ORIGINAL RESEARCH

Care Seeking Pattern, Knowledge and Response of Caregivers to Childhood Diarrhoea in a Sub-urban Community in Lagos, Nigeria

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ABSTRACT

Background Diarrhoea remains one of the leading causes of morbidity and mortality among children under 5 years old in spite of availability of effective treatment. Families and communities have been identified as key stakeholders to the improvement of child survival in diarrhoea.

Objective This study was set to determine caregivers' knowledge and response to diarrhoea within the first 24 hours, evaluate their care-seeking pattern and identify determinants of response.

Method A descriptive cross-sectional survey of 1,236 caregivers of children under five years was carried out in a sub-urban community in Lagos. Pretested, structured questionnaire was administered to caregivers whose children had experienced diarrhoea within one month of survey. Data were analyzed using descriptive and inferential statistics with Statistical Package for the Social Sciences (SPSS) Version 23.0.

Results The mean age of caregivers was 30.2 years ±5.305 with 1,201 (97.2%) being biological mothers of the children. Majority, 848 (68.6%) correctly recognized diarrhoea as passage of three or more watery stools within a 24-hour period. Knowledge of correct cause of diarrhoea was poor (332; 26.8%) and 797 (64.5%) perceived diarrhoea as a serious condition. While 48.9% opted for home treatment, 35.3% offered no care to the child. Only 119 (9.9%) respondents sort care in government health facilities.

Conclusion Majority of caregivers kept the child at home either treating them or not rendering care. Care seeking at government health facilities was low. Age category of child, educational status of caregiver, number of children being cared for by caregiver and overall knowledge of diarrhoea were significantly associated with response within the first 24 hours.

Keywords: Diarrhoea, caregiver, care seeking behaviour, response, healthcare facility

INTRODUCTION

Childhood diarrhoea has remained the second leading cause of death in the under five years age group population across the globe and currently, Nigeria and India account for 37.2% of global mortality from diarrhoea[1,2]. This signifies a huge burden on these countries and further highlights the disproportionate effect of diarrhoea on low income and developing countries[3]. Diarrhoea is defined as the passage of loose or watery stools three or more times in a period of 24 hours[4]. Diarrhoea can be caused by multiple factors that impair proper and efficient absorption of fluid from the lumen and increased secretion, thereby leading to passage of watery or loose stools. Irrespective of the cause of diarrhoea, fluid loss through stooling leads to dehydration, which tends to occur quickly in children and is the main cause of nearly all deaths due to diarrhoea[5]. Hence the ideal management of childhood diarrhoea as recommended by experts would be to prevent dehydration, treat dehydration and maintain a hydrated system. This ideal management has long been presented in the form of oral rehydration therapy (ORT) and micronutrient supplementation with zinc tablets[6]. ORT is

made up of low osmolarity oral rehydration salts (ORS), continued feeding and giving of other homemade fluids such as sugar-salt solution (SSS) and rice water[7]. Low osmolarity ORS rehydrates the system quickly and has been known to reduce stool output. Zinc reduces the frequency and severity of diarrhoea; and when given for 10 to 14 days, reduces recurrence of diarrhoea for the following 2 to 3 months[7]. Continued feeding ensures that the integrity of the cells is maintained and that the child does not get malnourished. In spite of these remarkable benefits of ORT and zinc, and the recommendation for ORS and zinc to be used as standard treatment for childhood diarrhoea, morbidity and mortality have remained persistently high in some developing countries, Nigeria inclusive[2]. Effective management of childhood diarrhoea has long been identified and made available to all countries[3]. However, the gains of this treatment have been uneven among countries. While some countries have made quantum leaps, others are still struggling. A countdown analysis of care in childhood diarrhoea among 12 Sub-Saharan African countries showed that Nigeria has one of the lowest qualities of care[8]. Nigeria's current child mortality rate of 100.2 per 1000 live births as against the world standard of 43 per 1000 live births is a testament to the quality of care and challenges of survival of children in Nigeria[2].

