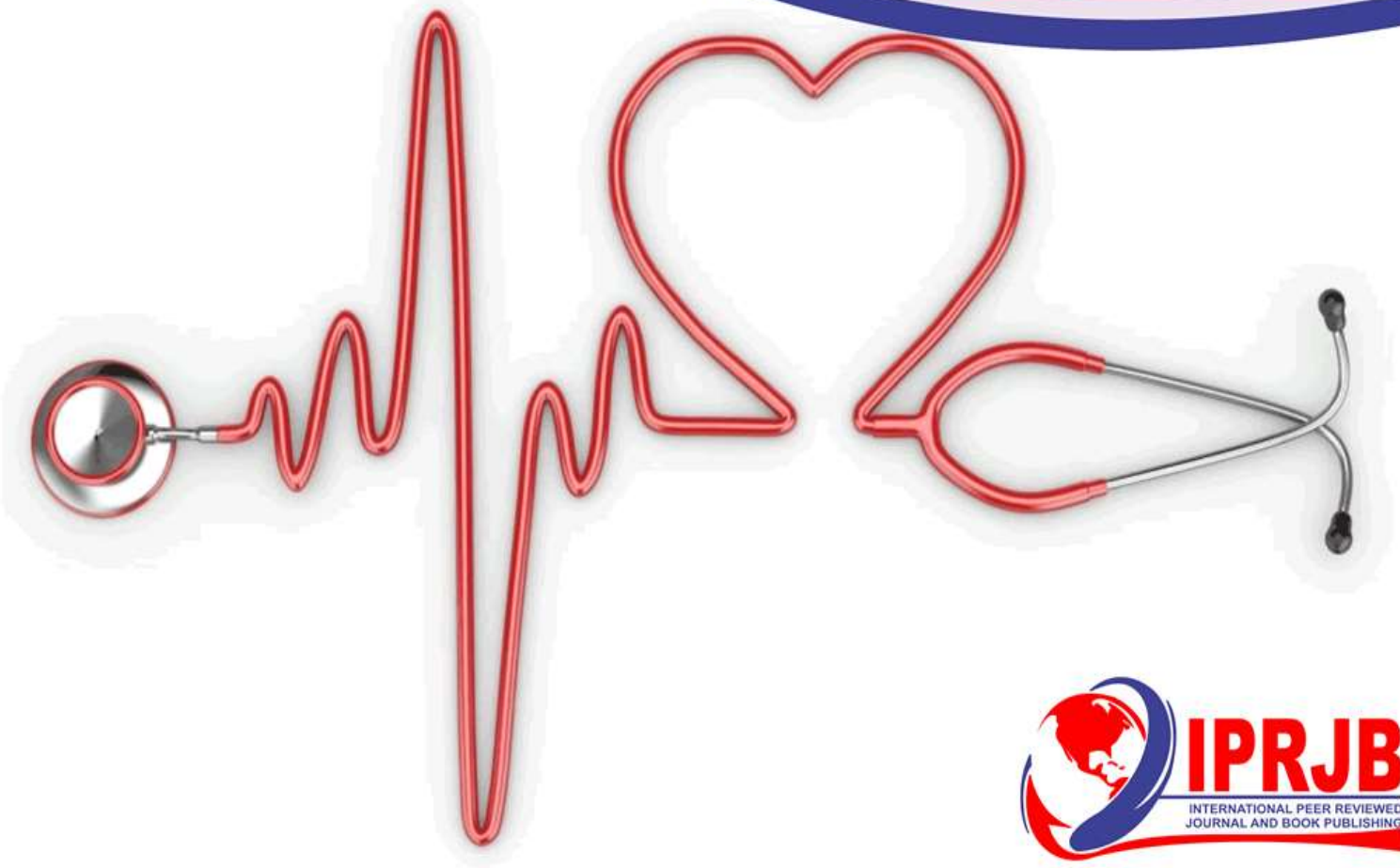
Journal of
Health, Medicine and Nursing
(JHMN)

