Diarrhea Prevalence and Associated Factors Among Under-Five Children in the Periphery Area of Azezo Sub-City, Gondar, Northwest Ethiopia: A community Based Cross-Sectional Study

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Abstract

Background

Although there has been a global decrease in childhood diarrheal disease in parallel with improvements in the standard of living, it still remains a significant public health problem that occurs due to poor WASH status and other related factors that cause massive childhood morbidity and mortality particularly in sub-Saharan Africa countries including Ethiopia.

Objective

To assess diarrheal disease prevalence and associated factors among under-five children in periphery area of Azezo sub-city, Gondar, northwest Ethiopia.

Methods

A community-based cross-sectional study was conducted in April 2019. A simple random sampling technique was applied to recruit the eligible clusters/villages. Structured interview questionnaires were used to collect data. The completed data were entered into Epi Info version 7 and exported to SPSS version 20 for further analysis. A binary logistic regression model was used to process bivariate and multivariable analysis of the data to establish the association between dependent and independent variables. The adjusted odds ratio (AOR) with 95% CI was used for the interpretation of data after controlling the confounders.

Results

The two-week prevalence of U5C diarrheal disease was 24.9% with 95% CI: (20.4 – 29.7). Age group of 1-12months [AOR: 9.22, 95%CI: (2.93-29.04)], age group of 13-24months [AOR: 4.44, 95%CI: (1.87-10.56)], low monthly income (AOR: 3.68, 95% CI: (1.81-7.51)], small family size [AOR: 0.32, 95% CI: (0.16-0.65)], poor hand washing practice [AOR: 8.37, 95% CI: (3.12-22.52)], and immediate feed for cooked foods [AOR: 0.39, 95%CI: (0.19-0.81)] were significantly associated factors with childhood diarrhea.

Conclusion

Diarrhea was a common health problem among under-five children in the periphery area of Azezo sub-city. Age of children, family size, monthly income, hand-washing practice, and feeding time for cooked food were identified statistically significant risk factors. Therefore, an appropriate intervention program through health education would be recommended with a focus on identified risk factors to reduce the burden of diarrheal diseases.

Background

Diarrhea illness remains the significant cause of morbidity and mortality of under-five children globally. However most incidents of childhood diarrhea are occurred in mild and acute cases can lead to severe dehydration, which may consequences in mortality and other health risks as a result of malnutrition (1). The most recurrent clinical forms of diarrhea comprises acute watery diarrhea which characterized by abrupt onset of frequent, watery loose, stools without visible blood, lasting less than two weeks (2, 3). Bloody diarrhea; often referred to as dysentery, is marked by visible blood and mucus in the stools (4). Whereas persistent diarrhea is an episode of diarrhea, with or without blood lasts at 14 days and causes substantial weight loss in most patients (2, 4).

Diarrheal illness is a main public health problem in globe. Internationally, 525, 000 under-5 years old children die by diarrhea annually, approximately 2195 every single day(5). It accounts 9% of child deaths worldwide and making childhood diarrhea the second leading cause of mortality next to pneumonia(6). Although there is a global reduction in the death rates of under-five children, the risk of a child for death earlier the age of under five years remains the highest in sub Saharan African countries (90 per 1000 live births), which is approximately 7 times higher than that in European Regions (12 per 1000 live births) (7). That implies the burden of diarrheal diseases in developing countries is higher than in more developed countries (8-12).

In Ethiopia, the toll of diarrhea is another killer of under-five children following to pneumonia(11). Previous study showed that in Ethiopia the incidence of diarrhea declined from 2000 to 2016, the problem is extremely high for children under five years old by causing loss of fluids with substantial mortality in infancy stages (13). Various studies revealed that diarrheal illness in unindustrialized countries like Ethiopia, is due to many reasons such as unsafe water supply, lack of water linked to inadequate hygiene, poor personal and domestic hygiene, poor sanitation, failure to wash hands at critical time, accessibility of toilet facilities, housing environments, educational status of mothers, and poor feeding practices (8-12, 14, 15). Still there is limited evidence in the study area towards diarrheal disease and predictors among under-five children. Therefore, the aim of this investigation was to evaluate the prevalence of diarrheal disease and associated factors of under five children in periphery area of Azezo sub city, Gondar, northwest Ethiopia.

Methods And Materials

Study design and period

A community based cross-sectional study design was employed to collect data from households having U5C in April 2019.

