

Fathers' Knowledge of Oral Rehydration Solution in Home Management of Childhood Diarrhoea in a Semi-Urban Nigerian Community

Sodeinde KJ¹[iD](#), Abolurin O²[iD](#), Adefala NO¹[iD](#), Omotosho AY¹[iD](#), Osinaike AO¹[iD](#), Ossai A¹[iD](#), Atuk J¹[iD](#), Egejuru G¹[iD](#), Okereke A¹[iD](#), Kuku A¹[iD](#)

1 Department of Community Medicine, Babcock University, Ilishan-Remo, Ogun State, Nigeria

2 Department of Paediatrics, Babcock University, Ilishan-Remo, Ogun State, Nigeria

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Abstract

Introduction: Extensive research has examined maternal knowledge and practices regarding diarrhoea management and ORS utilisation, whereas the role of fathers has been less explored. This study assessed fathers' knowledge of the use of ORS in the home management of childhood diarrhoea.

Methods: This is a descriptive cross-sectional study of 198 purposively selected fathers using structured, interviewer-administered questionnaires. Fathers' knowledge was assessed through the correct identification of certain facts about ORS. The 50% mark was used as the cut-off for good and poor knowledge. Data analysis was conducted using IBM SPSS version 23. Chi-square and Logistic regression analyses were done. A p-value of ≤ 0.05 was considered statistically significant.

Results: Mean age was 36.7 ± 7.82 years. The majority (73.7%) of the participants had good knowledge of ORS, while 26.3% had poor knowledge. Men who were currently married had 86% lower odds of having good knowledge of ORS compared to men who were not currently married, comprising single, divorced, and widowed men [Adjusted Odds Ratio (AOR) = 0.140; 95% Confidence interval (C.I.) = 0.046-0.422]. Also, men who had up to a tertiary education were twice as likely to have good knowledge of ORS (AOR=2.017; 95% C.I. = 1.019-3.995).

Conclusion: Fathers' knowledge of ORS was significantly associated with education and marital status. There is a need to invest in male education as a long-term approach to enhance childhood ORS utilisation. There should also be tailored interventions to foster shared responsibility among couples, especially as it relates to childhood diarrhoea management.

Keywords: Fathers, Home Management of Childhood Diarrhoea, Oral Rehydration Solution

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Introduction

Diarrhoeal diseases remain a major public health concern globally, particularly among children under five years of age. According to UNICEF, diarrhoea is responsible for approximately 9% of global under-five mortality, claiming the lives of around 1,200 under-fives daily or 444,000 annually (1). Despite being largely preventable and treatable, the burden remains disproportionately high in low- and middle-income countries, including Nigeria. One of the most effective interventions for managing diarrhoea is the use of

oral rehydration solution (ORS), a component of oral rehydration therapy (ORT), introduced by the World Health Organisation (WHO) in the 1960s (2). ORS is a low-cost, easy-to-administer treatment that has been credited with significantly reducing diarrhoea-related mortality globally (3).

While extensive research has examined maternal knowledge and practices regarding diarrhoea management and ORS utilisation, the role of fathers has been considerably understudied. This imbalance persists despite evidence

showing that in many cultural contexts, including Nigeria, fathers often hold primary decision-making power within households, especially concerning healthcare utilisation (4). In patriarchal societies, men are typically regarded as heads of households whose involvement or lack thereof can critically influence child health outcomes (5, 6).

Studies suggest that paternal involvement in child healthcare contributes to improved health outcomes, yet fathers' knowledge of childhood diarrhoeal treatment remains limited (7). Several factors, including cultural norms, lack of awareness, and poor health education targeting men, hinder effective paternal participation (8,9). Moreover, recent research conducted in both northern and southern regions of Nigeria highlights various levels of knowledge and utilisation of ORS among caregivers (10, 11, 12). However, these studies predominantly focus on mothers.

This paucity of data on fathers' understanding of ORS use represents a critical research gap. Without addressing this gap, public health efforts may continue to overlook an influential demographic whose support could substantially improve childhood diarrhoea outcomes. In addition, while national health strategies promote family-inclusive health education, implementation often lacks mechanisms for engaging male caregivers specifically (13).

Despite the proven effectiveness of ORS in treating diarrhoea and reducing child mortality, its utilisation remains suboptimal in Nigeria. Much of the public health discourse has focused on mothers, ignoring the significant role fathers play in healthcare decisions. There is a lack of empirical data on paternal knowledge of ORS use, which may contribute to the persistently low uptake of ORS in many communities. This oversight impedes efforts to reduce under-five mortality rates related to diarrhoeal diseases.

