

Knowledge, attitude and practice of home management of diarrhoea among mothers of under-fives in Samaru, Kaduna State, Nigeria

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Abstract

Background: Diseases associated with diarrhoea rank second among the top five diseases which account for childhood morbidities and mortalities in developing countries. Home-based management of diarrhoea is a globally recommended approach to reversing this trend and averting preventable deaths among under-five children.

Aim: To explore the knowledge of, attitudes to and the practice of home management of diarrhoea (HMD) among mothers of under-five children.

Methods: A cross-sectional, descriptive study was conducted in Samaru, Kaduna State, Nigeria, among mothers of under-fives, selected by multistage sampling method. Data were collected using interviewer-administered, close-ended, structured questionnaires, and then cleaned for errors and electronically analysed.

Results: The awareness of the concept of HMD was universal. Diverse methods were mentioned by respondents, ranging from recommended to inappropriate options. The knowledge of oral rehydration salts was high (93.7%), with the main source of information being health facilities. However, only 34.4% of the respondents would resort to using ORS for HMD, and the overall practice of any form of HMD was only 64%.

Conclusion: The knowledge of both recommended and inappropriate methods of HMD was demonstrated among respondents. Their awareness of ORS was high. However, the actual practice of HMD was relatively low. The promotion of positive HMD methods of fluid and electrolyte replacement; continuous, nutritious feeding and zinc supplementation for children with diarrhoea among mothers and caregivers is recommended.

Keywords: Diarrhoea, home management, knowledge, mothers, ORS, under-fives

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INTRODUCTION

Diarrhoea is a symptom of many gastrointestinal as well as general systemic diseases¹ that represents a heavy morbidity burden with high mortality rates, particularly among children

under the age of 5 years. The incidence of diarrhoea is reported to be more frequent between the ages of 6 months and 2 years, when weaning would have commenced.² Other groups susceptible to developing diarrhoea include

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the malnourished, those with impaired immunity and infants aged under 6 months and who are mix-fed with cow milk or infant feeding formulas.^{1,3} Complications and deaths resulting from diarrhoeal diseases in children occur due to severe dehydration, loss of calories and depletion of vital electrolytes (sodium, chloride, potassium and bicarbonate) through the frequent passage of loose, watery stools.⁴ Diarrhoeal diseases also rank second among the top five diseases accounting for childhood morbidities and mortalities globally.^{2,5} Due to the often sudden onset and speedy progression of the symptom, it could be life-threatening in children, in view of their relatively lower total body fluid volume, making severe volume depletion a possible threat to life.⁶ Therefore, prompt and timely intervention at home (prior to arrival at a health facility for definitive treatment) is of the essence, as this could make the difference between survival and mortality.

Globally, it is estimated that between 1.7 and 2.5 million episodes of diarrhoeal disease occur among children under the age of 5 years, annually.^{2,5} Out of this number, well over 500,000 children are estimated to die annually as a result of severe dehydration, which is both preventable and treatable.^{2,5,7} About 78% of these deaths are reported to occur in the African continent and South-East Asia.⁸ Diarrhoea may be infectious or non-infectious⁹ in origin, the former being more prevalent in the largely unhygienic environments of many developing countries,^{1,2,5} where viral agents are the most common aetiological factors.^{5,7,8}

Home-based oral therapy in the management of diarrhoea has been recognised and advocated by the World Health Organization (WHO), the United Nations International Children’s Emergency Fund (UNICEF) and the Integrated Management of Childhood Illness to reduce the impact of diarrhoea, particularly on children.^{4-5,10,11} Reduced (low)-osmolarity oral rehydration salt formulations remain the top and first-line recommendations for this purpose. In its absence, home-prepared salt-sugar solutions (SSS) constituted in specified ratios of salt, sugar and clean, boiled and cooled water are also recommended, alongside suitable food-based solutions such as pap, gruel, soup or rice water to replace lost fluids, energy and electrolytes.^{4,5} The main goal is to prevent severe dehydration from setting in, while other forms of treatment, if necessary, are sought (as many cases of diarrhoeal disease are self-limiting). However, adherence to applying such interventions, as a form of home management of diarrhoea (HMD), depends on the knowledge of and the attitude towards these measures among mothers and caregivers of under-five children. The objective of this study was to explore the knowledge of, attitude to and the

practice of HMD among mothers of under-five children in a community in northwestern Nigeria.

