



The influence of socio-demographic factors on the adoption of improved toilets in Dodoma City, Tanzania

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ABSTRACT

Tanzania encounters significant challenges related to sanitation with limited access to improved toilets. Despite government efforts such as the national sanitation campaign, only 67.76% of the households have access to improved toilets. This study was guided by the Diffusion of Innovation Theory (DIT). The research used a cross-sectional design to gather data on the influence of socio-demographic factors on the adoption of improved toilets at Mbabala in Dodoma City. The research was conducted with 250 randomly selected household heads through a survey and in-depth interview with the ward executive officer. IBM SPSS Version 27 was used in analyzing quantitative data whereby descriptive statistics and binary logistic regression were performed. On the other hand, content analysis was used in analyzing qualitative data. The research found that pit toilets without slabs (28%), pit toilets with slabs (27.2%), and ventilated improved toilets were common types of toilets adopted, while few used pour flush toilets connected to sewer systems (19.2%). The research further found that a higher level of education, income, access to clean water, the frequency of listening to the radio, and the frequency of watching television (TV) increased the likelihood of adoption of improved toilets among household heads. The study concludes that education, access to clean water, income, the frequency of listening to the radio, and watching TV influenced the adoption of improved toilets. The study recommends that the City Council of Dodoma, in collaboration with nonprofit organizations and media houses, should keep on promoting the use of improved toilets through awareness campaigns in order to create a more hygienic environment.

Keywords: Dodoma City, Improved Toilet, Sanitation, Socio-Demographic Factors, Tanzania, Toilet

I. INTRODUCTION

Access to improved toilets is a basic human right which is vital for public health, however, limited access to toilets continues to be a widespread global issue. In this research, the term 'improved toilets' encompasses flush or pour-flush toilets linked to piped sewer systems, septic tanks, or pit latrines, including those with slabs and composting toilets (World Health Organization [WHO], 2023). The United Nations (UN) has been actively advancing initiatives linked to Water, Sanitation and Hygiene (WASH) globally. In particular, Sustainable Development Goal 6 (SDG 6), which was espoused in 2015, seeks to ensure universal access to safe water and sanitation services. Target 6.2 aims to provide adequate and equitable sanitation and hygiene for everyone, with the objective of eliminating open defecation by 2030 (UN, 2015).

The World Health Organization (WHO) also highlights the vital role of having safe and clean toilets for the sake of public health (WHO, 2019). In 2022, despite ongoing initiatives, 3.5 billion people still did not have access to safely managed sanitation, with 1.9 billion utilizing basic services, 570 million relying on inadequate services, 545 million depending on poor services, and 419 million engaging in open defecation in the gutters of the streets, behind bushes, or in natural water bodies (WHO & UNICEF, 2023). The majority of those using unimproved sanitation facilities are located in rural regions (Legge et al., 2021; Asrate et al., 2022; Mondal, 2022; Ali & Khan, 2024; UNICEF & WHO, 2023).

Limited access to improved sanitation facilities negatively impacts public health, individual dignity, and safety. Inadequate sanitation conditions lead to diseases such as diarrhoea, typhoid and cholera leading to preventable deaths and health complications (UN, 2018; Asrate et al., 2022; Mondal, 2022; Brahmanandam and Bharambe, 2023; Kelly, 2024). According to WHO (2023), unsafe sanitation was responsible for more than 1 million deaths due to diarrheal diseases in 2019.

In 2020, there were still 208 million individuals in Africa practicing open defecation. The countries with the largest populations engaging in this practice are Nigeria, Democratic Republic of Congo, Madagascar, Niger and

Ethiopia (United Nations Children's Fund (UNICEF) & WHO, 2022). Poor sanitation, including the use of inadequate toilets, is frequently associated with ineffective development planning by governmental bodies. This has led to uncontrolled population growth, unregulated urbanization, a lack of coordination, unsuitable habits and low-income levels among the populace (Mshida et al., 2017).

