

Knowledge, attitude, and practices of community members toward the use of latrines at Lokatap village in Kotido district. A cross-sectional study.

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Page | 1

Abstract

Background:

Latrine use is a fundamental component of sanitation and public health, playing a critical role in preventing communicable diseases such as diarrhoea and cholera. This study assessed the knowledge, attitudes, and practices (KAP) of community members toward latrine use in Lokatap Village, Kotido District.

Methodology:

A descriptive cross-sectional study design employing quantitative methods was used. Data were collected from 30 adult respondents selected through simple random sampling. A structured questionnaire, translated into the local language, was utilized to gather information on socio-demographic characteristics and KAP related to latrine use. Data were analyzed using Microsoft Excel and presented in tables and charts.

Results:

The majority of respondents were aged 26–35 years (60%), had primary level education (57%), and were predominantly farmers (50%). Although 56.7% of respondents acknowledged that open defecation affects water and soil cleanliness, 60% were unaware of sanitation guidelines, and 53.3% incorrectly associated poor sanitation with conditions such as headache. Attitudinal findings revealed that 53.3% considered latrine use unimportant, while 57% had negative perceptions toward owning a latrine. Additionally, 53% believed latrine maintenance should be left to natural processes. In terms of practices, 60% of households reported using bushes or open spaces for defecation, while only 23% used household latrines. Latrine cleaning was irregular, with 53% cleaning occasionally and 7% never cleaning.

Conclusion:

There is poor knowledge, negative attitudes, and unsafe practices significantly hindering proper latrine utilization in Lokatap Village, increasing the risk of sanitation-related diseases.

Recommendation:

Targeted community health education programs should be strengthened to improve knowledge and attitudes toward sanitation. Promotion of household latrine construction, improved hygiene practices, and active involvement of local leaders in sanitation campaigns are essential.

Keywords: *Latrine use, Sanitation, Open defecation, Hygiene practices, Rural community, Kotido District, Uganda.*

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Background.

Latrine use refers to the regular and consistent use of toilet facilities for human waste disposal and is a critical component of improved sanitation and public health (Yulyani & Kurnia, 2019). Latrine use significantly influences the adoption and maintenance of proper sanitation behaviors, which are essential for preventing diseases such as diarrhoea and cholera (Woyessa et al., 2022).

Globally, improper latrine use remains a public health concern, with 46% of people lacking safely managed sanitation services (Jain et al., 2019). In India, 31% of rural households reported open defecation due to poorly maintained latrines with no visible footpaths (Jain et al., 2019). In Bangladesh, 45% of latrines had no adjacent handwashing facilities, contributing to continued fecal-oral disease transmission (Zelege et al., 2019). In Africa, the prevalence of improper latrine use is 33% of people in rural areas practicing open

defecation or using poorly maintained latrines (Belay et al., 2022). In Ghana, 47% of latrines lacked proper covers and had fecal contamination around the premises (Nunbogu et al., 2019). In Ethiopia, 46% of households reported flies around latrines and poor cleaning practices (Terefe et al., 2024).

In Sub-Saharan Africa, the pooled prevalence of open defecation and improper latrine use is 67.3% among households without improved sanitation (Tseklevs et al., 2022). In Chad, 39% of pit latrines in N'Djamena emitted strong smells and had no clear access paths (Tekoum et al., 2024). In Nigeria, 43% of public latrines were poorly maintained and attracted flies (Tekoum et al., 2024).

In East Africa, improper use of latrines is still widespread despite sanitation campaigns, with 36% of latrines showing signs of faecal contamination (Terefe et al., 2024). In Rwanda, 28% of latrines had flies and bad smells due to inadequate maintenance (Muhimpundu & Rutayisire, 2022).

In Tanzania, 39% of community latrines lacked soap and water for handwashing (Terefe et al., 2024).

In Uganda, the prevalence of poor latrine use is at 35–40%, especially in rural and informal communities (Mubatsi et al., 2021). In Kampala, 36% of pit latrines in informal settlements had faeces on floors or slabs (Mubatsi et al., 2021). In Nabilatuk District, 43% of surveyed households reported no soap at latrine sites (Colding-Jørgensen et al., 2023).