While efforts are being made by numerous institutions and programs to improve survival, basic research among caregivers of children is imperative since child survival is hinged mainly on their actions from the time of recognizing illness. The 'Pathway to Survival' framework, developed by Basic Support for Institutionalizing Child Survival (BASICS), outlines the pathways to survival of children in illnesses as: use of appropriate treatment in the home, interface between the home and outside services and prescription of appropriate treatment outside the home[9]. The identified pathways show the indispensability of the caregiver. The caregiver is expected to care for a child to maintain health, prevent disease, recognize when illness strikes, take appropriate action at home to return child to health and seek help from appropriate sources when necessary. The framework for diarrhoea expects 90% of all diarrhoea cases to receive quality care at home, thereby restoring child to health, while 10% end up in outside care[10]. It is also expected that all cases that seek care in appropriate places receive quality care. It therefore behoves the caregivers to have the capacity to recognize diarrhoea and respond appropriately. Caregivers' behaviour tends to be influenced by knowledge, belief and prior treatment exposure[11]. When knowledge is suboptimal, appropriate response might be unlikely. In populations where it is believed that diarrhoea cannot be treated at home, majority of the caregivers sought care outside the home[12]. While seeking care outside the home might seem commendable, it puts pressure on the health system and robs healthcare providers of the well-needed focus required for illnesses that cannot be handled at home.

The objective of this study was set to determine caregivers' knowledge and response to diarrhoea within the first 24 hours, evaluate their care-seeking pattern and identify determinants of response.

METHODS

Design and setting

This study was carried out in Ikorodu Local Government Area (LGA) of Lagos State, Nigeria. Ikorodu is a semi-urban town located at a distance of approximately 36km north of Lagos metropolis. The population of children under-five years in Ikorodu is estimated to be 159,602 [13]. Ikorodu LGA has six Local Council Development Areas (LCDAs) namely Ikorodu North, Ikorodu West, Ikorodu Central, Igbogbo/Baiyeku, Imota and Ijede. The town has a highly mixed and mobile population, as well as the hard-to-reach riverine dwellers.

The study was a descriptive, cross-sectional survey of caregivers of children under five years old living in Ikorodu LGA. Caregivers were recruited from both primary and secondary health facilities during their routine immunization clinic attendance over a period of 6 months, from July to December 2017. A consecutive non-probability sampling was used for this study. Caregivers were approached as they entered the health facilities and they were recruited to participate if they had any child between 6 and 59 months who had experienced diarrhoea within the past one month prior to survey. The study was explained to them and

consent obtained from each caregiver before trained research assistants administered the questionnaire. The structured questionnaire was adapted from Community Drug Management for Childhood Illness Assessment Manual [14]. This assessment tool had been used in two countries before final compilation and publication. Questions on diarrhoea were extracted from the assessment tool and compiled for this study. Face and content validity was still done by supervisors of the study and other experts in the field. The questionnaire was pretested among a subset of caregivers that did not participate in the study; and adjusted accordingly. The test of reliability was calculated with a Cronbach's alpha of 0.74.

The questionnaire consisted of 3 sections with 43 questions: made up of demographics of caregiver and child; questions on general knowledge of diarrhoea, type of diarrhoea experienced and response to diarrhoea episode; and 27 questions on home management of diarrhoea. Only caregivers who treated their child at home answered questions from the last section (Section C).

Sample size

Sample size calculation: Sample size of caregivers was calculated by first of all calculating the sample size for children in the desired age group using the formula of Yamane [15] . With total number of under five children at 159602 and a precision level of 0.05, sample size was calculated to be 400. SMART[16] formula was used to covert the number of under-five children sample size (400) to caregivers' sample size taking into consideration the average number of children under each caregiver (2), a constant approximately representing 6 to 59 months children within the under 5 age category (0.9) and proportion of under 5 children in the population (0.2); the minimum sample size for the study was therefore 1222 including attrition of 10% for non-response.

Ethical considerations

Ethical approval was obtained from the Lagos University Teaching Hospital (LUTH) Health Research and Ethics Committee (ADM/DCST/HREC/APP/705). Approval to recruit caregivers from the health facilities was obtained from the Lagos State Primary Health Care Board (LS/PHCB/MS/1128/VOL.1/272) and Lagos State Health Management Board (HSC 378/Vol.V/278).