In 2015, the financial impact of inadequate sanitation was estimated at 222.9 billion US dollars, which includes healthcare costs associated with illnesses resulting from poor sanitation practices, including the use of substandard toilets and open defecation (Tamene & Afework, 2021). Nevertheless, efforts aimed at improving Water, Sanitation and Hygiene (WASH) have shown positive results. The percentage of people with access to better sanitation facilities in Sub-Saharan Africa rose from 8% in 2000 to 31% in 2017 (Asrate et al., 2022).

Since gaining independence, the government of Tanzania has made significant efforts to promote the use of improved toilets. One of the key initiatives was the *Mtu ni Afya* (Man is Health) campaign, which took place from 1973 to 1978 and raised basic sanitation coverage from 20% to 80% (Mwesongo & Mwakipesile, 2023). Another significant initiative, the Health through Sanitation and Water (HESAWA) was launched in 1983/84 and carried out from 1985 to 2002 to enhance access to water and sanitation (Andersson, 2013). In 2012, the government introduced the National Sanitation Campaign (NSC) aimed at increasing sanitation coverage, particularly in rural regions. The second phase, initiated in 2018, was known as the *Nyumba ni Choo* (A House is not Complete Without a Toilet) campaign, which ran from 2017 to 2021. This campaign focused on motivating communities to construct and utilize improved toilets instead of relying on traditional options (Mwakalikamo et al., 2023). Furthermore, the government embraced the Community-Led Total Sanitation (CLTS) strategy to improve solutions for WASH (UNICEF, 2023). Despite these initiatives, only 67.76% of households have access to improved toilets (DHS, 2022).

While there have been significant advances, such as the decline in open defecation from 16% in 2010 to 9% in 2022, ongoing efforts are required, especially in rural and peri-urban areas to achieve a universal access to improved toilets. Thus, a comprehensive understanding of factors influencing adoption of improved toilets at Mbabala Ward in Dodoma is of paramount importance in designing interventions to tackle the problem.

1.1 Statement of the Problem

Inadequate access to improved toilets is a problem which confronts many regions in Tanzania, Dodoma in particular. Statistics indicate that still 32.24% of households use unimproved toilet facilities (DHS, 2022). Inadequate toilet facilities lead to spread of diarrhoeal diseases, typhoid and cholera (Prüss-Ustün et al., 2019; González-Rodrigo et al., 2022). The government of Tanzania has made various efforts to encourage adoption of improved toilets in the country, Dodoma city in particular. Such efforts encompass 'Mtu ni Afya' (Man is Health) campaign (Mwesongo & Mwakipesile, 2023), Health through Sanitation and Water (HESAWA) (Andersson, 2013). National Sanitation Campaign (NSC) (UNICEF, 2023). Despite the aforementioned efforts, still about one-third of the households use unimproved toilets (DHS, 2022).

Previous studies mainly relied on broader national demographic and health survey data (Belay et al., 2022; Zakayo et al., 2024) or examined the effects of the *Nyumba ni Choo* campaign (Mwakalikamo et al., 2023). This study specifically explored socio-demographic factors influencing the adoption of improved toilets in Mbabala Ward, Dodoma City. It adds to the existing knowledge concerning sanitation and guides future actions and policies regarding toilet improvement in Dodoma and similar contexts.

1.2 Research Objective

To examine socio-demographic factors influencing the adoption of improved toilets at Mbabala Ward in Dodoma City.

II. LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 Diffusion of Innovation Theory

This theory was advanced by Everett Rogers in 1960s. It mainly focuses on innovation, communication channel, time and social system. Based on the theory, adoption of a new idea or product occurs gradually through communication over time. Individuals go through five stages when they adopt an innovation such as getting knowledge, forming an opinion, making decision, implementing the change and confirming the choice (Rogers, 1962). The theory explains characteristics including observability, relative advantage, trialability, compatibility and complexity which have influence on adoption. For example, household heads are more inclined to adopt improved toilet facilities if they regard them as having greater advantages such as enhanced safety compared to traditional toilets.



