

Barriers to the use of ventilated improved pit latrines among residents of Gamogo parish, Gamogo sub-county, Kapchorwa district. Cross-sectional study.

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Abstract

Background:

Ventilated Improved Pit (VIP) latrines represent a critical step in reducing disease and improving quality of life. This study aimed to identify the barriers to the use of ventilated improved pit (VIP) latrines among residents of Gamogo Parish, Gamogo Sub-County in Kapchorwa District.

Methodology:

A cross-sectional study design was employed, utilising a simple sampling technique to obtain 50 participants. The study explored individual, environmental, and socio-economic challenges. Data was collected through a structured questionnaire survey administered to the respondents, and analysed using Microsoft Excel. Results were then presented in the form of tables and figures.

Results:

Overall, 54% were male, while 46% were female. The most, 28% were aged 26-35 years, 22% were in the 18-25 age group, the 46-55 age group at 20%, the 36-45 age group at 18%, and 12% were aged 56 and above at 12%. About 48% of the respondents were farmers. Businesspersons made up 22% of the respondents, civil servants 18%, unemployed 8%, and those in the 'other' category 4%. The findings revealed that 68% of respondents were aware of VIP latrines, largely due to community meetings and health worker initiatives. However, financial constraints and environmental challenges, such as difficult terrain and frequent heavy rains, were significant barriers to the construction and maintenance of these latrines. Additionally, while most households had some level of education, financial barriers remained a critical issue, preventing many from adopting improved sanitation practices.

Conclusion:

The study reveals that while community meetings and health workers have successfully built widespread awareness of VIP latrines, this knowledge is not enough to overcome the practical realities of daily life. Most participants are young to middle-aged males working primarily in farming, a group that is well-informed but economically vulnerable.

Recommendations:

There should be provision of financial support, investment in infrastructure improvements, and enhancement of educational programs. Active community involvement and advocacy for better sanitation facilities are crucial.

Keywords: Ventilated Improved Pit Latrines, Cultural Barriers, Knowledge, Attitudes, Gamogo Parish, Kapchorwa District, Practices.

Background

Globally, access to improved sanitation facilities is a critical component of public health and sustainable development. The World Health Organisation (WHO) and UNICEF have emphasised the importance of sanitation in preventing diseases and improving the quality of life. Ventilated improved pit (VIP) latrines are recognised as an effective solution for enhancing sanitation in both rural and urban settings. These latrines help reduce the spread of diseases by providing a hygienic way to manage human waste, thereby contributing to the overall health and well-being of communities (WHO & UNICEF, 2020). As of 2017, an estimated 2.0 billion people globally lacked access to basic sanitation services (WHO, 2019).

On the continental level, Africa faces significant challenges in achieving universal access to improved sanitation. According to the African Development Bank, many African countries struggle with inadequate sanitation infrastructure, which exacerbates health issues and hinders economic development. VIP latrines have been promoted across the continent as a cost-effective and sustainable solution to these challenges. For instance, in Zimbabwe, the VIP latrine, known locally as the Blair latrine, has been widely adopted and is considered a national institution (Salim, 2016). This success story highlights the potential of VIP latrines to improve sanitation in diverse African contexts. In urban areas of Sub-Saharan Africa, more than half of the population uses pit latrines, with an additional 36 million people adopting them since 2007 (Nakagiri et al., 2016).

In East Africa, countries like Kenya, Tanzania, and Uganda have made strides in promoting VIP latrines. These efforts are part of broader initiatives to improve water, sanitation, and hygiene (WASH) services. In Uganda, the Ministry of Health has been actively involved in promoting VIP latrines as part of its national sanitation strategy. The adoption of VIP latrines in Uganda is seen as a crucial step towards achieving the Sustainable Development Goals (SDGs), particularly Goal 6, which aims to ensure availability and sustainable management of water and sanitation for all (African Development Bank, 2019). In Kampala, Uganda, 95% of households in slum areas use either traditional or VIP latrines (Tumwebaze et al., 2015).

The relevance of this study is underscored by the persistent sanitation challenges faced by the community in Gamogo Parish, Gamogo Sub-County in Kapchorwa District. The area is characterised by difficult terrain and frequent heavy rains, which complicate the construction and maintenance of sanitation facilities. Additionally, financial barriers and limited awareness further impede the adoption of VIP latrines. Understanding these local challenges is essential for developing targeted interventions that can effectively address the barriers to improved sanitation in this region.