Data Analysis

The data obtained from the questionnaire were coded and entered into Statistical Package for Social Sciences (SPSS) Version 23.0. The data analysis involved descriptive statistics such as frequencies, percentages, means and Chi Square. There were three questions to assess basic knowledge about diarrhoea – recognition, cause and perceived seriousness. Questions were ranked as good if respondent got all three questions correct, fair if they got two correct and poor if they got one or none.

RESULTS

One thousand two hundred and thirty-six (1236) caregivers were surveyed, of which 1228 (99.4%) were female, with 1201 (97.4%) being biological mothers of the children. Mean age of children was 16.1 months ±11.756, with 669 (54.1%) between 6 and 11 months (Table 1).

Majority (68.6%) recognized diarrhoea as frequent watery/stools occurring at least three times in 24 hours. Answers that indicated frequent watery/loose stools occurring at least three times in 24 hours along with vomiting were also included as correct. Seven hundred and thirty (59.1%) caregivers indicated teething as the cause of diarrhoea. Contaminated food/water/germs and type of food eaten (332: 26.8%) were taken as correct answers. On the perceived seriousness of diarrhoea, very serious and somewhat serious (64.5%) were taken as correct answers (Table 2).

Overall, using the ranking according to the number of correct answers, 126 (10.2%) respondents had good knowledge, 554 (44.8%) had fair knowledge and 556 (45%) had poor knowledge (Fig 1).

Table 1: Demographic Data of Caregivers and Children

Variable	Characteristics	Frequency (n=1236)	Percent
Age category of child (months)	6-11	669	54.1
Mean Age ± SD = 16.1 ± 11.756	12-23	256	20.7
	24-35	154	12.5
	36-47	87	7.0
	48-59	70	5.7
Gender of Child	Male	631	51.1
	Female	605	48.9
Gender of Caregiver	Male	8	0.6
	Female	1228	99.4
Age Category of caregiver (years)	<20	13	1.1
Mean Age ± SD = 30.2 ± 5.305	20-29	564	45.6
	30-39	604	48.9
	40-49	50	4.0
	>50	5	0.4
Number of children being cared for by caregiver	1	463	37.5
(Mean ± SD = 2.1 ± 1.127)	2	379	30.7
	3	237	19.2
	4	121	9.8
	5	28	2.3
	6	6	.5
	7	2	.2
Relationship with child	Biological father	5	.4
	Biological mother	1201	97.2
	Others	30	2.4
Educational level of caregiver	No formal education	13	1.1
	Primary	80	6.4
	Secondary	539	43.6
	Tertiary	604	48.9
Marital status	Single	15	1.2
	Married	1201	97.5
	Single parent	15	1.2
	Widow	1	.1

