



Research

Knowledge of Childhood Diarrhoea and Home-Based Care Practices in a Rural Community in Northern Nigeria

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Abstract

Background: Diarrhoeal is a major public health problem among under five children (U5) in developing countries. This survey assesses knowledge of childhood diarrhoea and home-based care practices among caregivers for U5 children in a rural community in North Western Nigeria

Methods: A descriptive cross-sectional study among of 244 mother/caregivers of under-five children in a rural Gangara community between July- August 2022 using a systematic random sampling technique and a structured, interviewer administered questionnaire. The outcome variables for bivariate (chi square) analysis were the knowledge grade for diarrhoea, while the explanatory variables was the socio-demographic characteristics of the caregivers. Data were analysed with statistical package for social sciences (SPSS) version 26. The level of statistical significance was set at $p < 0.05$.

Results: The knowledge score for mode of transmission of diarrhoea and danger signs for dehydration were 70.5%, and 47.5% respectively. One third of the caregivers could not identify sunken eyeball 79 (32.4%) and tearlessness 110 (45.1%) as signs of dehydration. The common diarrhea home-based care practices were the use of ORS (98.8%), herbal concoction, (48.8%) and salt sugar solution (17.6%). Some caregivers would treat under-five diarrhoea at home with lomotil 115 (47.1%) ciprofloxacin 44 (18%) and metronidazole (34.8%). Only 54 (22%) caregivers would go to the hospital immediately they noticed symptoms of diarrhoea.

Conclusion: The knowledge of diarrhoea was poor and most home-based care practices were unconventional. Hence, the burden of diarrhoea disease was high. The LGA health authorities should facilitate continuous health education programs on diarrhoea diseases in this community.

Keywords: Caregiver; Under-fives; diarrhoea; Home – based; knowledge, Northern Nigeria.

Introduction

Childhood diarrhoea is a major public health problem especially in developing countries due to varied socioeconomic and environmental challenges.¹ It has

been described as the second leading cause of childhood mortality after respiratory infections.^{2,3} Globally, there are nearly 1.7 billion cases of diarrhoea diseases and 760,000 deaths in children under-five every year.⁴ A



national survey conducted in Nigeria showed that diarrhoea diseases constituted the second biggest killer of children in the country after childhood pneumonia⁵ and is responsible for estimated 16% of childhood mortality.⁶ According to the Nigeria Demographic and Health Survey 2018 the under-five mortality rate in the country is 132 deaths per 1,000 live births, while the infant mortality rate is 67 deaths per 1,000 live births.⁷ The prevention and control of diarrhoea therefore is capable of changing favorably the childhood death indices in a developing country like Nigeria. More worrisome is the fact that most of the childhood diarrhoea in the country is skewed to the northern Nigeria. The NDHS 2018 showed that more children in Northern Nigeria (37.7%) would have an episode of diarrhoea compared to Southern Nigeria (21.1%) over a given period.⁷ This shows a need for increased investment in childhood diarrhoea prevention and control program in diarrhoea endemic zones like in Northern Nigeria. The home-based care is an essential component of integrated management of newborn and childhood illness (IMNCI),^{8,9} it is a cost-effective public health strategy to prevent complications and death from diarrhoea diseases. The community IMNCI strategy include family practices which target among others, diarrhoea prevention and control through use of safe water supplies and sanitation facilities, food hygiene, correct management of diarrhoea at home, prompt referral of a sick child and adherence to counselling and treatment^{8,9} The use of oral rehydration therapy (ORT) is the first choice in the control of diarrhoeal diseases. The fluids given could be either ORS or other recommended home-based fluids such as, rice water, soup, yoghurt drinks or salt sugar solution. The child with diarrhoea is recommended to be given more fluids, zinc tablets, continued feeding and should be taken immediately to the health care facility for clinical assessment and treatment if the condition does not improve at home.¹⁰

The early detection of diarrhoea at home, early and optimal use of ORT, maintenance of proper, hygienic and safe feeding practices and prompt presentation of the sick child at the health care facility will reduce the duration, complications and death due to diarrhoea.¹⁰ This study was conducted among caregivers of under-five children in Gangara community to determine the knowledge of diarrhoea diseases and assesses the home-based care practices for effective childhood diarrhoea diseases prevention and control.