Study area and population

The study was conducted at periphery area located at Azezo sub-city, Gondar, about 727 km far from Addis Ababa, northwest Ethiopia. According to 2019 Ethiopian budget year, the total residents of this study area were estimated to be about 68,538 populations. Total population of 68,538 from which urban residents' accounts about 40,430 while the remaining 28,108 are rural inhabitants. In Azezo periphery area there are more than 513 U5C exists from a total population of 4198 and a total of 901 households.

Sample size determination and Sampling technique

The optimal sample size was determined using a single population proportion formula, $[n = Z^2_{\alpha/2} * P(1-P)/d^2]$ based on the following assumptions as 95% confidence interval ($Z=1.96$), the proportion of childhood diarrhea 22.1% a study finding from central Gondar zone, and 5% margin of error (d). Then after adding the non-response rate (5%), the total sample size was 417 households paired with at least one U5C. Cluster sampling technique was implemented to select legible villages with simple random sampling technique from the total number of villages present in the study area and then all households with U5C were recruited in randomly selected villages.

Data collection tools

Quantitative data were collected through face-to-face interview with mothers or guardians using a pretested structured questionnaire after developed by reviewing different related articles [13, 17, 21–25].

The questionnaires were divided into three sub sections to address different part of the questions.

Section-I: Socio-demographic and economic factors: age, sex, number of family members, level of education, occupation, religion, housing condition, and household income. Section-II: Water related factors: distance of water source to the household and waste disposal sites, type of water storage containers, type of water source, eating food prepared, and utensils washed with contaminated water, bathing and washing in unhygienic water. Section-III: Sanitation factors: availability of human and animal waste and household garbage disposal sites, latrine availability, type of latrine, utilization of latrine, cleanliness of latrine, availability of sewage system, presence of domestic animals and flies inside the house. Section-IV: Behavioral factors: hand washing practice at critical time, raw and prepared food and drink storage places and handling habit, unclean feeding bottles, washing utensils, cleanliness of domestic places, water drawing practice, cleaning practice of the floor, waste disposal practice, vaccination status and breastfeeding.

Data quality control

The questionnaire was first prepared in English and then translated to local language Amharic and back to English for data entry purpose to evaluate consistency of the questionnaire. Three B.Sc. in Environmental Health professionals were involved in data collection with close supervision after delivered two day training. Pretest was done from five percent of samples outside of the study area to check the response, language clarity, and appropriateness of the questionnaires prior to start the actual data

collection. Then the identified ambiguous questions had been corrected prior to interview. Every day after data collection each questionnaire was reviewed and checked for its completeness by the supervisors and principal investigators. Double entry of data and frequency checks were also done during the data entry, processing, and analysis. The test result of Cronbach-alpha was 0.8, which indicates the acceptable internal consistency of the measurement reliabilities.

Data processing and analysis

Data were checked for its completeness and relevance, coded and entered in to Epi Info version 7 computer software and analyzed using SPSS for window version 26. The descriptive statistical (frequency, percentages, mean and standard deviation) analysis used to compute of the findings of this study. The results then presented using tables, graphs, and texts. The strength of association of predictors with the outcome variable had been computed using the odds ratio with a 95% confidence interval. Bivariate analysis was performed to assess the binary relation between the outcome and independent variables. All variables with P-value less than 0.2 were included in the multivariable analysis model and then P-value of less than 0.05 considered as statistically significant predictors.

Results

Socio-demographic and economic characteristics of respondents

Four hundred and seven participants were enrolled in this study with 100% response rate. All the respondents were women with a mean ($\pm$ SD) age of 32.5 ($\pm$ 5.5) years. Most (96.4%) of participants were biological mothers. Ninety-two percent (384/417) of the mothers were married and having a median family size was six persons per household. The average family income of participants was 4458 ETB. The majority (62.6%) of participants did not have an ability to read and write (Table 1).

Diarrheal prevalence among under-five Children

The two week prevalence of U5C diarrheal disease was 24.9% with 95% CI: (20.4, 29.7) in which watery diarrhea takes higher proportion, which was 78.8% of the overall prevalence. The prevalence of under-five diarrhea is higher on children's at age group 13-14 months of age 42(40.4%) followed by age group 1-12 months 40(38.5%). The rest 22 (21.1%) was aged 25 and higher.

Table 1
Socio – demographic characteristics of the respondents in periphery area of
Azezo sub city, Gondar, Northwest Ethiopia, April 2019 (n=417).

