International Journal of
Health Sciences
(IJHS)

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CARI Journals

International Journal of Health Sciences

ISSN: 2710-2564 (Online)

Vol. 7, Issue No.7, pp. 36 - 46, 2024

www.carijournals

Level of Awareness of Community-Led Total Sanitation (CLTS) Among Communities in Kilifi and Marsabit Counties in Kenya

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Accepted: 1st Sep, 2024, Received in Revised Form: 10th Sep, 2024, Published: 23rd Sep, 2024

Abstract

Purpose: This study examined determinants of major interventional factors on community-led total sanitation to deliver open defecation-free societies and improve Health and well-being among the selected population in Kilifi and Marsabit in Kenya.

Methodology: The study methodology included a comparative cross-sectional study of the two diverse study populations. Eight hundred and eleven participants were recruited for the data collection phase of the study. A multistage sampling procedure was used to sample the villages and the households. Quantitative data was analyzed using SPSS tool version 26.0. Descriptive statistics were used to determine the different regional CLTS uptake. Inferential statistics, including multivariate logistic regression, were used to determine associations between variables.

Findings: The study found a significant statistical association between households with household heads having good handwashing awareness (A.O.R=2.459, p=0.002) and CLTS awareness (A.O.R=4.317, p=0.022) were statistically associated with owning a sanitation facility. The results show that the CLTS program is effective and has positively impacted sanitation status, such as reducing open defecation levels in Kilifi and Marsabit.

Unique Contribution to Theory, Policy and Practice: CLTS focuses on the behavioral change needed to ensure real and sustainable improvements—investing in community mobilization instead of hardware and shifting the focus from toilet construction for individual households to the creation of open defecation-free villages. It raises awareness that even if a minority of people continue to defecate in the open, everyone is at risk of disease

Keywords: *Sanitation, Open Defecation-Free, Handwashing, Awareness, Intervention, Diarrhoea*

Introduction

Background to the Study

Access to water and sanitation is a global challenge. According to the Joint Monitoring Programme (JMP) Report of WHO and UNICEF, about 61% of the world's population (4.5 billion people) lack access to safely supervised sanitation services (WHO/UNICEF, 2017). This indicates that these individuals use a latrine or toilet, which does not result in the safe treatment or disposal of excreta. Additionally, there were not enough handwashing statistics to create a global estimate. Only 15% of people in sub-Saharan Africa had access to a soap-and-water handwashing station (WHO/UNICEF, 2017).

Stunting in children has been connected to poor sanitation, particularly open defecation, in further research from the World Bank's Water Supply, Sanitation, and Hygiene (WASH) Poverty Diagnostics for 17 countries worldwide (IRC, 2024). Over 5.6 million Kenyans still urinate in the open, with only 31% of the population having access to improved sanitation in urban areas and 30% in rural ones. If immediate action is not taken, diseases including cholera, typhoid, amoebic, and diarrhoea will continue to be prevalent (IRC, 2024). Poor sanitation costs Kenya an estimated Kes 27 billion (365 million USD) annually, or 0.9% of the country's GDP (IRC, 2024). Even though open defecation costs Kenya $88 million annually, ending the activity would only necessitate constructing and using 1.2 million latrines (IRC, 2024). In Article 43 of the 2010 Constitution of Kenya, sanitation was deemed important enough to be designated a fundamental right. This poor sanitary status can be demonstrated by the current National Cholera crisis, especially in Kibra, Nairobi, that targeted ministers and high-end establishments (World Vision International, 2015).

More than half of Kenyans, or 21 million people, use unhygienic or shared latrines, while 5.6 million more have no access to latrines at all and must defecate in the open (World Vision International, 2015). The main factor causing Kenya's 3,500 cholera infections per year on average is faecal pollution of the environment. The required WASH response is expected to cost US$2.2 million annually (WHO Report, 2021). However, a cholera outbreak has economic ramifications beyond the immediate response of the health system. According to the WSP research, 19,500 Kenyans, including 17,100 children under the age of 5, passed away from diarrheal disease each year, with 90% of these deaths being directly related to inadequate access to water, sanitation, and hygiene (World Vision International, 2015).