2.2 Empirical Review

Researches conducted in African countries such as Ethiopia and Tanzania reveal that households with greater incomes showed higher rates of adoption of improved toilets than those with lower incomes (Temene & Aferwork, 2021; Malima et al., 2022; Tesfaw et al. 2023). Research conducted by Nyambe et al. (2020) in Lusaka, Zambia found that households having improved toilet facilities were positively correlated with households with improved drinking water, hand washing facilities, regular income and private toilet facilities. Thus, access to water as one of the components of WASH was one of the determinants for the adoption of improved toilets.

A mixed community based cross-sectional study conducted by Belete et al. (2024) revealed that awareness on latrine construction, use and maintenance, sex, occupation and income were the factors that were significantly associated with households' latrine adoption in Eastern Ethiopia. A study conducted by Lee (2017) in India found that women with regular access to mass media and accurate health information have a higher likelihood of having toilets. This is well supported by Zakayo et al. (2024) found that in Tanzania, households with televisions had a greater likelihood of using improved toilets compared to those without televisions.

III. METHODOLOGY

3.1 Study Area and Design

The research was done in Mbabala Ward located in Dodoma City, the capital of Tanzania. The geographical coordinates of the ward are 6.1667° S, 35.7500° E. In the year 2022, the ward had a population of 16,929 consisting of 4385 households (National Bureau of Statistics (NBS), 2022). A cross-sectional design was employed allowing for data collection from household heads and key informant at one point in time. The design was selected due to its cost-effectiveness and relatively short time frame (Kothari, 2006; Bryman, 2012; Creswell, 2014).

3.2 Sampling

The study's sampling frame consisted of a list of all household heads while the sampling unit consisted of an individual household head at Mbabala ward. The study utilized probability specifically systematic sampling approach to obtain household heads. The approach was carried out by paying a visit to every 10th household until the target sample size was achieved. The method ensured that the study represented all households in the area of interest. In terms of non-probability sampling, judgmental sampling was utilized to select key informants like the ward executive officer and community development officer. The sample size was determined by Yamane (1967) formula for known population:

$$n = \frac{N}{1 + Ne^2}$$

Where:

n = sample size

N = population (4,385 households)

e = Margin of error (6.14%) = 0.0614

$$n = \frac{4385}{1 + 4385(0.0615)^2}$$

$$n = 250.124 \cong 250$$

$$n \cong 250$$

The study's sample size included 250 household heads from Mbabala ward.

3.3 Instrument and Data Collection

Surveys, key informant interview and documentary review were used in gathering data from primary as well as secondary sources. Primary data were obtained directly from household heads regarding how socio-demographic factors influence the adoption of improved toilets in Mbabala. Secondary data came from government reports, scholarly articles and census information. These data were utilized to provide context and background regarding the study area, its population and the research subject. A checklist was employed in the key informant interview method incorporating questions that aligned with the study objectives to gather information from key informants including the ward executive officer as well as community development officer. Each key informant received different questions tailored to their specific obligations. Furthermore, a survey utilizing questionnaire was used to gather data concerning respondents' socio-demographic features, toilet types and factors influencing adoption of improved toilets. Utilization of questionnaires ensured consistency in the questions posed to respondents to facilitate easier statistical analysis. Documentary review guided by a checklist was conducted to obtain relevant information pertaining to the study objectives from published sources.

3.4 Data validity and Reliability

Data collection tools were pretested to ensure validity by identifying and correcting potential issues, including modifications to some sections of the questionnaire. To maintain reliability, all enumerators received comprehensive training in data gathering and adherence to research ethics. Furthermore, triangulation was utilized to ensure the consistency of the data obtained from key informant interviews, surveys and documentary reviews.

3.5 Data Analysis

IBM SPSS Statistics version 27 was used in the analysis of quantitative data whereby descriptive statistics were employed to analyse the types of improved toilets used by household heads, while inferential statistics (binary logistic regression) examined the relationships between independent variables (access to clean water, age, access to information (television, radio, newspaper, internet), marital status, income, level of education and the adoption of improved toilets. Content analysis technique was employed in the analysis of data collected from in-depth interviews.

