

Full Length Research Paper

Caregivers' knowledge, home treatment of diarrhoea disease and predictors of child diarrhoea disease in a semi urban community of Sokoto, North-west, Nigeria

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The World Health Organization advocates on some form of home treatment of children with diarrhoea disease in its Integrated Management of Childhood illness (IMCI) guideline. Caregivers need to have some knowledge of diarrhoea disease as well as know what is expected of them when their children start to have episodes of diarrhoea disease. This study aimed to assess caregivers' knowledge, home treatment of diarrhoea disease and predictors of child diarrhoea disease in a semi urban community of Sokoto, North-west, Nigeria. This was a community based cross-sectional study, 238 study participants with children less than or equal to 5 years were recruited into the study using Systematic sampling technique. Data was obtained using an interviewer-administered questionnaire. Data obtained was entered into and analysed using IBM SPSS version 22. Results were presented in form of tables. All statistical tests were carried out using 2 tailed tests with alpha set at 0.05. Most (90%) of the caregivers had good knowledge of diarrhoea disease. More than half of them (60.5%) gave their children drugs meant to stop diarrhoea and few of them give traditional medication to children with diarrhoea disease (23.3%). Caregivers knowledge of diarrhoea disease was significantly associated with her marital status, hers and her husband's educational status, occupational status of husband. Mother's marital status (being married) was the main predictor of child having diarrhoea disease. In conclusion majority of the caregivers had good knowledge of diarrhoea disease; some of them reported in-appropriate practices. Marital status (being single) was the main predictor of having diarrhoea disease among the children. Continuous education of mothers by health workers at every opportunity mothers come in contact with health care providers would go a long way in reducing in-appropriate practices as well as diarrhoea episodes among children.

Key words: Knowledge; home practice; predictors; diarrhoea disease.

INTRODUCTION

Diarrhoea has been reported to be one of the leading childhood killer diseases, worldwide it accounts for 9% of all deaths among children under the age of five (UNICEF, 2005). This translates into over 1,400 young children dying each day, despite the availability of simple effective treatment (UNICEF, 2005). Africa and Asia account for

over half the cases of childhood diarrhoea (Oloruntoba, et al., 2014), with it being ranked as the 4th leading cause of death among under five children in Nigeria (WHO, 2006; Oloruntoba et al., 2014).

Diarrhoea, also called loose or watery stool occurs when stools contain more water than normal and is

defined in many regions as three or more loose or watery stools in a 24-h period (WHO, 2005). It is common in children, especially those between 6 months and 2 years of age. If an episode of diarrhoea lasts less than 14 days, it is acute diarrhoea. Acute watery diarrhoea causes dehydration and contributes to malnutrition. The death of a child with acute diarrhoea is usually due to dehydration. If the diarrhoea lasts for 14 days or more, it is persistent diarrhoea. Up to 20% of episodes of diarrhoea become persistent. Persistent diarrhoea often causes nutritional problems that contribute to deaths in children who have diarrhoea (WHO, 2005). The number of stools normally passed in a day varies with the diet and age of the child (WHO, 2005). Diarrhoea disease may be caused by many pathogens and transmitted through numerous vehicles. Diarrhoea may last for several days and could leave the body without essential fluids and salts necessary for life leading to death from dehydration (Amare et al., 2014). The disease also predisposes children to malnutrition, which makes them highly susceptible to other infections, and this has been found to be a major contributor to morbidity and mortality.

Mothers usually know when their children have diarrhoea disease and the World Health Organization (WHO), in its Integrated Management of Childhood Illness (IMCI) guideline advocates that children with diarrhoea disease need extra fluid and foods to prevent dehydration. The rules of home treatment of diarrhoea disease are: to give extra fluid (such as oral rehydration salts), continue feeding and return the child immediately to the hospital if child develops danger signs (such as lethargy or unconsciousness, irritability, sunken eyes, inability to drink, etc.) (WHO, 2005).

