobatch's coefficient of 0.89 which implied that the instruments were reliable.

3.9 Data Analysis and Presentation

The quantitative data gathered was analysed in descriptive statistics and inferential analyses using the Statistical Package for Social Sciences (SPSS) version 29 and the results were presented in Tables and graphs. Descriptive statistics included percentages, frequencies and means while inferential analysis was done in logistic regression. The simple logistic regression analysis was run on each independent variable to ascertain whether it had a significant relationship with the dependent variable. Then a joint model

was run to test the joint relationship between the adoption of CLTS and the covariates of the independent variables (social, cultural and ability factors). Adjusted and unadjusted Odd Ratios (ORs) at 95% Confidence Intervals (CI) were obtained and discussed. A logistic model was chosen since the dependent variable is categorical and binary; the adoption of CLTS or non-adoption of CLTS while the independent variable is categorical and continuous. The results were presented in tables and discussed.

3.10 Ethical Consideration

The permission to carry out the study was obtained from Meru University Institutional Research and Ethics Review Committee (MIRERC). A license for data collection was sought from the National Commission for Science, Technology and Innovation (NACOSTI). The researcher also sought approval to carry out the study from the Marsabit County Ethics Committee. Written informed consent was used for the participants to consent before joining the study. The purpose and objectives of the study were explained to the participants to make them understand the aim of the study. Participation was on a voluntary basis and without coercion or enticement. Partciants' names were concealed for confidentiality of the information they shared. The data obtained from the study was stored in a lockable case and soft copy data was protected using a computer password to ensure that the information shared by participants did not leak to third parties

CHAPTER FOUR: RESULTS AND DISCUSSION

4.1 Introduction

The chapter presents results and discussion of findings obtained from the study conducted in Laisamis Sub-County, Marsabit County, Kenya. The objectives of the study were to: establish the influence of social factors, cultural factors and household ability factors on the adoption of Community-Led Total Sanitation in Laisamis Su-County. The chapter contains sections on response rate, demographic characteristics of respondents, descriptive and inferential statistics for social, cultural and household ability factors and the dependent variable, the adoption of Community-led total sanitation. The results are discussed objectively and are supported by relevant literature.

4.2 Response rate

The number of questionnaires distributed to the participants and the ones returned are shown in Table 4.1.

Table 4. 1
Response rate

Area	Number expected	Unreturned/partially filled	Number returned	Return Rate
Kargi	49	14	35	71%
Korr/Ngurunit	148	42	106	72%
Laisamis	68	18	50	73%
Loglogo	33	9	24	73%
Loiyangalani	95	27	68	72%
Total	**393**	**110**	**283**	**72%**

Research data (2024).

Questionnaires were distributed to 393 households in the area. However, 283 questionnaires were returned fully filled and met the criteria for analysis. The response rate was 72% and was considered sufficient for data analysis (Mugenda & Mugenda, 2003). A response rate of 100% was not attained because some household heads did not

return questionnaires given to them. Other questionnaires returned were not fully filled and were ignored during analysis.

In most cases, close monitoring of the process was ensured by the researcher and research assistants which ensured that the household heads visited filled in the questionnaires and that any required guidance in interpretation and filling in the instrument was accorded. Most of the participants were therefore able to fill in all the information required in the questionnaire with ease. Other questionnaires were distributed and left in households and picked later in the day, giving participants time to fill in the questionnaires when they were less engaged. Most of such questionnaires were partially filled as the participants might not have been keen on ensuring that all questions had been filled in.

4.3 Demographic Characteristics

The study examined the characteristics of respondents engaged in the study with regard to their gender, age bracket, level of education, religious affiliation, marital status and household size.

4.3.1 Gender of respondents

Table 4.2 shows results on the gender of household heads who took part in the study.

Table 4. 2

Gender of respondents

Gender	Frequency	Percentage
Male	21	7.4%
Female	262	92.6%
Total	**283**	**100.0**

Research data (2024).

The majority of participants who took part in the study were females at 92.6% while

males were only 7.4%. Such findings were obtained because the area was inhabited by pastoral communities who moved with their livestock away from home in search of water and pasture. Men were mostly not found in their households because they were in the fields herding livestock and women were tasked with household activities such as washing, cooking and looking after children.

The findings implied that women, who were mostly found in households, needed to have access to sanitation facilities that could address their needs. Although women could have toilets at the household, open defecation for men, who spent most of their time in bushes looking after livestock could be rampant due to the absence of toilets in the fields (Bokea, 2020). Community-led total sanitation was necessary for both men and women to trigger proper ways of faecal disposal whether in households or in bushes.

4.3.2 Age of respondents

Participants' ages were as shown in Table 4.3. The ages were recorded in ranges.

Table 4. 3

Respondents' age

Age Bracket of Respondents'	Frequency	Percentage
18-28 years	61	21.6
29-39 years	160	56.5
40-50 years	47	16.6
Above 50 years	15	5.3
Total	**283**	**100.0**

Research data (2024).

The majority of respondents (56.5%) were aged between 29 and 39 years, followed by 21.6% in the 18–28 age bracket, 16.6% in the 40–50 age group, and 5.3% above 50 years. These findings indicate that over half of the participants were middle-aged. This trend could be attributed to the fact that individuals within the 29–39 age range are typically at

a stage of establishing families and are more likely to be found at home taking care of young children.

The lower representation of the 18–28 age group may be due to their involvement in career development or migration for employment, which often keeps them away from their households. Similarly, individuals aged 40–50 years might have had more established families and could have been engaged in work-related activities outside the household.

The age distribution of respondents has implications for the implementation of Community-Led Total Sanitation (CLTS).

Age influences community dynamics, levels of participation, and openness to adopting new behaviors promoted by CLTS initiatives. Older individuals, particularly those above 40, are often respected community members who hold significant influence in local decision-making processes. Their involvement can be crucial in mobilizing support for sanitation interventions and encouraging collective behavior change. As noted by Mumin et al. (2023), age-related factors play a significant role in the success of community-based health and sanitation programs.

4.3.3 Highest education level

The highest level of education attained by respondents was determined and the findings were as shown in Table 4.4.

Table 4. 4

Highest education level

Level of Education	Frequency	Percentage
Not been to school	276	97.5
Primary school	7	2.5
Total	**283**	**100.0**

Research data (2024).

The findings reveal that a vast majority of respondents (97.5%) had not received any formal education, while only 2.5% had completed primary school. None of the participants had attained education beyond the primary level.

This trend may be attributed to the socio-economic and cultural context of the study area, which is predominantly a pastoralist community. In such communities, education is often deprioritized in favor of livestock rearing, which is considered the main livelihood activity. Additionally, traditional gender roles may contribute to low educational attainment, particularly among women, who are often expected to manage household responsibilities rather than pursue formal education.

Low levels of education among community members present a significant barrier to the effective implementation of Community-Led Total Sanitation (CLTS). Limited literacy can hinder the community's ability to comprehend the health implications of poor sanitation and the benefits of behavior change. As Crocker *et al*. (2017) observed, individuals with limited formal education may be more resistant to new practices, especially when these practices challenge long-standing cultural norms. Consequently, CLTS programs in such contexts may require adapted communication strategies, including the use of visual aids, demonstrations, and local languages to enhance understanding and foster participation.

4.3.4 Participant's religion

Results in Table 4.5 shows the religious affiliation of participants engaged in the study.

Table 4. 5

Participants' religion

Participants'	Frequency	Percentage
Christian	200	70.7
Muslims	69	24.4
Others	14	4.9
Total	**283**	**100.0**

The findings show that the majority (70.7%) of participants were Christians while 24.4% were Muslims. According to Kouassi et al. (2023), religion could influence the adoption of CLTS in that teachings emphasize the values of cleanliness and environmental stewardship. Studies by Kouassi et al. (2023) in Burkina Faso and Appiah-Effah et al. (2024) in Ghana confirmed that due to rituals of purity and the need for cleanliness, Muslims required sanitation options that did not expose them to faecal matter and that best addressed their washing needs. Failure to provide toilets based on the needs of users could attract toilet avoidance and open defecation. The endorsement of sanitation programs by religious leaders could accelerate the adoption of positive sanitation practices as they could motivate followers through moral teachings. Although people could be triggered to construct toilets, the need to provide user-friendly toilets cannot be ignored.

4.3.5 Household size

Respondents were asked to indicate the size of their households. The findings are presented in Table 4.6.

Table 4. 6

Household Size

Household Size	Frequency	Percentage (%)
1–5 members	154	54.4
6–10 members	125	44.2
Above 10 members	4	1.4
Total	**283**	**100.0**

Research data (2024).

The majority of respondents (54.4%) lived in households with 1–5 members, while 44.2% had 6–10 members. Only 1.4% of the households had more than 10 members. The prevalence of smaller household sizes may reflect increasing awareness and adoption of family planning practices, which are actively promoted in contemporary health interventions.

However, it is important to note that nearly half of the respondents reported living in households with more than six members. Larger household sizes can have implications for sanitation infrastructure. Specifically, households with many members require appropriately sized sanitation facilities, including larger or multiple toilet pits to accommodate higher waste volumes and avoid rapid fill-up. The financial burden of constructing such facilities may be beyond the reach of low-income families, which are common in rural pastoralist communities.

A study by Wasonga *et al.* (2023) in Siaya, Kenya, found that low-income households faced significant challenges in constructing and maintaining latrines. In communities where toilet sharing is culturally discouraged, the need for individual household latrines further strains financial resources. This situation contributes to the persistence of open defecation, even after the implementation of Community-Led Total Sanitation (CLTS). In addition to the number of toilets, ensuring that the sanitation facilities align with the

preferences, cultural values, and privacy needs of household members is essential for sustainable behavior change.

4.3.6 Main economic activity

The study sought to determine the primary economic activities of the respondents. The results are presented in Table 4.7

Table 4. 7

Main Economic Activity

Economic Activity	Frequency	Percentage (%)
Herdsman	276	97.5
Business	7	2.5
Total	**283**	**100.0**

Research data (2024)

The findings indicate that the vast majority of respondents (97.5%) were engaged in livestock herding, while a small minority (2.5%) were involved in business activities. This distribution reflects the pastoralist nature of the study area, where livestock keeping is the dominant source of livelihood.

It is important to note that 92.7% of the respondents were women, most of whom served as primary caregivers in their households. Although herding is typically associated with men in many pastoralist communities, women often play significant roles in managing livestock, especially when men are away for extended periods with migrating herds. Additionally, women may represent the household in surveys due to their availability at home during data collection.

The reliance on herding has direct implications for sanitation practices. Herdsmen and caregivers involved in livestock activities often spend long hours or days in the fields, where access to latrines is limited or nonexistent. As a result, open defecation becomes a

common practice due to the lack of appropriate sanitation facilities in grazing areas. Focus group discussions revealed that some community members believe defecating in the open contributes to pasture fertility. One participant remarked:

"True, there are no toilets in the bushes, and when we are there, there is nowhere to go — and that is manure for the livestock feeds. It grows so fast."