Socio-Demographic Factors Influencing Human Waste Disposal Practices in Kibra Sub-County, Kenya

Alex Kungu Githu, Prof. Gideon Kikuvi (PhD), Dr. Dennis Gichobi Magu (PhD) and
Dr. Mwiti Peter Kirimi (PhD)



IPRJB
INTERNATIONAL PEER REVIEWED
JOURNAL AND BOOK PUBLISHING

Journal of Health, Medicine and Nursing
ISSN 2520-4025 (Online)
Vol.12, Issue 2. No.3, pp 33 – 432, 2026

www.iprjb.org

Socio-Demographic Factors Influencing Human Waste Disposal Practices in Kibra Sub-County, Kenya

[1*]Alex Kungu Githu
Department of Environmental Health and Disease Control, Jomo Kenyatta University of Agriculture and Technology, Kenya

[2]Prof. Gideon Kikuvi (PhD)
Department of Environmental Health and Disease Control, Jomo Kenyatta University of Agriculture and Technology, Kenya

[3]Dr. Dennis Gichobi Magu (PhD
Department of Environmental Health and Disease Control, Jomo Kenyatta University of Agriculture and Technology, Kenya

[4]Dr. Mwiti Peter Kirimi PhD
Training Research and Innovation, Kenyatta National Hospital, Kenya

Article History

Received 15th February 2026

Received in Revised Form 17th March 2026

Accepted 20th April 2026

How to cite in APA format:

Githu, A., Kikuvi, G., Magu, D., & Kirimi, M. (2026). Socio-Demographic Factors Influencing Human Waste Disposal Practices in Kibra Sub-County, Kenya. *Journal of Health, Medicine and Nursing*, *12*(2), 33–42. https://doi.org/10.47604/jhmn.3721

Abstract

Purpose: The purpose of the study is to determine socio-demographic factors influencing human waste disposal practices in Kibra sub-county, Kenya

Methodology: A cross-sectional study was conducted at Kibra Sub-County, comprising 17 villages. Study Population was Household heads residing in Kibra for ≥6 months. Data was collected among 365 participants. A simple random sampling technique was employed from a household listing developed with local administrators. Quantitative data were collected via structured questionnaires. Data analysis involved descriptive statistics, Chi-square tests, and binary logistic regression to identify factors associated with safe disposal practices. Statistical significance was set at $p < 0.05$. Ethical Approval number was obtained from the JKUAT Ethical Review Board and NACOSTI. Written informed consent was obtained from all participants, with assurances of anonymity and voluntary participation.

Findings: Multivariable logistic regression was performed to identify independent predictors of safe human waste disposal among residents of Kibera Constituency. Paying for sanitation was a strong independent predictor of safe disposal. Respondents who paid for sanitation services were over seven times more likely to practice safe disposal compared to those who did not pay Adjusted OR 7.21 (95% CI: 3.52–14.78, $p < 0.001$). Higher household income significantly increased the likelihood of safe disposal. Respondents earning more than 30,000 KES were nearly twenty times more likely to practice safe disposal compared to those earning less than 10,000 KES Adjusted OR 19.84 (95% CI: 4.12–95.62, $p < 0.001$).

Unique Contribution to Theory, Practice and Policy: The social demographic factors, education level, household income, employment status among those able to pay were significantly associated with positive human waste disposal. This study recommends continues education campaign to residents of Kibra by leaders and ministry of health on importances of doing work to earn income and practice safe human waste disposal.