The role of the family, especially the mother/caregiver, is very important in general health promotion, diarrhoea disease prevention and patient care. It is on this basis that this study was designed to determine caregivers' knowledge, home treatment of diarrhoea disease and predictors of child diarrhoea disease in a semi urban community of Sokoto, North-west, Nigeria

MATERIALS AND METHODS

The study was conducted in Kalambaina, located within Wammako Local Government Area of Sokoto State in January, 2015. The study site has a population of 1,897 people (895 are males, while 1002 are females). Majority of the inhabitants are Hausa and Fulani and the predominant occupation is farming. The study population comprised of women with children who are under the ages of five years. The study design was cross-sectional and descriptive in nature.

Sample size was estimated using formula for sample size estimation for cross-sectional studies, where P(14.5%) was the proportion of women from previous study who administered ORS at

home to their child (Zahid et al., 2014) assuming response rate of 80%, sample size of 238 was arrived at.

A total of 668 houses were enumerated in the study area, probability-sampling technique (systematic sampling) was used to select women with children less than 5 years, simple random sampling (balloting) was conducted in houses with more than one woman meeting the study criteria. When the earlier selected house did not have a woman meeting the selection criteria at home, the immediate next house was visited and a woman meeting the study criteria was selected for the study.

Data was obtained using an interviewer-administered questionnaire containing open and closed ended questions after the instrument were Pre-tested at Yar'akija area of Sokoto. Consent form was read to individual respondents and verbal consent was obtained from individual respondents before commencement of data collection. Ethical approval was obtained from the Ethics Committee of the Sokoto State Ministry of Health.

Knowledge of diarrhoea disease was obtained by calculating percentage of questions answered correctly. For each respondent, a score of 50% and above was regarded as good knowledge, while a score of less than 50% was regarded as poor knowledge. Data obtained was entered into and analysed using IBM SPSS version 22. Analysis of data was started with description of data; using mean and standard deviation for quantitative variables, frequencies and percentages for qualitative variables. This was followed by inferential statistics (Chi-square and correlation). All statistical tests were carried out using 2 tailed tests with alpha set at 0.05.

RESULTS

Response rate for this study was 88%. The age range of the caregivers was between 18 and 53 years, with a mean age of 30.4 ± 7.9 years. Majority of caregivers, 193 (91.9%) were Muslims. Hausas constituted 122 (58.1%), while Fulanis made up 65 (31%) of the study population. Majority of the caregivers were married (85.2%), housewives (62.4%) with some formal education (60.5%). Most of the husbands of the caregivers had some formal education 171 (81.5), with civil servants being their predominant occupation, 106 (50.5) (Table 1).

Almost all the caregivers, 197 (93.8%) thought that diarrhoea was characterized by passage of frequent loose stools; 180 (85.7%) of them knew that giving child clean water prevents diarrhoea; majority of them also knew that washing hands before feeding can prevent diarrhoea; 181 (86.2%) of them knew that proper sewage disposal prevents diarrhoea; most of them knew that giving child clean water prevents diarrhoea; 172 (81.9%) of them knew that having a clean house/environment can prevent diarrhoea. Overall, majority (90%) of the caregivers had good knowledge of diarrhoea disease (Table 2).

Most of the caregivers (60.5%) do not stop breastfeeding when their child has diarrhoea disease, most continue to give child with diarrhoea disease water to drink (75.7%), most give sugar salt solution to child

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Table 1. Socio demographic characteristics of respondents.

Variables (n=210)	Frequency	Percent
Age		
<20	11	5.2
21-30	125	59.5
31-40	48	22.9
41-50	22	10.5
>50	4	1.9
Religion		
Islam	193	91.9
Christianity	17	8.1
Tribe		
Hausa	122	58.1
Fulani	65	31.0
Igbo	11	5.2
Yoruba	12	5.7
Mother educational status		
None	4	1.9
Quranic only	79	37.6
Primary school	22	10.5
Secondary school	48	22.9
Tertiary	57	27.1
Mother's occupation		
House wife	131	62.4
Farmer	1	.5
Business	55	26.2
Civil servant	20	9.5
Others	3	1.4
Marital status		
Single	8	3.8
Married	179	85.2
Divorced	7	3.3
Widowed	12	5.7
Separated	4	1.9
Fathers educational status		
None	3	1.4
Quranic only	36	17.1
Primary school	14	6.7
Secondary school	56	26.7
Tertiary	101	48.1
Fathers occupation		
Civil servant	106	50.5
Trader	49	23.3
Farmer	40	19.0
Others	15	7.1

having diarrhoea (62.4%). More than half of respondents (60.5%) gave child drugs meant to stop diarrhoea and few of the respondents give traditional medication to child with diarrhoea disease (23.3%) (Table 3).

