

FACTORS CONTRIBUTING TO INCREASED CASES OF DIARRHEA AMONG CHILDREN AGED BELOW 5 YEARS ATTENDING KAMULI GENERAL HOSPITAL IN KAMULI DISTRICT. A CROSS-SECTIONAL STUDY.

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Abstract

Background

Diarrhea remains a significant public health concern, disproportionately affecting young children worldwide. Children under the age of five are particularly vulnerable to diarrheal diseases, which can lead to severe dehydration, malnutrition, and even death. This study aimed to determine the factors contributing to increased cases of diarrhea among children aged below 5 years attending Kamuli General Hospital in Kamuli District.

Methodology

A descriptive study design employed quantitative data collection; a simple random sampling technique was used. Data was collected from a sample size of 50 respondents using a semi-structured questionnaire with closed and open-ended questions as a data collection tool. Data was later analyzed manually using tally sheets, computed into frequency and percentages using the Microsoft Excel program with bar graphs, pie charts, and tables for easier interpretation.

Results

(90%) of the respondents were female whereas the minority (10%) were male. (90%) had latrines in their home, (70%) of respondents had protected water sources while (30%) had unprotected water sources. (60%) lived in highly populated areas with more than 1000 citizens, 64% lived in rural areas. (74%) of the respondents, reported that they took 10min to reach the nearby water source. (66%) respondents visited the hospital once in a while this was also related to the long distances walked by the majority (60%) respondents of to the hospital.

Conclusion

The study found that lack of latrines and unprotected water sources are not the main causes of diarrhea among children under five. Instead, factors like crowded living areas, rural locations, and far distances to water and healthcare may contribute to the problem.

Recommendation

Ministry of Health should establish more health facilities in rural areas to reduce on long distances walked by patients.

Keywords: *Contributing factors, Sanitation and hygiene, Diarrhea among Children Under 5 years, Kamuli General Hospital.*

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Background of the study

Globally, there are nearly 1.7 billion cases of childhood diarrheal disease, causing 443,832 deaths each year. Children from the developing world are disproportionately affected by diarrhea and experience, on average, three diarrheal episodes every year. (WHO 2024) According to the 2016 Ethiopia Demographic and Health Survey report, 12% of under-five children had a diarrhea episode in the 2 weeks before the survey, similarly, this report showed that in Southern nations nationalities and People region 13.9% of children under the age of five had diarrhea (Kebede et al., 2020).

In Nigeria, 13% of children under the age of five were reported to have had diarrhea in the 2 weeks before the survey. This represents an increase from 2008 and 2013 of 10% in both years. Advice or treatment was sought for

65% of children who had diarrhea in the 2 weeks before the survey. The prevalence of diarrhea was highest in Gombe 35% and lowest in Ogun and Bayelsa (1% each). Similarly, this report showed that 50% of children under age 5 with diarrhea in the 2 weeks before the survey received some form of ORT (Okafor et al., 2022).

According to (Tamba et al. 2015), the prevalence of diarrhea in Sub-Saharan Africa is 23.8% and children under 24 months are highly affected.

According to the 2016 Nepal Demographic and Health Survey report, 8% of those under five children experienced diarrhea in the 2 weeks preceding the Survey (MoH Nepal & ICF 2017)

In Tanzania, 12% of children under age 5 had diarrhea in the 2 weeks before the survey the prevalence of diarrhea was slightly higher in urban areas 14% compared with

rural areas at 1% The Southern Zone had the highest prevalence of diarrhea at 6% and lowest 8% in the Northern Zone. Considering regional patterns, Kigoma and Rukwa had the highest diarrhea prevalence about 20% each), while Tabora had the lowest 5% (Tanzania 2016). 2016, Uganda Demographic and Health Survey report showed that 20% of children under age 5 had a diarrheal episode in the 2 weeks preceding the survey, the percentage of children with diarrhea in the 2 weeks preceding the survey was highest in Teso 29%, and Busoga 27% regions and lowest in Bunyoro region 10%. A similar report shows that only about one-third of children in Teso (34%) and Ankole (37%) regions received ORT (ICF 2018). Therefore, the objective of this study was to determine the factors contributing to increased cases of diarrhea among children aged below 5 years attending Kamuli General Hospital in Kamuli District.