Characteristics	Category	Number	Percent (%)
Relation of the respondent to child	Mother	402	96.4
	Caretaker	15	3.6
Age of mother/caretaker	15-24	21	5
	25-34	221	53
	>35	175	42
Marital status of mother/caretaker	Married	384	92.1
	Unmarried	33	7.9
Education of mother/caretaker	Educated	156	37.4
	uneducated	261	62.6
Occupation of mother/caretaker	House wife	327	78.4
	Employed	90	21.6
Family size	≤6	266	63.8
	>6	151	36.2
Family having livestock	Yes	326	78.2
	No	91	21.8
Family produce cash crop	Yes	78	18.7
	No	339	81.3
Monthly family income (ETB)	≤ 4000	236	56.6
	>4000	181	43.4

Characteristics of children

Out of 417 study participants, 260(62.4%) were males. The median age of children was 20 months with IQR: 11-31. The highest number 163 (39.1%) of children were above twenty months age. More than half 230 (55.1%) of the children were born in hospitals. About 260 (62.4%) children were partial breast feeders preceding the survey. The majority 340 (87.6%) of children started their supplementary food at the age of 6 months. The highest numbers 284 (79.4%) of children were received measles vaccination. Almost half 54(51.9%) of the diarrheic children were admitted to health institutions (Table 2).

Table 2
Characteristics of under five children (U5C) in periphery area of Azezo sub city, Gondar, northwest Ethiopia, April 2019 (n=417).

Characteristics	Category	Number	Percent (%)
Age of children (month)	≤12	122	29.3
	13-24	132	31.7
	>24	163	39.1
Sex	Male	260	62.4
	Female	157	37.6
Child birth	Hospital birth	230	55.1
	Home	187	44.9
Birth order	First	53	12.7
	Second	83	19.9
	Third	103	24.7
	Fourth and above	178	42.7
Current breast feeding status	Exclusive	28	6.7
	Partial breast feeding	260	62.4
	Not breast feeding	129	30.9
Duration of breastfeeding (month)	≤20	218	52.3
	>20	199	47.7
Started supplementary food (month) (n=388)	≤ 6	340	87.6
	>6	48	12.4
Measles vaccination (n = 356)	Vaccinated	284	79.7
	Unvaccinated	72	20.3
Two weeks diarrheal disease	Yes	104	24.9
	No	313	75.1
Type of diarrhea (n= 104)	Watery diarrhea	82	78.8
	Blood and mucus	22	21.2
Actions taken at the household level (n=104)	Diet change	9	8.7
	Health center	54	51.9

Characteristics	Category	Number	Percent (%)
	No treatment	41	39.4

Environmental characteristics

Water Related Factors

Half 221 (50.6%) of the study households with child paired were used drinking water from unimproved water source. Most of 223 (53.5) the households were collected water for round within 30 minutes time span. The highest number of households 165 (55.2%) were not experienced household water treatment methods as they are using unprotected drinking water sources. All study households used Jerry can for water storage at home. The majority households 330 (79.1%) stored water at home for consistent usage. The higher number 178 (42.7%) of households consumed about 60 L of water per day. However, the larger population segment of the study area experiences a median of 8 days of water shortage per month (Table 3).

Table 3
Characteristics of drinking water in periphery area of Azezo sub city, Gondar, northwest Ethiopia, April 2019 (n=417).

Characteristics	Category	Number	Percent (%)
Water source	Improved	206	49.4
	Unimproved	221	50.6
Method of household water treatment n= 299	Boiling	5	1.7
	Filtering	4	1.3
	Chlorine/ wuha agar	29	9.7
	Sedimentation	96	32.1
	No treatment	165	55.2
Distance of water source in round trip (in minutes)	≤30	223	53.5
	>30	194	46.5
Drinking water storage and collection material (repeated response)	Pot	6	1.4
	bucket	30	7.2
	Jerry can	417	100.0
Daily water consumption per Household(litter)	≤60	178	42.7
	60-80	93	22.3
	>80	146	35.0
Common purpose of Water container	Yes	120	28.8
	No	297	71.2
Water shortage	Yes	330	79.1
	No	87	20.9
Frequency of water shortage/month	≤8days	176	42.2
	>8days	241	57.8
Cleaning storage containers before use	Yes	389	93.3
	No	28	6.7
Water drawing method	By dipping	17	4.1
	By pouring	364	87.3

Characteristics	Category	Number	Percent (%)
	Both	36	8.6

Housing status and Sanitation conditions

Of the total 417 households about 355 (85.1%) had mud floors. All households were constructed with corrugated iron sheet roof. Two thirds 275(65.9%) of participants lived in a house having two or more rooms. Nearly three-fourth 281 (74.5%) of households did not have separate keeping rooms of livestock's. Most of the households 277 (66.4%) did not have latrines. The majority of households 332(79.6%) disposed their refuse in to the open field (Table 4).