METHODS

The study was conducted in Samaru, a suburban community located along the Zaria-Sokoto highway, opposite the main campus of the Ahmadu Bello University (ABU), Zaria, in SabonGari”Local Government Area (LGA) of Kaduna State, northwestern Nigeria. A cross-sectional, descriptive study design was employed. The study population consisted of mothers of children aged <5 years resident in the study area.

Multistage sampling method was employed. The study area was divided according to its existing 15 wards (subareas). In the first stage, a minimum of 24 households were selected in each ward by simple random sampling method. In each selected household, one mother of an under-five child was selected by simple random sampling technique using balloting – this was the second stage of sampling. The exclusion criteria applied excluded nulliparous women, women who do not have under-five children and women outside the reproductive age group from the study.

The sample size was calculated using the following formula:

$$n = \frac{z^2 pq}{d^2}$$

Where

n = the desired sample size

z = the standard normal deviate which corresponds to 95% confidence interval (normally set at 1.96)

p = the proportion of the target population estimated to correctly manage diarrhoea at home from a similar study¹² = 39.4% (i.e., 0.39)

q = $1 - p$ = 60.6% (i.e., 0.61)

Where

d = degree of precision (0.05)

$$n = \frac{(1.96)^2 \times 0.39 \times 0.61}{d^2}$$

n = 366

The response rate was 350 (95.63%).

Using interviewer-administered, close-ended, structured questionnaires, data were collected, and thereafter

cleaned for errors and analysed electronically using Microsoft Excel software. Some of the questions asked accommodated multiple responses. Results were presented as frequency tables and charts. Chi-square test of significance was used to establish the relationship between respondents' sociodemographic attributes and their practice of HMD. Informed consent was obtained from both the respondents and their spouses (according to the local cultural norms). Respondents' anonymity, confidentiality of information obtained from them, voluntary participation and right to withdraw at any stage were emphasised. Ethical approval was obtained from the ABU Teaching Hospital's Health Research Ethics Committee. Permission was also obtained from the various ward heads and the local government authorities.

RESULTS

The age group of 25–34 years constituted majority of the respondents (44.3%). Nearly 30% of them have post-secondary education. Many of them (40%) are full-time homemakers, while civil servants and traders constituted 44.3% of the respondents. Almost two-thirds (65.1%) of the respondents are Hausas.

All the respondents (100%) responded in the affirmative to knowing that diarrhoea can be treated at home and mentioned at least one (or more) method of HMD known to them. Oral rehydration solution (ORS) was the most popular method of HMD known and mentioned unprompted among respondents (69.1%), followed by 'continued breastfeeding' (33.1%) and SSS (32%). Orthodox (28%) and herbal remedies (18.9%) were the next category of options.

A majority of the respondents (93.7%) affirmed the awareness of ORS when asked specifically or directly. Hospitals and other health facilities accounted for almost half (48.3%) of the sources of information about ORS. The mass media and social interactions or relationships accounted for 21.7% and 23.1%, respectively.

The use of ORS was the most popular first-line option among one-third (34.4%) of the respondents. The administration of 'over-the-counter', prescription drugs purchased from chemists (patent medicine stores and pharmacies) ranked second. Continued feeding (increased food intake = 12% and continued breastfeeding = 13.3%) regardless of diarrhoea was affirmed by about a quarter (25.3%) of the respondents.

A total of 224 respondents, representing about two-thirds (64%) of the respondents, practised one form of HMD or the other, whereas over one-third (36%) did not.