Methods

The study was a cross sectional descriptive study conducted among caregivers of under five children in Gangara, a rural community in Giwa Local Government Area (LGA) of Kaduna State in Northwestern, Nigeria between 30th July- 15th August, 2022. The community is administratively regarded one of the eleven wards in Giwa LGA. Other wards in the LGA are Shika, Idasu, Kadaga, Danmahawayi, Galadimawa, Gangara, Giwa, and Gangara, pan Hauya, Kidandan, and Yakawada. The community has one primary health care centre, a primary school, community borehole and a community river were the major source of water. Pit latrine and open dumping were the major methods for sewage and refuse disposal.

A systematic random sampling technique was used in this study.¹¹ The process of a household selection includes a sample frame that contained a list of all 400 households in the community. Two hundred households were selected using a sampling interval of two. All caregivers (244) in the selected households were enumerated. A structured questionnaire was used for data collection by four trained research assistants. The variables of interest include knowledge of mode of transmission, clinical features of diarrhoea, morbidity and treatment outcome, common medications for diarrhoea and environmental factors affecting incidence of diarrhoea diseases. The outcome variables for the bivariate analysis were the knowledge grade for diarrhoea while the explanatory variables were the socio-demographic characteristics of the U5 caregivers.

The sample size was estimated using the fishers' formula: $n = (Z^2 pq) / d^2$. $= (1.96)^2 \times 0.17 \times 0.83 / (0.05)^2 = 217$, with estimated response rate of 90%, the minimum sample size was calculated as 241. However, the sample size was increased to 244 to include all 244 caregivers in the selected two hundred households.

Study tool/Questionnaire

Data collection was done by the researchers and 3 trained research assistants. The questions were rehearsed via a role play by the research assistants to check for errors in the questions, and also to determine the mean time it would take to ask the questions. All completed questions were numbered serially and manually cleaned by the research team for accuracy and completeness. Thirty-seven questions were used to assess the caregivers' knowledge of diarrhoeal diseases. The caregivers' knowledge scores for diarrhoea were obtained by giving a score of one (1) for each correct answer and zero (0) for a wrong answer. Maximum obtainable score was 37. All respondents who scored



70% (≥ 26) of the total mark were graded good, scores less than 70% were graded as Poor Knowledge.^{12, 13}

Data were analysed with statistical package for social sciences (SPSS) version 26. The Pearson Chi square test of proportion was used to test for association between predictor and outcome variables. The level of statistical significance was set at p-value of <0.05 .

Ethical approval was sought and obtained from the Ethical Review Committee of the Barau Dikko Teaching Hospital Kaduna. (HREC Reference Number BDTH/2022/063/VOL 1, NHREC 30/11/21A) The informed written consent was obtained before data collection. The participants were assured of the confidentiality and safety of the data.

Results

A total of 244 respondents participated in the survey. All the respondents were female 244 (100%). The mean age of caregivers was 29.02 ± 6.902 ; Majority 244 (99.6%) were Hausa, mostly attained only primary education (41.0%). A higher proportion 237 (97.1%) of the caregivers were the mothers of the children, the major occupation was petty trading 136(55.6%) with monthly income less than N10000 or $<$ one USD (\$1) per day. [Table 1].

Most of the respondent knew that contaminated water 213 (87.3%) and food 228 (93.4%), flies 175(71.7%), bottle feeding 160(65.6%), unclean hand and fingers 216 (88.5%) and indiscriminate defecation 226(92.6) were the mode of transmission for diarrhoea diseases. [Table 2].

Majority 180 (73.8%) also knew that increase thirst and/or dry mouth could signify dehydration. However, one third of the caregivers could not identify sunken eyeball 79 (32.4%) and tearlessness 110 (45.1%) as signs of dehydration. Knowledge grade of dehydration was just about average 128 (51.2%) [Table 3].

A higher proportion 241 (98.8%) of the respondents would give ORS for an episode of childhood diarrhoea. However, only 7 (2.9%) caregivers/ mothers had ORS available at home. More than three quarter of the respondent (79.5%) would not discard the prepared ORS except when it finishes. Other major home-made fluid used for diarrhoea include herbs 119 (48.8%), breast milk 76(31.1%) and salt sugar solution 43(17.6) only one client each would give rice water or cow milk to treat diarrhoea [Table 4].