Keywords: *Human Behavior, Waste Disposal Practice*

Journal of Health, Medicine and Nursing
ISSN 2520-4025 (Online)
Vol.12, Issue 2. No.3, pp 33 – 432, 2026
www.iprjb.org

INTRODUCTION

Globally inadequate sanitation is a critical public health challenge especially in regions with limited access to human waste disposal facilities. Recent estimates show that around 2.4 billion people lack improved sanitation access (WHO, 2022). Lack of such essential sanitation facilities including toilets can lead to unhealthy and contaminated environment (Progress on household drinking water, sanitation, and hygiene 2000-2020: Five years into the SDGs. Geneva: WHO and UNICEF, 2021). In sub-Saharan Africa, only 27% of the population has access to basic sanitation leaving over 70% without such facilities. Close to 220 million people across the continent are still practicing open defecation particularly in urban slums where overcrowding and poor infrastructure exacerbate the situation (Soliman, 2019). Waste from infected individuals can easily contaminate the community water, land, and increase the spread of infection, resulting in diseases like cholera, diarrhea, and dysentery (Tomoi, et al. 2025) .In Kenya, Water.org (2020) reports that 37 million Kenyans lack access to a safe toilet, indicating a significant gap in sanitation coverage. As per a report by WHO and UNICEF, (2021), approximately 71% of Kenyans lack access to improved sanitation facilities.

Studies on human waste disposal in Kibra reveal a mix of barriers and enablers. Economic constraints remain one of the major challenges faced by residents, who cannot afford to pay for toilets or waste disposal services, thus limiting their access to improved sanitation (UN-Habitat, 2021). Approximately 77.4% of people living in Kibra have limited human waste disposal facilities in accessibility of the services, where majority of women and children are affected (Kim et al., 2022). The sociodemographic factors may contribute to Human Waste Disposal Practices in Kibra yet not well understood. This study fills the gap by investigating social demographic factors such as income, education, household size, and payment for services contributing to unsafe human waste disposal practices.

Statement of the Problem

Approximately 77.4% of people living in Kibra have limited human waste disposal facilities in accessibility of the services, where majority of women and children are affected (Kim et al., 2022). Kibra Sub-County in Nairobi shows the major problems of managing human waste that many fast-growing informal settlements face. Even with various efforts from the government and Non-governmental Organization, the area still struggles with poor sanitation, deep-rooted social and economic issues, and habits that keep public health in a bad state. Many people in Kibra don't have access to better sanitation options. As a result, some residents have to resort to open defecation or use flying toilets, where they throw waste in plastic bags and leave them in open spaces. Majority of families have more than eight members sharing pit latrines with approximately 40 other members, where majority of muslim get challenges as a result of in adequate water. (Kim et al., 2022). There are also overcrowded and badly kept communal latrines. The unsafe human disposal practices led to widespread environmental contamination and a high incidence of waterborne diseases such as cholera, typhoid, and dysentery (Lebu et al 2024). Sanitation issues get worse because of social demographic factors where many people are unemployed/little pay, can't afford to use paid toilets, and without secure land rights, there's little economic power to build better sanitation facilities. Sociodemographic factors may contribute to improved Human Waste Disposal Practices among residents of Kibra yet not well understood.

Journal of Health, Medicine and Nursing
ISSN 2520-4025 (Online)
Vol.12, Issue 2. No.3, pp 33 – 42, 2026
www.iprjb.org

LITERATURE REVIEW

The World Health Organization (2022), reports that around 1.7 billion people around the world still don't have access to basic sanitation, and more than 673 million are still defecating in the open. This poor management of human waste is tied to preventable diseases like cholera, typhoid, dysentery, and infections from parasites. (Wamukoya, and Muindi. 2025). Women and girls deal with unique challenges, like lack of privacy, the threat of violence, and missing school because they can't manage their menstrual hygiene properly in places that lack secure sanitation. (Nelson et al. 2021). The management of human waste remains one of the most pressing yet under-addressed public health challenges in developing nations, particularly within rapidly urbanizing informal settlements where there is unemployed or and low income of the people. (Simiyu. (2017).