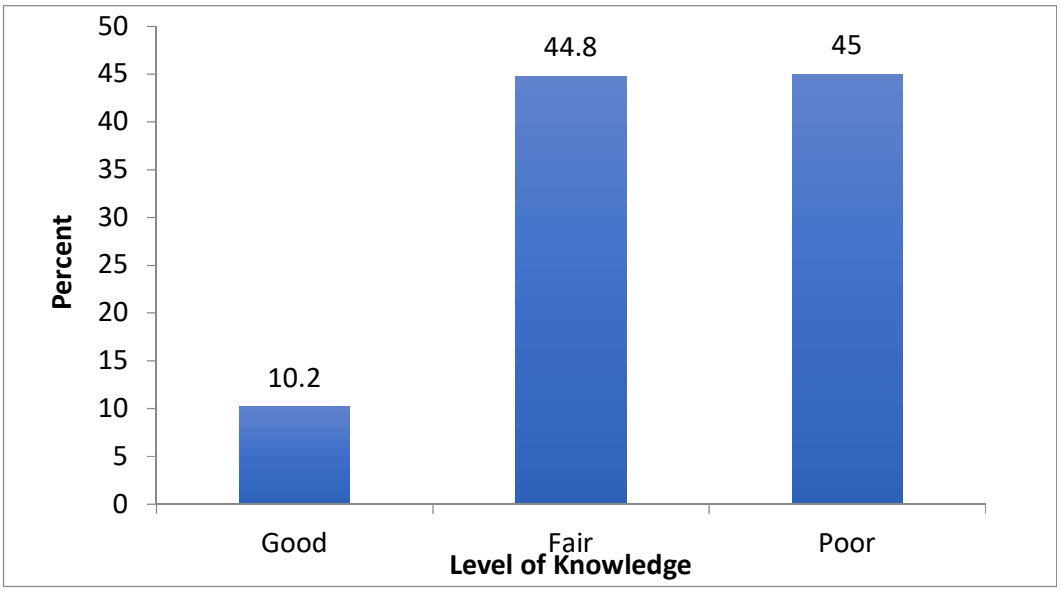

Figure 1: Overall level of knowledge of diarrhoea by caregivers

Table 2: Knowledge of Respondents about Diarrhoea

Variable	Frequency (n=1236)	Percent
Recognition of diarrhoea*		
Frequent non watery stool	27	2.2
Watery loose stool occurring three times a day	848	68.6
Watery loose stool occurring at least 6 times a day	292	23.6
Greenish stool	85	6.9
Vomiting	100	8.1
Others	23	1.9
Perceived cause of diarrhoea*		
Teething	730	59.1
Contaminated food/water/germ	145	11.7
Type of food eaten	187	15.1
Part of normal development	14	1.1
Don't know	118	9.5
Others	58	4.7
Perceived seriousness of diarrhoea		
Very serious	431	34.9
Somewhat serious	366	29.6
Not serious	408	33.0
Don't know	31	2.5

* Multiple responses were allowed

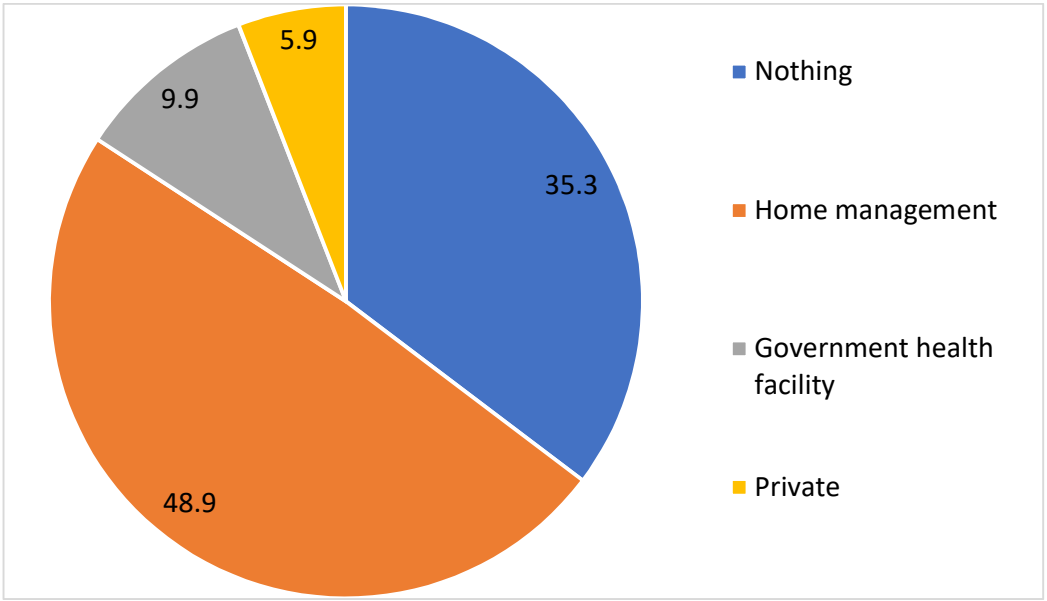

Fig. 2: Response and care-seeking by caregivers within the first 24 hours of recognizing diarrhoea

Only caregivers who did not notice blood in the stool (1197) answered the question on response (thirty-nine caregivers noticed blood in the stool). The response to diarrhoea within the first 24 hours varied between keeping the child at home (1008: 84.2%) and seeking care outside the home (15.8%). Majority (585; 48.9%) treated their child at home while a substantial number (423; 35.3%) did not offer any care to their child. Only 119 (9.9%) sought care at a public health facility (Figure 2). Private hospitals (39; 3.3%), Pharmacy (21; 1.8%) and Patent medicine stores (10; 0.8%) were grouped as private health facilities (70; 5.9%) (Fig. 2).