All the mother/caregivers patronized the patent medicine stores. The commonly used drugs in treatment of diarrhoea at home include ciprofloxacin 44 (18%), metronidazole 85(34.8%) and lomotil (diphenoxylate/atropine) 115 (47.1%). Very few 6 (2.5%). Only 114(46.7%) would go to the hospital after an unsuccessful home management of diarrhoea. [Table 5]. All members of the family of the respondents had at least one episode of diarrhoea in the last 3 month preceding the survey, 144 (59.8%) of the under five children had diarrhoea 3 month preceding the survey, with 5 reported severe presentation. [Table 6]

The study showed that there was significant relationship between age ($X^2 = 22.50$, $p=0.001$) family type ($X^2=5.16$, $p=0.04$) and good knowledge of diarrhoea. Younger aged care givers (≤ 29 years) and being a mother-care giver were significantly associated with good knowledge of diarrhoea diseases ($X^2=5.16$, $p=0.02$) [Table 7].

Table 1: Socio-demographic characteristic of caregivers of under-five children in Gangara community, (N = 244)

Variables	Frequency (N)	Percentage (%)
Age group of respondents		
15-24	67	27.5
25-34	112	45.9
35-44	60	24.0
>45	5	2.0
Tribe		
Hausa	243	99.6
Fulani	1	0.4
Level of education		
None	57	23.4
Primary	100	41.0
Secondary	75	30.7
Tertiary	12	4.9
Marital		
Married	243	99.6
Divorced	1	0.4
Occupation		
Housewife	91	37.3
Farmer	2	0.8
Trading	136	55.7
Artisan	12	4.9
Civil servant	3	1.2
Monthly		
<10,000	210	86.1
10,001-20,000	31	12.7



Variables	Frequency (N)	Percentage (%)
>20,000	3	1.2

Table 2: Knowledge of mode of transmission of the diarrhoea among caregivers of under-five children in Gangara community. (N = 244)

Variables	Frequency (N)	Percentage (%)
Contaminated water		
Yes	213	87.3
No	8	3.3
I don't know	23	9.4
Contaminated food		
Yes	228	93.4
No	7	2.9
I don't know	9	3.7
Flies		
Yes	175	71.7
No	34	13.9
I don't know	35	14.3
Bottle feeding		
Yes	160	65.6
No	49	20.1
I don't know	35	14.3
Unclean finger and hand		
Yes	216	88.5
No	17	7.0
I don't know	11	4.5
Defecating in open field		
Yes	226	92.6
No	10	4.1
I don't know	8	3.3
Knowledge Grade of mode transmission of diarrhoea		
Good (High)	172	70.5
Fair-Poor (Low)	72	29.5

Discussion

This study shows that the knowledge of mode of transmission of diarrhoea disease, recognition of danger sign and of preventive and control strategies for diarrhoea diseases were low among the mothers/caregivers of the under-five in this study, hence the high burden of diarrhoea in the community. All the mothers/care givers were within the reproductive age group with poor socioeconomic status. Previous studies have shown that poverty and ignorance were major drivers of infectious diseases such as acute diarrhoea in

developing countries.¹⁴ The short-term approach to control diarrhoea in this community therefore will be to engage the caregivers of the under –five in sustainable health promotion program for prevention and control of diarrhoea.¹⁵ The long term plan should encompass women empowerment program including poverty reduction and sustainable plans for improving girl child education.¹⁶

Table 3: Knowledge of sign and symptom of dehydration among caregivers of under-five children in Gangara community. (N = 244)

Variables	Frequency (N)	Percentage (%)
Increase thirst and dry mouth		
Yes	180	73.8
No	25	10.2
I don't know	39	16.0
Sunken eyeball		
Yes	128	52.5
No	79	32.4
I don't know	37	15.2
Tearless		
Yes	118	48.4
No	110	45.1
I don't know	16	6.6
Loss of skin turgor		
Yes	162	66.4
No	46	18.9
I don't know	36	14.8
Knowledge grade of sign of dehydration		
Good (High)	116	47.5
Fair-Poor (Low)	128	52.5