These findings are consistent with Bokea (2020), who reported similar trends among herding communities in Kajiado County, where mobility and absence of field-based sanitation facilities contributed to persistent open defecation.

To enhance the effectiveness of Community-Led Total Sanitation (CLTS) in pastoral settings, implementers should consider occupation-related sanitation needs. Strategies may include the promotion of mobile or field-appropriate sanitation solutions that can address defecation practices during herding activities, in addition to promoting improved sanitation around homesteads.

4.4 Adoption of Community-Led Total Sanitation

The study also aimed at assessing the adoption of CLTS in Laisamis Sub-County. Adoption of CLTS was assessed in terms of latrine adoption (construction and type), utilization and/or open defecation. Adoption was considered low when a high percentage of the community adopted unimproved toilets, failed to use the available toilets or defecated in the open. Adoption of CLTS was considered high with the adoption and use of improved toilets and few or no cases of open defecation in the community.

4.4.1 Type of toilets adopted and participation in CLTS activities

The researcher aimed to establish whether the types of toilets adopted were improved and whether residents had participated in the CLTS triggering exercises. Table 4.8 shows

results on the type of toilets constructed at the households.

Table 4. 8

Type of toilet used at the household

Response	Frequency	Percentage
Traditional Pit Latrine (simple/normal latrine)	186	65.7
Ventilated pit latrine (Latrine with Vent pipes)	15	5.3
Bush/Open	82	29.0
Total	**283**	**100.0**

Research data (2024)

The findings revealed that most (65.7%) of the respondents had adopted traditional pit latrines. Bush or open defecation was reported by 29% of the respondents while only 5.3% used ventilated Improved Pit latrines which were considered improved due to their odour and fly control capabilities. Ordinary or traditional pit latrines are mostly unimproved sanitation options that do not cut human contact with excreta. Such toilets were characterized by odour and flies, which could contribute to the spread of sanitation-related diseases. Defecation in the open also exposes people to the risk of interacting with pathogens from stool. The findings suggested that the sanitation status in the community was unimproved due to the adoption of unimproved toilets and the practice of open defecation. The question of whether CLTS triggered the adoption of toilets which kept people free from interacting with excreta persisted.

It was established that the majority (92.2%) of the participants had participated in CLTS triggering exercises and that only 7.8% had never been to the triggering sessions as shown in Table 4.9.

Table 4. 9

Ever participated in a CLTS-triggering exercise

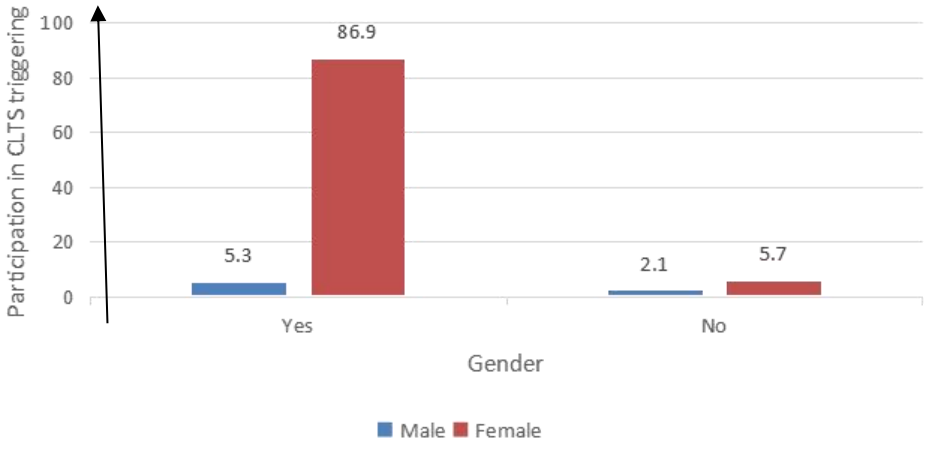
Response	Frequency	Percentage
Yes	261	92.2
No	22	7.8
Total	**283**	**100.0**

Research data (2024)

Attendance to CLTS triggering sessions could ensure that the community was enlightened and their emotions triggered to stop the practice of open defecation. Results from the findings in Table 4.10 suggested that a high number of community members had been taught about the essence of toilet construction and avoidance of open defecation as it is always done in CLTS triggering sessions thus they understood the impacts of poorly managed faecal matter in relation to human health. A community that understands the essence of toilet adoption and use is likely to be open defecation-free. When asked to indicate the gender that mostly participated in CLTS triggering activities, 86.9% of the participants indicated females while a few (5.3%) reported males as shown in Figure 4.1.

Figure 4.0.1

Gender that mostly participated in the CLTS triggering sessions



Research data (2024).

Fewer males than females participated in the CLTS triggering exercises as men were most of the time busy in the fields looking after their livestock. Women, who were mostly left in their households were available for the triggering session hence the high number. The findings were supported in the focus group discussion where a participant said:

"We women are always around the households. When the community doctors come, they always find us around. The men go to look after cows and they are nowhere to be found. I think it is good for them to understand what we are taught."

Researchers like Tough et al. (2023) have reported that participation of both men and women in CLTS activities could promote a platform for improved household sanitation status as the triggering process enables both to understand and initiate household-level behaviour change. Although women could understand the essence of toilet construction as a result of attending the triggering sessions, a study by Ashraf et al. (2022) established that convincing men, who are mostly the primary decision makers in households, that spending money to construct improved sanitation facilities is a worthwhile investment might be difficult. Although women might have attended the sessions, there was a need for support from men, inorder to construct good household toilets.

The participants were further requested to indicate whether CLTS had promoted the construction of toilets and whether the type of toilets constructed after CLTS were good for use as shown in Table 4.10.

Table 4. 10

CLTS has promoted toilet construction

Response	Frequency	Percentage
True	258	91.2
False	25	8.8
Total	**283**	**100.0**
Type of toilets after CLTS are good for use		
True	173	61.1
False	110	38.9
Total	**283**	**100.0**

Research data (2024).

The findings in Table 4.10 show that 91.2% of participants appreciated the role of CLTS in promoting toilet construction. Findings also showed that 61.1% of participants reported that CLTS promoted the construction of good toilets for use. However, it cannot be ignored that 38.9% of respondents indicated the contrary opinion showing that people could still construct poor toilets which could discourage toilet utilization. Similar results were reported in a study on slippage factors by Kouassi et al. (2023) who found out that latrines constructed after CLTS were poor and retained nuisances, were not easy to maintain and were shortlived. Construction of poor toilets has been associated with slippage to the practice of open defecation even after the construction of toilets. It was reported in the focus group discussion that the time given by the CLTS implementers was short for the construction of improved toilets especially for the poor as follows:

"When they come, they give us very good teachings about the importance of having toilets and how the construction of toilets can make us avoid eating other people's faeces. Some of us are very much willing to construct good toilets but where is the money? We are told to construct the toilet within 7 days and we have to do that."

Having little time for change without the necessary resources could promote the adoption of low-standard sanitation facilities which could continue keeping communities down the sanitation ladder and attracting open defecation cases from people who consider the available toilets non-friendly.

4.4.2 Open defecation and toilet utilization

The researcher intended to find out whether participants used the toilets constructed after CLTS and whether there were still open defecation cases that occurred within the community even after CLTS implementation. Table 4.11 summarizes the findings:

Table 4. 11

CLTS has promoted avoidance of open defecation

Response	Frequency	Percentage
True	212	74.9
False	71	25.1
Total	**283**	**100.0**

Research data (2024).

Findings in Table 4.11 showed that 74.9% of participants acknowledged the role of CLTS in promoting avoidance of open defecation. However, slightly more than a quarter (25.1%) of the respondents reported the inability of CLTS to trigger avoidance of open defecation. The findings suggested that open defecation still happened even after residents were made aware of its dangers, during the CLTS sessions. Studies have found out that knowing the dangers of open defecation is not enough in promoting behaviour change as open defecation could be driven by physical aspects where toilets are unfriendly for use, cultural barriers related to toilet utilization as well as the inability to construct toilets at the households (Wasonga et al., 2023; Appiah-Effah et al., 2024).

Regarding the use of toilets constructed after CLTS, results as shown in Table 4.12

showed that 41.3% and 34.6% of participants agreed and strongly agreed that some people in the area did not make use of the toilets constructed after CLTS (Mean=3.98, Standard deviation=0.234) implying a general agreement. Researchers like Mumin et al. (2023) in Tamale have reported toilet avoidance due to their status, which could have been a reason behind latrine non-utilization in the study area.

Table 4. 12

Some people do not make use of the constructed toilets after CLTS

Response	Frequency	Percentage
Strongly disagree	20	7.1
Disagree	48	17.0
Not sure	0	0.0
Agree	117	41.3
Strongly agree	98	34.6
Total	**283**	**100.0**

Mean=3.98, SD=0.234
Research data (2024).

Findings from observation (Figure 4.2 on status of toilets) showed that although there were footpaths for 71.4% of the toilets, 28.6% lacked clear footpaths which demonstrated that they were rarely used. Pathways to toilets that were used were always clear, with no bushes or grasses growing, indicating that people frequently visited them. Evidence of faeces left in the open was observed in 55.5% of the households which showed that although people had adopted toilets, cases of open defecation still happened, thus the presence of toilets alone was not an absolute motivator for their utilization. Nuisances like flies and odour were evident in 55.5% of the toilets, an implication that their maintenance status and ability to control nuisances was poor. Studies for instance by Kouassi et al. (2023) and Mosler et al. (2018) have found a relationship between toilet maintenance and utilization where low maintenance in toilets attracts toilets

underutilization. Although 58.7% of toilets had no gaps in the walls, 41.3% of toilets' superstructures were gapped. Gapped superstructures did not maintain the privacy of users.

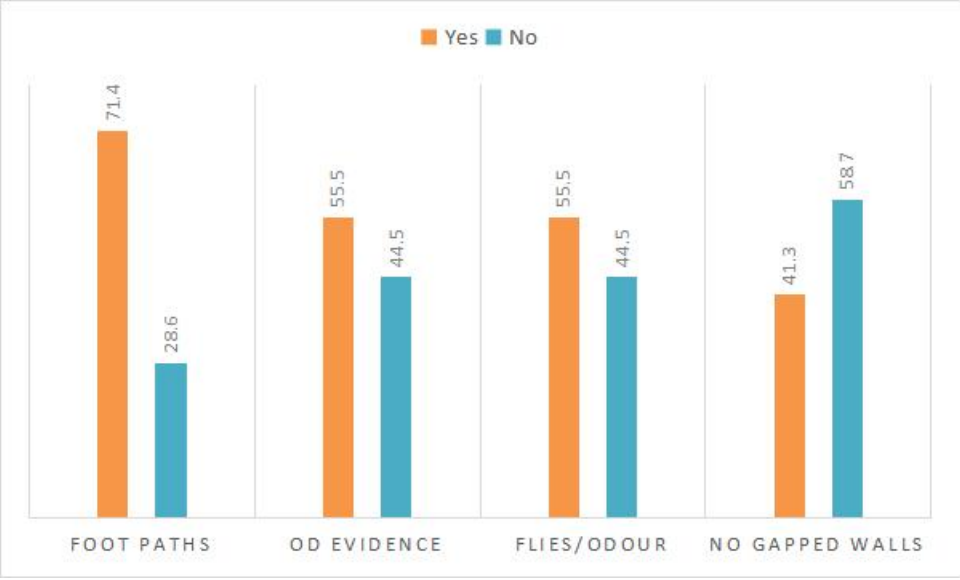
Results of the focus group discussion showed that the toilets that had been constructed could be avoided by some people since some were constructed using weak materials that did not maintain user privacy. A respondent from the focus group discussion said that:

"They tell us to construct toilets. I construct one with what is available. But you cannot use the toilets when children can see you when inside. You see the walls cannot be completed because they are made of tree branches. You cannot miss a hole."