By examining the barriers to the use of VIP latrines in Gamogo Parish, this study aims to contribute to the broader efforts to improve sanitation in Uganda and similar contexts. The findings would provide valuable insights for policymakers, practitioners, and researchers working to enhance sanitation and public health outcomes. This study aimed to identify the barriers to the use of ventilated improved pit (VIP) latrines among residents of Gamogo Parish, Gamogo Sub-County in Kapchorwa District.

Methodology

Study Design

A descriptive cross-sectional study, quantitative in nature, was used to determine the barriers to use of ventilated improved latrines among residents of Gamogo parish, Gamogo Sub-County, Kapchorwa District. The study design was used because it was cheaper and could be done in a short period, and yet time is limited for the study.

Study Area

The study was carried out in Gamogo parish, Gamogo Sub-County, Kapchorwa district in Eastern Uganda.

Study population

The residents of Gamogo parish were the primary respondents of this study. This area was chosen because no study has been published regarding the barriers to the use of ventilated improved latrines among residents of Gamogo parish, Gamogo Sub-County.

Sample size determination

The sample size was determined using Yamane (1967) for descriptive studies, where a fraction of the accessible population is considered.

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

n = sample size

N = Population size taken as average number of residents per parish in Gamogo Sub County, e = level of confidence (95% confidence interval) = 5% = 0.05

$$\begin{aligned} n &= N / (1 + N(e)^2) \\ &= 57 / (1 + 57(0.05)^2) \\ &= 50 \text{ participants} \end{aligned}$$

Sampling Technique

A simple random sampling method was used to sample all the residents meeting the inclusion criteria to participate in the study because it eliminated bias and gave an equal chance for all the participants to be included in the study.

Sampling Procedure

Pieces of paper with two written choices, “yes” and “no” were placed in a container. Each respondent was requested to pick one of the papers at random. The individual who picked the “yes” response was included in the sample, and those who picked pieces of paper with “no” were excluded. The sampled patients were taken through the study procedure and then presented with a consent form, and upon consent, they were given questionnaires for their opinions.

Data Collection Method

Face-to-face interviews with guidance of closed-ended questionnaires were used to collect data since they were easy to administer and saved time. Adequate time was given to respondents to ensure a complete filling in of the questionnaire.

Data Collection Tool(s)

Interviewer-administered questionnaires were used. The questionnaires were divided into three sections, each corresponding to specific objectives. Other data tools included a data entry form, a file, notebooks, pens, and pencils.

Data Collection Procedure

An introductory letter from the International Paramedical Institute was taken to the town clerk of Gamogo Sub-County, who then introduced me to the residents. I then explained my intention of the study to selected participants and requested consent from them, and later administered the questionnaire to the participants.

Dependent variable

Use of ventilated improved Pit Latrines

Independent variables

- Economic Barriers
- Cultural Barriers
- Environmental Barriers
- Infrastructural barriers
- Social barriers

Quality Control

For quality data to be collected, the questionnaire was pretested on 5 respondents in Gamogo sub-County before the actual data collection happened in order to find out whether they properly understood the questions and answered them as required. In case of any mistakes, the questionnaires were corrected.

Piloting of the study

The questionnaire was pretested in areas with similar characteristics to the area of study. The questionnaire was then translated into the common languages in the study area (Lugishu and Kusabiny languages)

Reliability

Before the actual time of the study, four data clerks were trained to help in the process of data collection and explain to those who may not understand the questions in the questionnaire. The questionnaires were submitted to the supervisor and the District health officer in order to find out their applicability, and where necessary adjustments were made to ensure a standard questionnaire.

Inclusion Criteria

The residents of Gamogo Sub County that are willing to participate in the study above 16 years.

Exclusion Criteria

Non-residents of Gamogo Sub-County and those above 16 years.

Data Analysis and Presentation

Data was analysed manually by coding and tallying method of information with similar characteristics, and a calculator was used to compute totals and percentages. Data was then presented as a narrative, in pie charts, tables, and bar graphs.

Ethical consideration

A letter of introduction was obtained from the principal of the School of Allied Health to permit commencement of the study.

Permission was obtained from the district health officer of Kapchorwa district so as to gain access to the residents of Gamogo Sub-County.

All participating respondents were selected on the basis of informed consent. The study was conducted on a voluntary basis, and information was kept private and confidential, and participants' anonymity was maintained. The study was conducted while upholding the professional code of conduct in a manner that does not compromise the scientific inclinations of the study.