Improper latrine use, characterized by foul Odors, fly infestation, absence of handwashing facilities, and visible faecal matter, has been widely associated with inadequate knowledge, negative attitudes, and poor sanitation practices among community members (Mubatsi et al., 2021). The latrine use is therefore closely linked to the knowledge, attitude, and practices, where limited awareness about sanitation, unfavourable perceptions, and unhealthy behaviours contribute to low and improper latrine utilization (Tseklevs et al., 2022). It is upon this background that the study is set to determine the knowledge, attitude, and practices of community members toward the use of latrines at Lokatap village in Kotido District.

Methods.

Study design.

The study was a descriptive cross-sectional study, which involved quantitative research approaches. Data were collected from various respondents using questionnaires, which proved to be an effective method.

Study setting.

The study was conducted in Lokatap Village, located in Kotido District in the northeastern region of Uganda, approximately 520 kilometres from Kampala City. Lokatap was a remote rural village within Kotido district and was characterized by a semi-arid climate, a nomadic pastoralist lifestyle, and limited access to basic sanitation facilities. The area was served by Kotido Health Centre IV, a government-owned facility with an estimated bed capacity of 40, which offered outpatient, inpatient, maternal-child health, immunization, and health education services. On average, the facility attended to 100–120 patients daily, mainly from surrounding villages including Nakwakwa, Lokitelaebu, Lokiding, and Panyangara.

Study Population

The study population consisted of adult community members residing in Lokatap Village, both male and female, aged 18 years and above. This group was selected because they were the primary decision-makers and users of household sanitation facilities.

Sample Size Determination.

The sample size for the study was determined using Krejcie and Morgan's sample size determination table. According to

local administrative records, Lokatap Village had an estimated adult population of 120 residents. Based on the Krejcie and Morgan table, a population of 120 corresponded to a sample size of approximately 92. However, due to logistical limitations, resource constraints, and time, a manageable sample of 30 respondents was selected to participate in the study. This decision aligned with UHPAB guidelines, which recommended a minimum sample size of 30 for quantitative studies, ensuring that the data collected remained valid and representative for analysis.

Formula

Slovin's formula was expressed as:

$$n = \frac{N}{1 + N(e^2)}$$

Where:

n = required sample size

N = total population size (90 respondents)

e = margin of error (chosen as 15% or 0.15)

Calculation

Substituting the known values into the formula:

$$\begin{aligned} n &= \frac{90}{1 + 90(0.15^2)} \\ n &= \frac{90}{1 + 90(0.0225)} \\ n &= \frac{90}{3.025} \\ n &\approx 30 \end{aligned}$$

Using Slovin's formula with a 15% margin of error, the calculated sample size was 30 respondents. This ensured a manageable and representative sample for the study while maintaining acceptable statistical reliability.

Sampling Procedure

A simple random sampling technique was used to select study participants from among adult residents of Lokatap Village who met the inclusion criteria and provided informed consent. A list of eligible community members was compiled with the help of local leaders. On the data collection days, 30 "YES" and 30 "NO" labels were written on folded pieces of paper and placed in a container. Each consenting individual randomly picked one paper. Those who picked a "YES" were included in the study, while those who picked "NO" were not. This method ensured that each individual had an equal and fair chance of selection, reducing bias and maintaining randomness. The final list of participants was recorded for tracking and analysis.

Inclusion Criteria and exclusion criteria.

The study included participants based on the following criteria to ensure the relevance and accuracy of findings regarding latrine use among community members in Lokatap Village:

Adult Residents: Participants were 18 years and above and permanent residents of Lokatap Village in Kotido District.

Local Community Members: Participants had lived in the community for at least 6 months, ensuring familiarity with local sanitation practices.

Latrine Accessibility: Participants resided in households with or without a latrine to reflect varied access levels.

Informed Consent: Participants provided informed consent to take part in the study.

Exclusion Criteria.

Visitors/Temporary Residents: Those visiting or temporarily staying in the village were not eligible.

Study Variables

Dependent Variable:

Latrine Use Practices: The extent and frequency of latrine usage by community members in daily life, including behaviors such as consistent use, hygiene practices, and avoidance of open defecation.

Independent Variables:

Knowledge Factors: Understanding of latrine benefits, disease prevention, and construction techniques.

Attitudinal Factors: Personal and cultural beliefs, perceptions of cleanliness, privacy, and convenience related to latrine use.