Reduced privacy and the condition of toilets stood out among the non-motivators of toilet use. Avoidance of toilets due to their status even in their presence after CLTS was noted in Tamale (Mumin et al., 2023), Uganda (Cagnet, 2022) and Cambodia (Hendrix, 2020).

Figure 4.2

Status of toilets



Research data 2024).

4.5 Influence of Social Factors on Adoption of Community-Led Total Sanitation

Adoption of CLTS in Laisamis Sub-County could be dependent on various factors. The study examined the influence of social factors like social support, Literacy, gender and decision-making roles and societal mobilization/pressure on adoption of CLTS.

4.5.1 Influence of social support on adoption of community-led total sanitation

Respondents were asked to indicate their level of agreement with the statement regarding whether the opinions of influential community members affected the adoption of Community-Led Total Sanitation (CLTS). The findings are presented in Table 4.13.

Table 4. 13

Opinions of Influential Community Members and Adoption of CLTS

Response	Frequency	Percentage (%)
Strongly disagree	0	0.0
Disagree	34	12.0
Not sure	12	4.2
Agree	128	45.2
Strongly agree	109	38.5
Total	**283**	**100.0**

Research data (2024).

Mean = 4.103, SD = 0.949

As shown in Table 4.13, the majority of respondents agreed or strongly agreed that the opinions of influential community members played a role in the adoption of CLTS, with a mean score of 4.103 (SD = 0.949). This suggests a general consensus that social influence from within the community was a key factor in driving behavior change.

These findings indicate that opinion leaders including elders, religious figures, and other influential individuals played a significant role in guiding and encouraging the adoption of sanitation practices promoted by CLTS. Rather than issuing directives, these leaders used their social standing and persuasive influence to shape community attitudes and

behaviors. Their involvement helped foster community acceptance and participation in the sanitation initiative.

Similar observations were made in a study by Kouassi *et al.* (2023) in Burkina Faso, where the success of CLTS implementation was attributed in part to the involvement of opinion leaders who were trusted, listened to, and held in high regard by community members.

In addition to the influence of opinion leaders, participants also reported that they received support from neighbors to implement CLTS requirements, particularly the construction of toilets. This form of peer support had a mean agreement score of 3.74 (SD = 1.023), further emphasizing the importance of social networks in reinforcing positive sanitation behaviors.

Table 4. 14

Support from neighbors/community members in implementing CLTS targets

Response	**Frequency**	**Percentage**
Strongly disagree	5	1.8
Disagree	53	18.7
Not sure	6	2.1
Agree	167	59.0
Strongly Agree	52	18.4
Total	**283**	**100.0**

Mean=3.74, SD=1.023

Research data (2024)

Some community members might not have been in a position to construct toilets on their own. Given that latrine construction is always demanded for after CLTS (Kar, 2010), community members assisted those who could not construct toilets on their own probably due to cost constraints to construct toilets so that the community would become open defecation free. Respondents from the focus group discussion indicated that the primary

goal of CLTS was to promote open defecation-free status in communities and a community could be declared as open defecation-free when one household was still practicing open defecation as follows:

"We teach the community that if one person has not stopped defecating in the open, then the whole community is not safe. They even monitor each other to ensure that everybody has constructed toilets."

"We also want our community to be celebrated as having attained open defecation-free status. That cannot happen when one of us does not have a toilet. We have been ensuring as much as we can that we construct toilets and even help those who are unable to dig pits."

When people who find toilet construction a burden to them are helped out, communities could attain an ODF status due to wide adoption of toilets. In Ghana and Cambodia, a study by Tribbe et al. (2021) established that rural households sustained sanitation gains by having neigbours help fellow neighbours to construct toilets.

4.5.2 Influence of Literacy on Adoption of Community-Led Total Sanitation

The study assessed participants' levels of agreement with statements related to their literacy on Community-Led Total Sanitation (CLTS). Using a 5-point Likert scale, the study evaluated perceptions of facilitator literacy, the adequacy of information provided during CLTS triggering sessions, and beliefs about the risks posed by human faeces in comparison to animal faeces. The results are presented in Table 4.15.

Table 4. 15
Literacy and Adoption of CLTS

Statement	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree	Total	Mean (SD)
Facilitators have adequate literacy on CLTS	3 (1.1%)	33 (11.7%)	17 (6.0%)	137 (48.4%)	93 (32.9%)	283 (100%)	4.003 (0.977)
Community has adequate literacy on the dangers of open defecation	4 (1.4%)	32 (11.3%)	9 (3.2%)	179 (63.3%)	59 (20.8%)	283 (100%)	3.908 (0.902)
Human faeces are not dangerous, just like animal faeces	62 (21.9%)	61 (21.6%)	8 (2.8%)	150 (53.0%)	2 (0.7%)	283 (100%)	2.890 (1.282)

Research data (2024).

Most participants either **agreed (48.4%)** or **strongly agreed (32.9%)** that CLTS facilitators possessed adequate literacy regarding the CLTS process. The mean score of **4.003 (SD = 0.977)** suggests general agreement. This indicates that facilitators were well-informed about CLTS principles and were capable of guiding the community toward adopting improved sanitation behaviors. According to Nanyim et al. (2022), high facilitator literacy is crucial for successful CLTS implementation, as well-informed facilitators can effectively communicate health messages and motivate community members toward behavior change.

Participants also reported that the community had an adequate understanding of the dangers associated with open defecation, with **63.3% agreeing** and **20.8% strongly agreeing**. The mean score of **3.908 (SD = 0.902)** indicates overall agreement with the statement. This suggests that CLTS interventions contributed to improved sanitation literacy, enhancing community awareness of the health risks linked to open defecation. During a focus group discussion, one participant stated:

"The sessions are good for the community where open defecation is practiced. The act of making them interact with the faeces makes them practically understand what it means by the movement of flies from what they leave in the open, to their food and then their mouths. Understanding that makes them decide to stop open defecation."

This observation highlights the effectiveness of CLTS in increasing awareness through practical, experiential learning. Improved sanitation literacy, particularly on disease transmission, is likely to promote behavior change.

Regarding the perception of the risks of human versus animal faeces, responses were more divided. While 53.0% agreed that human faeces are not more dangerous than animal faeces, a significant proportion disagreed (21.6%) or strongly disagreed (21.9%). The mean score of 2.890 (SD = 1.282) indicates a neutral position, reflecting mixed opinions among participants.

This variation in perception could be attributed to long-term interaction with animal faeces among pastoralist communities, which may reduce concern about the risks of human faeces. One focus group participant remarked:

“Human faeces is very dangerous. You cannot compare it with animal faeces. You cannot touch human faeces the way you can carry animal faeces. Leave alone its ability to cause diseases, it will even make you smelly.”

Conversely, another participant explained:

“You know the community has pastoralists who interact with animal faeces. I think this long-term interaction makes them less concerned about leaving faeces in the open. They treat all faecal matter with the same measure.”

These perceptions have important implications for the adoption of CLTS. Where community members do not fully appreciate the risks of human faeces, they may be less motivated to construct and use latrines. This could undermine CLTS objectives. A similar study by Barasa and Walden (2022) in Tanzania found that pastoralists often downplay the dangers of faecal matter due to their routine contact with livestock waste.

In conclusion, while facilitator and community literacy positively influence CLTS adoption, misperceptions about the health risks of human faeces can hinder progress. Addressing these misconceptions through targeted education may enhance the impact of CLTS initiatives

4.5.3 Influence of decision making roles on adoption of community-led total Sanitation

Respondents were requested to indicate the gender who were the primary decision-maker at the household on matters regarding toilet construction as shown in Table 4.16.

Table 4. 16

Primary decision makers in household toilet construction

Gender	Frequency	Percentage
Males	31	11.0
Female	252	89.0
Total	**283**	**100.0**
Gender roles hinder adoption of CLTS		
Strongly disagree	1	0.4
Disagree	32	11.3
Not Sure	7	2.5
Agree	177	62.5
Strongly Agree	66	23.3
Total	**283**	**100**
Mean=3.97, SD=0.862		

Research data (2024).

Findings from Table 4.16 show that females mostly made decisions on toilet construction in their households as reported by 89% of the participants. The findings showed that men were not mostly involved in matters of toilet construction in the households.

When participants were requested to indicate whether gender roles hindered adoption of CLTS, the scores of their responses averaged at 3.97 (SD=0.862) an indication that adoption of CLTS could be influenced by gender roles. Participants in the focus group discussion indicated that women, who were left at the households to perform usual household duties also constructed toilets when men had gone away to look after livestock. Females were left at the households to manage their homes and could thatch toilets, or construct them using locally available materials such as sticks, sacks and tree branches. A focus group discussion participants indicated that:

"Toilets are constructed by mothers and females because they are left in the village to look after or manage their households. They construct them using materials just within their households. The use of locally available materials like sacks, grass, sticks and

branches result in the construction of low standard toilets."

However, the kind of toilets constructed were observed to be poor and as reported in the focus group discussion, women wished to have improved toilets which was impossible as they lacked money for the purchase of better materials. Focus group discussion participants reported that since men did not mostly live in their households, they did not give priority to household sanitation and convincing them that good sanitation infrastructure was a worthwhile strategy was difficult for their women:

"The fact that we have used the locally available materials such as sticks and constructed shallow pits makes it difficult to have others when they fill up. Other toilets easily sink and digging others over and over again is impractical. We stay with the old one until we get means of having another one"

"Involving both males and females in the triggering exercise can improve the situation. They will both understand why they need good toilets for their households. Most toilets are constructed by women and the men are not there. To convince them to give out money for the construction of goods toilets might not make sense to them because they are mostly in the field."

4.5.4 Influence of social mobilization/societal pressure on adoption of CLTS

The study targeted at examining the role of societal pressure/mobilization on adoption of CLTS. Results on whether there was societal pressure after CLTS on toilet adoption are shown in Table 4.17.

Table 4. 17

There is societal pressure to adopt toilets after CLTS in my community

Response	Frequency	Percentage
Strongly disagree	29	10.2
Disagree	42	14.8
Not Sure	14	4.9
Agree	150	53.0
Strongly Agree	48	17.0
Total	**283**	**100.0**

Mean=3.516, SD=1.227

Research data (2024).

