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Determinants of Childhood Diarrhoea Management: A Socioeconomic Perspective Among Mothers in Kwali Area Council, FCT, Abuja, Nigeria

[1]Makama Catherine, [2]Ambrose Ogidi, [3]Sadi Yiga & [4]Dauda Yusuf Wotu
[1,2,3&4]Department of Sociology,
Nasarawa State University, Keffi

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Abstract

Childhood diarrhoea remains a leading cause of morbidity and mortality among children under five, particularly in developing countries. Guided by the Health Belief Model, this study assessed diarrhoea prevalence and management practices among mothers in Kwali Area Council, Federal Capital Territory, Abuja, Nigeria. A descriptive cross-sectional survey design was employed, administering structured questionnaires to 395 mothers using a multistage sampling technique. Data collected included, diarrhoea prevalence, and treatment choices. Findings indicated high diarrhoea rates, with oral rehydration solution (45.6%) being the most common intervention, followed by herbal medicine (24.3%), increased breastfeeding (17.7%), and self-medication (12.4%). Socio-economic factors such as education, income, and access to health information significantly influenced treatment decisions. Despite awareness of best practices, gaps remain in routine ORS use and continued feeding. The study recommends targeted health education, improved access to affordable care, and culturally tailored interventions to enhance mothers' health beliefs, strengthen diarrhoea management, and reduce under-five morbidity and mortality.

Keywords: *Childhood diarrhea, Socio-economic determinant, and Mothers' management practices*

Corresponding Author: **Makama Catherine**

Background to the Study

Diarrheal disease during childhood continues to be one of the leading causes of death among children under five years worldwide. In 2024, diarrheal disease was the third highest cause of death in this age category, accounting for an estimated 443,832 deaths annually, alongside nearly 1.7 billion episodes of diarrhoea globally (World Health Organization WHO, 2024). Despite being both preventable and treatable using interventions such as oral rehydration solution (ORS) and zinc supplementation, the burden remains unacceptably high worldwide. For instance, UNICEF and WHO estimate that combined preventive and therapeutic measures could prevent up to two million deaths per year from diarrhoea and pneumonia by 2025 through interventions such as clean water, sanitation, vaccines, ORS, and zinc supplementation (UNICEF & WHO, 2024).

Socio-economic determinants profoundly affect the incidence and treatment of childhood diarrhoea in sub-Saharan Africa. Multi-level analyses across eleven African countries revealed that caregivers' education, working status, and the socio-economic characteristics of their communities significantly influence treatment-seeking behaviours, including whether mothers visit medical centers, pharmacies, or practice self-treatment at home (Aremu, Lawoko, Moradi, & Dalal, 2011). Furthermore, studies conducted between 2013 and 2023 indicate that maternal education is a key determinant in reducing childhood diarrhoea prevalence, as educated mothers are more likely to adopt proper hygiene, sanitation, nutrition, and preventive care practices.

In Nigeria, childhood diarrhoea remains a significant burden, varying by region and socio-economic status. The 2018 Nigeria Demographic and Health Survey (NDHS) reported a national prevalence of 12.9%, with the highest burden in the North East (24.7%), among the poorest households (17.1%), and children of mothers without education (16.4%). Maternal education strongly influences risk: children of unschooled mothers had a diarrhoea rate of 15.5% and were 2.69 times more likely to experience diarrhoea than children of better-educated mothers (OR = 2.69; 95% CI: 1.80–4.02) (National Population Commission NPC & ICF, 2019).

Children under five are particularly susceptible to diarrhoea due to their immature immune systems, especially those with compromised nutritional status. Diarrhoea is caused by multiple infectious agents and is influenced by biological, environmental, economic, and socio-cultural determinants (Kamath et al., 2018). Between January 2020 and December 2024, persistent challenges in managing childhood diarrhoea have underscored the need to investigate its determinants. The burden is unevenly distributed across regions, with residence, socio-economic factors, and environmental conditions playing critical roles in shaping prevalence and incidence (Ayogu et al., 2019). Accordingly, this study examines the determinants of childhood diarrhoea management from a socio-economic perspective among mothers in Kwali Area Council, FCT, Abuja, Nigeria.

Statement of the Problem

Childhood diarrhoea remains a leading preventable cause of illness and death globally, killing nearly 424,000 children annually despite low-cost, effective interventions such as ORS and zinc supplementation (WHO, 2024). In sub-Saharan Africa, socio-economic disparities continue to affect both incidence and treatment, with low-income children and poorly educated mothers disproportionately affected (Adugna et al., 2023). In Nigeria, the burden is particularly concerning: the 2018 NDHS reported a prevalence of 12.9%, with the highest rates among regions with poverty, poor sanitation, and limited access to healthcare (NPC & ICF, 2019). Previous studies describe suboptimal ORS and zinc utilization, inconsistent feeding habits, and delayed health-seeking behaviour, particularly in rural and peri-urban areas (Oloruntoba et al., 2022; Okoh & Ilesanmi, 2021). However, little empirical evidence exists from Kwali Area Council, where socio-economic differences, maternal education levels, and restricted access to public health interventions may contribute to suboptimal management practices. This study, therefore, investigates the determinants of diarrhoea among children under five across districts of Kwali, aiming to identify key factors influencing its occurrence.