The age of mothers (respondents) was found to be a statistically significant determinant of practicing HMD. Their educational status and occupation were not found to be statistically significant determinants.

DISCUSSION

Home-based remedies for the treatment of diarrhoea represent a form of 'first aid' that plays a significant role in determining the outcome of diseases associated with this symptom, in terms of the setting in of complications (particularly dehydration) and/or the occurrence of mortality. The correct knowledge among caregivers, of the appropriate measures to take in the event of diarrhoea among young children, particularly those under the age of 5 years, is crucial in reducing the morbidity and mortality burdens associated with it. The socio-demographic distribution of the respondents shows that they cut across diverse age, educational and occupational categories [Table 1]. In this study, all the respondents were aware of the concept of HMD. Their unprompted responses to the methods of HMD [Table 2] included globally recommended interventions such as the use of oral rehydration solution (69.1%), continued breastfeeding (33.1%), SSS (32%) and increased food intake (18.35). These responses cut across, but do not

Table 1: Sociodemographic profile of the respondents (n=350)

Variable	Frequency (%)
Age group (years)	
15-24	75 (21.4)
25-34	155 (44.3)
35-44	110 (31.4)
>44	10 (2.9)
Total	350 (100.0)
Educational status	
None	12 (3.4)
Quranic	88 (25.2)
Primary	50 (14.3)
Secondary	96 (27.4)
Tertiary	104 (29.7)
Total	350 (100.0)
Occupation	
Full-time homemaker	140 (40.0)
Civil servant	100 (28.6)
Trader	90 (25.7)
Others	20 (5.7)
Total	350 (100.0)
Tribe	
Hausa	228 (65.1)
Yoruba	34 (9.7)
Igbo	30 (8.6)
Others	58 (16.6)
Total	350 (100.0)

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accurately fit into the WHO-recommended guidelines for HMD.¹³ A similar pattern of combinations of both recommended and ‘unwholesome’ methods being acknowledged among the respondents was reported in a study conducted in southeastern Nigeria, where mothers’ knowledge of HMD methods ranged from the use of ORS and SSS, to the use of antibiotics, anti-diarrhoeals and herbal preparations.¹² Such suboptimal knowledge of HMD methods has also been corroborated by other authors in the northern part of Nigeria,¹⁴⁻¹⁶ as well as other parts of south Nigeria.^{17,18} Studies in Ethiopia¹⁹ and Tanzania²⁰ report the use of leftover drugs (such as anti-diarrhoeals and antibiotic medications) and herbal medications, alongside ORT.

Despite the awareness of some recommended methods, certain inappropriate responses such as the use of ‘over-the-counter’, prescription drugs purchased from chemists such as patent medicine stores and pharmacies (28%) and the use of herbal remedies and concoctions (18.9%) were also mentioned. More often than not, the former consist largely of antibiotics, which pharmacologically would prove to be ineffective for treatment^{12,13,15,16} because most cases of childhood diarrhoeal diseases are reported to be viral in aetiology.^{5,7,8,12} The use of anti-diarrhoeal agents has also been reported as a common practice in HMD among caregivers of young children.¹⁴⁻¹⁶ Similar findings of patronising chemists and patent medicine stores as well as using herbal remedies have been reported by other authors from across the country.^{12,16,21,22} Documented factors known to facilitate this trend include a wide variety of convenience-oriented reasons. They include geographical proximity, little or no waiting time prior to consultation, financial affordability (cheaper drugs with opportunities to bargain prices, no separate consultation fees or charges, etc.), more reliable drug stocks, less formalities and/or ‘cumbersome’ procedures of registration with record clerks or units and perceived greater confidentiality (more personal or social interactions, ease of seeking advice, etc.).²³ The inappropriate use of unprescribed drugs and herbal remedies for HMD has also been reported by authors in Kenya and Tanzania.^{20,24}