Results from Table 4.17 show that to some extent societal pressure made people adopt toilets after CLTS (Mean=3.516, SD=1.227). Pressure from peers or fellow community members could encourage people to conform to the expected practices of sanitation improvement. Studies by Nanyim et al. (2022) and Tribbe et al. (2021) have acknowledged the role of social push and validation in motivating behaviour change, which promotes effective CLTS outcomes of proper hygiene and sanitation practices among community members. The need to conform and to 'fit in' has also been recognized as a significant motivator of behaviour change as people would want to do what is acceptable to the community.

Participants were asked to indicate the people who mobilized CLTS activities. A higher percentage (76.3%) reported health officials, 22.3% indicated natural leaders and only 1.4% reported local leaders like chiefs as shown in Table 4.18.

Table 4. 18

Community mobilizers on CLTS activities

Mobilizers	Frequency	Percentage
Natural leaders	63	22.3
Local leaders (Chiefs)	4	1.4
Health officials	216	76.3
Total	**283**	**100.0**

Research data (2024).

Findings in Table 4.18 revealed that health officials such as Public Health Officers and Community Health Extention Workers mostly implemented CLTS through triggering and making the community understand the essence of toilet adoption and use. The results were consistent with the guidelines by Kar (2010). However, only those who attended the triggering sessions for CLTS could appreciate the role of the health officials. Other participants who indicated natural leaders could have been the people who had not been attending the sessions but were found in their households by natural leaders who acted as mobilizers of behaviour change at the community level.

The study also targeted to establish the community's take on the role of natural leaders in encouraging the community to construct toilets. The statement was presented to participants with choices in form of a Likert scale which ranged from hoicse 1 for strongly disagree, 2 for disagree, 3 for not sure, 4 for agree and 5 for strongly agree as shown in Table 4.19.

Table 4. 19

Natural leaders have played a key role in encouraging toilet construction

Response	Frequency	Percentage
Strongly disagree	14	4.9
Disagree	40	14.1
Not sure	7	2.5
Agree	172	60.8
Strongly Agree	50	17.7
Total	**283**	**100.0**

Mean=3.721, SD=1.067
Research data (2024)

Most of the participants' responses as indicated in Table 4.19 lied in the agree category (60.8%). The mean obtained from the statement was 3.721, SD= 1.067 indicating that participants appreciated the positive contribution of natural leaders in encouraging toilet construction among the communities. Findings from the focus group discussion showed that natural leaders were essential in following up with community members who needed to construct toilets to ensure that they had indeed constructed them and pushing for the declaration of open defecation-free status in their communities.

" I am currently overseeing the construction of toilets by our community members. Those who do not have toilets have to do so before 7 days. I was disturbed to learn that we can continue consuming faecal matter from people who do not want to construct toilets. At least some have constructed and we will push the others to construct. We want to be declared open defecation free."

"There are those committees selected during triggering. They are helping so much in influencing CLTS outcomes. The community feels comfortable with them because they can understand them."

The results suggested that concern from natural leaders encouraged people to construct

toilets. The role of natural leaders in championing and spearheading toilet construction for their communities was also appreciated in Ghana by Nanyim et al. (2022) and in Nigeria by Victor et al. (2020).

4.5.5 Logistic regression analysis for social factors

Univariable and multivariable analyses were performed on the indicators of social factors (support, knowledge, decision making and societal pressure/social mobilization) against indicators of adoption of CLTS (open defecation and status of toilets adopted after CLTS). The univariable findings were presented as unadjusted odd ratios while multivariable results were presented as adjusted odd ratios as shown in Table 4.20. Findings from the univariable model for the odds of open defecation showed that involvement of women in decision-making on toilet construction at the households was associated with 55.4% lower chances of open defecation (Unadjusted OR 0.446, 95%CI: 0.325-0.611, $p<0.001$). Support from community members on toilet construction seemed to be associated with 1.049 higher chances of contributing to open defecation but the relationship was non-significant ($p>0.05$).

Participants who perceived human faeces as less dangerous just like animal faeces had 4.375 chances of defecating in the open compared to those who were knowledgeable of the difference between the dangers of the two kinds of faecal matter (Unadjusted OR 4.375, 95% CI: 3.287-6.492, $p<0.001$). Increased societal pressure to adopt toilets, encouragement by natural leaders, and participation in CLTS activities lowered the likelihood of open defecation by 49.8%, 42.8% and 30% respectively (Unadjusted OR 0.502, 95% CI: 1.168-1.932, $p= 0.002$; OR 0.572, 95% CI: 0.444-0.737, $p<0.001$; 0.700 95% CI: 1.570-4.645, $p<0.001$). The variables that turned out significant in the

univariable model were also significant in the multivariable model except the involvement of women in decision-making and societal pressure to adopt toilets (p>0.05).

Table 4. 20

Odds of adoption of CLTS in Laisamis Sub-County ***(n=283)***

Variable	**A. Open defecation**			
	Unadjusted ORs (95% CI)	**P-value**	**Adjusted ORs (95% CI)**	**P-value**
Women as decision makers in sanitation	0.446 (0.325-0.611)	<.001	0.558 (0.675-1.237)	0.558
Support from community members	1.049 (0.829-1.328)	0.691	1.833 (1.196-2.810)	0.055
Societal pressure to adopt toilets	0.502 (1.168-1.932)	0.002	0.794 (0.553-1.141)	0.212
Human feaces not dangerous just like livestock dung	4.375 (3.287-6.492)	<.001	4.543 (3.199-6.453)	0.005
Natural leaders encouraging toilet construction	0.572 (0.444-0.737)	<.001	0.616 (0.386-0.982)	0.042
Ever participated in a CLTS-triggering exercise	0.700 (1.570-4.645)	<.001	0.718 (1.733-4.654)	0.001
	B. Status of toilets adopted after CLTS			
Women as decision makers in sanitation	0.821 (0.654-1.163)	0.031	0.914 (0.675-1.237)	0.558
Support from community members	1.555 (0.883-1.410)	0.460	1.833 (1.196-2.810)	0.115
Societal pressure to adopt toilets	0.884 (0.696-1.123)	0.918	0.794 (0.553-1.141)	0.212
Human feaces not dangerous just like livestock dung	0.756 (0.449-0.632)	0.714	0.656 (0.488-0.882)	0.155
Natural leaders encouraging toilet construction	1.572 (0.444-0.737)	<.001	1.576 (1.245-3.476)	0.042
Ever participated in a CLTS-triggering exercise	2.700 (1.570-4.645)	<.001	2.218(1.733-4.654)	0.001

Research data (2024).

In the simple model for the odds of the status of toilets adopted after CLTS, the likelihood of adopting improved toilets after CLTS was 17.9% times lower when women

participated in decision-making and toilet construction processes ($p=0.031<0.05$). Communities who were supported by natural leaders had 1.572 more chances of adopting improved toilets compared to those who were not supported by natural leaders ($p<0.001$). The probability that people who had participated in the CLTS triggering exercise would adopt improved toilets was 2.700 higher than their counterparts ($p<0.001$). The relationship between societal pressure to adopt toilets, support from community members and low knowledge on the difference between the dangers of human faecal matter and animal faecal matter and the status of toilets adopted after CLTS was not significant ($p>0.05$).

Findings from the multivariable model shown in Table 4.20 for the odds of the status of toilets showed that encouragement by natural leaders and participation in CLTS triggering exercises had 1.576 and 2.218 higher chances of facilitating adoption of improved toilets respectively (Adjusted OR 1.576, 95% CI: 1.245-3.476, p=0.042; Adjusted OR 2.218, 95% CI: 1.733-4.654, p=0.001). The findings implied that communities who actively participated in CLTS triggering meetings and who had active natural leaders constructed toilets which were capable of separating human contact from excreta. As such, lack of participation or absence of natural leaders within the community, who would spearhead construction of better toilets, promoted construction of unimproved toilets in the area.

4.6 Influence of Cultural Factors on Adoption of Community-Led Total Sanitation

This section outlines results on the influence of cultural factors such as taboos, beliefs, norms and lifestyle.

4.6.1 Influence of taboos on adoption of community-led total sanitation

Respondents were given statements on a Likert scale to rate their level of agreement with the statements as shown in Table 4.21.

Table 4. 21

Cultural taboos and adoption of CLTS

Statement	Strongly disagree	Disagree	Not sure	Agree	Strongly agree	Total	Mean/SD
Defecation in toilets is considered a taboo	75 (26.5%)	67 (23.7%)	11 (3.9%)	129 (45.6%)	1 (0.4%)	283 (100%)	2.696 (1.296)
Our culture promotes open defecation	68 (24.0%)	65 (23.0%)	18 (6.4%)	117 (41.3%)	15(5.3%)	283 (100%)	2.809 (1.336)

Research data (2024)

When asked whether defecation in toilets was considered a taboo, most responses (45%) were in the agree category which were closely followed by strongly agree (26.5) and disagree (23.7%) responses. When requested to respond to the claim that community culture promoted open defecation, most responses (41.3%) were in the category of agree, followed by 24% and 23% in the strongly disagree and disagree categories respectively. The means of the responses were 2.696 (1.296) and 2.809 (SD=1.336) respectively which suggested that on average, respondents leaned on the 'disagree' category but not strongly so. Findings from the focus group discussion indicated that taboos that existed in the area mostly discouraged the practice of open defecation as leaving faecal matter in the open especially for children attracted anal diseases when their faeces got to be seen by people with a 'bad eye' as reported by a focus group discussion participant that:

"*We have to be keen in finding out where our children defecate. It is believed that*

children defecate in the compound or another person's field and a person with a bad eye sees the faeces, the children can acquire boils in their buttocks."

Such a belief attracted positive sanitation outcomes of avoidance of open defecation by children. However, although taboos that encouraged open defecation were not mostly reported, the near average mean showed that some people held taboos that encouraged defecation in the open. Such taboos surrounded the shame of mentioning human faecal matter and of expressing the urge to relieve oneself as reported in the focus group discussion where a member said:

"Sometimes it is an embarrassment to keep asking household owners permission to use their toilets when moving with cows. At times we are on the road. I see it a taboo to mention the urge. No one wishes to be associated with human waste."

The results suggested that open defecation was common among the people who moved around with livestock due to absence of toilets along the ways. The fear of expressing their sanitation needs discouraged them from using toilets from neighbourhoods. A study report in Ethiopia similarly showed that taboos had a significant contribution to the practice of open defecation (Abebe & Tucho, 2020). The findings suggested the need for strategies to enhance safe faecal disposal options for people on transit in such a community.

4.6.2 Influence of lifestyle on adoption of Community-Led Total Sanitation

The study examined how lifestyle influenced adoption of CLTS. Being a pastoral community, participants were given statements regarding pastoralists to rate their degree of agreement on whether herdsmen used latrines. The findings were as shown in Table 4.22.