Results

Socio-demographic information of the respondents

Table 1: Showing the social demographics of the respondents. (n=50)

Variables	Responses	Frequency (n=50)	Percentage
Age	18-25	11	22%
	26-35	14	28%
	36-45	9	18%
	46-55	10	20%
	56 and above	6	12%
Gender	Male	27	54%
	Female	23	46%
	Other	0	0%
Education Level	No formal education	6	12%
	Primary education	19	38%
	Secondary education	16	32%
	Tertiary education	9	18%
Occupation	Farmer	24	48%
	Businessperson	11	22%
	Civil servant	9	18%
	Unemployed	4	8%
	Other	2	4%
Household Income (monthly)	Less than UGX 100,000	17	34%
	UGX 100,000 - 300,000	21	42%
	UGX 300,001 - 500,000	7	14%
	More than UGX 500,000	5	10%

Table 1 showed that the majority were male, accounting for 54% of the sample, while females made up 46% of the respondents.

The largest age group was those aged 26-35, representing 28% of the respondents. This was followed by the 18-25 age group at 22%, the 46-55 age group at 20%, the 36-45 age group at 18%, and finally, those aged 56 and above at 12%. In terms of education level, the highest percentage of respondents had primary education at 38%. This was followed by secondary education at 32%, tertiary education at 18%, and no formal education at 12%.

Regarding occupation, 48% of the respondents were farmers. Businesspersons made up 22% of the respondents, civil servants 18%, unemployed 8%, and those in the 'other' category 4%.

For household income, 42% of respondents earned between UGX 100,000 and 300,000 monthly. This was followed by 34% earning less than UGX 100,000, 14% earning between UGX 300,001 and 500,000, and 10% earning more than UGX 500,000.

Individual Challenges

Page | 5 **Table 2: Showing individual factors of the respondents (n=50).**

Variables	Responses	Frequency (n=50)	Percentage
Belief in the benefits of VIP latrines	Yes	31	62%
	No	9	18%
	Not sure	10	20%
Concerns about VIP latrines	High cost of construction	19	38%
	Maintenance difficulties	14	28%
	Attract pests and odours	11	22%
	Not suitable for the local environment	6	12%
	Other	0	0%
Myths or misconceptions	Yes	26	52%
	No	24	48%

Table 2 revealed that 68% of respondents are aware of VIP latrines, while 32% are not. Among those aware, 26% learned about VIP latrines from health workers, 22% from community meetings, 14% from media sources such as radio, TV, and newspapers, and 12% from friends or relatives. None reported learning from other sources. Regarding the perceived benefits of VIP latrines, 62% believe they are beneficial for health, 18% do not, and 20% are unsure. The main concerns about using VIP latrines include the high cost of construction (38%), maintenance difficulties (28%), attraction of pests and odours (22%), and unsuitability for the local environment (12%). Additionally, 52% have heard myths or misconceptions about VIP latrines in their community, while 48% have not.

Figure 1: Showing the respondents' awareness about VIP latrines. (n=50).

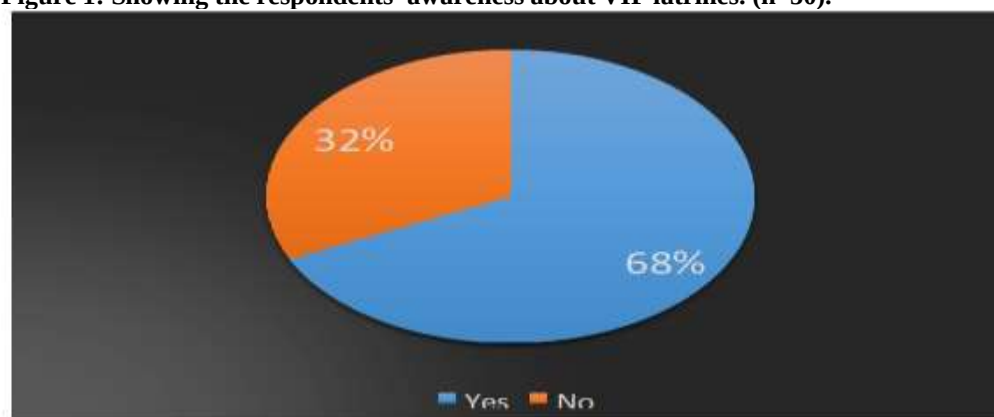


Figure 1 revealed that 68% of respondents are aware of VIP latrines, while 32% are not.