Methodology

Study design

Study design is a framework or a set of methods and procedures used to collect and analyze data on variables specified in a particular research problem. In this research, a descriptive cross-sectional study was used to employ quantitative methods of data collection which included a questionnaire with structured questions that facilitated and elaborated discussions by respondents. This approach aimed at collecting information from different categories of people at once. Quantitative methods helped to source experiences and key informants as well as to determine measures of central tendency such as percentages and ratios to establish relationships between variables.

Study area

Kamuli General Hospital is located in Kamuli in Eastern Uganda approximately 141km from Kampala the capital city of Uganda. The health center offers services like Antenatal care, Maternal, and child health care services, HIV/AIDS counseling testing, and treatment, birth deliveries, and management of medical conditions, and they also have a functioning Laboratory. The rationale for choosing this study area was because I, the researcher and a student at Kampala School of Health Sciences during my practicum period in Kamuli General Hospital, observed a lot of diarrhea cases in children aged below 5 years.

Study population

The study population was children aged 6 and 59 months diagnosed with diarrhea in Kamuli general hospital. It included all under-five children with or without diarrhea at that moment.

Sample size determination

The sample size was determined using Burton's formula (1965)

Sample size (n) = QR/O Where,

Q- Total number of days taken for data collections

R- Maximum number of respondents who were interviewed per day

O- Maximum time taken on each respondent per day.

Values: Q= 10 days R=5 respondents. O=1 hour (Time duration will be from 8 am- 1 pm each day) Therefore, n= QR/O N= (10x5)/1 =50 Respondents

A sample size of 50 respondents was used.

Inclusion criteria and exclusion criteria.

Children aged between 6 and 59 months were included. All, under-five children with persistent diarrhea and caretakers or household heads who were severely ill and unable to respond to the questionnaire were excluded.

Sampling technique.

A simple random sampling technique was employed in the study since respondents were obtained from only outpatient clinics (OPD). At the outpatient clinic, all patients who were willing to participate in the study were registered and assigned numbers. Then the sample size was obtained. Then the number of willing patients was noted on a piece of paper. The pieces of paper were put in the basket and shared to mix them up. Then the clinician on duty who was neutral was invited to pick the desired number of respondents. Then patients with the numbers picked by the clinician were given questionnaires to participate in the research study.

Sampling Procedure.

A probability sampling procedure known as the Simple random sampling procedure was used to select the sample from the source population. The procedure was preferred because it directly targeted the exact individual with the interest of the study.

Data Collection Method.

Questionnaire method

This is a method of data collection where a questionnaire is used as the tool of data collection to attain information from the respondents of a study. The questionnaire method was used in this study since many respondents could be gotten at the same time and provided anonymity to respondents which put them at ease and encouraged them to answer truthfully.

Data collection tool

Questionnaire tool

This refers to a set of standardized questions, often called items, which follow a fixed scheme to collect individual data about one or more specific topics. Therefore, for this study a questionnaire with both open and close-ended questions written in the English language and later translated into the local language (Lusoga) was used in this study to solve the research problem. This tool was considered because it saves time and financial resources.

Data collection Procedure

The requisition letter for research data collection of data at Kamuli General Hospital was obtained from the principal of Kampala School of Health Sciences and taken to the hospital. Then the research coordinator of the hospital gave me a letter that allowed me to collect data from patients at an outpatient clinic. Sampling of the patients took place using simple random sampling. Then the sampled patients were given the questionnaire in the language they understand either English or Busoga by self-administering. After the questionnaires were collected from the respondents and checked for completeness. Then they were taken for analysis.

Study variables

Dependent variables

Increased cases of diarrhea among children aged below 5 years.

Independent variables

Factors contributing to increased cases of diarrhea among children aged below 5 years.