Inadequate disposal and treatment of human excreta continue to threaten not only environmental sustainability but also the health, dignity, and well-being of vulnerable populations. (Kim et al.,2022). The Sanitation Ladder, a way to look at different sanitation practices, created by WHO and UNICEF, ranges from open defecation to safely managed sanitation. Many people in Kibra struggle at the bottom of this ladder. They face tough financial situations, lack space, and deal with various governance issues that make it hard to improve their situation. As a result, things like flying toilets, shared pit latrines, and other makeshift disposal methods are pretty common. The residents without proper housing or access to plumbing are more likely to use flying toilet. (Tomoi, et al. 2025).

In Kibra Sub-County, Nairobi, people's income makes it hard to deal with their wastes. This problem is especially acute in densely populated areas such as Kibra Sub-County, Nairobi, where social demographic factors influence safe human waste disposal practices. Many are below the poverty line and can't pay for private waste services. This leads to a heavy reliance on public toilets that are usually not well-kept, which can lead to problems like dirty water and disease (Ouma, 2020). To fix this, the government needs to invest in better public sanitation and create more job opportunities. The level of education greatly determines human waste disposal practices. (Winter et al.,2019).

In Kibra, the lack of adequate education on human waste management results in practices like open defecation and poor maintenance of sanitation facilities. Women and children are the most affected by human waste disposal, where muslim religion followers are equally affected by lack of water with community pit latrines. (Kim et al 2022) uch practices increase health and environmental hazards (Olima, 2020). Increased environmental education can lead to improved human waste management practices and consequently improve public health

Theoretical Framework

This study utilized social demographic status model where variables such as age, gender, income, and education level may influence health outcome.

Journal of Health, Medicine and Nursing
ISSN 2520-4025 (Online)
Vol.12, Issue 2. No.3, pp 33 – 42, 2026
www.iprjb.org

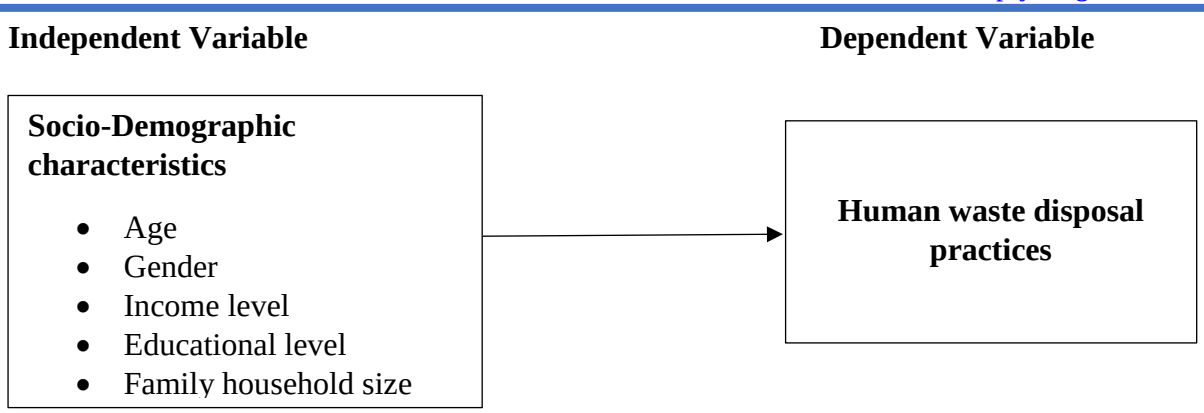


Figure 1: Conceptual Framework

Conceptual Framework

The conceptual framework figure 1 shows the relationship between independent variables and dependent variable. The dependent variable was Human waste disposal practices**,** while independent variables were social demographic factors; age, marital status, education level, Gender, Income and religion.

Research Gaps

In Kenya approximately 71% of population lack access to improved sanitation facilities for good human waste disposal. (WHO and UNICEF (2021)). Kibra Sub-County in Nairobi shows the major problems of managing human waste that many fast-growing informal settlements face. Sanitation issues get worse because of social demographic factors where many people are unemployed/little pay, can't afford to use paid toilets, and without secure land rights, there's little economic power to build better sanitation facilities. Sociodemographic factors may contribute to Human Waste Disposal Practices among residents of Kibra yet not well understood. Therefore, the study aimed to determine socio-demographic factors influencing human waste disposal practices in Kibra sub-county, Kenya.