Socio-Demographic Factors: Age, education level, occupation, gender, and household size.

Research Instruments

The study utilized a structured questionnaire as the primary tool for data collection. The questionnaire consisted of closed-ended questions designed to capture information on the knowledge, attitude, and practices of community members toward the use of latrines in Lokatap Village. It was developed in English and translated into Ngakarimjong, the local language widely used in the area, to ensure clarity and ease of understanding for participants. To ensure its effectiveness, the questionnaire was pretested at Rengen Health Centre III, a nearby facility, with a small group of respondents who were not included in the main study. Feedback from the pretest was used to refine the questionnaire before actual data collection. The questionnaire included sections aligned with the study's specific objectives, covering socio-demographic, knowledge, attitudinal, and practice-related factors.

Data Collection Procedure

The study utilized a structured questionnaire as the primary tool for data collection. The questionnaire consisted of closed-ended questions designed to capture information on factors influencing latrine use among community members in Lokatap Village. It was developed in English and translated into the local language to ensure clarity and ease

of understanding for participants. To ensure its effectiveness, the questionnaire was pretested at Rengen Health Centre III, a nearby facility, with a small group of respondents who were not included in the main study. Feedback from the pretest was used to refine the questionnaire before actual data collection. The questionnaire included sections aligned with the study's specific objectives, covering socio-demographic, knowledge, attitudinal, and practice-related factors.

Data management, & Data analysis, and presentation

The filled questionnaires were collected, checked for completeness, and counted after each day of data collection to ensure that all were returned. The questionnaires were coded and kept in a safe place as a backup. A flash disk was also used to store the data. The collected data were sorted manually and tallied, and frequency tables were developed following the numbers assigned to each questionnaire. The information was coded and then entered into Microsoft Excel for analysis. Tables, pie charts, and graphs were generated automatically by the computer program, and the report was written thereafter.

Quality Assurance: validity and reliability

To ensure the validity and reliability of the study on knowledge, attitudes, and practices of community members toward latrine use at Lokatap Village in Kotido District, several measures were taken. A structured and standardized questionnaire was used to maintain uniformity in data collection. To enhance validity, the tool was pretested in a neighboring village with similar socio-demographic characteristics to Lokatap to ensure that it accurately captured the intended constructs. The questionnaire was reviewed by experts in community health and research methodology from Florence Nightingale School of Nursing and Midwifery to ensure content and face validity. Reliability was achieved by thoroughly training the research assistants on how to administer the questionnaire consistently, ensuring that all respondents were approached in the same manner. A pilot study was conducted to refine any ambiguous items. Daily data checks were conducted to confirm completeness and internal consistency, thereby maintaining high-quality and dependable results.

Ethical Consideration

To uphold ethical standards, ethical approval was obtained from the research supervisor, and clearance was sought from the Principal of Florence Nightingale School of Nursing and Midwifery. An introductory letter was issued to facilitate community access and collaboration with the local leadership in Lokatap. Permission was sought from relevant authorities, and the purpose of the study was clearly explained to all participants. Participation was entirely voluntary, and individuals were informed of their right to

withdraw from the study at any time without penalty. Confidentiality was maintained through the use of unique identifiers rather than names, and all data were securely stored in password-protected digital files and locked physical storage. Written informed consent was obtained from each participant before data collection began. The

researcher adhered to all ethical guidelines to ensure the credibility and integrity of the study.

Results

Socio-demographic characteristics

Table 1: Sociodemographic characteristics of respondents (n=30)

Variables	Attributes	Frequency(f)	Percentage (%)
Age of Respondents.	15-25 years	5	17
	26-35 years	18	60
	36-45 years	4	13
	46 years and above	3	10
The highest level of education of the respondents	No formal education	7	23
	Primary level	17	57
	Secondary level	6	20
Source of livelihood	Farming	15	50
	business	7	23
	Formal employment	3	10
	unemployed	5	17
Number of years lived in that village	Less than a year	2	7
	1-5 years	5	17
	6-10 years	8	26
	More than 10 years	15	50

Legend: f= frequency, %= percentages

Based on the age bracket, the majority of respondents, 60%(18), were aged between 26 and 35 years, while only 10%(3) were aged 46 years and above. In terms of the highest level of education, half of the respondents, 57%(17), had attained primary level education, whereas a few of them, 20%(6), had attained tertiary education. In terms of the

sources of livelihood, most of the respondents, 57%(17) were farmers, while the a small number 10%(3) were formally employed, whereas interm of years they had lived in that village, majority of the respondent 50%(15) had lived for more than 10years, whereas very few 7%(2) had lived for lesser than a year.