Quality control

To ensure the collection of quality data, the research tools were pre-tested on 7 patients eligible patients (not among final respondents), and research assistants were trained and pretested on 7 eligible patients. In addition, a pilot study was conducted to test the reliability of the questions and time needed to interview each patient, this included research assistants. In addition, tools were given to a supervisor from the Kampala School of Health Sciences to ascertain their validity. After piloting, the captured information was modified to improve clarity before undertaking the study. The time required for the study was determined in the pilot study and ample time was given for data collection. All patients aged below 5 years and were residents of Kamuli district who got their Medical services at Kamuli General Hospital were eligible to be included in the study and all patients who were neither residents of Kamuli district nor got their Medical services at Kamuli General Hospital were excluded from the study. COVID-19 standard operating procedures were followed

and the researcher and the research assistant wore facemasks and were provided with hand sanitizers, social distance was observed during data collection.

Data analysis and presentation

Data was analyzed manually by use of tally sheets and computed into percentages using the Microsoft Excel computer program with illustrated figures and tables for easier interpretation and were presented in the form of frequency distribution tables, bar graphs, and pie charts.

Ethical considerations

A letter of introduction was obtained from the Kampala School of Health Sciences research committee introducing the researcher and seeking permission to carry out the study with assurance of confidentiality. The study commenced after the objectives of the study were explained to participants and consented to participate in the study. Any information obtained from the respondents was kept confidential and questionnaires were stored in a lockable case.

Ethical approval

A letter of introduction was obtained from the Kampala School of Health Sciences research committee introducing the researcher and seeking permission to carry out the study with assurance of confidentiality. The study commenced after the objectives of the study were explained to participants and consented to participate in the study. Any information obtained from the respondents was kept confidential and questionnaires were stored in a lockable case.

Informed consent

Participants provided informed consent after receiving clear explanations about the study's purpose, objectives, methods, benefits, and potential risks. They understood their participation was voluntary, they could withdraw at any time, and their responses would remain confidential.

Results

Demographic data

Table 1. Shows the frequency distribution table of respondents according to their demographic data, (n=50)

Variables	Frequency (f)	Percentage (%)
Age		
21-30	13	26
31-40	17	34
41-50	15	30
51-60	5	10
Total	50	100
Education level		
Primary	20	40
Secondary	25	50
Tertiary	5	10
Total	50	100
Marital status		
Single	10	20
Married	25	50
Divorced	15	30
Total	50	100
Sex		
Female	45	90
Male	5	10
Total	50	100
Employment status		
Employed	10	20
Self-employed	10	20
Unemployed	30	60
Total	50	100
The main source of income		
Salary	5	10
Wages	18	36
Business	27	54
Total	50	100

From Table 1, the majority (90%) of the respondents were female whereas the minority (10%) were male.

Based on the level of education, the study revealed that most of the respondents (50%) had attended school up to the secondary level and the least (10%) had attended school up to the tertiary level.

Based on marital status, the majority of the respondents (50%) were married whereas the minority (20%) were single.

Based on employment status, the majority of the respondents (60%) were unemployed whereas a minority (20%) were self-employed.

Based on age, the majority of the respondents (34%) were aged (31-40) years whereas the minority (10%) were aged (51-60) years.

Based on the main source of income, the majority of the respondents (54%) carried out business whereas the minority (10%) obtained their income from salary.

INDIVIDUAL FACTORS CONTRIBUTING TO INCREASED CASES OF DIARRHEA AMONG CHILDREN AGED BELOW 5 YEARS ATTENDING KAMULI GENERAL HOSPITAL IN KAMULI DISTRICT.

Table 2. Shows the distribution of respondents who had latrines, (n=50)

Response	Frequency	Percentage (%)
Yes	45	90
No	5	10
Total (n)	50	100

From Table 2, the majority (90%) of the respondents reported that they had latrines whereas the minority (10%) reported that had no latrines.