Sanitation is a constitutional right in Kenya, and the responsibility rests on the shoulders of the county government (Kenya National Commission on Human Rights, 2017). Recently, one form of intervention to reduce open defecation has gained worldwide attention. Community-led total sanitation has been adopted and implemented in many countries as an approach to putting an end to open defecation. Without providing subsidies to buy latrine or toilet construction materials, the

CLTS intervention facilitates a process to motivate and empower rural communities to avoid open defecation and construct and utilise latrines (WHO Report, 2021).

Community members examine their sanitation profile, including the level of open defecation and the spread of faecal-oral contamination that adversely impacts each and every one of them, using Participatory Rural Appraisal methodologies. The CLTS strategy makes the community feel contemptible and ashamed. They all recognise the horrible effects of open defecation, including the fact that, as long as it persists, they are consuming one another's faeces. This realisation inspires them to start a community-wide initiative to address sanitation conditions (Kasiva et al., 2022).

The most extensively used policy intervention for enhancing rural sanitation in low-income countries is community-led total sanitation (CLTS). The SDG of stopping open defecation (OD), which approximately 900 million people currently practice, is the focus of community-led complete sanitation (Kasiva et al., 2022). In many nations worldwide, CLTS programming and implementation are being carried out. It is a viable option for governments and donors, as it promises to decrease Open Defecation and increase sanitation coverage through community mobilisation and shared behaviour change—typically without direct financial support for the construction of toilets (Ministry of Health, 2021). Kenya initiated the open defecation-free rural Kenya in May 2011. The government aimed to have an ODF Kenya by 2013, and an ODF Rural Kenya Roadmap 2011-2013 was developed. It also aimed to accelerate MDG 7, which the country did not achieve (Ministry of Health, 2021). By the end of the period, only 9,126 villages had been triggered. Three thousand nine hundred fifty-six had claimed ODF status, 2,567 had been verified, and a dismal 1,273 had been certified as ODF (Ministry of Health, 2021).

Study Design and Setting

The study adopted a comparative study design and included an analytical cross-sectional study design to ensure a proper description of the study variables and to bring out the real situation of CLTS among the two communities, properly describing the differences in the effectiveness of CLTS in the two counties.

Study Approach

The study design used a quantitative approach. After the intervention phase, quantitative data for key parameters were recorded and compared to quantitative baseline data fetched from secondary sources.

Study Location

The study was carried out in Kilifi and Marsabit Counties in Kenya. The purposive method was used as the criteria for choosing the two study locations. CLTS has been implemented in both counties by the government in protocols, yet each one has a social, economic, and geographical difference, which calls for a comparison between the two to ascertain the outcomes of CLTs under these circumstances.

This study represents all such areas with diverse socio-cultural and socio-economic diversity in Kenya, Africa and globally. The study area in (Kilifi) is agricultural, while the other (Marsabit) is nomadic, food-deficient, and semi-arid. Both have different sanitation challenges yet are expected to simultaneously achieve open defecation-free status in Kenya by 2020 (Kenya ODF Roadmap, 2016) – under review.

Target Population

The targeted population were adult (18 and above) household heads. The study population was all households in Saku and Rabai Sub counties from Marsabit and Kilifi county reports, totalling 371 villages (Rabai 177 villages and Saku 194 villages).

These two areas were selected purposively because they both had a government CLTS project for one year, from November 2020 to November 2021.

Sampling Procedure

Sampling Technique. Purposive sampling was used to select the study site, which is in Saku and Rabai Sub Counties in Marsabit and Kilifi County.