Table 3: Relationship between response and care-seeking and sociodemographic characteristics of children and caregivers

	Nothing	Home management	Govt. Health Facility	Private Health Facility	Total	X^2	P value
			Frequency (Percent)				
Age category of child (months)							
6-11	277 (23.1)	282 (23.6)	66 (5.5)	37 (3.1)	662 (55.3)	58.914	*0.000
12-23	91 (7.6)	125 (10.4)	16 (1.3)	11 (0.9)	243 (20.3)		
24-35	28 (2.3)	90 (7.5)	16 (1.3)	7 (0.6)	141 (11.8)		
36 47	13 (1.1)	46 (3.8)	14 (1.2)	9 (0.8)	82 (6.9)		
48-59	14 (1.2)	42 (3.5)	7 (0.6)	6 (0.5)	69 (5.8)		
Gender of child							
Male	225 (18.8)	298 (24.7)	58 (4.8)	31 (2.6)	610 (51.0)	2.356	0.502
Female	198 (33.7)	298 (24.1)	61 (5.1)	39 (3.3)	587 (49.0)		
Age category of caregiver (years)							
<20	4 (0.3)	8 (0.7)	1 (0.1)	0 (0.0)	13 (1.1)	26.744	*0.008
20-29	221 (18.5)	240 (20.1)	54 (4.5)	29 (2.4)	554 (45.4)		
30-39	182 (15.2)	314 (26.2)	55 (4.6)	34 (2.8)	585 (48.9)		
40-49	16 (1.3)	19 (1.6)	8 (0.7)	7 (0.6)	50 (4.2)		
>50	0 (0.0)	4 (0.3)	1 (0.1)	0 (0.0)	5 (0.4)		
Gender of caregiver							
Male	4 (0.3)	2 (0.2)	1 (0.1)	1 (0.1)	8 (0.7)	2.091	0.554
Female	419 (35.0)	583 (46.7)	118 (9.9)	69 (5.8)	1189 (99.3)		
Number of children cared for by caregiver							
1	167 (14.0)	195 (43.3)	57 (4.8)	31 (2.6)	450 (37.6)	35.348	*0.009
2	139 (38.4)	174 (14.5)	33 (2.8)	16 (1.3)	362 (30.2)		
3	80 (6.7)	129 (10.8)	14 (1.2)	9 (0.8)	232 (19.4)		
4	31 (2.6)	66 (5.5)	13 (1.1)	10 (0.8)	120 (10.0)		
5	6 (0.5)	14 (1.2)	1 (0.1)	4 (0.3)	25 (2.1)		
6	0 (0.0)	5 (0.4)	1 (0.1)	0 (0.0)	6 (0.5)		
7	0 (0.0)	2 (0.2)	0 (0.0)	0 (0.0)	2 (0.2)		
Educational level							
No formal Education	7 (0.6)	4 (0.3)	2 (0.2)	0 (0.0)	13 (1.1)	30.927	*0.000
Primary	21(1.8)	42 (3.5)	11 (0.9)	3 (0.0)	77 (6.4)		
Secondary	223 (18.6)	226 (18.9)	40 (3.3)	33 (2.8)	522 (43.6)		
Tertiary	172 (14.4)	313 (26.1)	66 (5.5)	34 (2.8)	585 (48.9)		
Marital status							
Single	7 (0.6)	4 (0.3)	4 (0.3)	0 (0.0)	15 (1.3)	36.392	*0.000
Married	411 (34.3)	577 (48.2)	113 (9.4)	65 (5.4)	1166 (97.4)		
Single parent	5 (0.4)	4 (0.3)	2 (0.2)	4 (0.3)	15 (1.3)		
Widow	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.1)	1 (0.1)		

* = significant

Table 4: Relationship between response, recognition, cause and seriousness of diarrhoea