METHODOLOGY

Study Design: A cross-sectional study was conducted in Kibra Sub-County, comprising 17 villages.

Study Area: The study area was Kibra Sub-County, comprising 17 villages.

Study Population: Household heads residing in Kibra for ≥6 months were eligible. Using Cochran's formula with a 95% confidence level and 5% margin of error, a sample size of 385 was calculated. A simple random sampling technique was employed from a household listing developed with local administrators.

Data Collection and Analysis: Quantitative data were collected via structured questionnaires. Data analysis involved descriptive statistics, Chi-square tests, and binary logistic regression to identify factors associated with safe disposal practices. Statistical significance was set at $p < 0.05$.

Ethical Considerations: Approval number was obtained from the JKUAT Ethical Review Board and NACOSTI. Informed consent was secured from all participants, with assurances of anonymity and voluntary participation.

Journal of Health, Medicine and Nursing
ISSN 2520-4025 (Online)
Vol.12, Issue 2. No.3, pp 33 – 42, 2026
www.iprjb.org

RESULTS

Socio-Demographic Characteristics of Respondents

There was a total of 385 questionnaires given to the respondents in Kibra Sub-County, with 365 being returned and filled, which is a response rate of 94.8. The age distribution showed that the largest proportion of respondents were young adults aged 26–35 years (122; 33.4 Smaller proportions were recorded among respondents aged below 18 years (24; 6.6%) and those above 65 years (16; 4.4%). In terms of gender, the sample consisted of 196 females (53.7%) and 169 males (46.3%). Educational attainment among respondents varied. A notable proportion had completed secondary education (147; 40.3%), while tertiary education was reported by 89 respondents (24.4%) and a smaller group had no formal or informal education (35; 9.6%). The majority of respondents lived in households with 5–6 members (147; 40.3%) and only 40 respondents (11.0%) reported living in small households of one or two individuals. Nearly half of the respondents earned less than KES 10,000 per month (149; 40.8%) with only 32 respondents (8.8%) reported incomes above KES 30,000. Most respondents worked in the informal sector (103; 28.2%), followed by those who were self-employed (96; 26.3%). Only 69 respondents (18.9%) reported formal employment, while 66 (18.1%) relied on casual labor. The unemployed group constituted 31 respondents (8.5%).

Table 1: Demographic Characteristics of Respondents

Variable	(n)	(%)
Age group		
<18 years	24	(6.6%)
18–25 years	72	(19.7%)
26–35 years	122	(33.4%)
36–45 years	76	(20.8%)
46–55 years	37	(10.1%)
56–65 years	18	(4.9%)
>65 years	16	(4.4%)
Gender		
Male	169	(46.3%)
Female	196	(53.7%)
Education level		
Informal/no formal	35	(9.6%)
Primary	94	(25.8%)
Secondary	147	(40.3%)
Tertiary	89	(24.4%)
Household size		
1–2 persons	40	(11.0%)
3–4 persons	99	(27.1%)
5–6 persons	147	(40.3%)
7 or more persons	79	(21.6%)
Monthly household income (KES)		
<10,000	149	(40.8%)
10,000–20,000	116	(31.8%)
20,001–30,000	68	(18.6%)
>30,000	32	(8.8%)
Main source of income		
Formal	69	(18.9%)
Informal	103	(28.2%)
Self-employed	96	(26.3%)
Casual labor	66	(18.1%)
Unemployed	31	(8.5%)

Journal of Health, Medicine and Nursing
ISSN 2520-4025 (Online)
Vol.12, Issue 2. No.3, pp 33 – 42, 2026
www.iprjb.org

