



Original Research Article

SOCIO-CULTURAL FACTORS INFLUENCING THE SUSTAINABILITY OF OPEN DEFECATION-FREE STATUS AMONG ADULT RESIDENTS IN MWINGI WEST SUB-COUNTY, KITUI COUNTY IN KENYA

Munyongi Daniel Kyalo¹, Alexander M Mbeke²

¹Department of Community Health, School of Public Health, Mount Kenya University.

²School of Science and Applied Technology, Department of Biology and Biomedical Sciences and Technology, Laikipia University.

Received : 12/01/2025
Received in revised form : 05/03/2025
Accepted : 20/03/2025

Corresponding Author:

Mr. Munyongi Daniel Kyalo,
Department of Community Health,
School of Public Health, Mount Kenya
University.
Email: kmunyongi@gmail.com

DOI: 10.70034/ijmedph.2025.1.363

Source of Support: Nil,
Conflict of Interest: None declared

Int J Med Pub Health
2025; 15 (1); 1946-1950

ABSTRACT

Background: Approximately 420 million people, or 5% of the world's population, still defecate in open areas such as fields, forests, and waterways. The highest rates of open defecation are found in South Asia and Sub-Saharan Africa. Open defecation remains a public health burden in developing nations. The study aimed to assess social-cultural factors influencing the sustainability of open defecation-free status among adult residents in Mwingi West Sub-county, Kitui County.

Material and Methods: An analytical cross-sectional design was used in this study. Both purposive and Stratified sampling techniques were utilized to select the study participants. SPSS version 26 statistical tool was employed in the quantitative data analysis. The chi-square test was used for bivariate analysis, and binary logistic regression was used for multivariate analysis. The cutoff for statistical significance was $p < 0.05$. Qualitative data was analyzed thematically. Quantitative data was presented using tables and figures while qualitative data was presented using narratives.

Results: The sustainability of open defecation-free status among adult residents in Mwingi West Sub-County, Kitui County was at 75.3%. The presence of a sanction and sanitation program increased the odds of open defecation-free status sustainability by 3.3 (OR=3.3, 95% CI=1.433-7.488) and 2.2 (OR=2.2, 95% CI=0.273-1.953) respectively.

Conclusion: The sustainability of open defecation-free (ODF) status among adult residents in Mwingi West Sub-County, Kitui County, at 75.3%, highlights notable progress but remains a public health concern. This finding underscores the need for continued efforts to address gaps in achieving universal ODF status. The presence of a sanction program significantly improved sustainability by fostering compliance and community accountability, while a sanitation program enhanced access to hygienic facilities and reinforced behavior change. These results emphasize the importance of integrating enforcement mechanisms with accessible infrastructure to strengthen long-term ODF sustainability, ultimately improving community health and reducing environmental risks.

Keywords; Open Defecation, Open Defecation Free, Sanitation, Sustainability & Water Sanitation, and Hygiene.

INTRODUCTION

Access to adequate and reasonable sanitation is both a fundamental human right and a necessity. Ensuring universal access would drastically reduce mortality and disease rates, particularly among children. Poor

water, sanitation, and hygiene conditions kill roughly 827,000 people a year in middle- and low-income countries, where 60% of diarrheal deaths occur.^[1] It is estimated that poor sanitation was the main cause of 432,000 of these deaths.^[2] Around 420 million people worldwide were openly defecating as of

2022.^[3] Of the seven regions, Sub-Saharan Africa holds the largest share, with South Asia coming in second.^[3] Better access to water, sanitation, and cleanliness could prevent 297,000 child deaths under five each year.^[4,5] Defecating outside feeds the cycle of poverty and illness. In addition to having the highest rates of infant mortality, malnutrition, and poverty, the nations with the highest numbers of open defecation cases also have the most pronounced wealth disparities.^[6] More than 15% of the people in more than 25 African nations practice OD.^[7] In Sub-Saharan Africa, households' combined prevalence of open defecation practices stands at 22.55%.^[8] An estimated 215 million people still defecate in the open in sub-Saharan Africa. One of the main causes of death for children under five in sub-Saharan Africa is diarrheal illnesses, which are spread by this practice.^[9]