Table 4
Housing and sanitation condition of the participants in periphery area of Azezo sub city, Gondar, northwest Ethiopia, April 2019 (n=417).

Characteristics	Category	Number	Percent (%)
Type of floor material	Mud	355	85.1
	Cement	62	14.9
livestock living condition (n=377)	Separated	96	25.5
	Not separated	281	74.5
Number of rooms	≤2	142	34.1
	>2	275	65.9
Latrine availability	Yes	140	33.6
	No	277	66.4
Frequency of latrine cleaning/week(n=140)	≤1	74	52.9
	>1	66	47.1
Feces seen around the compounds	Yes	246	59.0
	No	171	41.0
Ways of waste disposal@	Garbage can	50	12.0
	burning	131	31.4
	Open field	332	79.6
@One household disposed the waste by using more than one method.			

Behavioral/hygienic practices of the participants

The majority 293(70.3%) household members were poorly practiced hand-washing at critical time. However, only water is the most accessible hand-wash material for the majority of households accounting 329 (78.9%) of the total participants. The larger proportion of the study participants did not have separate food preparing materials for their children. More than three quarters (76.7%) of the study participants feed cooked foods immediately after cooking to their children. Of the one thirds (33.6%) of the participants were had left over food storing habit. From which about 87 (62.1%) of participants reheat left over foods before consumption (Table 5).

Table 5
Behavioral/hygienic practices of the participants in periphery area of Azezo sub city, Gondar, northwest Ethiopia, April 2019 (n=417).

Characteristics	Category	Number	Percent (%)
Hand-washing practice	Good	124	29.7
	Poor	293	70.3
Hand washing agents	Plain Water	329	78.9
	Water with soap	88	21.1
Proper washing of raw food for children (n=388)	Yes	313	80.7
	No	75	19.3
Food purchase from street vendors (n=388)	Yes	165	42.5
	No	223	57.5
Separate materials for child food preparation (n=388)	Yes	233	60.0
	No	155	40.0
Child feeding time after food preparation (n=356)	Feed immediately	273	76.7
	Feed late	83	23.3
Hand-wash practice of children support with guardians (n=388)	Yes	356	91.7
	No	32	8.3
Left-over food storing habit	Yes	140	33.6
	No	277	66.4
Reheat left over foods before consumption (n=140)	Yes	87	62.1
	No	53	37.9
Kitchen cleaning habit	Yes	343	82.3
	No	30	7.1
Child bathing farcicality	At home with bidet	391	93.8
	River	26	6.2

Factors associated with diarrheal disease among under- five children

In the bivariate analysis, level of education, family size, latrine availability, sanitary condition of the compound, hand hygiene practice at critical time, shelf time of prepared foods, children's age, duration of breast feeding, measles vaccination and household monthly income were had p value < 0.2 and then they were entered in to the multivariate analysis. In the final steps of the multivariable analysis: age of children, family size, hand hygiene practice at critical times, shelf time of prepared foods, and household monthly income were significantly associated with under - five children diarrheal disease. Children between the age group of 13 to 24 months (AOR: 4.44; 95% CI: (1.87-10.56)) were 4 times more likely to develop diarrhea in relative to more than 24 months age groups. Children aged from 1 to 12 months [AOR: 9.22; 95% CI: (2.93-29.04)] were also higher odds of developing diarrhea when compared with above 24 months age group children. The occurrences of diarrheal disease were significantly associated with household monthly income in which children's of poor families were 3.68 times more likely to develop diarrhea [AOR:3.68; 95% CI: (1.81-7.51)] compared to higher income households. The family size of household members was also associated with childhood diarrheal disease development. Small family size (≤ 6) can reduce childhood diarrhea by 68% in relative to households of higher family size (> 6) [AOR: 0.32; 95% CI: 0.16 -0.65)]. The risk of developing diarrhea was 8 times among children's with mothers having poor hand washing practice at critical times [AOR : 8.37; 95% CI: (3.12-22.52)] in relative to children's whose mothers had good hand washing practice at critical times. Moreover, shelf time of prepared food was also one of significantly associated factor and children who feed cooked foods immediately can reduce the diarrheal disease by 61% [AOR: 0.39; 95%CI: (0.19-0.81)] when compared with children that are feeding cooked foods late (Table 6).