Caregivers with formal education had 3.28 odds of having good knowledge of diarrhoea disease when compared with those with informal education and this was statistically significant. There was statistically significant association between the occupation of the caregivers' husband and the caregivers' knowledge of diarrhoea disease. Caregivers whose husbands had formal education had 5 times the odds of having good knowledge of diarrhoea disease.

Caregivers whose children had diarrhoea disease one month before the survey had 6.5 times the odds of having poor knowledge of diarrhoea disease. However, there was no statistically significant association between caregivers' knowledge of diarrhoea disease with their age, religion, marital status, tribe, occupation, washing of hands before giving feeds to children. Caregivers with informal education had 3.28 times the odds of having poor knowledge of diarrhoea disease. Most of the participants with informal education who had good knowledge of diarrhoea disease were housewives, followed by business women/traders. There was no significant association between caregivers' occupation and knowledge of diarrhoea disease. Caregivers who do not wash the child's hand before the child eats had 2.83 times the odds of having poor knowledge of diarrhoea disease. Also, caregivers who do not wash her hands before feeding her child had 1.58 times the odds of having poor knowledge of diarrhoea disease. Caregivers who reported their child having diarrhoea disease had 6.5 times the odds of having poor knowledge of diarrhoea disease. Caregivers who reported their child having had diarrhoea disease had 6.5 times the odds of having poor knowledge of diarrhoea disease (Table 4).

Caregivers with informal education had 3.3 times the odds of having had children who had diarrhoea disease one month before the survey. Caregivers whose husbands had formal education had 5 times odds of having children who had diarrhoea disease one month before the survey. Caregivers with good knowledge score had 6.5 times odds of having children having diarrhoea disease one month before the survey (Table 5).

Marital status was found to be the main predictor of diarrhoea disease among respondents. Mothers who were married were 2 times more likely not to have had children having diarrhoea disease and this was statistically significant after controlling for the effects of mothers' age, tribe, religion, educational status, father's educational status, father's occupation, mother's knowledge, whether child's hand was washed before eating and whether mothers often wash their hands after using the toilets. Mothers with good knowledge of diarrhoea disease were 14.6 times more likely not to have children having diarrhoea disease and this was

Table 2. Respondent's knowledge of diarrhoea disease.

Variables (n=210)		Frequencies	Percentages
Diarrhoea is characterised by passage of frequent, loose stools	Correct response	197	93.8
Diarrhoea occurs when child eats what he doesn't like	Correct response	116	55.2
Giving child clean water to drink prevents diarrhoea	Correct response	180	85.7
Diarrhoea is characterised by passage of frequent, loose stools	Correct response	197	93.8
Washing hands before feeding child can prevent diarrhoea	Correct response	170	81
Proper sewage disposal prevents diarrhoea	Correct response	181	86.2
Giving child clean water prevents diarrhoea	Correct response	180	85.7
Having a clean house/ environment can prevent diarrhoea	Correct response	172	81.9
Overall knowledge categories	Good knowledge	189	90
	Poor knowledge	21	10

*Good knowledge: Respondents who scored 50% and above.

Table 3. Respondents home practice of diarrhea disease.

Variables (n=210)		Frequencies	Percentages
Do you stop breast feeding when child has diarrhoea?	Yes	127	60.5
Do you give less food when child has diarrhoea?	Yes	84	40
Do you continue to give water when child has diarrhoea?	Yes	159	75.7
Do you give salt sugar solution when child has diarrhoea disease?	Yes	131	62.4
Do you purchase drugs meant to stop diarrhoea from patent medicine store?	Yes	83	39.5
Do you give traditional medication to child with diarrhoea?	Yes	161	76.7

statistically significant after controlling for the mothers' age, tribe, religion, educational status, marital status, father's occupation, whether child's hand was washed before eating and whether mothers often wash their hands after using the toilets (Table 6).