A total of 14 respondents (4.0%) mentioned withholding of food as a remedy for diarrhoea, which is also reported by other studies within^{16,25} and outside^{24,26,27} Nigeria. This is not only inappropriate, but should also be absolutely discouraged, as it potentially tips children into malnutrition, which on its own is already an established concomitant complication of diarrhoea.^{2,4,5,8,13} Some mothers and caregivers ‘justify’ this habit if symptoms such as anorexia and vomiting occur concurrently with diarrhoea; others fear that continued feeding would worsen the diarrhoea.^{16,25,27}

However, children should continuously receive small, graded quantities of easily digestible, micro-nutrient and energy-rich foods (including breastmilk) at regular intervals during diarrhoeal episodes.^{4,5,8} It is noteworthy to state that 18 respondents (5.1%) mentioned some rather bizarre methods, which include water from boiled pawpaw or guava leaves and 1 cube of ‘Maggi’ (seasoning cube) in water measured in a bottle of 7 Up. Such practices ought to be discouraged and discontinued, even though they may be ‘popular’ and culturally acceptable in certain social circles, as they are potentially harmful to children.²⁶

Oral rehydration salts (ORSs) were mentioned by over two-thirds (69.1%) of the respondents [Table 2] as a method of HMD in this study without any prompting. This figure, however, rose to 328 (93.7%) when the awareness of ORS was enquired of them directly [Table 3]. This is consistent with the findings from a study in northeastern Nigeria,¹⁴ where all respondents had heard of ORS. Studies from north-central¹⁶ and southeastern¹² Nigeria report 71.2% and 76% awareness of ORS, respectively, among respondents. The difference may lie in the fact that the former (study) was conducted in a rural area, where literacy levels and public enlightenment via mass media and other formal means of communication or publicity are relatively low. The National Demographic and Health Survey (NDHS) reports that the knowledge of ORS is high (80%) among

Table 2: Mothers’ responses to possible methods of home management of diarrhoea (multiple responses were accommodated)

Methods mentioned	Frequency (%)
Withhold food	14 (4.0)
Increase food intake	64 (18.3)
Continue breastfeeding	116 (33.1)
Give SSS	112 (32.0)
Give ORS	242 (69.1)
Give drugs/medications from the chemist	98 (28.0)
Give traditional/herbal concoctions	66 (18.9)
Others*	18 (5.1)

*Others include water from boiled pawpaw and guava leaves, 1 cube of ‘Maggi’ (seasoning) in water measured in a bottle of 7 Up (30 cl), etc., SSS: Salt-sugar solution

Table 3: Awareness of oral rehydration solution (ORS) among the respondents

	Frequency (%)
Awareness of ORS	
Yes	328 (93.7)
No	22 (6.3)
Total	350 (100.0)
Sources of information about ORS	
School	15 (4.3)
Hospital	169 (48.3)
Neighbours/friends	81 (23.1)
Mass media	76 (21.7)
Others	9 (2.6)
Total	350 (100.0)

Nigerian mothers.²⁸ Oral rehydration therapy is a recognised simple and relatively affordable intervention, which has been proven to be effective for both the prevention and management of dehydration due to diarrhoea, vomiting and/or fever and for the replenishment of lost fluids and electrolytes.^{4,6,8,12,24,28-30} The sources of information about ORS among respondents in this study [Table 3] ranged from hospitals and other health facilities (48.3%), social relationships and interactions (23.1%) and the mass media (21.7%). This buttresses the role of health workers and facilities in advancing the course of positive health practices,^{30,31} as well as the place of the ‘word of mouth’ in social relationships and the mass media in circulating positive health information for action.^{24,31} These channels when properly and adequately harnessed have the potential of boosting the use of ORS, which is reported to be currently low (about 39% and below) in many developing countries.^{12,15,20,30} Some of such countries, mainly in the sub-Saharan African region including Mali, Togo, Burkina Faso, Cameroon and Zimbabwe, are reported to have ORS use rates of <25%.³¹