Over 70% of the 340 million people who live in Eastern and Southern Africa lack access to even the most basic sanitary facilities. Out of them, 98 million people (19%) defecate in the open, 179 million use unimproved facilities, and 63 million use shared sanitary facilities.^[10] Sanitation is a major issue in Kenya. An estimated five million people, or 10% of the population, defecate in the open, and about 33 million people, or 70% of the population, lack access to basic sanitation facilities.^[11] Open defecation is a public health concern in rural areas, where 15% of people practice it compared to just 3% of people in urban areas.^[12] Open defecation is only one aspect of Kenya's poor rural sanitation issue. Approximately 85% of open defecation incidents in Kenya occur in 15 counties, most of which are located in Arid and Semi-Arid Lands (ASAL). At least ten of the fifteen counties mentioned above are home to a sizable population of transhumant pastoralists, who are difficult to reach with traditional sanitation interventions.^[13]

During Global Hand Washing Day, which was observed nationally on October 15, 2018, in Mwingi Town, Kitui County, the county was proclaimed to be free of open defecation. According to the 2019 Kenya National Bureau of Statistics (KNBS) report, 9.2% of the 261,814 households in Kitui County, which has a population of 1,136,187, have returned to using bushes to dispose of their human waste.^[14] In the year 2022, the sub-county reported 3, 057 diarrheal problems even though it was declared ODF (15). In 2022, 734 cases of stunting were also reported in the sub-county.^[15] The low sustainability of ODF status and hand washing is one of the most likely factors causing the high prevalence of diarrhea and other hygiene-related illnesses. As a result, this study aimed to assess sociocultural factors influencing the sustainability of Open Defecation-Free status among adult residents in Mwingi West Sub-County, Kitui County, Kenya.

MATERIALS AND METHODS

Study design

An analytical cross-sectional design was employed in this study, with both quantitative and qualitative data collected concurrently. The qualitative data facilitated generalization, while the quantitative data provided deeper insights into the community's perspective on socio-cultural factors influencing ODF sustainability.

Study area

The study was conducted in Kitui County's Mwingi West Sub-County. According to the 2019 KNBS report, 133,349 people are living in the Sub County overall. In 2018, the Ministry of Health and UNICEF Kenya verified Mwingi West as an open defecation-free sub-county through impartial observers. This showed that every residence in the sub-county had a latrine and were washing their hands in a handwashing sink. The same survey found that 98.8% of households had maintained ODF, while 1.2% had gone back to Open Defecation.

Study population

The study population for this study was Adult Residents In Mwingi West Sub-County, as a result, the study targeted 133,349 individuals who lived in 28,607 families in Mwingi West Sub-County (14).

Sample size determination

Using Yamane's formula, 396 respondents were chosen as the sample size from the study population of 133,349 adult residents of Mwingi West Sub-County (16).

Sampling technique

A stratified random sampling technique was used to select study participants from the four wards of Mwingi West Sub-County, Kitui County, Kenya, while a purposive sample technique was employed to select key informants from stakeholders involved in ODF status sustainability as well as the Focused Group Discussions in Mwingi West Sub-County.

Data collection tools and procedures

A self-administered, structured questionnaire was also utilized to gather quantitative data. Data on the sustainability of open defecation-free status were collected using section A of structured questionnaires; social demographic characteristics of the study respondents were captured using section B, while the section of the questionnaire captured data on social-cultural factors influencing sustainability of Open Defecation-Free status. A focused group discussion and key informant guides were used to gather qualitative data.

Statistical analysis

The statistical package for social sciences, or SPSS, version 26.0, was used to clean, arrange, code, and analyze the quantitative data that had been gathered. The chi-square test was used for bivariate analysis, and binary logistic regression was employed for further analysis of variables that revealed statistical significance in bivariate analysis. The cutoff for statistical significance was $p \leq 0.05$. Using narratives

based on themes and sub-themes, Nvivo version 11 was used to conduct a thematic analysis of the qualitative data.