Knowledge of community members toward the use of latrines at Lokatap village in Kotido District.

Table 2: Shows knowledge of community members toward the use of latrines at Lokatap village in Kotido district (n=30)

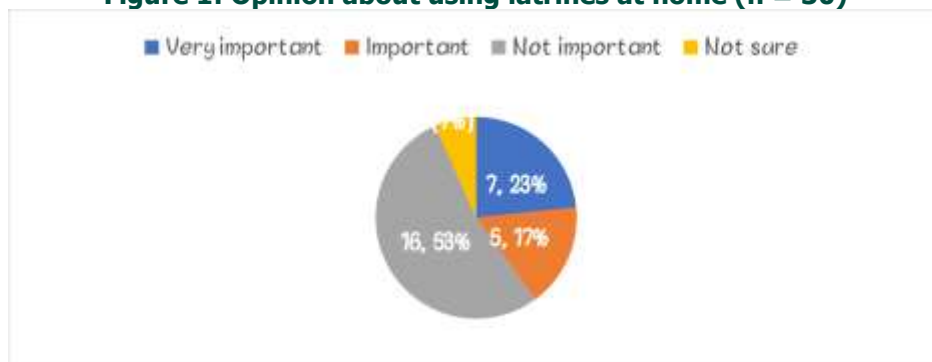
variables	Attributes	Frequency(f)	Percentage (%)
Identifies conditions associated with poor sanitation	Diarrhea-related diseases	8	26.7
	Headache	16	53.3
	Skin rashes	4	13.3
	Don't know	2	6.7
Examines the perceived impact of open defecation	Affects water and soil cleanliness	7	56.7
	Has no effect	18	56.7
	Not sure	5	16.7
Assesses awareness of health authority sanitation guidelines	Yes	7	23.3
	No	18	60.0
	Not sure	5	16.7

Legend: f=frequency, %= percentage

Concerning the condition associated with poor sanitation, most of the respondent's 53% (16) identified headache as a condition associated with poor sanitation, lesser than 10% (2) reported that they did not know any associated condition. Regarding the perceived impact of open defecation, a bigger proportion, 60% (18), stated that it has effects on water and

soil cleanliness, whereas a small number, 16.7% (5), were not sure. With respect to awareness of health authority sanitation guidelines, almost three-quarters of the respondents indicated that they were not aware, while 23% confirmed awareness.

Figure 1: Opinion about using latrines at home (n = 30)



Primary Source.

In regard to opinion about the use of latrine at home, many 53.3% (16) of the respondents reported that the use of latrines at home was not important, while few 6.7% (2) reported that they are not sure about the use of latrines at home.

Attitude of community members toward the use of latrines at Lokatap village in Kotido District

Table 3: show some attitude of community members toward the use of latrines (n =30)

Variables	Attributes	Frequency(f)	Percentage (%)
Assesses views on who should be responsible for encouraging latrine use in the household	Father	16	53%
	Mother	4	13%
	All adults in the household	8	27%
	Not sure	2	7%
Explores respondents' attitudes toward owning a latrine at home	Positive	7	23%
	Neutral	4	13%
	Negative	17	57%
	No opinion	2	7%
Examines respondents' opinions on proper latrine maintenance	Cleaned regularly by assigned family members	5	17%
	Cleaned occasionally when needed	7	23%
	Left for nature to clean	16	53%
	Not sure	2	7%

Legend: f=frequency, %=percentage

In regard to who is responsible for encouraging latrine use in the household, a higher proportion, 53% (16) of respondents, believed that fathers should be responsible for encouraging latrine use in the household, but 7% (2) were not sure who should take responsibility. About perceptions of owning a latrine at home, a greater number, 57% (17) of

the respondents expressed negative attitudes, whereas a lesser percentage, 7% (2), had no opinion. With respect to latrine maintenance, the majority of respondents, more than half, 53% (17) of the respondents, felt that latrines should be left for nature to clean, while only 7% (2) were not sure how latrines should be maintained.