Socio-Demographic factors associated with Safe Human Waste Disposal

The association between socio-demographic factors and safe human waste disposal practices was examined to identify characteristics influencing residents' sanitation behaviors. Education showed a strong positive association with safe waste disposal. Only 24 (68.6%) of respondents with informal or no formal education practiced safe disposal, compared to 131 (89.1%) with secondary education and 81 (91.0%) with tertiary education. The odds of safe disposal were significantly higher among secondary and tertiary educated respondents, with OR 3.46 (1.49–8.04, p = 0.004) and OR 4.29 (1.62–11.34, p = 0.003), respectively, relative to those with no formal education. Safe disposal was more frequent in smaller households. Respondents from households of 1–2 persons (38, 95.0%) and 3–4 persons (89, 89.9%) were significantly more likely to practice safe disposal compared to larger households of seven or more members (60, 75.9%), with ORs of 6.33 (1.43–28.07, p = 0.015) and 2.97 (1.06–8.31, p = 0.038), respectively.

Income was positively associated with safe disposal. Respondents earning 20,001–30,000 KES (65, 95.6%) and 10,000–20,000 KES (102, 87.9%) were significantly more likely to practice safe disposal than those earning less than 10,000 KES (115, 77.2%), with ORs of 6.35 (1.86–21.70, p = 0.003) and 2.13 (1.07–4.24, p = 0.032), respectively. Those earning over 30,000 KES (32, 100%) all practiced safe disposal. Employment status influenced disposal practices. Safe disposal was lowest among the unemployed (22, 71.0%), and progressively higher among casual laborers (53, 80.3%), informal sector workers (88, 85.4%), self-employed respondents (86, 89.6%), and those in formal employment (65, 94.2%). Crude odds ratios confirmed significant associations for informal employment OR 2.40 (1.03–5.60, p = 0.042), self-employment OR 3.52 (1.45–8.57, p = 0.006), and formal employment OR 6.65 (2.16–20.50, p = 0.001), compared to the unemployed.

Journal of Health, Medicine and Nursing
ISSN 2520-4025 (Online)
Vol.12, Issue 2. No.3, pp 33 – 42, 2026
www.iprjb.org

Table 2: Socio-Demographic Factors Associated with Safe Human Waste Disposal

Characteristic	Safe Disposal n (%)	Unsafe Disposal n(%)	Crude OR (95% CI)	p-value
Age group				
<18 years	17 (70.8%)	7 (29.2%)	1.00 (reference)	
18–25 years	64 (88.9%)	8 (11.1%)	2.04 (0.74–5.63)	0.169
26–35 years	110 (90.2%)	12 (9.8%)	2.33 (0.91–5.97)	0.078
36–45 years	67 (88.2%)	9 (11.8%)	1.90 (0.71–5.08)	0.200
46–55 years	31 (83.8%)	6 (16.2%)	1.32 (0.45–3.85)	0.612
56–65 years	14 (77.8%)	4 (22.2%)	0.89 (0.26–3.07)	0.855
>65 years	11 (68.8%)	5 (31.3%)	0.56 (0.17–1.83)	0.337
Gender				
Male	149 (88.2%)	20 (11.8%)	1.00 (reference)	
Female	165 (84.2%)	31 (15.8%)	0.80 (0.44–1.45)	0.460
Education level				
Informal/no formal	24 (68.6%)	11 (31.4%)	1.00 (reference)	
Primary	78 (83.0%)	16 (17.0%)	2.06 (0.87–4.88)	0.099
Secondary	131 (89.1%)	16 (10.9%)	3.46 (1.49–8.04)	**0.004**
Tertiary	81 (91.0%)	8 (9.0%)	4.29 (1.62–11.34)	**0.003**
Household size				
1–2 persons	38 (95.0%)	2 (5.0%)	6.33 (1.43–28.07)	**0.015**
3–4 persons	89 (89.9%)	10 (10.1%)	2.97 (1.06–8.31)	**0.038**
5–6 persons	127 (86.4%)	20 (13.6%)	2.12 (0.80–5.61)	0.130
7+ persons	60 (75.9%)	19 (24.1%)	1.00 (reference)	
Monthly household income (KES)				
<10,000	115 (77.2%)	34 (22.8%)	1.00 (reference)	
10,000–20,000	102 (87.9%)	14 (12.1%)	2.13 (1.07–4.24)	**0.032**
20,001–30,000	65 (95.6%)	3 (4.4%)	6.35 (1.86–21.70)	**0.003**
>30,000	32 (100%)	0 (0%)	undefined	–
Main source of income				
Unemployed	22 (71.0%)	9 (29.0%)	1.00 (reference)	
Casual labor	53 (80.3%)	13 (19.7%)	1.40 (0.58–3.40)	0.453
Informal	88 (85.4%)	15 (14.6%)	2.40 (1.03–5.60)	**0.042**
Self-employed	86 (89.6%)	10 (10.4%)	3.52 (1.45–8.57)	**0.006**
Formal	65 (94.2%)	4 (5.8%)	6.65 (2.16–20.50)	**0.001**