Table 6

Factor analysis related to diarrhea among under-five children in periphery area of Azezo sub city, Gondar, northwest Ethiopia, April 2019 (n=417).

Variable	Category	Diarrhea		COR (95% CI)	AOR (95%CI)
		Yes	No		
Age of child (month)	1-12	40	82	3.12(1.74-5.62)***	9.22(2.93-29.04)***
	13-24	42	90	2.99(1.68-5.34)***	4.44(1.87-10.56)**
	>24	22	141	1.0	1.0
Mother/caretaker level of education	Educated	48	108	0.61(0.39-0.96)*	0.73(0.37-1.46)
	uneducated	56	205	1.0	1.0
Family size	≤6	53	213	0.49(0.31-0.77)*	0.33(0.16,0.65)**
	>6	51	100	1.0	1.0
Duration of breast feeding(month)	≤20	65	153	1.74(1.11-2.75)*	0.97(0.42-2.27)
	>20	39	160	1.0	1.0
Measles vaccination	Unvaccinated	29	43	1.0	1.0
	Vaccinated	63	221	0.42(0.24-0.73)**	0.73(0.35-1.54)
Latrine availability	Yes	26	114	1.0	1.0
	No	78	199	1.72(1.04-2.83)*	0.59(0.26-1.34)
Feces seen around the compound	Yes	75	171	2.15(1.32-3.48)**	1.78(0.82-3.89)
	No	29	142	1.0	1.0
Hand washing practice	Poor	97	196	8.27(3.72-18.42)**	8.37(3.12-22.52)***
	Good	7	117	1.0	1.0
Child Food consumption time	Feed immediately	62	211	0.44(0.26-0.75)**	0.39(0.19-0.81)*
	Feed late	33	50	1.0	1.0

Variable	Category	Diarrhea		COR (95% CI)	AOR (95%CI)
		Yes	No		
Household monthly income	≤4000	81	155	3.59(2.15-6.00)***	3.68(1.81-7.51)***
	>4000	23	158	1.0	1.0
*=P-value < 0.05,**=p-value <0.01, ***=p-value <0.001					
Hosmer and Lemeshow model fitness test was 0.814 i.e., P>0.05					

Discussion

The findings of this study revealed that the two-week prevalence of diarrhea in under-five children was 24.9% with 95% CI: (20.4, 29.7%). In the factor analysis of this study, the children's age group, family size, hand wash practice, cooked food retention time, and household income were found statistically significant predictors of childhood diarrheal disease.

In this study, almost a quarter of under-five-children experienced the toll of diarrheal disease (24.9%). This finding is lower than the findings in rural Burundi (32.6%)(17), Hodan district Mogadishu-Somalia (47.9%)(3) and in Arba Minch, Ethiopia (30.5%)(18). This finding is in line with findings from Eastern Ethiopia (22.5%)(15), Bahir Dar Zuria district (20%)(19), rural areas of North Gondar Zone(22.1%)(16), Senegal (26%)(20) and Afar region, (26.1%)(21). However, This find is higher than the findings in Serobo town Jimma (12%)(22), Wolaita Sodo (11%)(23) and the 2016 EDHS national report (12%)(16),Tanzania (6.1%)(24), Northern Nigeria, (12.7%) (9). These differences might be due to the variation in the socio-demographic characteristics, study setting, environmental factors, study period, behavioral characteristics of the study households. This showed that the occurrence of diarrheal disease was varied among children in different study areas.

In factor analysis outcome, the present study revealed that young children were more exposed to the burden of diarrheal disease. The odds of childhood diarrhea were higher than in children whose age is less than two years when compared with two years and above age groups. This could be due to multiple reasons such as the young children started crawling and walking which increases environmental exposure for infectious agents, children's transition period from exclusive breastfeeding to complementary food supplementation that may be contaminated, and less development of immune systems that may easily be affected by diarrheal diseases. This finding is supported with the findings from the study was done in different parts of Ethiopia such as Kersa district, Afar, Benishangul Gumuz, and Sidama zone (15, 21, 25-27).