Table 4. 22

Use of latrines by herdsmen

Statement	Strongly disagree	Disagree	Not sure	Agree	Strongly agree	Total	Mean/SD
Herdsmen use latrines when moving with their livestock	61 (21.6%)	90 (31.8%)	17 (6.0%)	62 (21.9%)	53 (18.7%)	283 (100%)	2.845 (1.460)
Herdsmen use latrines while in settler camps	87 (30.7%)	49 (17.3%)	7 (2.5%)	114 (40.3%)	26 (9.2%)	283 (100%)	2.799 (1.463)

Research data (2024)

When requested to indicate whether herdsmen used latrines while moving with their livestock, participants as shown in Table 4.22 indicated a general disagreement at a mean of 2.845 (SD=1.460). People who moved with their livestock did not mostly use toilets when they needed to relieve themselves as there could have been no toilets along their grazing or movement ways. In addition, although neighboring households along the road could have had toilets, it could have been difficult for the herdsmen to express their desire to use the toilets. The other statement on latrine use by herdsmen in settler camps yielded a mean of 2.799 (SD=1.463) which implied that herdsmen did not use toilets when in settler camps. Failure to use toilets in both cases was attributed to lack of toilets and reluctance to build temporary structures for temporary solutions as reported in the focus group discussion where a respondent said:

"You see they are mostly moving, they cannot construct toilets in settler camps because they know after sometimes they will move."

Lack of toilets in setter camps and movement with livestock in deserted places attracted

open defecation which made adoption of the desired outcomes of CLTS of open-defecation free communities less achieved. A study conducted by Barasa and Waldman (2022) also reported similar findings where herdsmen contributed to increased bush open defecation cases in Tanzania. People who implement CLTS required to address occupation-related sanitation issues for the communities to be open-defecation free.

4.6.3 Influence of beliefs and cultural norms on adoption of community-led total sanitation

This section presents results from the study findings on the existence of beliefs and norms in relation to CLTS outcomes. Results from Table 4.23 show responses to the question on beliefs that discouraged toilet sharing among the community members.

Table 4. 23

Beliefs discouraging toilet sharing

Response	Frequency	Percentage
True	192	67.8
False	91	32.2
Total	283	100.0

Research data (2024).

Most of the respondents (67.8%) reported that there were beliefs in the community that discouraged toilet sharing suggesting that most of the communities in the area did not like sharing toilets either across gender or age. Findings from the focus group discussion indicated beliefs that restricted toilet sharing among in-laws and between adults and children as follows:

"Married women do not use the same toilet with their husband's father. Children are not also supposed to use the same toilets as adults. They have a tendency of wanting to know what an adult is doing inside there."

Having beliefs that discouraged toilet sharing among members of one family implied that households needed to construct toilets several toilets for children, adults and in-laws which could be expensive and impractical especially for low-income families. Failure to provide separate toilets for the groups could have facilitated avoidance of the available toilets for open defecation which promoted failure in CLTS adoption. Other beliefs that affected latrine adoption in households revolved around the perception that toilets would harm livestock as they could collapse inside toilet pits. A participant in the focus group discussion indicated that:

"They believe that cows can get inside the toilets through the pits and deem toilets as animal traps. Toilets are either be constructed away from households or not constructed at all."

People who feared that their livestock would die or get injured in toilets were less likely to construct toilets ar situate the toilets far from households which could discourage some members like women from using them especially at night due to fear of harassment. Similar findings on the influence of beliefs on sanitation behaviours were noted by Barasa and Waldman (2022) in Tanzania and Wasonga et al. (2023) in Kenya.

Participants were requested to rate their degree of agreement with the statements shown in Table 4.24 on cultural norms and alignment of CLTS practices with the community's values.

Table 4. 24

Cultural norms and values

Statement	Strongly disagree	Disagree	Not sure	Agree	Strongly agree	Total	Mean/ SD
CLTS practices align with the cultural values and beliefs of my community	48 (17.0%)	46 (16.3%)	8 (2.8%)	168 (59.4%)	13 (4.6%)	283 (100%)	3.184 (1.261)
There are cultural norms that affect sanitation in this community	5 (1.8%)	31 (11.0%)	6 (2.1%)	187 (66.1%)	54 (19.1%)	283 (100%)	3.898 (0.895)

Research data (2024).

Table 4.24 shows that at a mean of 3.184 (SD=1.261), respondents indicated that CLTS practices aligned with the cultural values and beliefs of the community. The findings suggested that the community had no issue with the implementation mechanism for CLTS where faecal matter is mentioned and brought in their presence. Studies have reported a likelihood of communities embracing behaviour change approaches that align with their values (Lomas & Hammersley, 2016). The community in the study area therefore had no values that could discourage the implementation of CLTS. Implementation of CLTS requires a receptive community that can feel shocked when faecal matter is brought near them. However, members from the focus group discussion indicated that the community had interacted with faeces from livestock too much to feel

ashamed of human faeces as reported:

"We live with faeces from animals. Don't you think that some people might be less shocked when interacting with faeces from human beings? The CLTS process may not always cause disgust to some of these people. They are used to it."

Community-Led Total Sanitation might be less effective when the disgust and fear of faeces are not felt as intended. Context-specific approaches to CLTS could be necessary to improve the receptiveness of CLTS messages to pastoral communities for effective behaviour change.

Results showed that at a mean of 3.898 (SD=0.895), there existed cultural norms that affected sanitation in the community (Table 4.24). Some communities could have norms and hold practices that affect the willingness to construct or use toilets. Findings from the focus group discussion also indicated that other people who spent their lives in deserted places like warriors contributed to high cases of open defecation in the study area. The participants reported avoidance of toilets at night for the warriors as they were engaged in their missions as follows:

"People have constructed toilets but not all avoid open defecation. Warriors are the only individuals who are not free to use toilets during the day but they can use them at night. They have to stay alert and focused on missions instead of taking breaks. They are on the move during the day or engaged in activities."

Postponement of missions by warriors to attend to personal needs was considered a waste of time and would mean losing the mission. Community-led total sanitation awareness creation interventions are required to address such issues to eradicate open defecation cases in bushes.

4.6.4 Logistic regression analysis for cultural factors

Logistic regression was carried out to examine the relationship between cultural factors like taboos, beliefs, norms and lifestyles on adoption of CLTS. The findings were as summarized in Table 4.25. Findings from the univariable model showed that the odds of open defecation were 5.203 times higher for people who perceived defecation in toilets as a taboo ($p<0.001$). Open defecation chances were 3.733 times higher for families whose lifestyle was centered on herding compared to the people who did not practice herding ($p=0.012<0.05$). People who held beliefs against toilet sharing had 0.640 lower chances of defecating in the open compared to when beliefs were not held ($p<0.001$).

All variables that turned out to be significant in the univariable model were also significant in the multivariable model. Consideration of defecation in toilets as a taboo (adjusted OR 4.481 95% CI 2953-6.800, $p<0.001$), herding (OR 4.094, 95% CI: 0.145-2.856, $p=0.000$) and beliefs surrounding sharing of toilets (OR 0.670, 95% CI: 0.345-4.567, $p=0.002$) influenced open defecation.

In the univariable and multivariable models for the odds of the status of toilets after CLTS in Table 4.25, the only variable that tested significant was taboos restricting defecation in toilets. Both models showed a reduced likelihood of adopting improved toilets for residents who held such taboos ($p<0.05$). The results implied that open defecation was more common for communities who held sanitation-related taboos and presence of such taboos was an hinderance to toilet utilization and thus adoption of CLTS.

Table 4. 25

Odds of adoption of CLTS in Laisamis Sub-County (n=283)

Variable	A. Open defecation			
	Unadjusted ORs (95% CI)	**P-value**	**Adjusted ORs (95% CI)**	**P-value**
Defecation in the toilets as a taboo	5.203(3.677-7.360)	<.001	4.481(2.953-6.800)	<.001
Cultural norms affecting sanitation	0.810(0.639-1.027)	.082	0.717(0.459-1.122)	0.146
Lifestyle (herding) hindering CLTS	3.733(0.575-2.933)	0.012	4.094(0.145-2.856)	0.000
Beliefs discouraging toilet sharing	0.64(0.269-4.497)	<.001	0.670(0.345-4.567)	0.002
B. Status of toilets adopted after CLTS				
Defecation in the toilets as a taboo	0.621(0.451-1.568)	<.001	0.655(0.481-1.891)	0.007
Cultural norms affecting sanitation	1.093(0.857-1.395)	0.473	0.921(0.648-1.310)	0.648
Lifestyle (herding)	0.724-0.570-0.921	0.058	0.718(0.815-1.703)	0.384
Beliefs discouraging toilet sharing	1.122(0.884-1.423	0.344	0.886(0.657-1.195)	0.429

Research data (2024).

4.7 Influence of Household Ability Factors on Adoption of Community-Led Total Sanitation

This section presents results obtained from the study on how ability factors like the affordability of toilet construction costs, space availability, latrine construction materials availability at the household and latrine construction skills influenced adoption of CLTS.

4.7.1 Influence of household latrine construction affordability on adoption of Community-Led Total Sanitation

The study examined the employment status of the participants and whether they could

comfortably afford the construction costs for toilets. The findings were as summarized in Table 4.26.

Table 4. 26

Employment status and affordability of construction costs

Employment Status	**Frequency**	**Percentage**
Employed (Salaried)	1	0.4
Self Employed	1	0.4
Not Employed	281	99.3
Total	**283**	**100.0**
My household can comfortably afford the construction of a simple latrine		
Strongly disagree	154	54.4
Disagree	49	17.3
Not sure	3	1.1
Agree	45	15.9
Strongly Agree	32	11.3
Total	**283**	**100.0**

Mean=4.012, SD=0.135

Research data (2024).

Results from Table 4.26 showed that nearly all (99.3%) of the participants were not employed. The results could be attributed to the fact that women, whose duties were to look after their homes and to attend to household duties were mostly left at the households when men went for herding. At A mean of 4.012 (SD=0.135), participants confirmed that the latrine construction costs were high for their households and they could not afford them. Findings in the previous sections have indicated that women had the primary role of ensuring the construction of toilets at the households.

However, when women lacked financial resources for the construction of better toilets, they constructed poor toilets made of poor local materials as indicated in the focus group discussion where a participant said:

"In most cases, women are not allowed to go away from their households. It is men who do. So they are supposed to ensure that everything in their households runs smoothly.

Sometimes women lack money for the costs associated with latrine construction. They do it by themselves. Some toilets are not pleasing."

Results from the focus group discussion also showed that livestock was often the primary focus for the community and overshadowed other needs such as toilet adoption. Efforts were usually directed towards animals' wellbeing as opposed to improved sanitation standards at the households. A focus group discussion participant argued that:

"*The pastoralists put animals at the forefront of their plans. They primarily focus on the wellbeing of their animals and other needs to them are not as critical as the needs for their livestock."*

Existing studies by Kouassi et al. (2023 a) in Burkina Faso and Paul et al. (2022) in Haiti found out an association between CLTS outcomes and affordability of the construction costs for latrines where residents defecated in the open due to lack of resources for toilet construction. Although communities could be poor, and require aid, the introduction of subsidies or financial aid could interfere with the potency of CLTS which works under the principle of community push and zero subsidies (Rama, 2016).