Figure 1. Shows the distribution of respondents according to the water source for domestic use, (n=50)

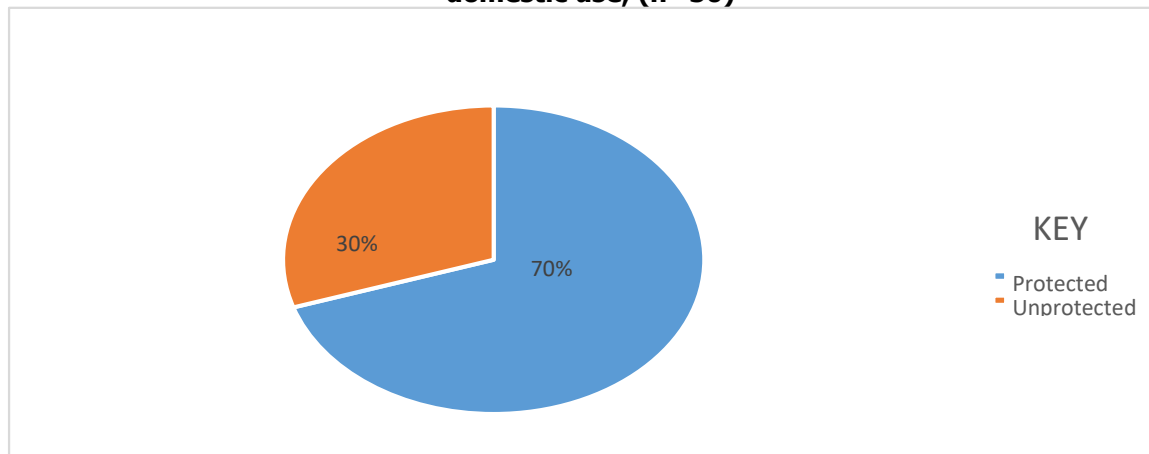


Figure 1 indicates the majority (70%) of the respondents reported that they used protected water sources whereas the minority (30%) reported that they used unprotected water sources.

Figure 2: showing the distribution of respondents according to how many people they lived with in the community. (n=50)

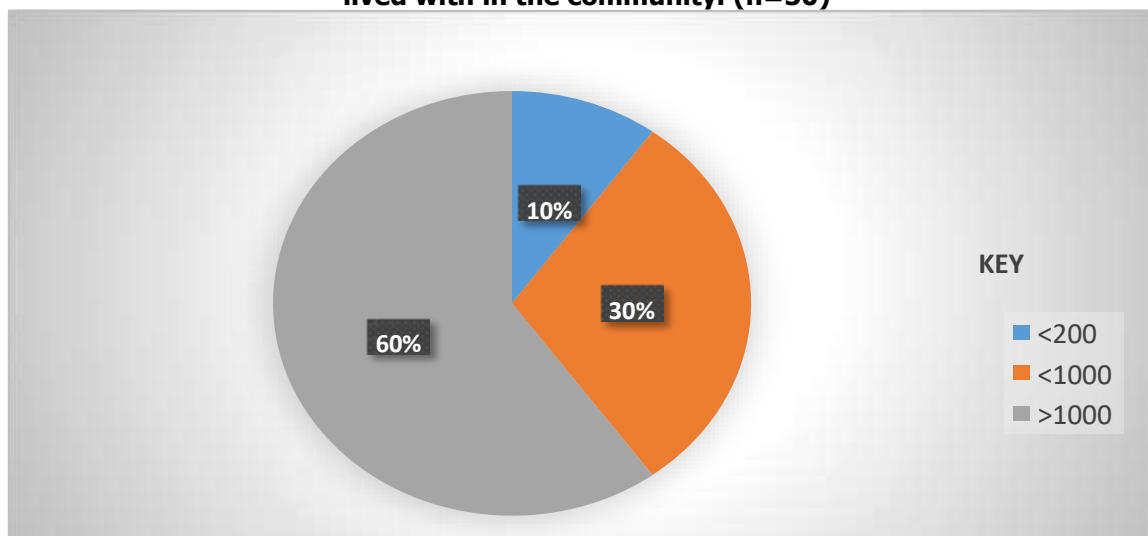


Figure 2 indicates more than half (60%) of the respondents reported that they lived with >1000 people whereas the least (10%) lived with <200 people.

COMMUNITY-RELATED FACTORS CONTRIBUTING TO INCREASED CASES OF DIARRHEA AMONG CHILDREN AGED BELOW 5 YEARS

Table 3. shows the distribution of respondents showing where they lived, (n=50)

Response	Frequency	Percentage (%)
Rural	32	64
Urban	18	36
Total	50	100

Table 3 indicates the majority (64%) of the respondents reported that they lived in rural areas whereas the minority (36%) reported that they in urban areas.