3.5.1 Binary Logistic Regression Model

$$(p) = \ln (p / (1 - p)) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 \dots + \beta_n X_n$$

Whereby:

P: is the probability of the event (e.g., probability of adoption of improved toilets

ln: is the natural logarithm.

p / (1 - p): is the odds of the event.

β_0 : is the intercept (constant term).

$\beta_1, \beta_2, \dots, \beta_n$: are the regression coefficients for each independent variable.

$X_1, X_2, \dots, X_n$: are the independent variables (predictors).

Table 1

Description of Variables in the Logistic Model Variables

Variable	Variable description	Measurement	Expected effects
Y (P)	Dependent variable (adoption /otherwise)		
Xs	Independent variables		
Age	Age of respondents	Years	+
Sex	Sex of respondents	Dummy 1 male 2 otherwise	+/-
Marital status	Marital status of respondents	Dummy1 married 2 otherwise	+/-
Education	Education level	Years in school	+
Information	Access to information	Dummy 1 Access 2 otherwise	+/-
Hh Size	Household size	Number of members	+
Water	Access to water	Dummy 1 Access 2 otherwise	+/-
Television	Frequency watching television	Number of days	+
Radio	Listening to the radio	Number of days per week	+
Newspaper	Frequency of reading the Newspaper	Number of days per week	+
Internet	Frequency of using the internet	Number of days per week	+
Income	Income level of respondents	In Tsh shillings	+
Cost	Cost of construction of a toilet	In Tsh shillings	+

The study dependent variable is the adoption of improved toilets. This was measured by asking respondents if they were aware of improved toilets, how they were informed, and the types of toilets available in the study area. The questionnaire included seven response options for the types of toilets: bucket toilets, hanging toilets, pit toilets without slabs, ventilated improved pit toilets, pour-flush toilets connected to a piped sewer system and pit toilets with slabs (washable). A binary coding system was used whereby “1” stand for improved toilets and “0” for unimproved toilets.

The study used various independent variables identified through literature review such as household size, education level, age, marital status, access to clean water, access to information (television, radio, newspaper, internet) and income.

3.6 Ethical Considerations

Respondents were thoroughly informed about the study's objectives and guaranteed that the data gathered would be utilized solely for academic purposes. The emphasis was placed on their voluntary involvement, and they were made aware of their right to withdraw without facing any repercussions. The responses from participants were maintained strictly within the confines of the study to ensure confidentiality and were not disclosed to any third parties. Prior to the commencement of the study, participants signed a consent form acknowledging their informed agreement. Their

identities were kept confidential to avoid any connection to their responses. Throughout the study, the privacy rights of the participants were respected and protected.

IV. FINDINGS & DISCUSSION

4.1 Socio-demographic Characteristics of the Respondents

The study determined socio-demographic characteristics of the respondents including age, sex, monthly income level, marital status and education level as presented in Table 2.

Table 2

Socio-demographic Characteristics of the Respondents (n=250)

Variable	Category	Frequency	Percent
Age	18-24	10	4.1
	25-44	138	55.1
	45-64	89	35.7
	65+	13	5.1
Sex	Male	77	30.6
	Female	173	69.4
Monthly Income level	Less than 50,000 Tshs	41	16.4
	50,000 - 150,000 Tshs	94	37.6
	160,000 - 250,000 Tshs	69	27.6
	More than 250,000 Tshs.	46	18.4
Marital status	Married	125	50
	Single	67	26.8
	Separated/Divorced	10	4
	Widower/Widow	10	4
	Living with a partner	38	15.2
Education level	Primary	75	30
	Secondary	109	43.6
	Post-secondary	66	26.4
Awareness of toilet programs	Yes	225	90
	No	25	10

The results presented in Table 2 reveal that the largest proportion (55.1%) of the respondents were in the 25-44 age bracket, suggesting a relatively young and productive population. Also, over half of the respondents (69.4%) were female. The predominance of female respondents reflects the significant role women play in household sanitation. Concerning educational attainment, a significant portion of the respondents (43.6%) had completed secondary education, which may influence their awareness and adoption of improved toilets. Furthermore, 50% of the respondents were married, followed by 4% who were widowed, separated or divorced. The higher number of married respondents suggests a higher likelihood of adopting improved toilets, as they can decide together and share the responsibilities. This result is similar to a study conducted in Eastern Ethiopia by Tamene and Afework (2021).