DISCUSSION

It is pertinent to note that adequate knowledge of the concepts, causative agents, manifestation, mode of transmission, preventive measures and management of childhood diarrhoea is a major step in the identification of the diseases and their prevention and management practices (Nwokike, 2015). Knowledge of the disease could be acquired in the school, and in the case of those who are literate, it can be acquired through health talks given while attending antenatal clinics or other media (Nwokike, 2015).

The study revealed that care-givers in the semi-urban area of Sokoto state had high level of knowledge of the various components of childhood diarrhoea and overall knowledge, with majority of them having good knowledge of diarrhoea disease. The finding was expected and therefore not surprising considering the mothers' place of residence, and with over half of them with some sort of formal education. In addition to this, these care-givers

might have been attending antenatal clinics where trained nurses and midwives taught the rudiments of childhood diarrhoea. This finding is in consonance with that reported in Enugu, Nigeria, Sudan (Ahmed et al. 2009) and Palestine (Abu-Hijleh, 2003) who reported that their respondents exhibited high level of knowledge of the components of childhood diarrhoea.

The study further revealed that knowledge on diarrhoea disease increased with educational status of parents (mothers and their husbands). Likewise, care-givers whose children did not have diarrhoea (one month prior to the survey) were more likely to have good knowledge of diarrhoea, hence preventing their children from the infection. In the same vain, occurrence of diarrhoea in children was associated with the educational status of their parents (mothers and fathers). Meaning that the more educated parents are, the more knowledgeable they are on issues on diarrhoea disease, and the less likely that their children would have had diarrhoea disease (one month prior to the survey) as this study revealed that children whose mothers had informal education were about three times more likely to have reported that their child had diarrhoea disease. This is similar to findings from a study conducted at Ile-Ife, Osun State, which reported a 5-fold increase in the incidence of diarrhoea among infants of illiterate as compared to the educated mothers (Elegbe et al., 1982). It is consistent

Table 4. Factors associated with respondents' knowledge of diarrhoea disease.

Variables (n=210)	Knowledge score		Test statistics and p-value	
	Poor	Good		
Mothers Age	<20	0(0.0)	11(5.8)	$\chi^2 = 7.529$, p= 0.077
	21-30	17 (81.0)	108(57.1)	
	31-40	1(4.8)	47(24.9)	
	41-50	2(9.5)	20(10.6)	
	>50	1(4.8)	3(1.6)	
Mothers Religion	Islam	21 (100.0)	172(91.0)	$\chi^2 = 0.229$, p= 0.155
	Christianity	0(0.0)	17(9.0)	
Marital status	Single	1(4.8)	7(3.7)	$\chi^2 = 3.28$, p=0.392
	Married	17(81.0)	162(85.7)	
	Divorced	2(9.5)	5(2.6)	
	Widowed	1(4.8)	11(5.8)	
Mothers Tribe	Hausa	10(47.6)	112(59.3)	$\chi^2 = 4.792$, p= 0.141
	Fulani	11(52.4)	54(28.6)	
	Igbo	0(0.0)	11(5.8)	
	yoruba	0(0.0)	12(6.3)	
Mothers educational status	Informal	8 (66.7%)	75 (37.9%)	OR=3.28 (0.95-11.3)
	Formal	4 (33.3%)	123 (62.1%)	
Mother's occupation	House wife	17(81.0)	114(60.3)	$\chi^2 = 3.482$, p=0.486
	Farmer	0(0.0)	1(0.5)	
	Business/trader	3(14.3)	52(27.5)	
	Civil servant	1(4.8)	19(10.1)	
	Others	0(0.0%)	3(1.6)	
Fathers occupation	Civil servant	5(23.8)	101(53.4)	$\chi^2 = 12.964$, p=0.003
	Trader	6(28.6)	43(22.8)	
	Farmer	10(47.6)	30(15.9)	
	Others	0(0.0)	15(7.9)	
Fathers educational status	informal	6 (50)	33 (16.7)	OR=5.0 (1.5-16.5)
	formal	6 (50)	165 (83.3)	
Do you wash your child's hand before child eats?	In appropriate practice	5 (35.7)	21(16.4)	OR= 2.83 (0.9-9.3)
	appropriate practice	9(64.3)	107(83.6)	
Do you wash your hands before feeding your child	In appropriate practice	3(14.3)	18(9.5)	OR= 1.58 (0.4-5.9)
	appropriate practice	18(85.7)	171(90.5)	
Did your child have diarrhoea disease two weeks before survey	Yes	19 (90.5)	107 (59.4)	OR=6.481(1.5-28.7)
	No	2 (9.5)	73 (40.6)	