Figure 3: Shows distribution of respondents on how the structure of their toilet was. (n=50)

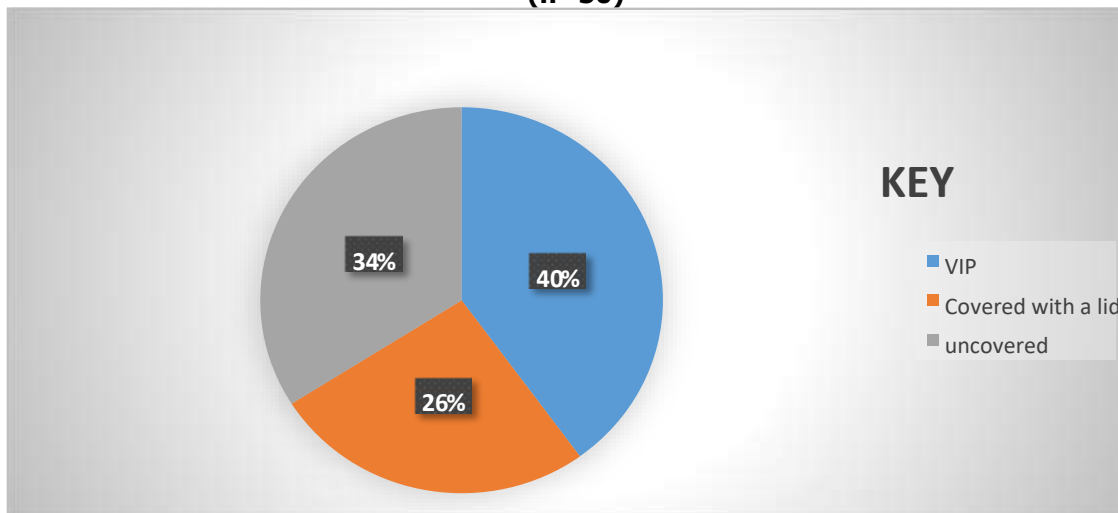


Figure 3 indicates the majority (40%) of the respondents reported that they had VIP latrines whereas the minority (26%) reported that they did not cover their latrines with lids.

Table 4. Shows the distribution of respondents showing how long it took for them to reach the nearby water source. (n=50)

Response	Frequency	Percentage (%)
10mins	37	74
30mins	10	20
>30mins	3	6
Total	50	100

Table 4 indicates the majority (74%) of the respondents reported that they took 10 min to reach the nearby water source whereas the minority (6%) reported that it took them more than 30 minutes to reach the nearby water source.

Figure 4: showing distribution of respondents on how often they used to clean their water containers. (n=50)

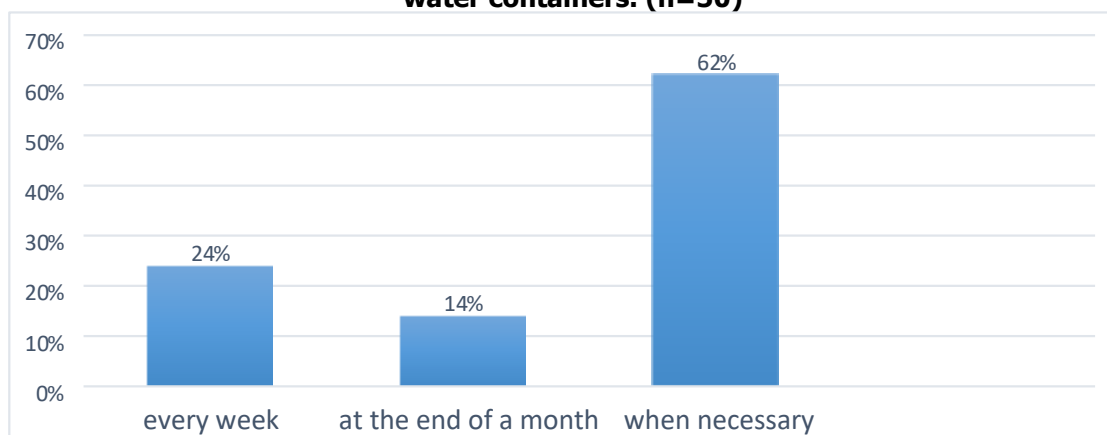


Figure 4 indicates most of the respondents (62%) reported that they cleaned their water containers when necessary whereas the least (14%) reported that they cleaned their water containers at the end of a month.