Figure 2: Showing respondents who have ever learnt about VIP latrines. (n=50)

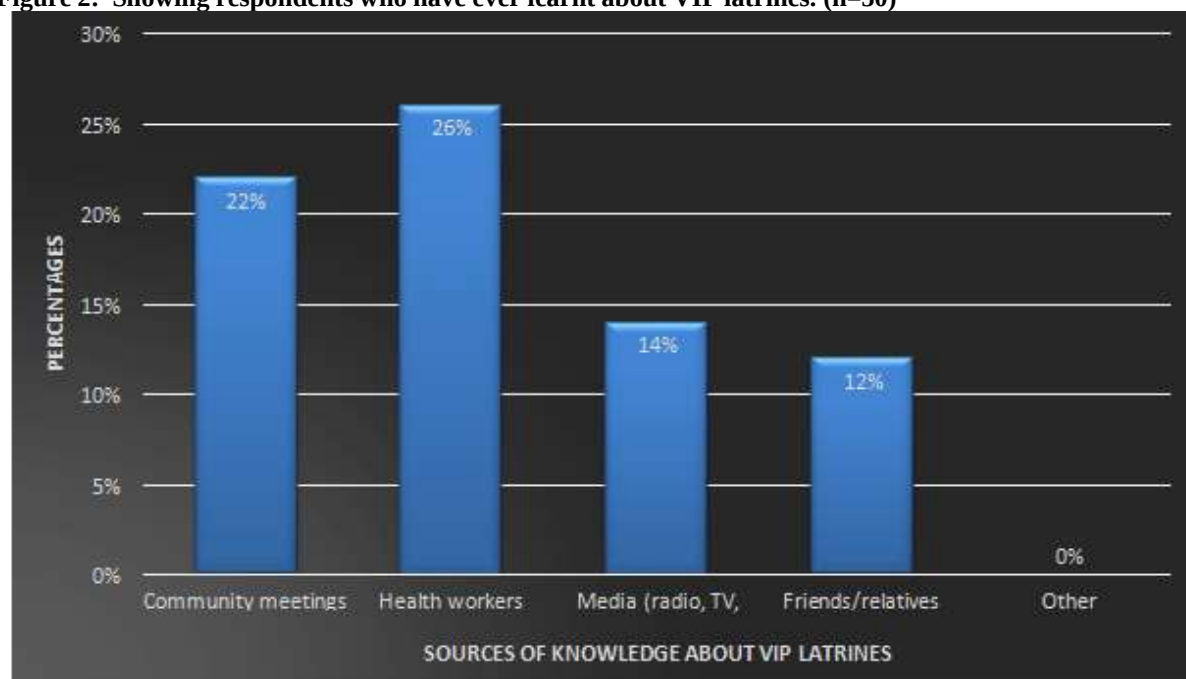


Figure 2 revealed that among those aware, 26% learned about VIP latrines from health workers, 22% from community meetings, 14% from media sources such as radio, TV, and newspapers, and 12% from friends or relatives. None reported learning from other sources.

Environmental Challenges

Table 3 shows the environmental challenges faced by the respondents. (n=50)

Variables	Responses	Frequency (n=50)	Percentage
Terrain description	Flat	9	18%
	Hilly	26	52%
	Rocky	11	22%
	Other	4	8%
Terrain affects construction	Yes	31	62%
	No	19	38%
Frequency of heavy rains	Rarely	6	12%
	Occasionally	14	28%
	Frequently	21	42%
	Very frequently	9	18%
Adequate water supply	Yes	19	38%
	No	31	62%

Table 3, the terrain of the area was described as hilly by 52% of respondents, flat by 18%, rocky by 22%, and other types by 8%. The terrain affected the construction of VIP latrines for 62% of respondents, while 38% do not find it to be a problem. Heavy rains are experienced frequently by 42% of respondents, very frequently by 18%, occasionally by 28%, and rarely by 12%. Heavy rains have damaged latrine structures for 68% of respondents, whereas 32% have not experienced such damage. Adequate water supply for cleaning and maintaining latrines is available for 38% of respondents, but 62% report an inadequate supply. Environmental factors affecting the use of VIP latrines include flooding (28%), erosion (22%), wildlife (12%), and lack of water (38%).