Regarding respondents’ attitude towards HMD, in terms of their first line of action in the event of diarrhoea among their under-five children, the use of ORS was the most popular first-line option among one-third (34.4%) of them [Figure 1]. This is rather low against the backdrop of the target of a minimum of 80% usage of ORT set by the National Control of Diarrhoeal Diseases Programme in its 5-year plan in the early 1990s.^{12,32} The administration of prescription drugs purchased ‘over the counter’ from chemists (i.e., patent medicine stores and pharmacies) ranked second (15.8%) as a first-line option. The shortcomings and futility of this practice have already been elaborated earlier. Continued feeding regardless of diarrhoea either by increased food intake (12%) or by continued breastfeeding (13.3%) was affirmed among the

respondents. This is encouraging as the aforementioned vicious relationship between diarrhoea and malnutrition would be averted if this practice is promoted among mothers and caregivers of under-fives.^{4,5,8,13,25,27,30}

About one-tenth (10.8%) of the respondents’ first line of action was the use of SSS,^{12,32} which is another recommended home fluid, that guarantees a good outcome and contributes to reducing dehydration and diarrhoeal mortality.³⁰ Fortunately, unwholesome methods such as withholding of food and the use of herbal concoctions ranked low, attitudinally, as first line of action. Notably, no mention was made of the administration of zinc supplements, implying a possible zero awareness of this remedy among respondents. Zinc supplementation has been endorsed by WHO and UNICEF for the replacement of lost zinc and the reduction of diarrhoeal duration and severity as well as the reduction of its incidence for another 2–3 months.^{4,5,8,10,11,13,15,30} The finding in this study differs from those of Ogunrinde *et al.* and Okoh *et al.* in the northern and southern parts of Nigeria, respectively, who report awareness rates of 32% and 36.9%, respectively.^{15,17} However, a study in Lagos, Nigeria, corroborates this study’s finding with a rate of 4.3% awareness.¹⁸ Similar studies conducted in East Africa^{19,20,24} and India²⁶ also report respondents’ non-affirmation of zinc supplementation. It is recommended that this knowledge gap be addressed in order to improve the prognosis associated with childhood diarrhoea.

Overall, less than two-thirds (64%) of the respondents practiced any form of HMD [Figure 2], despite a universal (100%) awareness of the concept of home-based therapy and a 93.7% awareness of ORS (among other known positive methods) among them. This is low compared to findings from studies in north-central¹⁶ and

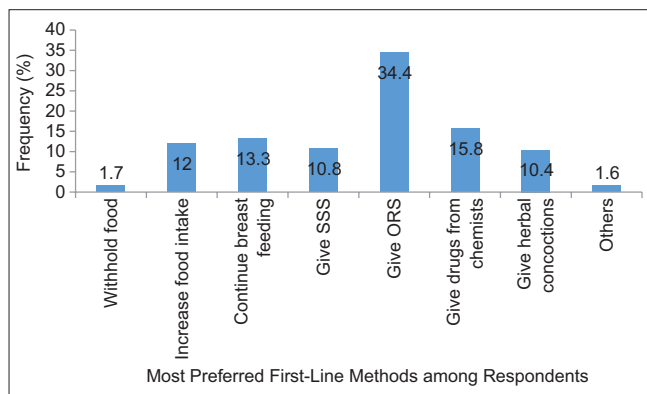


Figure 1: Respondents’ attitude to home management of diarrhoea (most preferred first line of action in the event of diarrhoea)