4.7.2 Influence of space/land availability in households on adoption of Community-Led Total Sanitation

The study assessed the availability of land or space and its influence on adoption of CLTS in Laisamis Sub-County. Table 4.27 summarizes the findings.

Table 4. 27

Approximate size of land in acres

Land Size	Frequency	Percentage
Less than 1	124	43.8
1-2	149	52.7
More than 2	10	3.5
Total	**283**	**100.0**
Size of land (Space availability) influences CLTS outcomes e.g. construction of toilets		
True	260	91.9
False	23	8.1
Total	**283**	**100.0**

Research data (2024).

Results from Table 4.27 showed that many (52.7%) participants resided in a 1 to 2 acres land and that 43.8% lived in a land that was less than an acre. Such a land could have been small to accommodate all household activities including space for rearing cattle and growing cattle feeds. Ninety-one percent (91%) of participants indicated that the size of land influenced the construction of toilets. Toilets were likely to be constructed when there was sufficient space around the compound. Lack of enough space could imply that space for toilet construction was minimal which might make the community fail to construct toilets as expected in CLTS, attracting the practice of open defecation. The findings were supported in the focus group discussion where a participant said that:

"Toilet construction might be difficult when we do not have enough land. A space where cattle can rest after grazing, a space for farming and construction of household structure."

The findings of this study concurred with the results by Yogananth and Bhatnagar (2018) who established that households with less space had higher chances of defecating in the open due to inadequate space for latrine construction. However, the findings contradicted

with results obtained from Ethiopia by Asnake and Adane (2020) who associated the presence of space around households with the practice of open defecation. The contradiction could be because the studies were conducted in different contexts with different values and practices.

4.7.3 Influence of materials availability on adoption of Community-Led Total Sanitation

The study examined whether the availability of materials for toilet construction in the household and the ability of the households to acquire the materials influenced adoption of CLTS. The sources of materials for the households and the availability of materials were examined. The findings were as shown in Table 4.28.

Table 4. 28

Source of Materials for Latrine Construction

Source of Materials	**Frequency**	**Percentage (%)**
Locally available	261	92.2
Purchased from hardware/shop	18	6.4
Re-used materials	4	1.4
Total	**283**	**100.0**
Ability to Afford Latrine Construction Materials		
Response	**Frequency**	**Percentage (%)**
Yes	27	9.5
No	256	90.5
Total	**283**	**100.0**

Research data (2024).

The findings presented in Table 4.28 show that the vast majority of participants (92.2%) relied on locally available materials for constructing latrines. Only 6.4% reported purchasing construction materials from hardware stores or shops, while 1.4% used re-purposed or re-used materials.

The preference for locally available materials is closely linked to the community's

limited financial capacity, as indicated by 90.5% of respondents who stated they could not afford to buy materials for latrine construction. This limitation contributes to the construction of less durable latrines, often made from low-quality or temporary materials. Barasa and Waldman (2022) observed that financial constraints in rural communities often result in the use of improvised or substandard materials, which negatively affects the sustainability and safety of sanitation infrastructure.

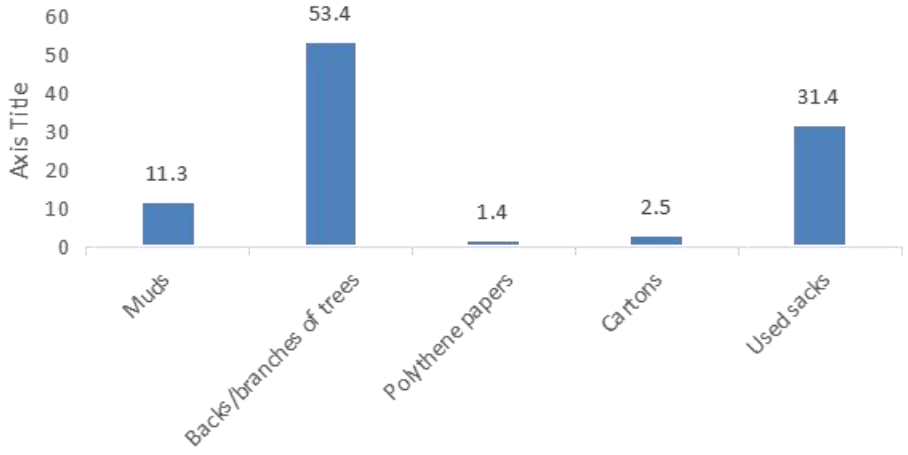
Observational data (as shown in Figure 4.3) supported these findings, revealing that:

i. 53.4% of latrines were constructed using barks or branches of trees,
ii. 31.4% used recycled sacks,
iii. 11.3% were made from mud,
iv. 2.5% from cartons, and
v. 1.4% from polythene papers.

These construction methods reflect both the resourcefulness and the economic limitations of the community. While the use of local materials supports accessibility and affordability, it also raises concerns about durability, privacy, hygiene, and long-term usability. These factors must be addressed to ensure the sustainability of Community-Led Total Sanitation (CLTS) outcomes.

Figure 4- 3

Materials used for toilet construction



Research data (2024).

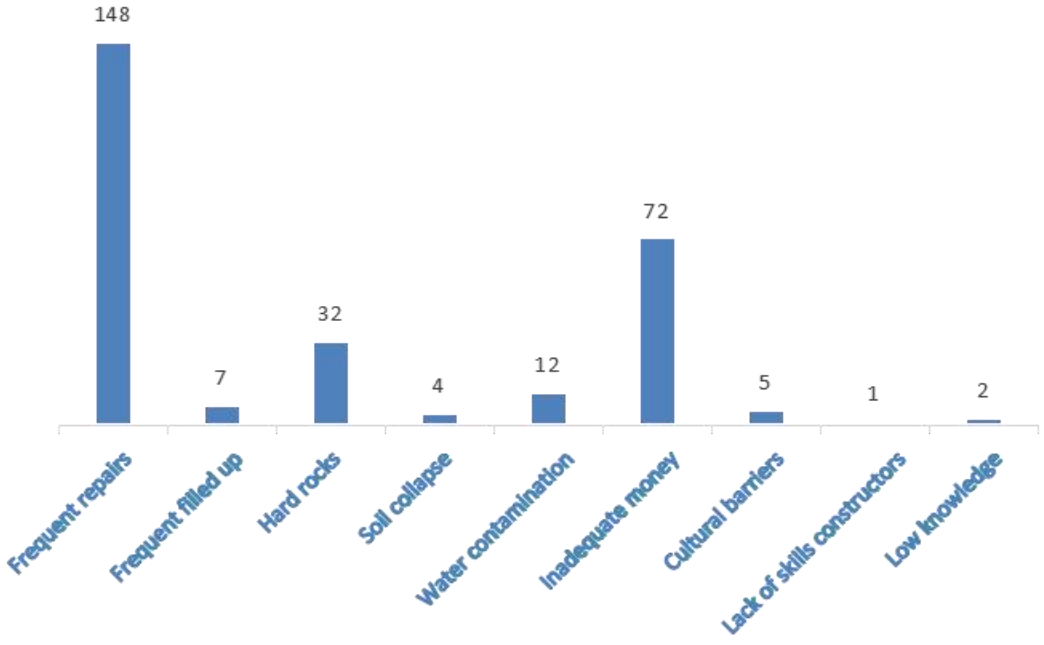
The Results showed that none of the materials were strong enough to ensure adoption of durable toilets. Studies have reported slippage to open defecation when toilets constructed after CLTS fill up or collapse (Yogananth & Bhatnagar, 2018; Barasa & Waldman, 2022). Findings from the focus group discussion indicated that some materials used for toilet construction were poor and could easily get destroyed by the hot sun in the area as indicated:

"The sun here is very hot. It burns the walls for toilets constructed using cartons, sacks, sticks or polythene papers."

Worn-out superstructures tend to have holes around the walls which could make the community fail to use the toilets because of their inability to maintain user privacy. One of the major challenges reported to have been encountered at the households was the need for frequent toilet repairs, frequent fill-up rates, and unexcavatable soils among others as shown in Figure 4.4.

Figure 4- 4

Challenges for toilet construction at the household level



Research data (2024).

The absence of better materials for toilet construction could have influenced reversion to open defecation when such toilets collapsed or toilets underutilization due to their unpleasing conditions. Such practices could mean low adoption of the expected CLTS outcomes.

4.7.4 Influence of latrine construction skills on adoption of Community-Led Total Sanitation

The researcher sought to find out whether the community had the desired skills for toilet construction and the people involved in toilet construction when the community members lacked skills for latrine construction. The results were as shown in Table 4.29.

Table 4. 29

Skills and training on toilet construction

Response	Frequency	Percentage
Yes	155	54.8
No	128	45.2
Total	**283**	**100.0**
Training on toilet construction after CLTS		
Yes	139	49.2
No	144	50.8
Total	**283**	**100.0**

Research data (2024).

Findings from Table 4.29 showed that more than half of the participants (54.8%) had skills for toilet construction and that 49.2% had received training on latrine construction after CLTS. People with latrine construction skills are likely to construct toilets in better designs when they access the required latrine construction materials. However, it cannot be ignored that 45.2% of the residents reported lack of toilet .

In Burkina Faso, a study by Kouassi *et al*. (2023) established that toilets constructed by masons with the desired skills were likely to be of good quality and designs. Lack of skills by some community members called for aid from local masons, who charged a significant amount of money to erect a single block which could have discouraged people from constructing toilets or could have attracted construction of low-standard toilets from untrained community members. A respondent from the focus group discussion indicated that:

"I do not know how to construct a good toilet by myself. When I do then it is bad. I always look for money to pay local people who construct toilets around. They do at a cost which is sometimes expensive when I do not have money.

The results demonstrated the essence of community training and sanitation marketing on

the best toilet designs after Community-Led Total Sanitation activities to equip community members with the skills required to erect improved toilet facilities.

4.7.5 Regression analysis for household ability factors

Regression analysis was performed to examine the relationship between household ability factors (affordability, space availability, materials availability and skills) and adoption of CLTS. Results from the univariable model for the odds of open defecation (Table 4.30) showed a negative significant relationship between open defecation and availability of space around the households (OR=0.438, p=0.003) and availability of skilled toilet constructors (0.375, p<0.001).

The results implied that increased space around the households and the construction of toilets by skilled masons could contribute to a reduction of open defecation. The odds of open defecation were 2.136 times higher for households that lacked toilet construction materials compared to where the materials were available. The variables that tested significant in the unadjusted model were also significant in the adjusted model. The ability of households to afford toilet construction costs showed a non-significant relationship with open defecation for both models.