Regarding household income, Table 2 indicates that, the largest group (37.6%) of respondents earned between 50,000 to 150,000 Tshs, indicating economic constraints that could affect the ability of household heads to invest in improved toilets. This result is consistent with Belete et al. (2024), who found that households adopt different types of latrines depending on the economy of the household.

4.2 Types of Toilets Adopted

The study sought to determine types of toilets adopted by the households in the study area, and the findings were presented in Figure 1.

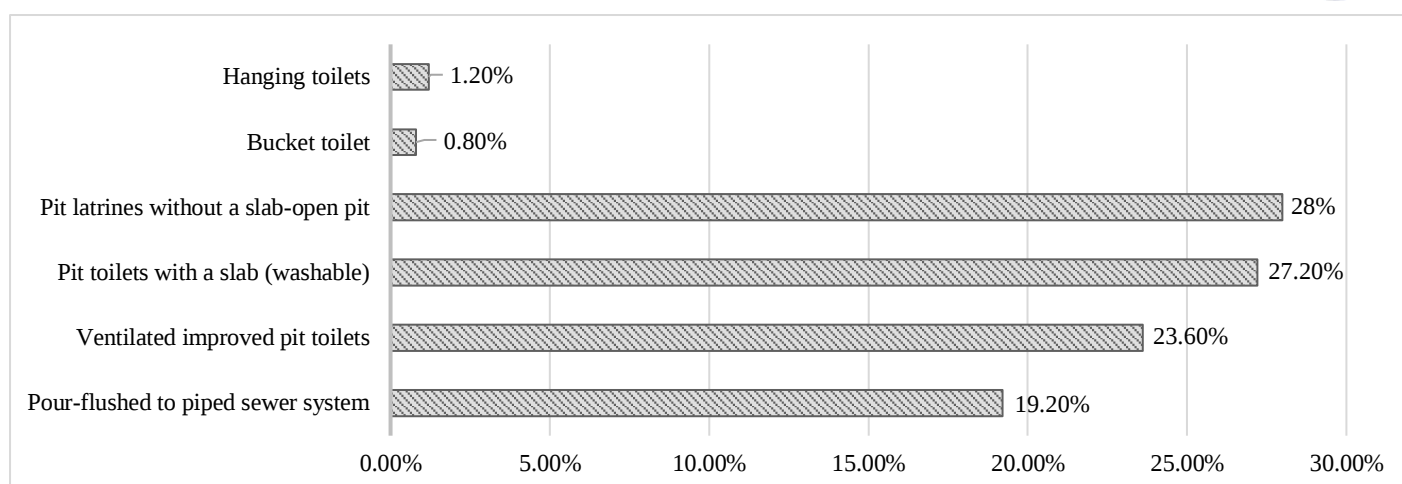


Figure 1
Types of Toilets Adopted

Figure 1 shows that 28% of the respondents adopted pit toilets without slabs followed by 27.2% of the respondents who adopted pit toilets with slabs (washable). It further shows that 23.6% of the respondents adopted ventilated improved pit toilets while 19.2% adopted pour-flushed toilets to piped sewer systems. Only 1.2% and 0.8% of the respondents adopted hanging and bucket toilets respectively.

In addition to that, during the key informant interview in the ward executive office, one of the key informants revealed that:

“The ward development committee members have been providing education on the importance of improved toilets through meetings. These efforts have enabled households to build toilets ranging from pit latrines without slabs to even pour-flush toilets to piped sewer systems in the ward.” (KII with ward executive officer, August, 2025).

These findings partly agree with Zakayo et al. (2024), who found that in Tanzania, pit toilets with slabs, pit toilets without slabs/open pits, flush to pit toilets, and ventilated improved pit toilets were common. These findings underscore the need to upgrade toilets, for instance, from pit toilets without slabs to pit toilets with slabs (washable).