	Nothing	Home management	Government health facility	Private health facility	Total	X^2	*p* value
Frequency (Percent)							
Recognition of diarrhoea by caregivers							
Correct	293 (24.5)	405 (33.8)	81 (6.8)	50 (4.2)	829 (69.3)	234	0.972
Incorrect	130 (10.9)	180 (15.0)	38 (3.2)	20 (1.7)	368 (30.7)		
Knowledge of caregivers about cause of diarrhoea							
Correct	82 (6.9)	171 (14.3)	31 (2.6)	20 (1.7)	304 (25.4)	13.006	0.005
Incorrect	341 (28.5)	414 (34.6)	88 (7.4)	50 (4.2)	893 (74.6)		
Perceived seriousness of diarrhoea by caregivers							
Correct	248 (20.7)	379 (31.7)	86 (7.2)	54 (4.5)	767 (64.1)	14.243	0.003
Incorrect	175 (14.6)	206 (17.2)	33 (2.8)	16 (1.3)	430 (35.9_		
Overall knowledge level of caregivers							
Poor	222 (18.5)	247 (20.6)	46(3.8)	24 (2.0)	539 (45)	22.916	0.001
Fair	173 (14.5)	265 (22.1)	63 (5.3)	36 (3.0)	537 (44.9)		
Good	28 (2.3)	73 (6.1)	10 (0.8)	10 (0.8)	121 (10.1)		

*= Significant

Table 3 shows the relationship between response and care seeking and some socio demographic characteristics of caregivers. Factors such as age category of child (p=0.000), age category of caregiver (p = 0.008), number of children being cared for by caregiver (p=0.009), educational level of caregiver (p=0.000) and marital status (p=0.000) have significant association with response of and care-seeking by caregiver to diarrhoea within the first 24 hours.

Response of caregivers and their care seeking pattern were significantly associated with their level of knowledge of diarrhoea (p = 0.001) specifically with perceived cause (p =0.005) and seriousness of diarrhoea (p = 0.003) (Table 4).

DISCUSSION

The findings of this study reveal that a large number of the caregivers (study population) had a wrong perception of the cause of diarrhoea among the paediatric population, with most of them indicating teething as cause. Furthermore, a larger number kept their child with them, either treating them at home (48.5%) or not offering any form of care (35.3%) within the first 24 hours. Only 189 (15.8%) caregivers sought care outside the home within the first 24 hours. Response by caregivers to diarrhoea episodes was significantly associated with demographic characteristics such as age category of child, age category of caregiver, number of children being cared for by caregiver, educational level of caregiver and marital status. Caregivers' knowledge level precisely perception of cause and

seriousness of diarrhoea were also significantly associated with response. Wrong perception of teething (59.1%) as a cause of diarrhoea could have been a major reason why caregivers kept their child at home. There is an assumption in the study setting that 'igbe eyin' (meaning diarrhoea associated with teething in local language) would pass without being treated because it is part of normal development and would cleanse the child.

Similar findings had been reported in Ibadan where 51.6% of the study population stated teething as a cause of diarrhoea; but differs from studies done in other geographical locations in Nigeria: Enugu (3.9%), Port-Harcourt (14.6%) and north-western states of Nigeria (19%)[17-20]. Only 11.7% of this study population stated contaminated water/food/germs as the cause of diarrhoea unlike findings in the earlier sited studies: Port-Harcourt (46.5%), Enugu (35.4%) and north-western states of Nigeria (39.8%). These differences in knowledge and perceptions affect responses and underscore the need to adapt interventions directed at improving caregivers' understanding and response to specific study settings. Care seeking outside the home was low (15.8%) and fairly close to an earlier report that care seeking for diarrhoea by caregivers slightly declined from 32% to 29% in Nigeria[21] However, it differs from the experience in China and Calabar (another part of Nigeria) where 67% and 73% of the study population sought care outside the home[22,23]. Findings from a systematic review on care-seeking from 33 studies done in low and middle income countries found care-seeking for diarrhoea for children under five years old to be at a median of 68.5%, ranging from 13.7% - 76%[24]. These extremes in care seeking are an indication that different study populations have peculiarities that would require customized intervention programs.