Ethical consideration

Before the research was carried out, authorization to conduct the study was obtained from Mount Kenya University's ethics and review committee (MKU/ISERC/2862), thereafter permission was also sought from NACOSTI, in this case, a research license was provided by NACOSTI (NACOSTI/P/23/27346). In addition, Permission was sought from Kitui County Government. The study was entirely voluntary, and participants were asked to sign a consent form before they participated in the study. Participants' privacy was given careful consideration.

RESULTS

Sustainability of Open defecation Free Status

As indicated in Figure 1, the prevalence of open defecation-free status sustainability among adult residents in Mwingi West Sub-County, Kitui County, was 75.3%.

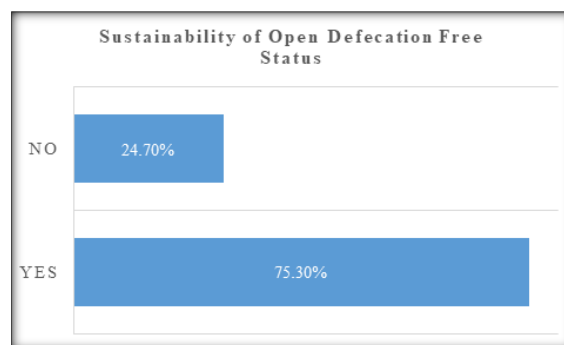


Figure 1: Sustainability of Open defecation Free Status

Social demographics characteristics

The study participants' social demographic characteristics are shown in Table 1 below. The majority of study participants (92.2%) who were household heads were men. Married people made up the majority of study participants (81.6%). Of the study participants, nearly a quarter (26.8%) had finished primary school and nearly half (45.7%) had finished secondary school. Concerning household size, over half (61.1%) of the households surveyed had 5-8 members, and nearly a third (28.5%) had 1-4 members.

Table 1: Social demographic characteristics of the study respondents

Variables	Categories	Frequency	%
Gender	Male	365	92.2%
	Female	31	7.8%
Age	25-34	73	18.4%
	35-44	86	21.7%
	45-54	203	51.3%
	54-64	34	8.6%
Marital Status	Married	323	81.6%
	Single	15	3.8%
	Window	26	6.6%
	Divorced	4	1%
Educational Level	Separated	28	7.1%
	Primary	106	26.8%
	Secondary	181	45.7%
	Tertiary	35	8.8%
Household Size	No formal education	74	18.7%
	1-4	113	28.5%
	5-8	242	61.1%
	More than 9	41	10.4%

Social cultural factors influencing sustainability of open defecation-free status

Regarding social-cultural factors, the following variables were found to be significantly associated with open-defecation-free status sustainability; the presence of sanction ($\chi^2=8.159$, $df=1$, $p=0.004$) and the presence of a sanitation program ($\chi^2=9.271$, $df=1$, $p=0.002$) hence they were imported for binary logistic regression analysis. However, Harassment of women ($\chi^2=0.422$, $df=2$, $p=0.81$), Attributes of open defecation ($\chi^2=1.3$, $df=1$, $p=0.252$), and Sharing of a pit latrine ($\chi^2=1.758$, $df=1$, $p=0.185$) were not statistically associated with the sustainability of open-defecation-free status.

As indicated in Table 2 the presence of a sanction program in the community increased the odds of sustaining open defecation-free status by 3.3.

These findings collaborated with the qualitative data where the majority of the focused group discussant noted that:

"I would say the presence of punishment for the members of the community who practice open defecation has really helped in preventing open defecation in the community and this has played a key role in sustaining open defecation-free status, for instance in my village you commanded to dispose of the fecal matter accordingly as well as pay a fine to the village elder if the action is repeated again..." (Participant 2, Age 34, FGD 2).