4.3 Descriptive Results for the Dependent Variable (Adoption of Improved Toilet) by Socio-demographic Factors

The study sought to examine the adoption of improved versus unimproved toilets by key socio-demographic factors, illustrating the relationship between the dependent variable (adoption of improved toilets) and independent variables such as education level, income, access to clean water, and frequency of media exposure.

Table 3

Descriptive Results for the dependent variable (Adoption of Improved Toilet) by Socio-demographic factors

Socio-demographic Factors	Category	Adopted Improved Toilets n(%)	Unimproved Toilets n(%)
Education Level	Primary education	10(4)	65(24)
	Secondary education	60(24)	49(19.6)
	Post-secondary education	59(23.6)	7(2.8)
Income Level (Tshs)	<50,000	3(1.2)	38(15.2)
	50,000 – 150,000	5(2)	89(35.6)
	160,000 – 250,000	46(18.4)	23(9.2)
	>250,000	46(18.4)	0(0)
Access to Clean Water	Yes	89(35.6)	33(13.2)
	No	5(2)	123(49.2)
Frequency of Watching Tv	Not at all	50(20)	26(10.4)
	Daily	15(6)	23(9.2)
	Weekly	20(8)	31(12.4)
	Never	40(16)	44(17.6)
Frequency of Listening to Radio	Not at all	60(24)	29(11.6)
	Daily	15(6)	22(8.8)
	Weekly	20(8)	23(9.2)
	Never	25(10)	56(22.4)

The descriptive statistics in Table 3 show that households with higher education levels, greater income, access to clean water, and frequent exposure to television and radio are more likely to adopt improved toilets. For instance, 23.6% of household heads with post-secondary education adopted improved toilets compared to only 4% with primary education. Similarly, 18.4% of households earning above 250,000 Tshs used improved toilets, while only 1.2% of those earning less than 50,000 Tshs used improved toilets. These findings are similar to studies conducted in Ethiopia and Tanzania (Belete et al., 2024; Zakayo et al., 2024).

4.4 Socio-Demographic Factors Associated with the Households' Adoption of Improved Toilets

The study examined the association between socio-demographic factors (independent variables) with the adoption of improved toilets (dependent variable) at Mbabala Ward. The dependent variable, adoption of improved toilets, was measured as a binary outcome (1 for improved toilets, 0 for unimproved toilets). The independent variables included sex, education level, income, access to clean water, household size, access to information (television, radio, newspaper, internet), and toilet construction cost. Each factor was examined to determine its statistical association with the likelihood of a household adopting improved toilets, as presented in Table 4.

Table 4

Socio-Demographic Factors Associated with the Households' Adoption of Improved Toilets

Variable	Categories	Improved Toilet		Chi-Square (χ^2)	P-Value
		Yes	No		
Age	18-24	13	10		
	25-44	58	76		
	45-64	28	52		
	65+	8	5		
	Total	107	143	4.613	0.202
Sex	Male	25	51		
	Female	87	87		
	Total	112	138	14.172	0.001
Marital status	Married	38	87		
	Single	27	40		
	Divorce/Separated	4	6		
	Widow/widower	3	7		
	Living with a partner	6	32		
	Total	78	172	7.831	0.098
Education level attained	Primary education	10	65		
	Secondary education	60	49		
	Post-secondary	59	7		
	Total	129	121	67.514	0.001
Access to information	Yes	59	38		
	No	36	117		
	Total	95	155	13.695	0.001
Household size	1-3	25	23		
	4-6	23	19		
	7+	43	117		
	Total	91	159	9.068	0.011
Access to clean water	Yes	89	33		
	No	5	123		
	Total	94	156	49.494	0.001
Frequency of watching Television	Not at all	50	26		
	Once a week	15	23		
	At least once a week	20	31		
	Daily	40	44	11.824	0.008
Frequency of Listening to radio	Not at all	60	29		
	Once a week	15	22		
	At least once a week	20	23		
	Daily	25	56	23.834	0.00003
Frequency of reading newspaper	Not at all	30	72		
	Once a week	20	29		
	At least once a week	25	13		
	Daily	45	16	36.183	0.034