HEALTH FACILITY-RELATED FACTORS CONTRIBUTING TO INCREASED CASES OF DIARRHEA AMONG CHILDREN AGED BELOW 5 YEARS ATTENDING KAMULI GENERAL HOSPITAL.

Table 5. shows the distribution of respondents to date with vaccination, including the ROTA virus vaccine, (n=50)

Response	Frequency	Percentage (%)
Yes	42	84
No	8	16
Total	50	100

Table 5 indicates almost all (84%) of the respondents reported that their children were up to date with vaccination, including the ROTA virus vaccine whereas the least (16%) reported that their children were not.

Figure 5: showing the distribution of respondents according to how often they visit the health care facility for routine checkups of their children every after 2weeks, (n=50)

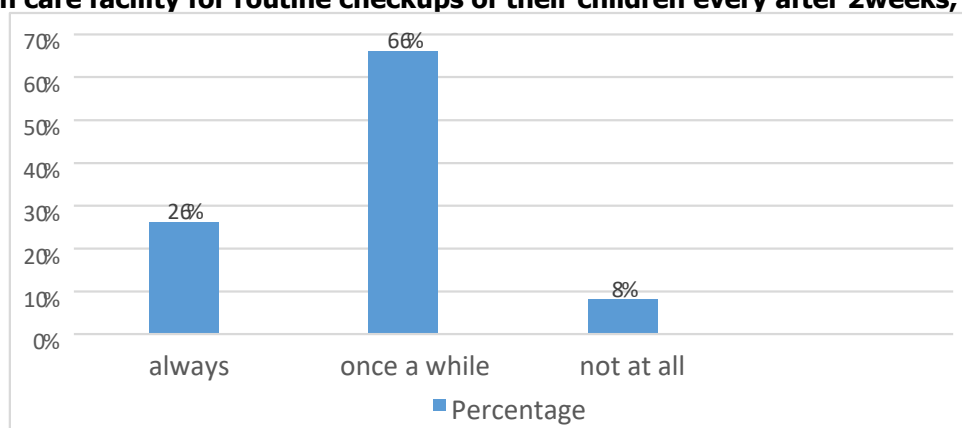


Figure 5 indicates more than half (66%) of the respondents reported that they visited the hospital once in a while whereas the least (8%) reported that they had not visited the hospital.

Table 6. shows the distribution of respondents according to how far the nearest facility from their home, (n=50)

Response	Frequency	Percentage (%)
<1km	8	16
<5km	12	24
>5km	30	60
Total	50	100

Table 6, indicates more than half (60%) of the respondents reported that lived >5km away from the nearest facility whereas the least (16%) lived <1km away from the nearby facility.

Discussion

Individual factors contributing to increased cases of diarrhea among children aged below 5 years attending Kamuli General Hospital in Kamuli district.

The study findings showed that the majority (90%) of the respondents had latrines in their home and this may be attributed to the government policy of every home to have a latrine. The findings were in the same line with the study

carried out by (Yilkal et al., 2020) in Ethiopia 2020 in Amhara Regional State, North Central Ethiopia found that 10% of HHs residing in ODF and 251 (56.1%) HHs living in NODF kebeles had no latrine. Faces were seen in the compound of about one in three of them (67.3% HHs) living in ODF and non-open-defecation-free (NODF) kebeles, respectively. From children who had developed diarrheal diseases, faces were seen in line in ten of their compounds.