OR = Odds ratio.

with the report from NDHS (2013) and NPC, ICF (2013) but contrast a study done in Ibadan, Oyo State that

reported that occurrence of diarrhoea was not associated with educational status of parents (Omokhodion et al.,

Table 5. Determinants of diarrhoea disease.

Variables (n=210)	Had diarrhoea disease		Test statistics and p-value	
	Yes	No		
Mothers Age	<20	7(5.6)	4 (5.3)	$\chi^2 = 3.011, p = 0.556$
	21-30	74(58.7)	44 (58.7)	
	31-40	29(23.0)	17(22.7)	
	41-50	12(9.5)	10(13.3)	
	>50	4(3.2)	0(0.0)	
Mothers Religion	Islam	117(92.9)	67(89.3)	$\chi^2 = 0.754, p = 0.385$
	Christianity	9(7.1)	8(10.7)	
Marital status	Single	6(4.8)	2(2.7)	$\chi^2 = 4.986, p = 0.275$
	Married	107(84.9)	63(84.0)	
	Divorced	6(4.8)	1(1.3)	
	Widowed	6(4.8)	6(8.0)	
Mothers Tribe	Hausa	70(55.6)	47(62.7)	$\chi^2 = 2.673, p = 0.449$
	Fulani	42(33.3)	19(25.3)	
	Igbo	8(6.3)	3(4.0)	
	yoruba	6(4.8)	6(8.0)	
Mothers educational status	Informal	8 (66.7%)	75 (37.9)	OR=3.28 (0.95-11.3)
	Formal	4 (33.3%)	123(62.1)	
Mother's occupation	House wife	77(61.1)	48(64.0)	$\chi^2 = 2.409, p = 0.739$
	Farmer	1(0.8)	0(0.0)	
	Business/trader	32(25.4)	21(28.0)	
	Civil servant	15(11.9)	5(6.7)	
	Others	1(0.8)	1(1.3)	
Fathers occupation	Civil servant	64(50.8)	38(50.7)	$\chi^2 = 3.652, p = 0.302$
	Trader	25(19.8)	22(29.3)	
	Farmer	27(21.4)	12(16.0)	
	Others	10(7.9)	3(4.0)	
Fathers educational status	informal	6 (50)	33 (16.7)	OR=5.0 (1.5-16.5)
	formal	6 (50)	165 (83.3)	
Do you wash your child's hand before child eats?	In appropriate practice	72(83.7)	38(77.6)	OR= 1.5 (0.6-3.6)
	appropriate practice	14(16.3)	11(22.4)	
Do you wash your hands after leaving the toilet	In appropriate practice	113(89.7)	68(90.7)	OR= 0.89 (0.2-2.4)
	appropriate practice	13(10.3)	7(9.3)	
Knowledge score	Poor	19(15.1)	2(2.7)	OR=6.481(1.5-28.7)
	Good	107(84.9)	73(97.3)	

OR= Odds ratio.

1998). A study conducted in Indonesia also reported that mothers with higher educational status were less likely to

have their children have diarrhoea in the past one month prior to the study (Rohmawati, 2010).

Table 6. Predictors of diarrhea disease among children of respondents.