The univariable model for the odds of status of toilets adopted after CLTS showed that people who were comfortable with construction costs for toilets had 67.9% lower chances of constructing improved toilets (p=0.031<0.05). The relationship was also significant in the multivariable model (Adjusted OR 0.366, 95% CI: 0.955-1.565, p=0.001). The findings was difficult for the researcher to explain. However, such findings, where even the financially able people, constructed unimproved toilets could be related to other compound factors which require further exploration to clarify the phenomenon.

Respondents who did not have materials for toilet construction had 11.6% lower chances of adopting improved toilets (p=0.018).

The probability of constructing improved toilets increased by the availability of skilled people for toilet construction (Unadjusted OR 1.205, 95% CI: 0.949-1.532). The availability of space around the households was not related to the construction of improved toilets (p>0.05). The multivariable model also showed a significant relationship between skills and availability of latrine construction materials and adoption of improved toilets after CLTS.

The regression results suggested that participants were likely to adopt improved toilets when they engaged people with the necessary skills for toilets construction. Besides, adoption of improved toilets was more possible for residents who had the ability to aquire materials for latrine construction. Absence of the materials resulted in adoption of low-quality toilets. The goal of CLTS according to Kar (2020) is to promote a community that is free from any form of faecal exposure and construction of unimproved toilets in the area implied that CLTS was least effective based on absence of skills and materials for latrine construction.

Table 4. 30

Odds of adoption of CLTS in Laisamis Sub-County (n=283)

Variable	**A. Open defecation**			
	Unadjusted ORs (95% CI)	**P-value**	**Adjusted ORs (95% CI)**	**P-value**
Comfortably afford the construction costs	0.920(0.728-1.163)	0.486	0.809(0.597-1.096)	0.171
Space availability	0.438(0.252-0.762)	0.003	0.402(0.228-0.709)	0.002
Unavailability of construction	2.136(1.641-2.779)	<.001	1.669(1.214-2.296)	0.002

materials				
Skills	0.375(0.287-0.492)	<.001	0.438(0.324-0.593)	<.001
B. Status of toilets adopted after CLTS				
Comfortably afford the construction costs	0.321(0.954-1.563)	0.031	0.366(0.955-1.565)	0.001
Space availability	1.115(0.883-1.410)	0.360	1.130(0.890-1.436)	0.316
Unavailability of construction materials	0.884(0.696-1.123)	0.018	0.942(0.720-1.231)	0.014
Skills	1.205(0.949-1.532)	0.014	1.154(0.880-1.513)	0.003

Research data (2024).

CHAPTER FIVE: CONCLUSION, RECOMMENDATIONS AND PUBLICATION

5.1 Introduction

This section presents the conclusion and recommendations derived from the findings of the study conducted in Laisamis Sub-County which aimed at examining the influence of social factors, cultural factors and household ability factors on adoption of CLTS. The section also contains a manuscript prepared for publication.

5.2 Summary of Findings

The study examined the influence of social, cultural and household ability factors on adoption of CLTS in Laisamis Sub-County. The study was based on household surveys, observations and focus group discussions. Data obtained revealed low adoption of Community-Led Total Saniation as a result of social factors, cultural factors and factors within households. Almost one third of the population defecated in bushes or in the open and 65.7% of the residents adopted unimproved forms of sanitation options (Traditional Pit Latrines) which kept them below the sanitation ladder. At a mean of 3.98, participants reported that some people did not use the available toilets which implied that some toilets constructed after CLTS were regarded non-suitable by some residents due to their low quality.

Regarding participation in CLTS triggering sessions, most of those who reported having participated in the sessions were females and men showed minimal participation which was attributed to their busy schedules in livestock keeping away from home. Facilitators of CLTS were rated as having adequate knowledge on CLTS implementation and the community showed awareness of the dangers of open defecation as enlightened in CLTS

exercises. However, the notion that human faecal matter was not harmful just like animal faeces encouraged defecation in the open and such a notion was attributed to their long term interaction with animal faeces as residents in the study area were mostly pastoralists. Other factors that contributed to increased CLTS non-adoption in the area were absence of toilets in bushes and deserted areas such as water collection points which attracted open defecation for both men and women visiting such areas.

Findings amplified the influence of cultural taboos and beliefs which centered on toilet sharing among members of the same family which affected latrine utilization hence affecting the expected outcome of CLTS of latrine adoption and use. Women were mosty left in the households and were tasked to construct toilets for their households. However, minimal skills and absence of materials for latrine construction was a problem which attracted construction of low quality toilets which were sometimes ignored for open defecation. Although women could have wished to adopt improved toilets, it was a difficult task to convience their busy husbands, who prioritized livestock more than other household matters, that investment in better sanitation options was of essence.

5.3 Conclusion

The study aimed at establishing adoption of CLTS in the communities in Laisamis Sub-County. Findings obtained from the study showed that although CLTS had been implemented, the desired outcomes of adopting improved toilets, use of toilets and open-defecation free status in communities were minimally achieved. The study concluded that CLTS could be an effective approach in promoting behaviour change only if the factors that influenced its adoption were addressed.

Objective one assessed the influence of social factors on adoption of CLTS. The study

concluded that the practice of open defecation and adoption of unimproved toilets were as a result of the interaction of residents with animal faeces which made them treat human faeces with the same measure as animal faeces, low participation in CLTS triggering exercises, inadequate strategization on natural leaders for social mobilization.

It can be concluded from the findings obtained on cultural factors that adoption of CLTS was affected by the existence of taboos that discouraged toilet use, the existence of beliefs which prohibited toilet sharing among family members and the lifestyle of herding cattle in lonely and deserted places without toilets. Although culture should be respected, context-specific solutions are needed to ensure that the desired outcomes after CLTS are attained to minimize slippage down the sanitation ladder.

Objective three assessed the influence of household ability factors on adoption of CLTS. The study concluded that the sanitation status in the sub-county was poor despite the implementation of CLTS as a result of lack of space for toilet construction, unavailability of materials for latrine construction and inadequate skills for construction of good toilets.

5.4 Recommendations

The study recommends regular follow-ups to communities where CLTS has been implemented to ensure complete eradication of open defecation and to oversee the construction of improved toilets. The follow-up activities should incorporate household-based training on latrine construction. Sanitation marketing is essential at the community level, to sell ideas on the best toilets to be constructed using locally available materials which could favour the poor, who cannot afford the costs associated with the construction of toilets. In addition, community sanctions are necessary to restrict open defecation practices whether in bushes or within the household compounds. This should be preceded

by awareness creation campaigns to make people understand that faeces left in the open could facilitate sanitation-related infections.

Given the cultural orientation of the communities in the study area, the study recommends context-specific CLTS strategies that address sanitation needs in the most practical and effective way, to make communities better appreciate the essence of adopting toilets. Such strategies could involve use of the most locally available materials such as milk in the demonstration of how faecal matter can be transmitted from where it has been left in the open to the milk they take everyday. The strategy could make them better and practically appreciate safe sanitation practices. The study also recommends efforts by governments and policymakers to advocate for the construction of public toilets along the roads and in strategic places of deserted areas to ensure that herdsmen can have options to manage their faecal matter.

There is also a need for the CLTS implementors including the Ministry of Health to advocate for local champions who are respected figures in the community and who can command behaviour change. Participatory approaches during the CLTS implementation processes are needed to ensure representation of gender in the triggering meetings. This would make both men and women more informed on the essence of toilet construction and use, thus successful adoption of CLTS.

5.5 Publication

Yussuf Galmogle, Lilian Mukiri Kirimi, Kirema Nkanata Mburugu, Grace Kasiva Eliud Influence of Social and Cultural Factors on Adoption of Community-Led Total Sanitation in Laisamis Sub-County, Marsabit County, Kenya. *African Journal of Science, Technology and Social Sciences, Volume 07 Issue 10 October 2024. DOI:*

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APPENDICES

Appendix A:Consent Form

CONSENT TO PARTICIPATE IN THIS STUDY

I, _____(participant initial), confirm that the person asking my consent to take part in this research has told me about the nature, procedure, potential benefits and anticipated inconvenience of participation. I have read (or had explained to me) and understood the study as explained in the information sheet. I have had sufficient opportunity to ask questions and am prepared to participate in the study.

I understand that my participation is voluntary and that I am free to withdraw at any time without penalty (if applicable). I am aware that the findings of this study will be processed into a research report, journal publications and/or conference proceedings, but that my participation will be kept confidential unless otherwise specified. I agree to the recording of the questionnaire.

Participant

Signature…… Date……

Name ……

Researcher's signature…… Date……

Appendix B:Questionnaire

INSTRUCTIONS:

- **Do not write your name in the questionnaire**.
- **Complete the following items by writing the number for the appropriate response and by writing a short response where necessary**.

The questionnaire has four (4) Sections. Give your most honest response for each question. Complete the questionnaire in black ballpoint pen.

SECTION A: DEMOGRAPHIC DATA

1 Specify your gender?

a. Male ☐
b. Female ☐

2 How old are you?

a. 18 – 28 years ☐
b. 29 - 39 years ☐
c. 40 – 50 years ☐
d. Above 50 years ☐

3. What is your highest level of education?

a. Not been to School ☐
b. Primary school ☐
c. High school ☐
d. Post–Secondary Education ☐

4. What is your religion?

a) Christian ☐ b) Muslim ☐ c) Others

5. Marital status

a) Married ☐

b) Single ☐

c) Divorced ☐

d) Separated ☐

e) Widowed ☐

6. Number of family members

a)1-5 ☐ b) 6-10 ☐ c) above 10 members ☐

7. What is the main economic activity of the head of the household?

a) Herdsman

b) Business

c) Farmer

d) Any Other…….

SECTION B: ADOPTION OF COMMUNITY – LED TOTAL SANITATION.

1. Which type of toilet do you use in the household?

a) Traditional pit latrine (Simple/normal latrine) ☐

b) Ventilated pit latrine (Latrine with vent pipes) ☐

c) Flush toilets ☐

d) Bush/Open ☐

2. i) Have you ever participated in a CLTS–triggering exercise?

a) Yes ☐

b) No ☐

ii) Which gender mostly participates in CLTS activities?

a) Male ☐
b) Females ☐

3. Please tick the most appropriate answers for the statements below

	True	**False**
CLTS has promoted the construction of toilets.		
CLTS has promoted avoidance of open defecation.		
The type of toilets after CLTS are good for use.		
Some people do not make use of the constructed toilets after CLTS.		

SECTION C: SOCIAL FACTORS

1. Given below are a number of statements. For each statement indicate your level of agreement or disagreement by ticking the appropriate choice from those given. 1 - STRONGLY AGREE 2 - AGREE - 3 - DISAGREE 4 - STRONGLY DISAGREE

	Strongly Disagree	**Disagree**	**Not Sure**	**Agree**	**Strongly Agree**
1. The opinions of influential community members (elders, religious leaders, etc.) significantly impact the adoption of CLTS practices in my community					
2. I receive substantial support from neighbors or community members in implementing CLTS targets.					
3. There is societal pressure to adopt toilets after CLTS in my community.					
4. Facilitators have adequate knowledge and expertise in matters related to CLTS practices.					
5. The community has adequate knowledge on the dangers of open defecation and the importance of toilet adoption.					