A multistage sampling technique of the villages within the sub-counties was deployed. This is a form of cluster sampling that involves dividing the population into groups (or clusters). Then, one or more clusters were chosen at random, and everyone within the chosen cluster was sampled. The sampling entailed cluster sampling for villages. The study used a sample frame for HHs and then performed simple random sampling for the HHs.

Data Management and Analysis

The data analysis plan followed the quantitative aspects of the current study.

The Quantitative Data Analysis Plan

IBM SPSS version 23 was used to evaluate the data. The prevalence was calculated using descriptive statistics: means, standard deviations, and percentage frequencies. Sections A and B of the questionnaire were examined using the percentage frequency measure to ascertain the adoption of CLTS and ODF in the two chosen locations.

Propensity score matching (PSM) was used to estimate the impact of CLTS intervention on the sample population. PSM is a quasi-experimental method in which researchers deploy statistical techniques to form an artificial control group and then match each treated group with a non-treated group having similar characteristics. Using the outcome of the matching process, the researcher can make critical estimates of the impact of the intervention under investigation. PSM assumes that, by using the observable characteristics between the two groups, the treated unit can be compared to the untreated unit as though the treatment has been sufficiently randomised. Using

this approach, PSM mimics randomisation and overcomes bias issues that impact other non-experimental approaches.

The steps to analyse data using PSM are as follows:

First, the data is identified, clearly showing the treated and the untreated group. Secondly, the researcher estimates the propensity score through a discrete choice model such as logit or probit. In the second stage, the researcher ensures that all relevant covariates are present. The covariates are the baseline characteristics that are not affected by the treatment. After that, the researcher uses values predicted by the logit or probit function to generate the propensity score. The third step is the restriction of the sample to common support. This step ensures that units with the same covariate values have a positive probability of being treated and untreated. After that, a matching algorithm is chosen and implemented. Finally, the impact of the intervention with the matched sample is estimated, and standard errors are calculated. The estimated impact of the intervention is the average difference in outcomes between treated units and their matched untreated control units. This study used the PSMATCH2 command within the IBM SPSS version 23. The command executes all the steps above, thus efficiently estimating the impact of CLTS on sanitation status.

An independent samples t-test was used to compare two groups of cases in one variable. A multivariate logistic analysis was utilised to ascertain if the variables and covariates were related. P 0.05 was used as the criterion of significance for all tests in this study. The study's final findings were displayed in graphs, charts, tables, and figures.

Socio-Demographic and Economic Characteristics

In both counties, the females represented a significant proportion: Kilifi 73.97% (N=304) and Marsabit 60.75% (N=243). In Kilifi County, 18.74% were above 61 years, and 23.84% of respondents aged between 31-40 years. In Marsabit, most study participants, 39.25% (N=157), were aged between 21-30 years. Regarding marital status in both counties, most were married: Kilifi (81.0%) and Marsabit (71.5%). Islam was the predominant religion in Marsabit (71.5%) and Christianity in Kilifi (69.76%). The monthly income earned by respondents varied across the two counties was also determined. In Kilifi County, 56.69% earned less than 5000 Kenyan shillings per household per month. In Marsabit County, 21.5% earned between 5000-10,000 Kenya shillings per household monthly. Regarding the level of education, in Kilifi County, only 1.7% (n=7) had a university level of education, while in Marsabit, 3.25% (n=13) attained university education. The proportion of study participants who completed secondary school was higher in Marsabit (16.25%) than in Kilifi County (5.11%).