From the study findings, more than half (60%) of the respondents reported that they lived with >1000 people and this can be attributed to many employment opportunities in highly populated areas. The study findings are in the same line with the study carried out by

(Kamran et al. 2023). The study done in a Peri-urban district of Pakistan shows that a total of 4674 children between the ages of 0 and 23 months were included in this study and a total of 1558 cases were matched with 3116 controls. In unadjusted analysis, children of mothers >30 years of age had lower diarrhea odds than children of mothers <25 years of age. Children also had lower odds of diarrhea if their mothers and fathers attained higher education. In addition, children belonging to the rich and wealthiest quintile were less likely to have diarrhea than those from the poorest quintile.

Furthermore, the majority (70%) of the respondents reported that they had protected water and this may be attributed to many boreholes constructed by politicians. The study findings were in the same line with the study carried out by (Tsegaye et al. 2023) in Northwest Ethiopia 2023, about the prevalence of diarrheal disease among under-five children was discovered to be high [29.0% with 95% CI: (25.5–32.6%)]. The regular cleaning of the compound, source of drinking water, animal access to the water storage site, vector around food storage sites, use of leftover food, and fecal contamination of water remained to have a significant association with under-five diarrheal diseases. And (Tsegaye et al. 2023) also, the study which was done in Zanzibar, where a total of 97 children under the age of 5 years were included. The results showed that 60 (61.9%) of the caretakers reported diarrhea and only 37 (38.1%) reported no diarrhea among their children under five years of age. The prevalence was significantly associated with demographic and socioeconomic factors, water-related factors, behavior and hygiene factors, and environmental and sanitation factors. The findings on environmental and sanitation factors associated with the prevalence of diarrhea. The results indicated that households that practiced the utilization of flush toilets and reached waste-collecting services had fewer episodes of diarrhea compared to those that did not. The site of disposing of baby faces was not significantly associated with the prevalence of diarrhea (Ali et al. 2021)

Community-related factors contributing to increased cases of diarrhea among children below five years attending Kamuli General Hospital in Kamuli district

The study findings showed that more than half of the respondents (62%) had cleaned their water containers when necessary and this may be attributed to health education about the importance of cleanliness. The findings were in the same line with the study carried out by (Ali et al. 2021) in Zanzibar, where a total of 97 children under the age of 5 years were included. The results showed that 60 (61.9%) of the caretakers reported diarrhea and only 37 (38.1%) reported no diarrhea among their children under five years of age. The prevalence was significantly associated with demographic and socioeconomic factors, water-related factors, behavior and hygiene factors, and environmental and sanitation factors. The findings on environmental and sanitation

factors associated with the prevalence of diarrhea. The results indicated that households that practiced the utilization of flush toilets and reached waste-collecting services had fewer episodes of diarrhea compared to those that did not. The site of disposing of baby faces was not significantly associated with the prevalence of diarrhea.

The majority (74%) of the respondents reported that it took 10 minutes to reach the nearby water source and this may be attributed to many water sources e.g. boreholes constructed by the government.

The study findings were not in the same line with the study that was carried out by (Araya G. et al. 2018). Regarding the proximity of the house to a main water source, 32% spent 30 minutes, and 33.2% of them traveled a round-trip from 60–120 minutes to fetch water. Household water treatment (any means) was practiced among 150 (24.6%) households. Regarding latrine availability, 59.7% of the households had their latrine facilities.

The majority (40%) of the respondents reported that they had VIP latrines and this may be attributed to health education about the importance of having proper latrines. The study findings were in the same line with the study that was carried out by (Robinah et al. 2022) in 2022. The study also found that having a vent-piped toilet was protective against diarrhea among children below 5 years with 0.503 times odds reduction when compared to toilets having lid covers in slum settlements in Entebbe municipality (Robinah et al. 2022)