6. Human feaces are not dangerous just like livestock dung.					
7. Natural leaders have played a key role in mobilizing/encouraging the community to construct toilets.					

2. Who is the primary decision maker in household toilet construction?

   a) Males ☐

   b) Female ☐

3. Who mobilizes the community on CLTS activities?

   a) Natural leaders ☐

   b) Local leaders (Chiefs) ☐

   c) Health officials ☐

   Any other……

SECTION D: CULTURAL FACTORS

Given below are a number of statements. For each statement indicate your level of agreement or disagreement by ticking the appropriate choice from those given. 1 - STRONGLY AGREE 2 - AGREE - 3 - DISAGREE 4 - STRONGLY DISAGREE

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
1. Defecation in the toilet is considered a taboo					
2. Our culture promotes open defecation.					
3. Herdsmen use latrines while moving with their livestock					
4. Herdsmen use latrines while in settler camps.					
5. There are cultural norms that affect sanitation in this community.					
6. Traditional gender roles hinder the adoption of CLTS.					
7. Traditional gender roles hinder adoption of CLTS.					

1. Please select the most appropriate response. There any beliefs in this community that discourage toilet-sharing

   a) True ☐
   b) False ☐

SECTION E: HOUSEHOLD ABILITY FACTORS FACTORS

1. i) What is your employment status?

a) Employed (Salaried) ☐
b) Self Employed ☐
c) Not Employed ☐

ii) Please indicate by ticking the correct answer for the statement below my household can comfortably afford the construction of a simple latrine.

1- Strongly disagree ☐
2- Disagree ☐
3- Not sure ☐
4- Agree ☐
5- Strongly agree ☐

2. i) What is the approximate size of your land?

a) Less than 1 ☐ b)1 – 2 ☐ c) More than 2 ☐

ii) Please select the appropriate choice: the size of land (Space availability) influences CLTS outcomes e.g. construction of toilets.

a) True ☐

b) False ☐

3. i) What is the source of materials for latrine construction?

a. Locally available ☐

b. Purchase from hardware/shop ☐

c. Re-use ☐

d. Others ……

ii) Are you able to afford materials to construct a toilet at your home?

a) Yes ☐

b) No ☐

b) Do you have the needed skills and manpower to construct a toilet?

1. Yes ☐ 2. No ☐

c) If No who usually constructs toilets for your household?

1. Trained Mason ☐
2. No ☐

d) Have you ever been trained in toilet construction after CLTS?

1. Yes ☐ 2. No ☐

6 There is adequate space to be able to construct latrines

a) Yes ☐ b)No ☐

Appendix C: Observation checklist

1. Presence of a pit-latrine in the compound

   a) Yes ☐ b)No ☐
2. Evidence of use of latrine (a footpath to the pit-latrine)
   a) Yes ☐ b)No ☐
3. Evidence of open defecation
   a) Yes ☐ b)No ☐

4. Presence of improved type of toilets (Observe presence of flies/oduor)

   a) Yes ☐ b) No ☐

5. Toilet with complete walls (No Gaps/ holes)

   a) Yes ☐ b) No ☐
6. Materila for toilet construction
   a) Muds ☐
   b) Barks/branches of trees ☐
   c) Polythene papers ☐
   d) Cartons ☐
   e) Used Sacks ☐

Appendix D:Focus Group Discussion guide

1. Do you think that Community-Led Total Sanitation (CLTS) has promoted the construction of toilets/ avoidance of open defecation? Explain

……
……
……

2. Which gender mostly participates in CLTS triggering and why?

……
……
……

3. Are there people who fail to use toilets that were constructed after CLTS?

……
……
……

4. How can you describe the type of toilets constructed after CLTS?

……
……
……

5. How does opinion from influential community leaders affect CLTS outcomes?

……
……
……

6. Is there any form of support that people receive for toilet construction or improvement after CLTS and how has it affected behaviour change sustainability?

……
……
……

7. What do you think promotes open defecation in the pastoral communities?

……
……
……

8. Do you think that interaction with animal faeces affects pastoralists' understanding of the dangers of open defecation during CLTS triggering? Explain your answer

……
……
……

9. Does CLTS practice align with cultural values in this community?

……
……

……

10. Are there cultures in this community that prevent adoption of the desired sanitation practices such as toilet construction/use after CLTS?

……

……

……

11. What are some of the factors within households that prevent adoption of the desired outcomes after CLTS?

……

……

……

12. Are there subsidies offered for toilet construction in this community? Who offers them and do you think that it affects CLTS outcomes?

……

……

……

13. What challenges do people in this community encounter that prevent them from constructing toilets after CLTS?

……

……

……

14. Are there any specific factors that particularly prevent behaviour change particularly for pastoralists after CLTS? Explain

……

……

……

15. What strategies can be employed to promote the successful adoption of CLTS in these nomadic communities?

……

……

……

Appendix E:Research Permit

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Appendix F: Publication

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Influence of Social and Cultural Factors on Adoption of Community-Led Total Sanitation in Laisamis Sub-County, Marsabit County, Kenya

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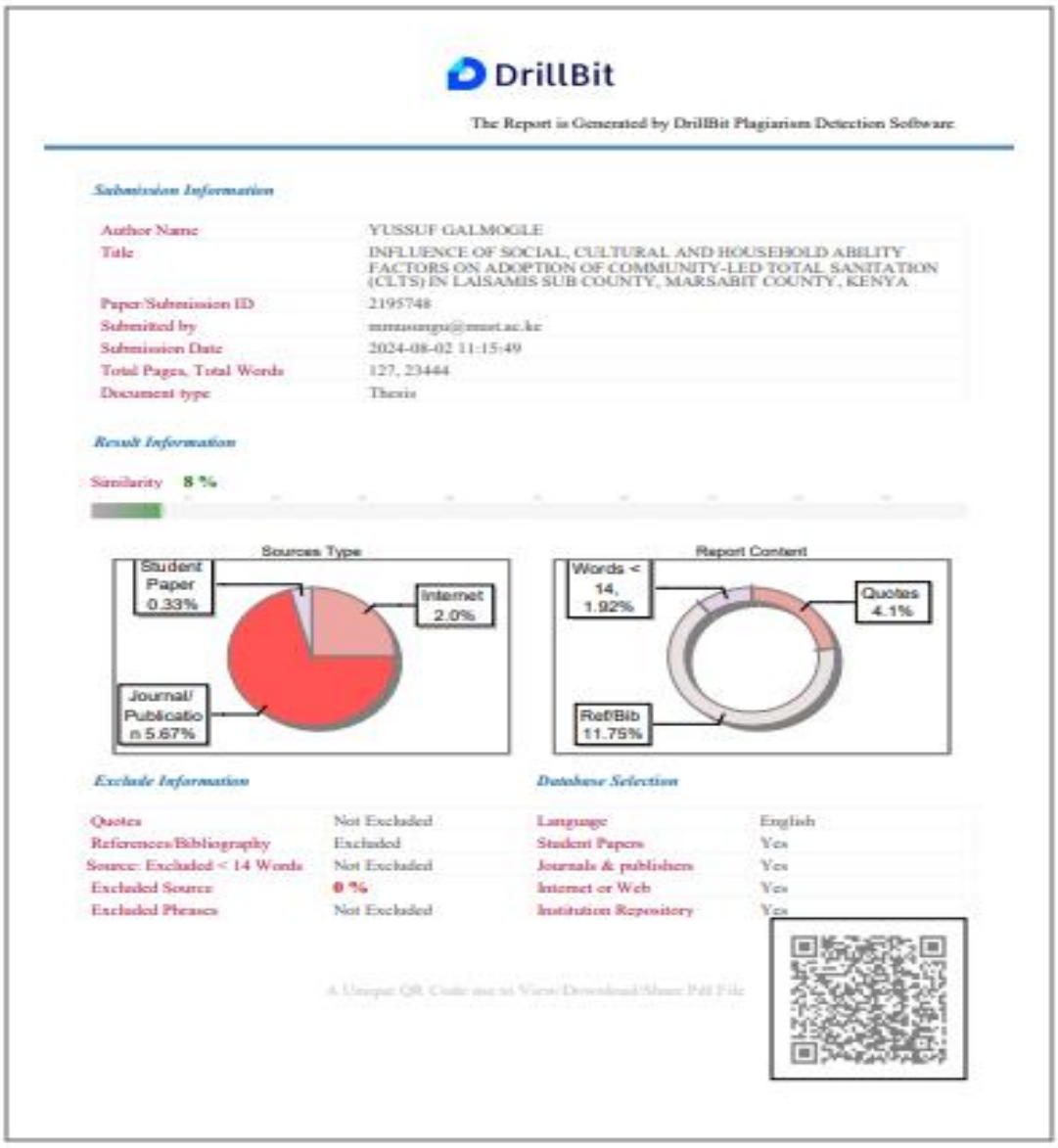
ABSTRACT: Community-Led Total Sanitation (CLTS) is a behavior change approach that aims at promoting access to safe sanitation and hygiene. The approach empower communities to take collective action to eliminate open defecation practices, thus promoting a healthy population. Despite CLTS implementation in Kenya, open defecation is still rampant, in low-income communities particularly in pastoral areas. This study's study was to examine the influence of social and cultural factors on adoption of Community-Led Total Sanitation in pastoral areas. The study was conducted in Laisamis Sub-County, Marsabit County, Kenya using a descriptive design with a mixed methods approach. The sample size was 393 household heads who were randomly selected from the five Wards in the Sub-County, which were treated as clusters. The data was collected using structured questionnaires and analyzed in descriptive and inferential statistics. Qualitative data was collected from a focus group and analyzed in themes. Findings showed that despite CLTS activities to impart communities with knowledge on toilet use, 63.3% of participants opined that open defecation practice was still rampant. The most cases of open defecation were reported among herdsmen whose livelihood was based in herding in grazelands where there were no toilets. Results also revealed that taboos and beliefs that surrounded toilet sharing between children and adults affected toilet utilization (OR 0.67 95% CI: 0.345-4.567, P=0.002). The impact of CLTS was thought to be minimal for a community that often interacted with animal faeces, which made over 90% of the participants believe that human faecal matter was not dangerous just like animal faecal matter. The role of women in household sanitation matters was appreciated as they were left in households to construct toilets while men went to look after cattle. However, herdsmen's concerns regarding the essence of investing in improved latrines were minimal as most of their time was spent in the fields, and convincing them on the need for better toilets could have been impossible for the women. The study concluded that CLTS was an effective strategy in triggering behaviour change among communities if its execution was to be context-specific. Involvement of both women and men in CLTS triggering exercises is essential in reinforcing the importance of ending open defecation whether in bushes or at home.

KEYWORDS: Community-Led total sanitation, cultural factors, latrine construction, latrine use, open defecation, pastoral communities, social factors

Appendix G:Plagiarism Report



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