Social Demographic Predictors of Safe Human Waste Disposal

Multivariable logistic regression was performed to identify independent predictors of safe human waste disposal among residents of Kibera Constituency. Paying for sanitation was a strong independent predictor of safe disposal. Respondents who paid for sanitation services were over seven times more likely to practice safe disposal compared to those who did not pay Adjusted OR 7.21 (95% CI: 3.52–14.78, $p < 0.001$). Higher household income significantly increased the likelihood of safe disposal. Respondents earning more than 30,000 KES were nearly twenty times more likely to practice safe disposal compared to those earning less than 10,000 KES Adjusted OR 19.84 (95% CI: 4.12–95.62, $p < 0.001$). Those earning 20,001–30,000 KES and 10,000–20,000 KES also had significantly higher odds of safe disposal OR 7.68 (95% CI: 2.14–27.56, $p = 0.002$) and OR 2.41 (95% CI: 1.16–5.03, $p = 0.019$), respectively. Education emerged as an important independent predictor. Respondents with tertiary education were four times more likely to practice safe disposal OR 4.11 (95% CI: 1.47–11.51, $p = 0.007$), while those with secondary education were over three times more likely OR 3.27 (95% CI: 1.34–7.99, $p = 0.009$) compared to individuals with no formal education.

Journal of Health, Medicine and Nursing
ISSN 2520-4025 (Online)
Vol.12, Issue 2. No.3, pp 33 – 42, 2026
www.iprjb.org

Table 3: Multivariate Analysis on Social Demographic Factors Associated with Safe Human Waste Disposal

Predictor	Adjusted OR	95% CI	p-value
Pay for sanitation			
Yes	7.21	3.52 – 14.78	**<0.001**
No (reference)	1	–	–
Monthly household income (KES)			
>30,000	19.84	4.12 – 95.62	**<0.001**
20,001–30,000	7.68	2.14 – 27.56	**0.002**
10,000–20,000	2.41	1.16 – 5.03	**0.019**
<10,000 (reference)	1	–	–
Education level			
Tertiary	4.11	1.47 – 11.51	**0.007**
Secondary	3.27	1.34 – 7.99	**0.009**
Primary	2.18	0.88 – 5.39	0.092
Informal/no formal education (reference)	1	–	–

Discussions

Socio-Demographic Factors Influencing Human Waste Disposal Practices

The findings indicate that socio-demographic characteristics play a crucial role in determining safe human waste disposal within Kibra Sub-County. Education level emerged as a significant predictor of safe disposal practices, with respondents possessing secondary education showing 3.46 times higher odds (95% CI: 1.49–8.04, p=0.004) and those with tertiary education 4.29 times higher odds (95% CI: 1.62–11.34, p=0.003) of practicing safe disposal compared to individuals with no formal education. These results align with earlier research by Muhele (2016), who highlighted the critical role of education in improving sanitation outcomes. Lebu, et al (2024) found high education level is associated with positive human waste disposal.