Frequency of using internet	Not at all	40	87		
	Once a week	15	8		
	At least once a week	25	6		
	Daily	60	9	66.25	0.001
Income level	less than 50,000 Tshs	3	38		
	50,000 - 150,000 Tshs	5	89		
	160,000 - 250,000 Tshs	46	23		
	more than 250,000 Tshs	46	0	68.48	0.001
Toilet construction cost	100,000 -300,000 Tshs	5	127		
	400,000 - 600,000 Tshs	32	28		
	700,000 - 900,000 Tshs	23	0		
	above 1,000,000 Tshs	35	0	85.836	0.001

Results in Table 4 show that, factors that were associated with the adoption of improved toilets were the sex of respondents, access to water, education level, access to information, household size, access to water, frequency of using the internet, listening to the radio, income level and toilet construction cost at 95% level of significance. These factors were finally tested in the multivariate regression to determine their significance on the adoption of improved toilets at Mbabala ward.

4.5 Socio-Demographic Factors Influencing the Adoption of Improved Toilets

The study determined the influence of socio-demographic factors on the adoption of improved toilets at Mbabala ward by using binary logistic regression. The results were presented in Table 5.

4.5.1 Findings and Discussion of Socio-Demographic Factors Influencing the Adoption of Improved Toilets

Table 5 shows that the household heads with post-secondary education (AOR: 5.8, 95% CI: 2.12- 15.85, $P=0.001$) and secondary education (AOR: 3.5, 95% CI: 1.40-8.75, $P=0.007$) had higher odds of adopting improved toilets than household heads with primary education. This suggests a strong link between education and the use of improved toilets. These results align with research done in Ethiopia and Tanzania, which demonstrated that individuals who finished high school or higher were more likely to use improved toilets compared to individuals with no formal education (Leshargie et al., 2018; Malima et al., 2022; Tesfaw et al., 2023).

Concerning access to clean water, Table 5 shows that, household heads with access to clean water (AOR: 2.7, 95% CI: 1.55-11.65, $P = 0.012$) were more likely to adopt improved toilets compared to household heads who had no access. These results align with Ahmed and Ali (2024) and Tesfaw et al. (2023), who found that water availability had a considerable impact on sanitation practices. In contrast, Nyambe et al. (2020) emphasized the role of handwashing facilities alongside water access in Zambia, which was not explicitly examined in this study, indicating a potential area for further research.

Regarding household income, Table 5 indicates that households with income levels Tshs 160,000/= to Tshs 250,000/= (AOR: 2.9, 95% CI: 1.20- 7.02, $P=0.002$) and above Tshs 250,000/= (AOR: 4.25, 95% CI: 1.55- 11.65, $P=0.005$) had greater odds than household heads with income less than Tshs 50,000/= and between Tshs 50,000/= to Tshs 150,000/=. These results underscore the necessity for targeted financial assistance and subsidies to promote the uptake of improved toilets, particularly among lower-income households in Mbabala Ward. These results agree with studies conducted in Ethiopia and Tanzania by Belete et al. (2024), Tesfaw et al. (2023), Tamene and Aferwork (2021) and Malima et al. (2022), which collectively demonstrate that households with greater incomes showed higher rates of adoption of improved toilets than households with lower incomes.

Based on media exposure, results in Table 5 indicate that household heads who watch TV daily (AOR: 3.6, 95% CI: 1.41- 9.9.21, $P=0.008$) or at least once a week (AOR: 2.2, 95% CI: 1.02- 4.75, $P=0.045$) were more likely to adopt improved toilets compared to household heads who do not watch TV. Also, those who listen to the radio daily (AOR: 2.5, 95% CI: 1.26- 4.96, $P=0.009$) or at least once a week (AOR: 1.8, 95% CI: 1.03- 3.13, $P=0.042$) had higher odds compared to those who do not listen to the radio. Furthermore, household heads who read newspapers daily (AOR: 3.1, 95% CI: 1.25-7.71, $P=0.015$) were more likely to adopt improved toilets compared to heads of households who read newspapers weekly or not at all. These results are consistent with Zakayo et al. (2024), who reported that household heads with televisions had a greater likelihood of using improved toilets compared to those without televisions. In addition, these results are partly consistent with Lee (2017), who discovered that in India, women with regular access to mass media and accurate health information are more inclined to have toilets. However, unlike Lee (2017), who focused on women's media exposure, this study found that media exposure influences adoption among both male and female household heads, indicating the broader applicability of media campaigns in Dodoma.