Literature Review

Childhood Diarrhoea

The World Health Organization defines diarrhoea as the passage of three or more loose or liquid stools per day, or more frequent than normal for the individual (WHO, 2007). Globally, diarrhoeal diseases remain a leading cause of mortality among children under five (UNICEF, 2018), accounting for higher mortality in some regions than all other causes combined (Petri et al., 2008; UNICEF, 2018). Children under five account for approximately 63% of the global diarrhoea burden (Walker et al., 2012; Zhang et al., 2016), and diarrhoea is the second leading cause of infant mortality in developing countries (Platts-Mills et al., 2015; Kotloff, 2017), with poor sanitation and limited potable water supply as major contributing factors (Chakravarty et al., 2017; Squire & Ryan, 2017). In Africa, Asia, and South America, diarrhoea accounts for one in eight deaths among children under five annually (Keddy et al., 2016; Kotloff, 2017) and approximately 16% of child deaths in Nigeria (Charyeva et al., 2015). In Ogun State, South-West Nigeria, diarrhoea ranks among the three most prevalent water-related diseases alongside typhoid fever and cholera (Omole et al., 2015). Childhood diarrhoea remains a public health concern in low- and middle-income countries, with WHO (2024) defining it as the passage of three or more loose stools within 24 hours, potentially resulting in dehydration, which may be fatal if poorly managed. UNICEF and WHO (2023) estimate 1.7 billion cases of childhood diarrhoea globally per year, leading to roughly 443,000 deaths among children under five. While preventable and treatable with cost-effective interventions such as ORS and zinc supplementation, diarrhoea still accounts for approximately 8% of all under-five deaths worldwide (WHO, 2024).

In Nigeria, diarrhoea is particularly concerning. The 2018 NDHS reported a two-week prevalence rate of 12.9%, with higher rates in rural and impoverished communities. Limited maternal education, low household income, and restricted access to healthcare contribute to higher prevalence and ineffective management (Oloruntoba et al., 2022). Despite government and international promotion of ORS and zinc supplementation, coverage remains

suboptimal: only 42% of children with diarrhoea receive zinc, and fewer than 50% receive ORS (Adugna et al., 2023).

Socio-Economic Determinants of Childhood Health

Childhood health is heavily influenced by socio-economic determinants, which shape living conditions, access to resources, and opportunities for healthy development. WHO (2022) defines social determinants of health as "non-medical factors that affect health outcomes," including conditions in which people are born, grow, live, work, and age. Socio-economic position, determined by parental education, income, occupation, and wealth, is a critical predictor of child health (Marmot & Bell, 2019).

Maternal education strongly predicts child health outcomes, with educated mothers more likely to adopt preventive health practices, utilize health services, and follow recommended child care practices, including immunization, proper nutrition, and diarrhoea management (Victora et al., 2016; Adekanmbi et al., 2017). Household wealth and income also affect child health, as economically better-off families can afford nutritious food, access clean water, and seek timely medical care, while poorer households face malnutrition, frequent infections, and delayed treatment (Rutstein & Staveteig, 2014; NPC & ICF, 2019).

Parental occupation, particularly maternal, influences child health by affecting time for child care and access to health services. Mothers in low-paying or informal jobs may have limited access to clinics, growth monitoring, and immunization (Fagbamigbe et al., 2021). Residence in peri-urban or rural areas introduces structural barriers, such as poor infrastructure and limited health facilities, further delaying treatment (Okoh & Ilesanmi, 2021). Community-level factors, including access to WASH services, maternal and child health facilities, and exposure to health promotion campaigns, are crucial for child health outcomes (UNICEF, 2021). Integrated interventions targeting hygiene and early diarrhoea management have been shown to reduce morbidity in low-resource settings (Walker et al., 2018).

Childhood Diarrhoea Management Practices among Mothers

Maternal management is key to child survival, particularly in contexts with limited formal healthcare access. WHO (2024) recommends three core strategies: low-osmolarity ORS to prevent and treat dehydration, 10–14 days of zinc supplementation to reduce severity and duration, and continued feeding, including breastfeeding, to prevent malnutrition. Despite low cost and high efficacy, coverage is uneven globally (UNICEF & WHO, 2023). Mothers' decisions are influenced by knowledge, socio-cultural beliefs, and health information. Well-informed mothers correctly prepare ORS, maintain feeding practices, and seek timely medical attention (Oloruntoba et al., 2022). Misconceptions, such as withholding food or fluids during diarrhoea, persist in many communities, exacerbating dehydration and malnutrition (Adugna et al., 2023). Cultural beliefs and reliance on herbal remedies can delay appropriate treatment, particularly in rural and peri-urban areas (Okoh & Ilesanmi, 2021).