Understanding the knowledge of fathers regarding ORS is vital for designing gender-sensitive interventions aimed at improving child health outcomes. Targeting men in health education campaigns could bridge existing knowledge gaps and promote shared responsibility in child healthcare. Furthermore, as Nigeria continues to strive toward meeting Sustainable Development Goal 3 (Good Health and Well-being), such research could inform more inclusive and effective health communication strategies.

Findings from this study will offer insights for policymakers and public health practitioners on the necessity of integrating fathers into child health interventions, particularly in diarrhoea management. It can inform the design of father-inclusive health promotion programs, guide community-based educational strategies, and support the development of national health policies that recognise the pivotal role of male caregivers. Increased paternal awareness and involvement could lead to better utilisation of ORS, contributing significantly to reducing child mortality rates in Nigeria and similar settings. This study, therefore, aimed to assess the knowledge of fathers working within a university setting about the use of oral rehydration therapy in the treatment of childhood diarrhoea.

Methods

Study Area, Study Design, Study Population, and Sample Size Estimation

This study was conducted among a sample of men in Babcock University (BU), Ilishan-Remo, Ogun State, Nigeria. The university is in the Ikenne Local Government Area, which comprises semi-urban communities. BU is a private university owned by the Seventh-Day Adventist Church. The university commenced activity on September 17, 1959, as Adventist College of West Africa (ACWA). The Federal Government of Nigeria approved the university as one of the first three private universities in the country on the 20th of April 1999. The university currently has a student population of approximately 10,000 and a staff population of around 1,500, excluding those on daily rates, wages, and fixed salaries. The university currently comprises 10 schools. This was a descriptive cross-sectional study. The study participants were men working within the premises of BU. Men who were 18 years old and above and who had at least one child less than 5 years old were included. However, men who were health workers were excluded from the study. This is because health workers were expected to be more knowledgeable about ORS, and including them may cause bias in the study findings. The minimum sample size was determined using Cochran's formula z^2pq/d^2 . A standard normal deviation of 1.96, a prevalence of 12.9% from a similar study (14) and a margin of error of 5% were used for the calculation, and this gave a minimum sample size of 172.7. Correcting for a 10% poorly filled questionnaire and non-response, the sample size became 191.8. However, 198 men participated in this study.

Sampling Method, Data Collection Tools, and Techniques, Study Measures

The purposive sampling method was used to select the study participants due to logistical constraints. The method was employed to ensure representation of men who met the inclusion criteria. Moreover, the university community involves a complex mix of various men- academic staff, non-academic staff, artisans, bankers, religious leaders, and so on. It may be difficult to effectively adopt a probability sampling method in such a setting. Participation was entirely voluntary. Consenting men who worked in the university and met study conditions were purposively recruited until the desired sample size was reached. Trained research assistants helped in collecting data from the participants using a structured interviewer-administered questionnaire. This tool was constructed from a review of previous similar studies and reviewed by experts on the research subject. It was then pretested among 20 men in Ilishan Community, the immediate neighbour of the university. Amendments were made to the parts of the questionnaire that were found to be ambiguous or that lacked clarity. The questionnaire sought information about the participants' socio-demographic

characteristics and knowledge of men about using ORS in the management of childhood diarrhoea.

Data Management and Analysis

The questionnaires were cross-checked for errors and cleaned. Data were entered into SPSS software version 24 (IBM SPSS Inc., Chicago, IL) for analysis. Data summary was done using mean, standard deviation, and proportions. A composite variable (aggregate score) was calculated for knowledge. A total of 9 items were assessed for knowledge, and all the items were weighted equally. Those who had at least 5 correct answers (50%) were classified as having good knowledge, while those who had 4 or fewer correct answers were classified as having poor knowledge. Chi-square was used to test for associations between categorical variables,

while logistic regression was used to test for factors associated with good knowledge. The level of significance was set at 5%. The analysed data were presented as frequency tables.

Results

Table 1 shows that the mean age of respondents was 36.69 ± 7.82 , and most (57.5%) held a tertiary education as their highest level. About 67.7% of respondents were currently married, while Christianity is the most practised religion (81.3%), with the Yoruba ethnic group having more representation (65.2%). Just over a quarter of the participants were either unskilled workers (29.8%) or professionals (29.3%).

Table 1: Sociodemographic Characteristics of Respondents

Variable	Frequency	Percentage
Age		
20-29	41	20.7
30-39	96	48.5
40-49	45	22.7
≥ 50	16	8.1
Marital status		
Married	134	67.7
Single	56	28.3
Divorced	8	4.0
Highest level of education		
No formal education	13	6.6
Primary	16	8.1
Secondary	55	27.8
Tertiary	114	57.5
Occupation		
Unskilled	59	29.8
Semi-skilled	43	21.7
Skilled	38	19.2
Professional	58	29.3
Religion		
Christianity	161	81.3
Islam	32	16.2
Traditional Religion	5	2.5
Ethnicity		
Yoruba	129	65.2
Igbo	65	32.8
Hausa	4	2.0

Mean Age= 36.7 ± 7.82

Table 2 shows that all the men have heard of ORS. The majority knew that clean and healthy water is used to prepare ORS (74.7%), that ORS can prevent dehydration among children (64.2%), and that ORS contains water, sugar, and salt (58.1%). However, just over two-fifths (44.9%) knew

ORS can be stored after it was prepared, while less than two-fifths (38.4%) knew that ORS should be discarded after 24 hours. The majority (73.7%) of the participants had good knowledge of ORS, while 26.3% had poor knowledge.