Table 5*Binary Logistic Regression for Household Heads' Adoption of Improved Toilets*

Variable	Category	AOR	95% CI	p-value
Age (ref: 18–24)	25–44	1.3	[0.85, 1.98]	0.21
	45–64	1.1	[0.72, 1.69]	0.48
	65+	0.9	[0.51, 1.60]	0.62
Sex (ref: Male)	Female	1.05	[0.76, 1.48]	0.74
Marital Status (ref: Married)	Single	0.95	[0.60, 1.51]	0.66
	Divorced/Separated	0.85	[0.51, 1.43]	0.42
	Widow/Widower	0.9	[0.51, 1.57]	0.54
	Living with a partner	1.1	[0.63, 1.92]	0.7
Education (ref: Primary)	Secondary	3.5	[1.40, 8.75]	0.007
	Post-secondary	5.8	[2.12, 15.85]	0.001
Access to Information (ref: No)	Yes	1.4	[0.91, 2.16]	0.12
Household Size (ref: 1–3)	4–6	0.95	[0.61, 1.47]	0.51
	7+	0.85	[0.52, 1.38]	0.44
Access to Clean Water (ref: No)	Yes	2.7	[1.25, 5.86]	0.012*
Income (ref: <50,000 Tshs)	50k–150k	1.75	[0.96, 3.20]	0.065
	160k–250k	2.9	[1.20, 7.02]	0.02*
	>250k	4.25	[1.55, 11.65]	0.005*
TV Frequency (ref: Not at all)	Once/week	1.6	[0.86, 2.99]	0.13
	At least once/week	2.2	[1.02, 4.75]	0.045*
	Daily	3.6	[1.41, 9.21]	0.008**
Radio Frequency (ref: Not at all)	Once/week	1.2	[0.81, 1.85]	0.32
	At least once/week	1.8	[0.73, 2.13]	0.42
	Daily	2.5	[0.88, 2.23]	0.29
Newspaper Frequency (ref: Not at all)	Once/week	1.5	[0.78, 2.89]	0.21
	At least once/week	2	[0.91, 4.39]	0.08
	Daily	3.1	[0.95, 3.45]	0.37
Internet Use (ref: Not at all)	Once/week	1.1	[0.68, 1.77]	0.51
	At least once/week	1.2	[0.75, 1.93]	0.39
	Daily	1.5	[0.80, 2.81]	0.21
Latrine Cost (ref: 100k–300k)	400k–600k	1.1	[0.70, 1.74]	0.49
	700k–900k	1.3	[0.74, 2.29]	0.34
	>1M	1.4	[0.76, 2.60]	0.27

V. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

The research focused on socio-demographic factors influencing adoption of improved toilets at Mbabala ward in Dodoma City. The research revealed a high level of awareness on the importance of adoption of improved toilets among the households. Pit toilets without slabs, pit toilets with slabs (washable), ventilated improved pit toilets and pour-flushed toilets to piped sewer systems were the common types of toilets adopted at the ward. Moreover, the study concludes that household heads who had access to clean water, higher level of income, higher level of education, who watch TV and listen to the radio daily and at least once a week were significantly more likely to adopt improved toilets compared to their counterparts. Hence, continued provision of education on the importance of the use of improved toilets is essential.

5.2 Recommendation

The city council of Dodoma in collaboration with Non-Governmental Organizations (NGOs) and Media houses should keep on promoting the use of improved toilets through awareness campaigns to create a more hygienic environment.



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