In addition, the presence of a sanitation program increased the odds of open defecation-free status sustainability by 2.2. These findings were in agreement with the qualitative data where one of the key informants noted that: “I would say the presence of sanitation programs in this area has helped in dealing with the problem of open defecation because it has been an issue in this

area. You will find through this program some members have benefitted through the provision of incentives in ensuring they have a pit latrine which is a key factor in promoting open defecation-free status in society, I would say the provision of this program has a lot of benefits.....” (Community Health Extension Worker, KII 2,2024)

Table 2: Social-Cultural Factors influencing sustainability of open defecation-free status

Variables	B	S.E	Wald	Df	Sig	OR	95% C.I	
							Lower	Upper
Sanction programs								
Present	1.187	.422	7.912	1	0.005	3.3	1.433	7.488
Absent						<i>Ref</i>		
Sanitation program								
Present	0.794	.257	9.560	1	0.002	2.2	0.273	1.953
Absent						<i>Ref</i>		
Constant	-1.865	.407	20.951	1	0.000	.155		

DISCUSSION

The percentage of residents in Mwingi West Sub-County, Kitui County, who had an open defecation-free status was 75.3%, which is lower than the national Kenyan target of 100% open defecation-free status by 2030, which is in accordance with sustainable development goal number six. This was far less. These findings were close to those of a study in Kenya where open defecation-free status was at 76.5%.^[17] Another study conducted in Ghana revealed a higher open defecation-free status sustainability of 98%.^[18] The presence of a sanitation program increased the odds of open defecation-free status sustainability by 2.2. This could be geared to benefits linked to sanitation programs which advocate for proper disposal of fecal matter as well as sustaining adequate personal hygienic practices. Study findings corroborated with two other studies done in Rwanda and Ethiopia which revealed the presence of sanitation programs increased the odds of open defecation-free status sustainability.^[19,20] This was contrary to a study done in Kenya which found no association between the two factors.^[13]

There was no statistical correlation between sharing of pit latrines and sustainability open defecation-free status. The majority of study participants may have maintained their open defecation-free status by sharing pit latrines, which could account for the decline in statistical power of association. Study findings were consistent with two other studies in Tanzania and Kenya where sharing of pit latrines was not associated with sustainable open defecation-free status.^[21,22] This was contrary to another study done in Burkina Faso which revealed that the lack of sharing of pit latrines reduced the odds of sustainability of open defecation-free status.^[9]

The presence of a sanction program in the community increased the odds of sustaining open defecation-free status by 3.3. A sanction program greatly improves the community's capacity to maintain an open defecation-free status over time by promoting accountability, discouraging non-compliance,

fostering collective responsibility, and reinforcing behavior change. Study findings were consistent with a study done in Ghana where the presence of sanction programs increased the odds of sustainability of open defecation-free status.^[4] This finding was contrary to an investigation done in Zimbabwe which revealed the absence of association between the two parameters.^[23] There was no statistical correlation between harassment of women and sustainability open defecation-free status. This could be linked to the fact that Harassment may be underreported due to stigma and cultural norms. These findings were contrary to two studies done in Ethiopia where the presence of women's harassment reduced the odds of open defecation-free status sustainability.^[24,25] On the other hand, the results of the study were consistent with a Ugandan study that found no link between the sustainability of open defecation-free status and harassment of women.^[26]

CONCLUSION

The percentage of people in Mwingi West Sub-County, Kitui County, who are open defecation-free (ODF) was 75.3%. The odds of ODF sustainability increased in the presence of the sanitation program sanction program. However, neither the sharing of pit latrines nor the harassment of women were statistically correlated with ODF sustainability. According to these findings, structured community programs are essential for maintaining ODF status, but they also raise the possibility that other social factors might not have a direct impact on long-term success in meeting sanitation objectives.

Acknowledgment

The authors appreciate the support of the Mount Kenya University staff and management and also the willingness of the respondents to participate in the study.

Conflict of interest: None declared.

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