Figure 3: Showing respondents' views about damage caused by rain. (n=50)

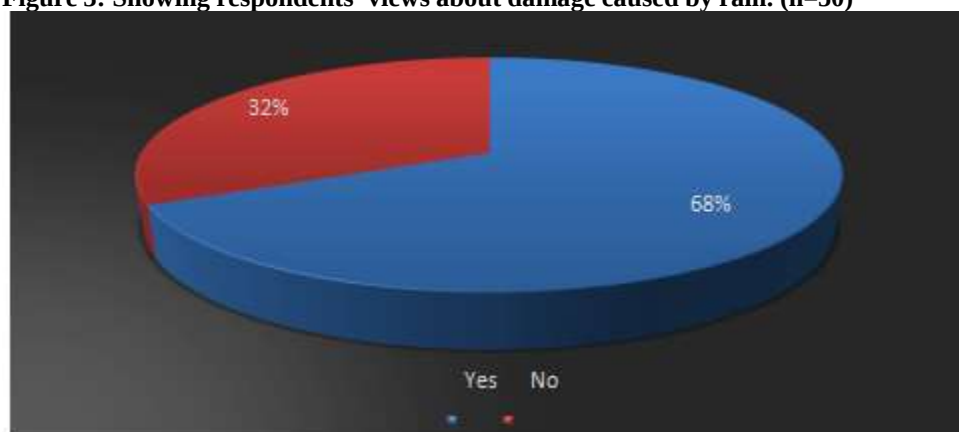


Figure 3 shows that Heavy rains have damaged latrine structures for 68% of respondents, whereas 32% have not experienced such damage.

Figure 4: Showing the effects of environmental factors on the use of VIP latrines. (n=50)

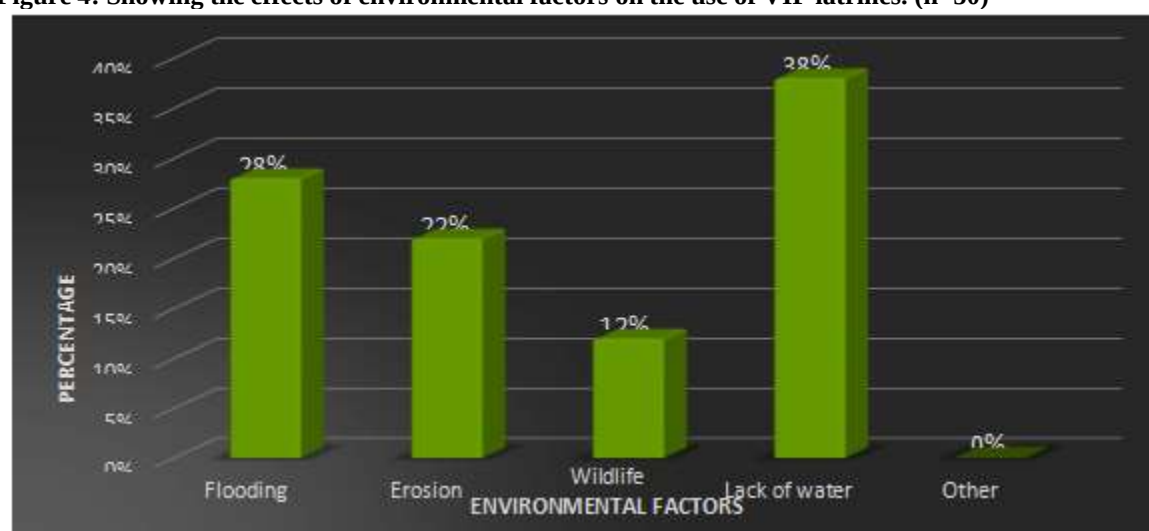


Figure 4 revealed that Environmental factors affecting the use of VIP latrines include flooding (28%), erosion (22%), wildlife (12%), and lack of water (38%).