Table 4: Utilization of Oral Rehydration salt and other fluid in Gangara community. (N=244)

Variables	Frequency (N)	Percentage (%)
Gave ORS		
Yes	241	98.8
No	3	1.2
Have ORS available at home		
Yes	7	2.9
No	237	97.1
When do you discard ORS after dissolve in water		
Until finished	194	79.5
< 23 hours	23	9.4
At 24 hours	21	8.6
Others fluid used in treatment of diarrhoea		
Herbal concoction	119	48.8
Breast milk	76	31.1



Salt sugar solution	43	17.6
Gruel make of cereals	4	1.6
Rice water	1	0.4
Cow milk	1	0.4

Table 5: Common medications at home and time of presentation at hospital for diarrhoea diseases

Variables	Freq (N)	Percent (%)
Gave drugs prescribed by Patent Medicine Vendors		
Yes	244	100.0
Drugs commonly used in treatment of diarrhoea		
Ciprofloxacin	44	18.0
Metronidazole	85	34.8
Lomotil ^R (diphenoxylate/atropine)	115	47.1
Gave zinc in the management		
Yes	6	2.5
No	238	97.5
Go to hospital for management of diarrhoea		
After treating at home and no improvement	114	46.7
After getting drugs at patent medicine store and no improvement	76	31.1

Table 7: Bivariate analysis of socio-demographics factor and caregivers' knowledge of the diarrhoeal diseases

Variables	Good knowledge of diarrhoea (%) N=166	Poor knowledge of diarrhoea (%) N=78	X ²	P-value
Age in years				
29 years and below	90 (68.7)	41 (31.3)	22.50	0.001
Above 29 years	76 (67.3)	37 (32.7)		
Tribe				
Hausa	165 (67.9)	78 (32.1)	0.47	0.68 ^F
Others	1 (100.0)	0 (0.0)		
Level of education				
Below secondary	103 (65.6)	54 (34.4)	1.19	0.28
Secondary and above	63 (72.4)	24 (27.6)		
Occupation				
Trading	86 (63.2)	50 (36.8)	3.25	0.07
Others	80 (74.1)	28 (25.9)		
Marital status				
Currently married	165 (67.9)	78 (32.1)	0.83	0.95 ^F
Not currently married	1 (100.0)	0 (0.0)		
Relationship of caregivers with child				
Mother	164 (69.2)	73 (30.8)	5.16	0.02
Others	2 (28.6)	5 (71.4)		
Family type				
Monogamous	82 (56.6%)	63 (43.4)	4.31	0.04
Polygamous	69 (69.7%)	30 (30.3)		

Immediately there is a symptom of diarrhoea 54 22.1

Table 6: Report of Diarrhoea diseases among family members in Gangara community

Variables	Freq (N)	Percent (%)
Family member who had diarrhoea in the last 3 month preceding the survey	244	100
Designation of Family member who had diarrhoea in the last 3 months		
Under-five caregiver	42	17.2
Under five -Son	104	42.6
Under five-Daughter	83	34.0
Other members of the family	15	6.1
Diarrhoea presentation		
Mild/moderate	234	95.9
Severe	5	2.0



Variables	Good knowledge of diarrhoea (%) N=166	Poor knowledge of diarrhoea (%) (N=78)	X ²	P-value
10,000 and below	137 (62.3%)	83 (37.7)	0.14	0.70
Above 10,000	14 (58.3%)	10 (41.7)		

F= Fishers' exact test

The knowledge of oral rehydration salt (ORS) for diarrhoea disease prevention was very high among the mother-care givers, but the availability of ORS at home in case a child present with diarrhoea was however, very low. Acute diarrhoeal diseases are one of the leading causes of mortality in infants and young children in many developing countries.¹⁵ In most cases, death is caused by dehydration. This implies that the knowledge and availability of ORS is crucial to child survival.¹⁷ Having at least a sachet of ORS at home and understanding how to use it should be essential component of a health education program to prevent diarrhoea in this rural community. The method of giving fluids to prevent or treat dehydration is known as oral rehydration therapy (ORT).¹⁷ The ORT, combined with guidance on appropriate feeding practices, personal and environmental hygiene are the main strategies recommended by the WHO Department of Child and Adolescent Health and Development (CAH) to achieve a reduction in diarrhoea-related mortality in children.¹⁸ Oral rehydration therapy (ORT) can be delivered in this community by village health workers and practiced in the home by mothers with some guidance, and therefore, it is an appropriate technology used in primary health care approach to prevent diarrhoea diseases.¹⁹ Studies have also shown that when this is given along with advice on proper feeding practices, ORT has been found to contribute to better weight gain and thus to reduce the ill effects of diarrhoea on the child nutritional status.²⁰ It should be noted in this study that the knowledge of the time to discard the ORS was very poor. Four out of every five mother-care givers would keep the ORS until it finishes regardless of the WHO recommendation that ORS should be consumed or discarded within 12 hours of its preparation, if held at room temperature, or 24 hours if kept refrigerated, to prevent the risk of contamination.²¹