The majority (64%) of the respondents lived in rural areas and this may be attributed to enough land in rural areas. The study findings were in the same line with the study carried out by (Robinah et al. 2022) out by in 2022 in Wakiso district which shows that from the 378 children below 5 years that were surveyed, the study indicated that the majority 236 (62.4%) of the children below 5 years lived in the village slum settlements of Entebbe municipality had suffered from diarrhea the past 1 month before the study was carried out and only 142 (37.6%) had not suffered from diarrhea the previous month. Family size, maternal handwashing behavior, water source, child's age, birth weight, and toilet cleanliness were statistically significant contributors to diarrhea. Children residing in large families had a 2.224 times increased risk of suffering from diarrhea compared to their counterparts in small families whereas improper maternal handwashing contributed to 4.645 higher odds compared to those with proper handwashing behaviors. Obtaining water from a protected water source was associated with a 73.5% reduction in diarrhea disease when compared with unprotected water sources like lakes and shallow wells. Regarding child factors, being 3 years and above was protective against diarrhea with 0.513 reduced odds when compared to those below 1 year of age. Furthermore, being born with a normal birthweight (2.5–3.9kgs) was also associated with 87.5% reduced diarrhea chances when compared to low-birth-weight children. The study also found that having a vent-piped toilet was protective against diarrhea among children below 5 years

with 0.503 times of odds reduction when compared to toilets having lid covers in slum settlements in Entebbe municipality.

Health facility-related factors contributing to increased cases of diarrhea among children aged below five years attending Kamuli General Hospital in Kamuli district

The study indicated that more than half (66%) of the respondents visited the hospital once in a while and this can be attributed to long distances walked by the caretakers to the hospital. The findings were in the same line with the study that was carried out by (Nathan et al.,2023) who reported that of the 13,573 caregiver-child pairs who responded to the diarrheal question, the prevalence of self-reported diarrhea over the previous two weeks was 20.9%. The majority of children in the study were below the age of 1 year (22.5%), and the majority of the participants resided in rural areas (82.6%) with many coming from the Western region 33.3%. The majority of caregivers visited a health facility 80.5% and received diarrhea medication 60.0% for their children. The majority of the children in the study received a Vitamin A dose 66.0% but did not get a rotavirus vaccine 91.9%, This was significantly associated with childhood diarrhea. The majority (60%) of the respondents reported that they lived >5km away from the nearest facility and this can be attributed to few Health facilities in some areas. The study findings were in the same line as the study carried out by (Nathan et al.,2023).

Furthermore, almost all (84%) of the respondents reported that their children were up to date with vaccination, including the Rotavirus vaccine and this can be attributed to free immunization services rendered by government facilities. The findings were not in the same line with the study carried out by (Walie et al. 2019) who reported that among 582 respondents, 11.5% of children were partially vaccinated and the prevalence of diarrhea in under-five children who were partially vaccinated was 37.7%. The percentage of mothers who deliver at home and health sector was 33% and 67% respectively. Similarly, the prevalence of diarrhea morbidity among children who had a fever was the largest (44%) of children who had no fever (16.1%).

Conclusion

The majority of the respondents lived in highly populated areas which led to poor disposal of fecal matter, the majority lived in rural areas and the majority of the respondents visited the hospital once in a while, this was also related to the long distances walked by the majority of the respondents to the hospital. This highly contributed to the increased cases of diarrhea among children aged below 5 years attending Kamuli General Hospital. The study's limitations were Inadequate finance since no external source of funds was provided for the study. Language barrier since the patients came from different regions of the country and were residents of the study

area. Limited time since some respondents did not have enough time to fill out the whole questionnaire. Hostile respondents affected the study negatively.

Recommendation

Residents should be sensitized about the importance of having VIP latrines with lid covers.

Residents should be sensitized to the importance of maintaining good personal hygiene.

Ministry of Health should establish more health facilities in rural areas to reduce on long distances walked by patients as well as avail health education about the spread, causes, and prevention of diarrhea.

The government should construct more boreholes in the rural areas to minimize long distances from home to water bodies as well as create more employment opportunities in rural areas to minimize the high population in urban areas.

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May the faithful God fulfill your desires.

List of Abbreviations

MoH: Ministry of Health.

OPD: Outpatient department.

ORT: Oral Rehydration therapy.

WHO: World Health Organisation

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This study was not funded

Conflict of interest

No conflict of interest declared

Author contributions

FM designed the study, conducted the data collection, cleaned and analyzed data, and drafted the manuscript. AK supported in study conceptualization and general supervision as well as mentorship.

Data availability

Data is available upon request.

Author Biography

Fahad Mugweri is a student of Diploma in Pharmacy at Kampala School of Health Sciences.

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