Practices of community members toward the use of latrines at Lokatap village in Kotido District

Table 4: shows some of the practices of community members toward the use of latrine (n=30)

variable	Attributes	Frequency(f)	Percentage (%)
Describes the type of facility commonly used for defecation by the household	Household latrine	7	23%
	Public latrine	3	10%
	Bush/open space	18	60%
	others	2	7%
Indicates the frequency with which household latrines are cleaned	Daily	7	23%
	Weekly	5	17%
	Occasionally	16	53%
	Never	2	7%
	Use the latrine	7	23%

Legend: f=frequency, %=percentage

Evaluates practices for ensuring safe disposal of feces by young children in the household	Bury in soil	4	13%
	Leave in open	17	57%
	Not applicable	2	7%

Regarding the type of facility commonly used for defecation by the household, the majority of respondents, 60% (18), reported that their households commonly used the bush or open space for defecation, while the minority, 7% (2), indicated that they used other facilities. With respect to the frequency of latrine cleaning, most respondents, 53% (16), reported cleaning occasionally, whereas the minority, 10% (3), stated that their latrines were never cleaned.

Discussion of results

Knowledge of community members toward the use of latrines at Lokatap village in Kotido District

Pertaining to the perceived impact of open defecation, the majority of the respondents reported has no effect, while a minority were not sure. These findings are in parallel to the study by Osumanu et al., (2019), in which they revealed that 63% of participants understood that open defecation contributes to environmental degradation and contamination of water sources. This reflects inadequate knowledge because open defecation contaminates water and soil, spreading diseases like cholera and dysentery. The variation may arise due to limited community sensitization, cultural normalization of open defecation, and the absence of consistent health authority campaigns.

Concerning awareness of health authority sanitation guidelines, the findings indicated that a greater percentage of the respondents were not aware, and few knew the guidelines. This is not in line with the study by Murakwani et al. (2022) in Bulawayo, Zimbabwe, which found that 85% of community members were knowledgeable about national and local health guidelines promoting latrine use. This is inadequate knowledge since awareness of sanitation guidelines is critical for adopting safe hygiene practices. The variation could have originated from weak health education systems, insufficient dissemination of public health messages, and poor engagement of community health workers.

In regard to opinion about the use of a latrine at home, most respondents reported it was not important, while fewer of them were not sure of the importance. This disagrees with the study by Nachaiwieng et al. (2024), which stated that 74% of participants recognized the importance of proper latrine use in breaking the cycle of intestinal parasite infections, a result attributed to the WASH education provided alongside deworming efforts.

Attitude of community members toward the use of latrines at Lokatap village in Kotido District

In line with the views on who is responsible for encouraging the use of latrine in the household, half of the respondents believed that fathers should be responsible for encouraging latrine use in the household, with a quarter reporting not sure. This is not in line with the study by Ellis et al. (2020), which showed that 63% of families reported that latrine maintenance was a shared responsibility among all adult members, especially women and older children. This is a negative attitude because it shifts the responsibility to one gender instead of promoting collective household accountability, which weakens overall compliance. The variation might be from patriarchal norms, cultural beliefs about decision-making, and a lack of inclusive sanitation campaigns.

Regarding respondents' opinions on proper latrine maintenance, the majority of the respondents felt that latrines should be left for nature to clean, and only a few were not sure. This is a poor practice because neglecting regular cleaning compromises hygiene, encourages flies and Odors, and promotes the spread of faecal-borne diseases. The variation might result from a lack of awareness of hygiene maintenance, the absence of cleaning tools, or cultural attitudes minimizing responsibility for sanitation.

Practices of community members toward the use of latrines at Lokatap village in Kotido District

About the type of facility commonly used for defecation by household 60% reported that their households commonly used the bush or open space for defecation, though a minority stated that they use other facilities. This is not in conformity with the study done by Temesgen et al. (2021) in Machakel District, Ethiopia, which stated that. The study found that while 84% of households had latrines, only 63% consistently used them, with the rest occasionally resorting to open defecation. This is a poor practice because open defecation contaminates the environment, increases exposure to flies, and spreads diseases such as diarrhoea and cholera. The variation could be due to a lack of functional household latrines, poverty limiting latrine construction, and cultural acceptance of open defecation.