It is also noted in this study that, instead of seeking health care at a hospital facility, most of the women would prefer to patronize the patent medicine vendors for antibiotic and other medications including diphenoxylate/atropine (lomotil) to stop a child diarrhoea. This medication is an anti-motility class of drugs which have been reported to have the risk for

respiratory depression in under five children.²² The mother care giver needs to be educated on the danger of self-medication and patronization of patent medicine vendors to treat diarrhoea diseases in children. Use of cow milk and herbal concoctions are some of the poor practices for diarrhoea prevention in this community. These preparations might be contaminated by dangerous microorganisms like Salmonella, Campylobacter, Cryptosporidium, E. coli, Listeria, and Brucella, which can worsen the diarrhoea disease.²³ Use of milk product for treatment of diarrhoea can also lead to lactose intolerance.²⁴

The study shows poor health seeking behavior for childhood diarrhoea. Most mother care givers in this community would try all manner of home strategies to avoid going to the health facilities for treatment of a child with diarrhoea. Studies have shown that delay in seeking appropriate care for childhood diarrhoea can lead to fatal outcome.^{25, 26} The reasons for poor health seeking behaviors among this mother caregivers need to be explored in an explorative study with appropriate interventions. Use of ORS and complementary zinc therapy was also poor in this study. The World Health Organization recommends 20 mg of zinc per day for 10 to 14 days for children with acute diarrhoea. Previous studies suggest that administration of zinc along with ORS, can reduce the duration and severity of diarrhoeal episodes for up to three months.^{27, 28} The health care providers and mothers-care givers will need to be trained on the use of complimentary zinc therapy for childhood diarrhoea. The study also showed that good knowledge of diarrhoea disease was significantly higher among mother care givers and younger mothers.

The implication of these findings is the need to promote good health seeking behavior among these care givers and also a programmatic target of older women, some of whom were grandmother care givers for health education on diarrhoea. Previous studies have reported poor personal hygiene among older and rural women due to poor access health education, safe water and sanitary sewage disposal.^{29, 30} There is a need to train the caregivers of under-five on key community IMNCI strategies for prevention and control of childhood illnesses such as diarrhoea. Policy makers and



community leaders can engage the services community resource persons (CORPS) for a sustained community health capacity building program for these women.

Strength and limitations of the study: The conduct of a community survey for childhood diarrhoea and home care practices in a rural location is the strength of this study. The limitation however is the reliance on oral reports from the caregivers which might be liable to information bias.

Conclusion

The incidence of diarrhoea disease in this community was high (100%) in the 3 months under review, the care givers were of low socioeconomic status, with low knowledge of mode of transmissions, prevention, and treatment of diarrhoea. More than half of the children under five had an episode of diarrhoea in the three-month preceding the survey. This community therefore is highly endemic for diarrhoea. The causes and risk factors identified in this study if promptly and adequately addressed by various stakeholders including the Local government department of health, the state ministry of health and developmental partners will result in not only reducing the incidence of diarrhoea diseases in this community, but also prevent avoidable mortality due to childhood diarrhoea.

Declarations

Authors' contributions: OAM is the principal investigator for the study; he contributed to the study design, data analysis as well as drafted the introduction and discussion segments of the manuscript. GI was involved in data collection. GI, KSI and GJ contributed to the result section and data analysis, while DJ contributed to the discussion and conclusion section of the manuscript. All the Authors made critical inputs into the revision and finalization of the manuscript. All authors read and approved the final manuscript.

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