	Kilifi	Marsabit
Gender	**N(%)**	**N(%)**
Female	304(73.97)	243(60.75)
Male	107(26.03)	157(39.25)
Total	411(100)	400(100)

	Kilifi	Marsabit
Marital Status	**N(%)**	**N(%)**
Divorced	16(3.9)	12(3.0)
Married	333(81)	286(71.5)
Widowed	38(9.3)	33(8.3)

	Kilifi	Marsabit
Religion	**N(%)**	**N(%)**
Christian	286(69.76)	147(37.00)
Islam	110(26.83)	247(61.75)
Other	14(3.41)	5(1.25)
Total	410(100)	400(100)

	Kilifi	Marsabit
Monthly Income	**N (%)**	**N(%)**
10,001-15,000	38(9.25)	64(16.0)
15,001-20,000	35(8.52)	34(8.5)
25001-30000	14(3.41)	10(2.5)

5001-10000	69(16.79)	86(21.5)
above_30_000	3(0.73)	22(5.5)
less_than_5,000	233(56.69)	160(40)
Total	411(100)	400(100)

	Kilifi	**Marsabit**
Education Level	**N(%)**	**N(%)**
College	26(6.33)	34(8.5)
primary complete	129(31.39)	47(11.75)
primary incomplete	174(42.34)	193(48.25)
secondary complete	54(13.14)	65(16.25)
secondary incomplete	21(5.11)	48(12.00)
University	7(1.70)	13(3.25)
Total	411(100)	400(100)

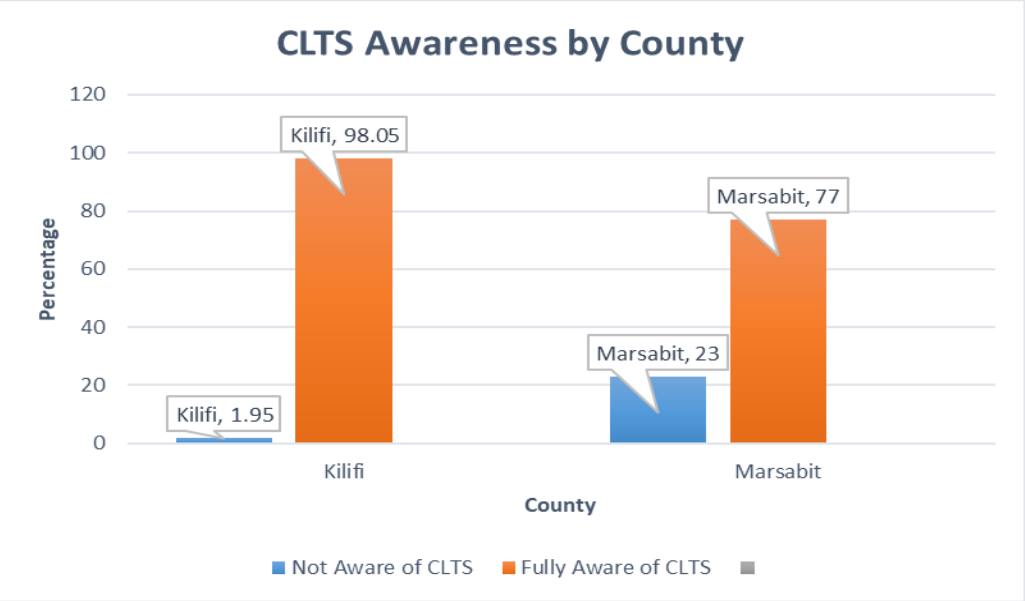
	Kilifi	**Marsabit**
Age Group	**N(%)**	**N(%)**
21-30 Years	82(19.95)	157(39.25)
31-40 Years	98(23.84)	126(31.50)
41-50 Years	100(24.33)	61(15.25)
51-60 Years	54(13.14)	26(6.50)
Above 61 Years	77(18.74)	30(7.50)
Total	411(100)	400(100)

Results

Level of Awareness on CLTS by Counties

awareness	Freq.	Percent		
Not Aware of CLTS	100	12.33		
Fully Aware of CLTS	711	87.67		
Total	811	100		
Awareness	Kilifi	Marsabit	Total	
Not Aware of CLTS	8(1.95)	89(23.0)	95(12.33)	***X=83.1195, df=1, p=0.0001***
fully Aware of CLTS	405(98.05)	311(77.0)	716(87.67)	
Total	411(100.0)	400(100.0)	811(100)	

The proportion of study participants unaware of CLTS was higher in Marsabit, 23%, compared to those in Kilifi. Among those fully conversant with CLTS, 98% resided in Kilifi County; 77% in Marsabit were fully aware of CLTS, as illustrated.