Variables (n=210)	B	S.E.	Wald	P-value	OR	95% C.I. for OR	
						Lower	Upper
Age	0.004	0.03	0.03	0.87	1.004	0.95	1.06
Tribe	0.523	0.33	2.49	0.12	1.687	0.88	3.23
Religion	-0.146	0.98	0.02	0.88	.864	0.13	5.93
Mother's educational status	-0.431	0.23	3.66	0.06	.650	0.42	1.01
Mothers occupation	-0.399	0.23	3.17	0.08	.671	0.43	1.04
Marital status	0.681	0.28	6.11	0.01	1.975	1.15	3.39
Father's educational status	0.340	0.24	1.96	0.16	1.405	0.87	2.26
Father's occupation	-0.265	0.25	1.17	0.28	.767	0.47	1.24
Knowledge	2.681	1.15	5.42	0.02	14.602	1.53	139.59
Wash child's hand before eating	0.931	0.56	2.74	0.10	2.536	0.84	7.63
Do you often wash hands after using the toilet?	0.114	0.73	0.03	0.88	1.121	0.27	4.67
Constant	-8.073	3.31	5.94	0.02	.000		

$R^2 = 0.17$ (Cox and Snell), $R^2 = 0.23$ (Nagelkerke).

A study carried out in the South–Western Nigeria, found out that for the most common types of diarrhoea, most mothers would reduce the intake of fluid or stop breast-feeding (Jinaddu et al., 1994). In this study, however, many care-givers did not reduce or stop breastfeeding during episodes though there was a reduction in the intake of other foods. The care-givers also gave more water and salt sugar solution during diarrhoea episodes. This may also be due to the fact that most of these mothers care-givers have some form of formal education making them know the importance of breast-feeding, particularly when a child has diarrhoea disease. Furthermore, breast-feeding and its attributes are often thought during ANC. These findings were corroborated by a study conducted in Ogun State in the south-western Nigeria (Agbon et al., 2010). It contrast the report by NDHS (2013) that revealed that only 10% of children with diarrhoea were given fluid than usual; less than third (29%) of children under age 5 continued feeding and were given ORT and/or increased fluids when they had diarrhoea (NPC, ICF 2013).

The use of traditional herb was low though significant in this study with about a quarter of the mothers administering it to children with diarrhoea. This is consistent with a much earlier study carried out in Oyo State, 23% (Omotade et al., 1994) lower than 28% (Oni et al., 1991) reported in Ilorin, Kwara State, but much higher than that reported from a comparative study done in Ibadan, Oyo State (1% in Gbaji and 2% in Bodija) (Omokhodion et al., 1998) and 7% in a study carried out among educated mothers in eastern Nigerian (Ogbuagu et al., 1994). The reason for the lower percentage of the care-givers who used herbs in this study may be related to the increased knowledge of proper management of diarrhoea since they reside in the semi-urban area of Sokoto, especially with the introduction of oral

rehydration therapy into our primary healthcare programme in which most of the care-givers in this study gave it when child had diarrhoea disease. Children whose mothers were married had less odds of having had diarrhoea disease. This is not surprising because a married woman is more likely to be matured enough to take care of her children to prevent diseases. They are also more likely to have financial support from their husbands for the well-being of themselves and children.

Children whose mothers had good knowledge of diarrhoea disease also had less odds of having diarrhoea disease. Other factors such as the social class or family income might influence the mothers' knowledge more than just their own education which subsequently leads to less odds of diarrhoea cases among their children (Ghasemi et al., 2013). Other factors such as mothers' age, tribe, religion, educational status, father's occupation, whether child's hand was washed before eating and whether mothers often wash their hands after using the toilets were not predictors of diarrhoea disease among children of respondents.

Conclusion

Majority of the care-givers had good knowledge of diarrhoea disease, some of them reported in-appropriate practices such as giving traditional medication, administering medication meant to stop diarrhoea, stopping breastfeeding and not giving ORS. Marital status (being single) was the main predictor of having diarrhoea disease among children of study participants. Continuous education of mothers by health workers at every opportunity mothers come in contact with health care providers would go a long way in increasing knowledge of diarrhoea disease, reducing its in-

appropriate practices as well as diarrhoea episodes among children.

Conflict of Interests

The authors have not declared any conflict of interests.

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