Table 2: Knowledge of ORS among Fathers

Variable	Frequency	Percentage
Heard of ORS	198	100.0
ORS can be prepared at home		
Yes	125	63.1
No	69	34.9
Unsure	4	2.0
Knows how to prepare ORS		
Yes	137	69.2
No	44	22.2
Unsure	17	8.6
ORS can be stored after it is prepared		
Yes	89	44.9
No	58	29.3
Unsure	51	25.8
Component of ORS		
Water, salt, and sugar	115	58.1
I don't know	83	41.9
This is done to ORS after 24 hours of preparation		
Continue to use	36	18.2
Store it for future use	86	43.4
Discard it	76	38.4
Water for ORS Preparation		
Tap Water	16	8.1
Sachet water	34	17.2
Clean and safe water	148	74.7
ORS is an effective measure in managing childhood diarrhoea		
Yes	174	87.9
Unsure	24	12.1
ORS can prevent dehydration in childhood diarrhoea		
Yes	127	64.2
No	22	11.1
Unsure	49	24.7
ORS should always be administered with other treatments, such as antibiotics		
Yes	125	63.1
No	17	8.6
Unsure	56	28.3
Knowledge Score		
Good Knowledge	146	73.7
Poor Knowledge	52	26.3

Table 3 shows that age ($p=0.007$), marital status ($p<0.001$), and education ($p=0.05$) were all significantly associated with participants' knowledge. Men who were younger, not currently married, and who had a tertiary education had higher proportions of good knowledge.

Table 3: Association Between the Participants' Characteristics and Knowledge of ORS

Variable	Knowledge of ORS		χ^2 (p-value)
	Good Knowledge n (%)	Poor Knowledge n (%)	
Age			
≤36	85 (81.7)	19 (18.3)	7.23 (0.007)
≥37	61 (64.9)	33 (35.1)	
Marital status			
Currently Married	86 (64.2)	48 (35.8)	19.56 (<0.001)
Not Currently Married	60 (93.8)	4 (6.3)	

Highest level of education			
Tertiary	90 (78.9)	24 (21.1)	
Non-Tertiary	56 (66.7)	28 (33.3)	3.77 (0.05)
Occupation			
Skilled/Professional	72 (75.0)	24 (25.0)	
Semi-skilled/Unskilled	74 (72.5)	28 (27.5)	0.153 (0.695)
Religion			
Christianity	122 (75.8)	39 (24.2)	
Non-Christianity	24 (64.9)	13 (35.1)	1.85 (0.174)
Ethnicity			
Yoruba	96 (74.4)	33 (25.6)	
Non-Yoruba	50 (72.5)	19 (27.5)	0.089 (0.766)

Table 4 shows that men who were currently married had 86% lower odds of having good knowledge of ORS compared to men who were not currently married [Adjusted Odds ratio (AOR) = 0.140; 95% CI = 0.046-0.422]. Also, men who had up to a tertiary level of education were twice as likely to have good knowledge compared to those who were not educated up to a tertiary level. (AOR=2.017; 95% CI = 1.019- 3.995).

Table 4: Factors Associated with Men's Knowledge of ORS

Variable	Adjusted Odds Ratio	95% C. I	P-value
Age			
≤36	1.00		
≥37	0.626	0.307	1.276
Marital status			
Currently Married	0.140	0.046-0.422	< 0.001
Not Currently Married	1.00		
Highest level of education			
Tertiary	2.017	1.019-3.995	0.044
Non-Tertiary	1.00		

Discussion

This study showed that most participants were of Yoruba ethnicity and Christians, reflecting the demographic characteristics of the study setting, a faith-based institution located in an area dominated by Yoruba people. Most of the respondents demonstrated good knowledge of ORS, although a significant number still showed knowledge gaps. Men with tertiary education and those who were not currently married were more likely to have better knowledge of ORS. These findings highlight the important role of sociodemographic factors, especially education and marital status, in health knowledge and child health outcomes.