Discussion

Our study demonstrates a positive reception to CLTS in Kenya. CLTS appears to have significantly influenced the adoption of improved sanitation behaviours. The study also provides insight into the process of change initiated by CLTS-triggering activities. Leveraging community leadership, including traditional chiefs and village headmen, is a powerful tool for encouraging communities to embrace the CLTS program and mobilise to construct and use toilets (Wamera, 2012). Marsabit

and Kilifi county governments have established an advocacy strategy that uses seven national advocates who are all chiefs with verified ODF chiefdoms. The strategy supposes that, if properly engaged, traditional rural leaders, especially chiefs, can make a meaningful and sustainable impact on sanitation and handwashing practices.

Numerous emotive factors, including shame and disgust, hierarchical and peer pressures, and competition (both internal at the village level and external with other communities), influence the behaviour change process. The transect walk seems powerful in eliciting these emotive factors, driving much behavioural change. Cultural norms that exist can paradoxically both inhibit and encourage latrine use. Children also have a special influence on their families and communities in terms of sanitation behaviours. We believe that the strength of CLTS lies in the awareness of its community-based approach in which residents reach their conclusions about the importance of sanitation and develop their strategies for implementing changes based on personal cultural beliefs and practices (Pickering et al., 2015; Garn et al., 2017).

Generally, community members perceive the impact of CLTS on their communities as very high. New behaviours, including latrine construction and usage (among others), were widely reported across all areas. Participants strongly believed that the burden of diarrhoea and other diseases decreased significantly after the trigger of CLTS. There was no documented evidence of a reduced disease burden so that these perceptions may stem from assumptions about the potential impact of CLTS. These results may suggest more about positive reception and acceptance of CLTS and the triggering process than a reduction in diarrheal diseases and will require further research.

Awareness Levels of CLTS Among Communities in Kilifi and Marsabit Counties in Kenya

The two counties demonstrated disparities in levels of ownership/access to sanitation facilities. Kilifi County recorded a 97.07 per cent ownership rate, significantly above the 75.75 per cent reported in Marsabit. CLTS awareness levels varied considerably between the two counties. In Marsabit, the unawareness level was about 23 per cent, higher than the 2 per cent rate recorded in Kilifi.

Marsabit recorded a higher sanitation mortality rate among children under five (218491.5, mean) compared to Kilifi (29905.53, mean), which could be attributed to low awareness of CLTS, among other factors.

Conclusions and Recommendations

Recommendations for Policymakers

- Sanitation and hygiene awareness are the pillars of behaviour change and should, therefore, be enhanced to ensure policies that provide access to sustainable health services for sanitation-related diseases such as diarrhoea.

- Social Behavior Change Communication (SBCC) must go hand in hand with all other hygiene promotion measures.
- Behaviour change messaging must be communities to ensure no one is left behind.
- Provide access to health education regarding prevention, treatment, and management of sanitation-related diseases through targeted and innovative multi-media and public platforms.
- CLTS focuses on the behavioral change needed to ensure real and sustainable improvements—investing in community mobilisation instead of hardware and shifting the focus from toilet construction for individual households to the creation of open defecation-free villages. It raises awareness that even if a minority of people continue to defecate in the open, everyone is at risk of disease.
- Introduce CLTS concepts in primary education to increase awareness among primary school leavers and dropouts.
- Introduce basic health education regarding sanitation and sanitation-related diseases at the primary level.

Recommendations for Further Research

- Investigate the awareness in the context of socio-economic determinants of Health.
- Investigate variables critical for behaviour change that promotes proper sanitation measures.
- Carry out a similar study by recruiting participants from every county in Kenya to achieve generalisable results.

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