Socio-Economic Challenges

Table 4 shows the socio-economic factors of the respondents. (n=50)

Variables	Responses	Frequency (n=50)	Percentage
Affordability of VIP latrine	Yes	21	42%
	No	29	58%
Education affects adoption	Yes	34	68%
	No	16	32%
Social norms/gender roles	Yes	26	52%
	No	24	48%
Local government support	Yes	16	32%
	No	34	68%
Support needed	Financial assistance	21	42%
	Educational programs	14	28%
	Technical support	10	20%
	Community involvement	5	10%
	Other	0	0%

Table 4 showed that 58% of respondents cannot afford the construction of a VIP latrine, while 42% can. The main financial barriers include high initial costs (38%), maintenance costs (28%), and lack of access to credit (22%), with 12% citing other unspecified barriers. The highest level of education attained by the head of the household is primary education for 38% of respondents, secondary education for 32%, tertiary education for 18%, and no formal education for 12%. Education level affects the adoption of VIP latrines for 68% of respondents, while 32% do not see it as a factor. Social norms or gender roles affect the decision to build a VIP latrine in 52% of households, whereas 48% do not experience such influences. Local government support for sanitation improvements is received by 32% of respondents, while 68% do not receive any support. The types of support that would help increase the use of VIP latrines include financial assistance (42%), educational programs (28%), technical support (20%), and community involvement (10%).

Figure 5: Showing financial barriers towards the usage of VIP latrines. (n=50)

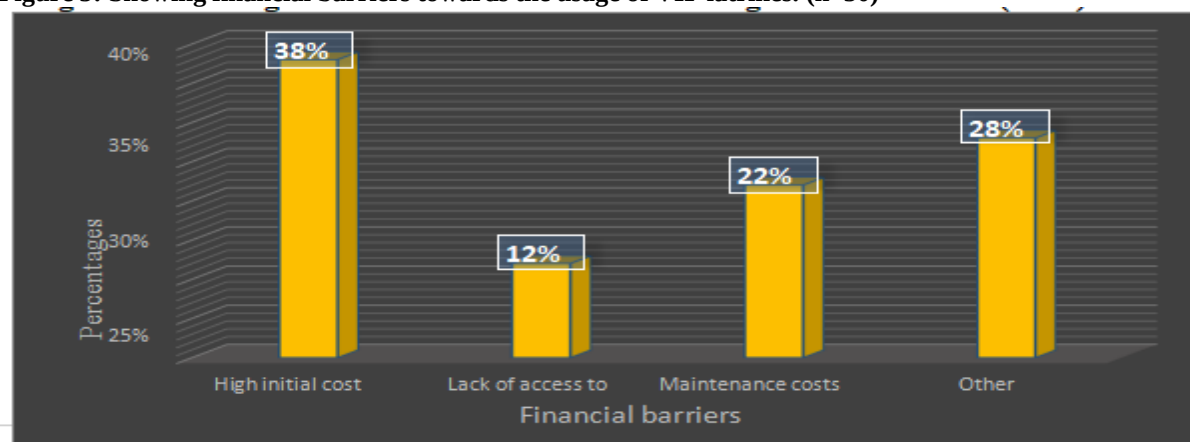


Figure 5 showed that the main financial barriers include high initial costs (38%), maintenance costs (28%), and lack of access to credit (22%), with 12% citing other unspecified barriers.

Figure 6: Showing the educational level of the household head. (n=50)

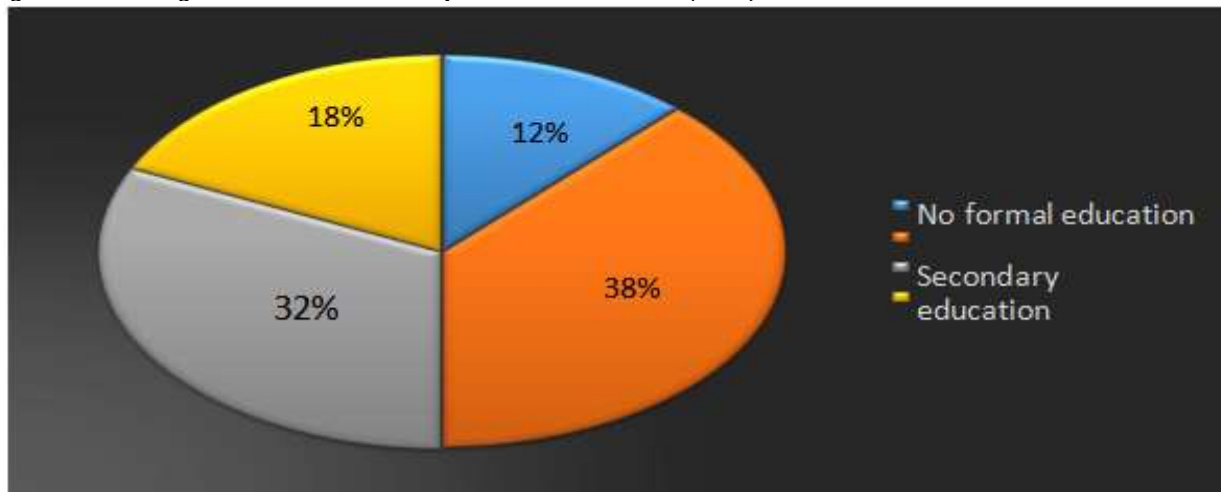


Figure 6 showed that the highest level of education attained by the head of the household is primary education for 38% of respondents, secondary education for 32%, tertiary education for 18%, and no formal education for 12%.