Only 9.9% of this study population sought care at public health facilities even though they were recruited from these facilities during immunization clinic days. These findings differ from a study done in Ethiopia where 71.6% sought care in health facilities. The disparity could be a result of the fact that 72.7% of the Ethiopian study population believed that diarrhoea cannot be treated at home[12]. This finding is also in contrast with studies done in Calabar and Ibadan where 50.4% and 79.6% respectively, sought care at public health facilities[20,23]. Care seeking in private hospital/clinic was relatively low (3.3%) in this study setting (Ikorodu), unlike in Ibadan where 16.1% went to private hospitals[20]. One main explanation for our finding could be that the study population did not show much interest in seeking care outside the home, possibly because of their perception of cause. It may also be attributed to the socio-economic status of the population of this sub-urban region. Exorbitant consultation fees of private hospitals might be outside their financial reach. Care seeking in pharmacies (1.7%) and vendors of patent medicines (0.8%) were also low even though these sources of care are highly accessible. While the government and private health facilities are appropriate sources of care; concerns have been expressed on the suboptimal treatment offered by these sources of care[11,25-26]. Studies done among community pharmacists and primary health facilities in Lagos Nigeria showed that only 15% of pharmacists recommended treatment for acute watery diarrhoea in line with WHO standard; and only 40% of acute watery diarrhoea (AWD) cases presented at the primary health facilities received appropriate treatment[27,28]. This discouragingly infers that not all cases of childhood diarrhoea presented at these sources accessed quality care. While overall care-seeking outside the home (15.8%) in this study might be considered low, it is higher than the expectation of BASICS' Pathway to Survival framework which requires that only 10% of diarrhoea cases end up seeking care outside the home[10]. This study shows that majority of

the caregivers would rather treat their child at home or do nothing, just watching and waiting for the outcome. There seems to be a very fundamental lack of understanding of the consequences of dehydration regardless of the perceived cause of diarrhoea, and the essence and benefits of quickly tackling diarrhoea either at home or at the health facility. Until the fundamentals of consequences of diarrhoea and benefits of quick rehydration are successfully impressed on caregivers, programs planned to improve management of diarrhoea would not yield expected results.

Progress would only be made when caregivers understand and adopt the recommendation to start treatment as soon as diarrhoea is recognized, with the use of ORS and zinc. The proportion of caregivers (35.3%) who did not offer any form of care to their child in this study is higher than that found in Ethiopia (20.3%), Uganda (9%) and India (5.9%)[11,12,29]. Giving no care within the first 24 hours of recognizing diarrhoea poses a higher risk of dehydration from fluid loss and subsequently, death. This behaviour disregards recommendations that ORS and zinc be started immediately diarrhoea is recognized[3,4,7]. Caregivers need to be taught that dehydration occurs quickly in children and that death can occur in less than 24 hours as experienced in the course of this study. The recommendation that caregivers start giving their child ORS and zinc as soon as diarrhoea is recognized is an indication that home management is possible and can be done correctly. The proportion of caregivers (48.9%) who opted to treat their child's diarrhoea at home is commendable. Nevertheless, the practices need to be assessed for appropriateness.

The findings of this study highlight the critical position of caregivers in the pathway to survival of children with diarrhoea. Decision to access quality care outside the home or to treat at home lies with the caregiver. Since majority of the caregivers in this study kept their children at home, there is need for home management to be evaluated and possibly strengthened through a definite intervention method that would enhance the adoption of quality care. Therefore, a closer look at the caregiver and factors that affect their decision-making would be of great benefit in improving child survival.

Limitations of study: This study was a cross-sectional study and so it is a snapshot of the study period. There could be a possibility of recall bias due to the maximum of one-month period prior to survey.

CONCLUSION

Majority of the caregivers in this study kept their child at home, either treating them (48.9%) or just leaving them alone (35.3%). Very few (9.9%) sought care in the government health facilities. Age category of child, age category of caregiver, educational level of caregiver, number of children being cared for by caregiver and knowledge level of diarrhoea were significantly associated with caregivers' response and care seeking within the first 24 hours.

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