Income demonstrated a clear gradient effect, with households earning between KES 20,001–30,000 exhibiting over sixfold increased odds of safe disposal relative to those earning less than KES 10,000 (OR 6.35; 95% CI: 1.86–21.70, p=0.003). This demonstrate that those with high income are able to pay for good human waste disposal. This study found that employment status showed a similarly positive association across informal and formal sectors on good human waste dsposal. The finding of this study is consistent with finding noted by Simuyu et al., (2017) who stated employment status is positively associated with good waste disposal. Similarly study done by Kim et al. (2022) found that those people who are employed are more likely to have high income hence improved use of sanitation services.

CONCLUSION AND RECOMMENDATION

Conclusion

This study found out socio-demographic characteristics particularly education level, household income, employment status, household size, and the ability to pay for sanitation services were found to significantly associated with human waste disposal.

Recommendations

This study recommends continuos education campaign to residents of Kibra by leaders and ministry of health on importances of safe human waste disposal. This study recommends that

the county government of Nairobi to introduce flexible or subsidized payment systems for toilet use and emptying services to ensure that individuals with low-income and an employed have opportunity for safe human waste disposal options.

Implication to Theory, Practice and Policy: The social demographic factors, education level, household income, employment status was significantly associated with human waste disposal. This study recommends continues education campaign to residents of Kibra by leaders and ministry of health on importance of safe human waste disposal.

REFERENCES

Kim, J., Kahindo, M., Omungo, J., & Simiyu, S. (2022). Socio-economic determinants of sanitation access in informal settlements: Evidence from East Africa. *International Journal of Environmental Research and Public Health, 19*(12), 7456. https://doi.org/10.3390/ijerph19127456

Lebu, S., Okurut, M., & Mosugu, M. (2024). Shared sanitation outcomes in global informal settlements: A meta-analysis. *The Lancet Global Health, 12*(4), e567–e578. https://doi.org/10.1016/S2214-109X(24)00045-2 https://doi.org/10.1177/109019818801500401

Muhele, J. (2016). *Factors influencing sanitation practices in Kibera urban informalsettlement* [Master's thesis, University of Nairobi]. University of Nairobi Repository. https://erepository.uonbi.ac.ke/handle/11295/99023

Nelson, S., Drabarek, D., Jenkins, A., Negin, J., & Abimbola, S. (2021). How community participation in water and sanitation interventions impacts human health, WASH infrastructure and service longevity in low-income and middle-income countries: A realist review. *BMJ Open, 11*(12), e053320. https://doi.org/10.1136/bmjopen-2021-053320

Olima, W. (2020). Education and waste management in Kibra: The role of awareness

Ouma, B. (2020). Economic barriers to safe waste disposal in Kibra

Soliman, A. (2019). Action at scale: How to accelerate access to adequate and equitable sanitation and hygiene in Africa.

Tomoi, H., et al. (2025). Willingness-to-pay and costs for novel manual emptying services for onsite sanitation facilities in an informal settlement of Nairobi, Kenya. *ACS ES&T Water*. https://doi.org/10.1021/acsestwater.4c01244

UN-Habitat. (2021). Sanitation challenges in urban slums: The case of Kibera. UN-Habitat. https://unhabitat.org

Water.org. (2020). Sanitation and water crisis facts. https://water.org

Wamukoya, M., & Muindi, K. (2025). The challenges of informal settlements and slums in urban Africa. In *Urban health in Africa* (pp. 49–??).

Winter, S. C., Barchi, F., Dzombo, M., & Obare, G. (2019). A mixed-methods study of women's sanitation utilization in Mathare informal settlement, Nairobi, Kenya. *PLOS ONE, 14*(3), e0214114. https://doi.org/10.1371/journal.pone.0214114

World Health Organization. (2022). Impact of poor waste management on public health. WHO. https://www.who.int

World Health Organization & UNICEF. (2021). Progress on household drinking water, sanitation, and hygiene 2000–2020: Five years into the SDGs. WHO and UNICEF.