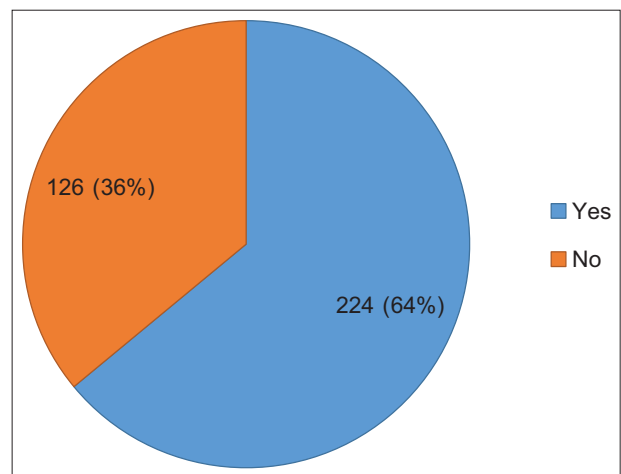


Figure 2: Actual practice of home management of diarrhoea among respondents

southeastern Nigeria,³³ which reported higher rates of 72.9% and 92.5%, respectively, among respondents. This disparity in rates in the two studies may be as a result of the obvious urban–rural (the former being a rural community) as well as north–south disparities in health indices and indicators, as reported by the NDHS.²⁸ It is desirable that a near-universal practice of at least some form of recommended therapy be initiated from the home prior to arrival at a health facility. Timely intervention by more mothers and caregivers will significantly reduce the morbidity and mortality burdens associated with diarrhoea among under-five children in many developing countries, as any delay (at home or on transit to health facilities) constitutes a danger to their well-being and lives.^{4,5,11}

In this study, the age of mothers (respondents) was found to be a statistically significant determinant of practicing HMD [Table 4], with the practice being more ‘popular’ among the younger age groups of <35 years. The educational status and occupation of respondents were not found to be statistically significant determinants. These findings may allude to the tendency of younger mothers to be more open and amenable to embracing change and trying out non-traditional methods of treatment as compared to older mothers who may be more fixed in their previous practices. This study’s findings differ from those of a study in the southern part of Nigeria,¹⁸ where maternal educational status and social class were the determining factors for the practice of HMD, and age was not. An Ethiopian study, however, agrees with the finding of this study that maternal age is significantly associated with the practice of mothers and caregivers on the home management of under-five

diarrhoea.¹⁹ Another study conducted in north-central Nigeria²⁹ (though specific for ORS) also reports a positive association between practice and maternal age. Overall, other factors predominantly shown to impact on the practice of HMD from other studies include mothers’ educational status, social class and place of residence, as well as the sex of index child (with male children experiencing more home-based interventions).^{18,19,28}

The scope of this study did not cover reasons why over one-third (36%) of the respondents do not practice HMD despite being aware of it as well as the various recommended methods of its practice. Similarly, factors underlying common practices such as patronising chemists and patent medicine stores and using herbal remedies, were not explored (the use of zinc supplements was also not directly enquired among the respondents). These gaps or limitations could be addressed by further research, probing into the factors contributing to these phenomena. Findings from such research would not only add to the existing knowledge, but also prove useful in further promoting the practice of HMD among mothers, caregivers, families and communities at large.

CONCLUSION

This study demonstrated the knowledge of a wide range of home-based methods of diarrhoeal management among respondents, ranging from standard, recommended methods to some inappropriate options. The awareness of ORS was high, and it ranked first, as the most preferred option for intervention. However, the actual practice of HMD was relatively low. This, therefore, calls for the promotion among mothers and caregivers, of the positive home management methods of fluid and electrolyte replacement; continuous, nutritious feeding and the use of zinc supplementation for children with diarrhoea.

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Conflicts of interest

There are no conflicts of interest.

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Table 4: Relationship between home management of diarrhoea and sociodemographic characteristics of the respondents

Respondents' sociodemographic characteristics	Practice of home management of diarrhoea		Total	P
	Yes	No		
Age (years)				
15-24	47	28	75	<0.05
25-34	123	32	155	
35-44	50	60	110	
>44	4	6	10	
Total	224	126	350	
Educational status				
None	7	5	12	>0.05
Quranic	59	29	88	
Primary	27	23	50	
Secondary	63	33	96	
Tertiary	68	36	104	
Total	224	126	350	
Occupation				
Full-time homemaker	80	60	140	>0.05
Civil servant	74	26	100	
Trader	57	33	90	
Others	13	7	20	
Total	224	126	350	

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