As shown in this study, the burden of diarrheal disease was about 3.5 times higher among children with lower family incomes than their high-income counterparts. This might be related to the inability to access water, sanitation, and hygiene technologies and to cover direct medical costs as well as it might be a

bottleneck to fulfill the necessary dietary components to their children as a result they might become malnourished and increase the risk of acquiring the diarrheal disease. Our study finding is consistent with the findings in India, Bangladesh, Senegal, Nigeria, Rwanda, and Eritrea (21, 28-32).

The finding of the current study revealed that lower family size was a protective factor for the burden of childhood diarrhea. This is the fact that high family size might be positively associated with under-five diarrheal disease in which as the number of siblings increases mothers/caretakers are exposed to high burden responsibility in different household activities. As a result, this might be diverted the mother's attention of care to their children and this may create an abandoned opportunity for children to expose unhygienic environments. This study finding is consistent with findings of other similar studies in Kersa district, Sengale, Wolitta Soddo Town, and Eritrea (15, 20, 23, 28).

The current finding was also obtained a statistically significant association of diarrheal disease with poor hand hygiene practices of child guardians at a critical time. The occurrence of childhood diarrhea was increased by eightfold due to poor hand-washing practices after latrine visits, during child meal preparation, and after refuse handling. The possible explanation might be the high microbial load may be exposed to various health threats as contamination of hands by various types of pathogens. This finding was in line with studies in India, Somalia, Ethiopia in which children's whose mothers/caretakers are failed to practice good hand-washing at critical times were at higher risk of diarrhea as compared with children's whose mothers/caretakers who are practicing good hand washing abilities (3, 18, 33).

The outcome of this study was also indicated that odds of diarrheal disease were strongly associated with the time elapsed for the prepared food given to children. The odds of diarrhea among children who feed cooked foods immediately were lower when compared with children who feed cooked foods that are waiting for an undefined period of time. This might be due to some strains of pathogenic agents having the capacity to survive and reproduce in prepared foods through time which leads to diarrheal diseases. In addition, the prepared child food may be exposed to recontamination when stored for a long time. Studies done in Afar and Dessie Ethiopia showed that long storage of cooked food-related problems was strongly associated with under-five diarrheal disease (34, 35).

Limitations

It is very difficult to establish a causal relationship due to the inherent nature of cross-sectional study design. Recall and/or social desirability biases may be introduced in interview-based data collection. The self-report of mothers/caretakers may cause under or over-estimation of diarrheal disease outcomes.

Conclusions

This study demonstrated that childhood diarrheal disease was a common health problem among under-five children in the periphery area of the Azezo sub-city like another part of Ethiopia. Compared with the national and other similar study findings, a higher prevalence of diarrhea was reported in this study area. This study was also identified that children in the young age group, a high family size, low household

income, poor hand-wash practice, and long time storage for cooked food were statistically significant potential risk factors of childhood diarrheal diseases. Therefore, an appropriate intervention program through health education would be recommended with a focus on identified risk factors to reduce the burden of diarrheal diseases.

Abbreviations

AOR: Adjusted odds ratio, COR: Crude odds ratio, EDHS: Ethiopian Demographic and Health Survey, LMICs: low and middle-income countries, MOFD: Ministry of Finance and Education, SDGs: Sustainable Development Goals, UNICEF: United Nations Children's Fund, U5C: Under-Five Children, WASH: Water Sanitation and Hygiene, and WHO: World Health Organization

Declarations

Ethics approval and consent to participate

A legal ethical clearance and approval was obtained from the research and ethical review committee of university of Gondar, Institute of public health, department of environmental and occupational health and safety. Supportive letters obtained from Azezo sub city health office to get permission and acceptance. Verbal informed consent was obtained from guardians of under five children. The participants that are mothers/caretakers with child paired had been informed about the aim of the study and the right to withdraw at any time if they were felt discomfort. The participant's privacy and confidentiality was strongly maintained using codes rather than personal identifiers.

Consent for publication

The personal data were not exposed in this manuscript.

Availability of data

We, all the authors do have the data of this study and the corresponding author can provide as per the request

Conflicts of Interest

The authors declared that they have no conflicts of interest in financial and non financial perspectives.

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Authors' Contributions

All stated authors BDB, AG, and JA were actively involved in the study from the inception to design, acquisition of data, analysis, and interpretation and drafting of the manuscript. All authors read and approved the final manuscript.

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