The high proportion (73.7%) of the participants with good knowledge of ORS matches findings from other sub-Saharan African areas, where caregiver knowledge of ORS is relatively high (15). However, a study in Burayo Town, Ethiopia (16), reported that only 59% of male and female caregivers possessed good ORS knowledge, while another study in Ife, in Southwestern Nigeria, found that only 55% of mothers knew about ORS (12). The higher knowledge levels in this study may be because the participants were selected from a university community and had access to health information from a tertiary hospital on campus. This suggests that exposure to formal and informal health information sources improves knowledge and indicates the need to strengthen community health education channels.

Education was strongly associated with knowledge of ORS, consistent with studies from Ethiopia, Nigeria, and other sub-Saharan African countries (15, 17, 18). In turn, knowledge of ORS has been reported to have direct relationships with its administration to children (18, 19). Male education has also been shown to be a predictor of several family health and health-related issues (20, 21, 22, 23). Educated men are more likely to access diverse sources of health information and are better positioned to challenge misconceptions about diarrhoea management (24, 25). This has policy implications: interventions to improve male involvement in child health must integrate health literacy programmes tailored for men with lower educational attainment. In addition, sustained investment in male education more broadly serves as a long-term public health strategy, since education equips fathers with the capacity to make informed decisions that directly influence maternal and child health.

The finding that unmarried men were more likely to have exhibited good knowledge compared to married men is intriguing and reflects possible differences in caregiving dynamics. In some cases, single fathers may assume greater responsibility for childcare in the absence of maternal support, prompting deliberate efforts to acquire knowledge about child health. While this highlights resilience in certain family settings, it also emphasises the need for deliberate policies that encourage shared parental responsibility in two-

parent households. In patriarchal societies such as Nigeria, where men are often final decision-makers on health expenditures and service utilisation, their knowledge and engagement in childhood diarrhoea management are pivotal. However, other sociocultural factors may have contributed to this finding. Further qualitative research is therefore needed to explore this dynamic.

From a public health perspective, these findings have significant implications. Despite global and national efforts, including Nigeria's adoption of the Integrated Management of Childhood Illness (IMCI) strategy, and WHO/UNICEF recommendations for ORS and zinc supplementation, the utilisation of ORS in many communities remains suboptimal (13). The IMCI, for instance, emphasises the treatment of childhood diarrhoea with low-osmolarity ORS and zinc (26). The persistent gap in paternal knowledge and involvement represents a missed opportunity for maximising the impact of these initiatives. Male-focused and family-inclusive health education strategies are urgently needed to complement mother-centred approaches. Such strategies could include community-based fatherhood programmes, integration of male caregivers into maternal and child health clinics, and workplace health promotion activities targeting men. At the policy level, integrating father-inclusive child health interventions into Nigeria's National Strategic Health Development Plan can accelerate progress toward reducing under-five mortality from diarrhoea. Globally, strengthening paternal involvement aligns with Sustainable Development Goal 3, which targets ending preventable child deaths, and with the Global Action Plan for Pneumonia and Diarrhoea (GAPPD), which emphasises universal access to proven interventions such as ORS (27). Moreover, community and religious institutions can play a transformative role in promoting male engagement, given their influence on cultural norms and practices.

Study limitations

This study is limited in that it was a cross-sectional study; hence, it could not assess true causal relationships between participants' characteristics and the knowledge of ORS. Moreover, the use of a purposive sampling method had the inherent possibility of introducing selection bias to the study with subjective participant selection by the researcher. The sampling method also limits the generalizability of the study to a larger population.

Conclusion

This study reaffirms the critical role of male education and engagement in improving childhood diarrhoea outcomes. To achieve national and international child survival targets, policymakers and practitioners must move beyond maternal-centric health promotion and embrace gender-inclusive approaches. Increasing paternal awareness and involvement will not only improve ORS uptake but also foster shared responsibility in child health, ultimately contributing to a

reduction in childhood morbidity and mortality from diarrhoeal diseases.

Abbreviations

BU: Babcock University
BUHREC: Babcock University Health Research and Ethics Committee
ORS: Oral Rehydration Solution
ORT: Oral Rehydration Therapy
UNICEF: United Nations Children's Fund
WHO: World Health Organisation

Declarations

Ethics Approval and Consent to Participate: Ethical approval was obtained from the Babcock University Health Research and Ethics Committee (BUHREC 883/24). Verbal and written informed consent were obtained from all the participants. No one received any incentive to participate in this study. Strict confidentiality was maintained throughout the study.

Data Availability: Data for this work are available from the authors and may be presented on request.

Competing Interests: The authors have declared no conflict of interest.

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Author contributions: SKJ, AO, ANO, AJ, EG, OkA, OsA, and KA conceived the research idea. ANO, AJ, EG, AmO, and KA collected the data, while SKJ, OAY and OAO analysed the data and wrote the first draft of the manuscript. All authors reviewed and approved the final copy of the manuscript.

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