Concerning the frequency with which the latrines are cleaned by the household, most respondents reported cleaning latrines only occasionally, with 7% reporting they

never cleaned. This disagrees with a study conducted by Miheso et al. (2024) in Homa Bay County, Kenya, which revealed that 67% of community members practiced regular latrine cleaning at least twice a week, with a focus on reducing bad smells and insect infestations. This is a poor practice since irregular cleaning creates unhygienic conditions, attracts flies, and discourages consistent latrine use. The variation might be a result of inadequate cleaning materials, limited awareness of hygiene standards, and low prioritization of sanitation in daily routines.

In relation to whether the respondent practiced hand hygiene after using the latrine, more than half reported that they never washed their hands after latrine use. This was in contrast to the study by Richardson and Collins (2023) that revealed that 62% of respondents reported washing hands with soap or ash and water after latrine use, a behavior significantly influenced by hygiene sensitization campaigns. The variation might result from a lack of soap or water, low awareness about the importance of handwashing, and cultural undervaluing of hygiene behaviours.

Conclusion

This study examined the knowledge, attitudes, and practices of community members toward the use of latrines in Lokatap Village, Kotido District. The findings revealed generally inadequate knowledge, with many respondents associating sanitation with unrelated conditions, being unaware of health guidelines, and uncertain about the benefits of household latrines.

Attitudes were largely negative, as latrine use was often viewed as unimportant, ownership was discouraged, and cleaning responsibilities were shifted, though trust in local leaders as sources of information was evident.

Practices were equally poor, characterized by widespread open defecation, irregular latrine cleaning, unsafe disposal of children's feces, low privacy, and lack of handwashing after use. Collectively, these results highlight critical gaps in sanitation awareness, cultural perceptions, and hygiene practices that continue to undermine effective latrine use and increase vulnerability to preventable diseases.

Limitations of the Study

The study acknowledged several limitations related to data collection and participant behavior:

Social Desirability Bias: Some participants may have offered responses they believed were expected or socially acceptable, particularly regarding hygiene practices.

Incomplete Data: Some respondents skipped questions or provided unclear answers, leading to gaps in data quality.

Participant Attrition: Some individuals withdrew from the study or became unreachable after initially consenting, potentially affecting the target sample size.

Recommendations

Strengthen Community Health Education Programs: Conduct regular sensitization campaigns to correct misconceptions about sanitation-related diseases and emphasize the benefits of latrine use, including privacy, hygiene, and disease prevention.

Promote Household Latrine Construction: Encourage and support households to build functional latrines by providing technical guidance, subsidized materials, or community-driven construction initiatives.

Enhance Hygiene Promotion: Train community health workers to demonstrate proper latrine maintenance, safe disposal of children's feces, and handwashing practices with soap and water.

Engage Local Leaders in Advocacy: Utilize the trust that community members place in local leaders to champion sanitation initiatives and mobilize households toward improved practices.

Improve Accessibility of Information Materials: Provide IEC (Information, Education, and Communication) materials such as posters and pamphlets in local languages to reinforce sanitation messages.

Evaluate the Effectiveness of Sanitation Campaigns: Assess how community-led health education programs impact knowledge, attitudes, and practices regarding latrine use.

Explore Cultural and Social Beliefs: Investigate the influence of cultural norms and gender roles on sanitation behaviors to design culturally appropriate interventions.

Assess Barriers to Latrine Construction: Examine economic, structural, and environmental challenges that prevent households from constructing and maintaining latrines.

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List of abbreviations.

KAP – Knowledge, Attitude, and Practices

WHO – World Health Organization

WASH – Water, Sanitation, and Hygiene

IEC – Information, Education and Communication

UHPAB – Uganda Health Professions Assessment Board

SPSS – Statistical Package for the Social Sciences

HC IV – Health Centre IV

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Conflict of interest.

There is no conflict of interest.

Availability of data.

Data used in this study are available upon request from the corresponding author.

Authors contribution.

EPL designed the study, conducted data collection, cleaned and analyzed data, and drafted the manuscript.

LO supervised all stages of the study from conceptualization of the topic to manuscript writing and submission.

DO supervised all the research process.

TMO supervised the entire research process.

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