Discussion

Individual challenges to the use of ventilated improved pit latrines.

A significant finding in this section was that 68% of respondents were aware of ventilated improved pit (VIP) latrines. This high level of awareness can be attributed to the efforts of community meetings and health workers who actively promote sanitation practices. Local health campaigns and educational programs likely played a crucial role in disseminating information about VIP latrines, making residents more knowledgeable about their benefits and usage. This finding is in line with Kanda et al. (2022), who reported high awareness levels due to active community engagement and educational efforts.

On the other hand, only 12% of respondents expressed concerns about VIP latrines being unsuitable for the local environment. This low percentage indicates that most residents do not see environmental suitability as a major barrier. This perception could be due to successful demonstrations and examples of VIP latrines functioning effectively in similar environmental settings, which have helped to alleviate concerns about their appropriateness for the local conditions. This finding contrasts with Tamene & Afework (2021), who noted that misconceptions about environmental suitability were a significant barrier in other regions.

Environmental Challenges towards the use of ventilated improved pit latrines.

In the environmental challenges section, 62% of respondents indicated that the terrain affects the construction of VIP latrines. The hilly and rocky landscapes of Gamogo Parish pose significant construction challenges, making it difficult and costly to build durable VIP latrines. This high percentage reflects the practical difficulties faced by residents in constructing and maintaining these facilities in such challenging terrains. This finding is consistent with Kanda et al. (2022), who highlighted the impact of geographical terrain on the construction of sanitation facilities.

Conversely, only 12% of respondents reported that their area rarely experiences heavy rains. This low percentage suggests that heavy rains are a common occurrence, which can lead to flooding and erosion, further complicating the construction and maintenance of VIP latrines. The frequent heavy rains likely contribute to the high percentage of respondents who see the terrain as a significant barrier. This finding aligns with Obeng et al. (2019), who emphasised the challenges posed by seasonal variations and heavy rains on the sustainability of VIP latrines.

Socio-Economic Challenges towards the use of ventilated improved pit latrines.

In the socio-economic challenges section, 58% of respondents indicated that their households could not afford the construction of a VIP latrine. This high percentage underscores the financial barriers faced by many residents, including high initial construction costs and ongoing maintenance expenses. The lack of access to credit and financial assistance further exacerbates these challenges, making it difficult for low-income households to invest in improved sanitation facilities. This finding is in line with Kanda et al. (2022), who reported similar financial barriers in other regions.

In contrast, only 12% of respondents reported that the head of their household had no formal education. This low percentage suggests that most households have some level of education, which can positively influence the adoption of VIP latrines. Educated individuals are more likely to understand the health benefits of improved sanitation and the proper maintenance techniques required for VIP latrines. This finding aligns with Tamene & Afework (2021), who noted that higher educational attainment was associated with better sanitation practices.

Page | 10 **Study Limitation(s)**

There were limited funds since the study did not have external funding of the study. The time frame given to conduct some study activities was inadequate.

Some respondents were hostile to the candidate.

There were conflicting programs between the time for data collection and school schedules.

Conclusion

A significant portion of the population is aware of VIP latrines, largely due to community engagement and health worker initiatives. However, financial constraints and environmental challenges, such as difficult terrain and frequent heavy rains, pose significant barriers to the construction and maintenance of these latrines. Additionally, while most households have some level of education, financial barriers remain a critical issue, preventing many from adopting improved sanitation practices.

Recommendation

Provide subsidies or financial assistance to low-income households to help cover the initial construction and maintenance costs of VIP latrines.

Invest in infrastructure improvements to mitigate environmental challenges, such as erosion control and flood management, which affect the sustainability of VIP latrines.

Enhance educational programs to further increase awareness and understanding of the benefits and proper maintenance of VIP latrines.

Engage actively in community meetings and health education sessions to stay informed about sanitation practices and available support.

Form community groups to pool resources and share the costs of constructing and maintaining VIP latrines, making it more affordable for individual households.

Advocate for better sanitation facilities and support from local authorities by voicing concerns and needs during community meetings.

Further Studies

Conduct longitudinal studies to assess the long-term impact of VIP latrines on health and sanitation in similar communities.

Comparative Analysis: Compare the effectiveness of different types of sanitation facilities in various environmental and socio-economic contexts to identify the most suitable solutions.

Policy Impact: Evaluate the effectiveness of government policies and programs aimed at improving sanitation to provide evidence-based recommendations for policy adjustments.

Acknowledgement

Am so grateful to my supervisor for his continuous guidance and supervision throughout the development of the research proposal and seeing me through the research report writing.

I appreciate the people of Gamogo sub-County, Kapchorwa district, for the cooperation rendered to me during the study, without forgetting all my colleagues whose support has been remarkable.

Above all, I thank the Almighty God for his sustenance, provision, protection, and wisdom.

List of abbreviations

VIP: Ventilated Improved Pit

UGX: Ugandan Shilling (currency)

KAP: Knowledge, Attitudes, and Practices

MOH: Ministry of Health

WASH: Water, Sanitation, and Hygiene

CDC: Centres for Disease Control and Prevention

UNICEF: United Nations International Children's Emergency Fund

WHO: World Health Organisation

SDG: Sustainable Development Goals

Page | 11 Source of funding

The study was not funded.

Conflict of interest

The author declares that there was no conflict of interest.

Author contributions

CWO- Developed and investigated the study.

DM- Supervised the study.

MMM- Supervised the study.

Data availability

Data is available upon request.

Informed consent

Written informed consent was obtained from all participants prior to their inclusion in the study. Participants were informed about the purpose of the study, procedures involved, potential risks and benefits, and their right to withdraw at any time without penalty.

Author biography

Cuthbert Wabudeya Operu holds a Diploma in Clinical Medicine and Community Health from the International Paramedical Institute, Maya.

Denis Mungasa is a tutor and research supervisor at the International Paramedical Institute, Maya.

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References

1. African Development Bank. (2019). *African Development Bank water sector activities and initiatives report for 2019*. African Development Bank.
2. Kanda, A., Ncube, E. J., & Voyi, K. (2022). *Drivers and barriers to sustained use of Blair ventilated improved pit latrine after nearly four decades in rural Zimbabwe*. PLOS ONE, 17(4), e0265077. PLOS ONE. <https://doi.org/10.1371/journal.pone.0265077>
3. Nakagiri, A., Niwagaba, C. B., Nyenje, P. M., Kulabako, R. N., Tumuhairwe, J. B., & Kansiime, F. (2016). *Are pit latrines in urban areas of Sub-Saharan Africa performing? A review of usage, filling, insects, and odour nuisances*. BMC Public Health, 16(1), 120. PubMed. <https://doi.org/10.1186/s12889-016-2772-z>
4. Obeng, P. A., Keraita, B., Appiah-Effah, E., & Jensen, P. K. M. (2019). *Seasonal variations in use of sanitation facilities in low-income communities in Kumasi, Ghana*. Journal of Water, Sanitation and Hygiene for Development. IWA Publishing.
5. Salim, A. (2016). *VIP Latrines in Zimbabwe: From local innovation to global sanitation solution*.
6. Tamene, A., & Afework, A. (2021). *Sanitation facility ownership and its determinants in Ethiopia: A multi-level analysis of the 2016 Demographic and Health Survey*. PLOS ONE. PLOS ONE.
7. Tumwebaze, I. K., Orach, C. G., Niwagaba, C., Luthi, C., & Mosler, H. J. (2015). *Sanitation facilities in low-income settlements of Kampala, Uganda: User satisfaction and determinant factors*. International Journal of Environmental Health Research, 25(6), 587–604. Taylor & Francis.
8. Uganda Ministry of Health. (2018). *Uganda National Sanitation and Hygiene Strategy (2018–2023)*. Kampala: Government of Uganda.
9. WHO & UNICEF. (2021). *Progress on household drinking water, sanitation, and hygiene 2000–2020: Five years into the SDGs*. UNICEF Data.

10. World Health Organisation. (2019). *Progress on household drinking water, sanitation, and hygiene 2000–2017*
11. Yamane, T. (1967). *Statistics: An introductory analysis* (2nd ed.). New York: Harper and Row.