Dietary practices during diarrhoea are critical. Prolonged breastfeeding and increased fluid intake help prevent dehydration, yet caregivers often reduce feeding due to cultural

misconceptions (Fagbamigbe et al., 2021). Less than half of children with diarrhoea receive adequate fluids, and fewer than 42% receive zinc as recommended (NPC & ICF, 2019). Health-seeking behaviour depends on proximity to healthcare, cost, past experience, and advice from family or community members. Families in remote, low-income areas often delay or forgo professional care, increasing complications, whereas educated mothers with higher socio-economic status tend to seek care promptly (Rutstein & Staveteig, 2014; Walker et al., 2018). Despite interventions like the Integrated Management of Childhood Illness (IMCI) strategy and mass media promotion of ORS and zinc, awareness and utilization remain suboptimal (UNICEF, 2021).

Empirical Review

Mihrete et al. (2020) found that maternal work status and the number of under-five children influenced diarrhoea risk, with children of working mothers having higher odds, while having two or fewer under-five children reduced odds. Gebru et al. (2019) reported that children of non-educated mothers had higher odds of diarrhoea, as did children in households with improper refuse disposal. Mengistie (2010) and Hussein (2017) identified an association between drinking water sources and diarrhoea; children in households using unprotected sources were at higher risk. Amgusi (2020) reported increased diarrhoea among children who received polio 3 vaccinations compared to unvaccinated children. Mengistie et al. (2021) also found diarrhoea significantly associated with unimproved domestic water supply in eastern Ethiopia.

Theoretical Framework

Health Belief Model

The Health Belief Model (HBM) was developed to explain individual preventive health decisions (French, 1992). Initially applied in the 1950s to evaluate tuberculosis screening in the USA (Hayden, 2009), the model posits that health behaviour is shaped by personal beliefs regarding health problems and available resources (Calnan, 1984; Champion & Skinner, 2008). In this study, HBM is used to understand mothers' behaviour and decision-making regarding childhood diarrhoea management in Kwali Area Council, FCT, Abuja. The model comprises four constructs:

Perceived Susceptibility: The belief in personal risk of disease or threat in specific circumstances, influencing the likelihood of seeking care (Hayden, 2009).

Perceived Severity/Threat: The belief regarding the seriousness of a health problem, including medical and social consequences, which motivates action (Hayden, 2009; Van den Broek & Falconer, 2011).

Perceived Benefits: The belief that adopting a health action reduces risk or severity of disease, promoting behavioural change (Champion & Skinner, 2008; Hayden, 2009).

Perceived Barriers: Factors perceived as obstacles to action, such as fear, cost, or social consequences, which may prevent health-seeking behaviour (Hayden, 2009; Mullany, 2006; Simkhada et al., 2006; Suwal, 2008).

The Health Belief Model (HBM) provides a useful theoretical framework for explaining the behavioural components underlying mothers' management of childhood diarrhoea in Kwali Area Council. The model posits that individuals' engagement in health-related behaviour is influenced by their perceptions of susceptibility, severity, benefits, and barriers. Within the socioeconomic context of this study, the HBM helps to elucidate how mothers' educational level, income status, and access to health information shape their perceptions and actions towards childhood diarrhoea management. For instance, mothers with higher educational attainment are more likely to perceive the susceptibility of their children to diarrhoea diseases and recognize the severity of the condition, prompting timely medical intervention. Conversely, mothers from low-income households may experience significant perceived barriers, such as the cost of treatment, distance to health facilities, or lack of trust in healthcare systems, which can hinder effective management practices.

Furthermore, the perceived benefits component of the HBM is reflected in mothers' willingness to seek professional medical care, adopt oral rehydration therapy, or practice improved sanitation and hygiene behaviours often influenced by their socioeconomic standing. The model, therefore, provides an explanatory link between individual cognition and broader socioeconomic determinants, suggesting that mothers' health behaviours are not only a function of knowledge but also shaped by their economic capabilities and environmental realities. By applying the HBM, this study interprets how socioeconomic disparities translate into varying health beliefs and responses among mothers, ultimately influencing the prevalence and treatment outcomes of childhood diarrhoea in Kwali Area Council.

Methodology

Research Design

This study adopted the survey research design, which enables the collection of data from a subset of the study population that accurately represents the larger group. The survey approach is particularly useful for identifying the relative incidence, distribution, and relationships between variables related to childhood diarrhea management among mothers in Kwali Area Council. To achieve this, the study utilizes both questionnaires and in-depth interviews (IDI) as qualitative research instruments.

Population, Sample Size and Sampling Techniques

Though the total population of Kwali Area Council is put at 85,837 from the National Population Commission projection (NPC, 2006). However, the target population for this study is not the entire population of Kwali Area Council, but the married women, both young and adult women, who are between 18 years and above from selected electoral wards which include Dafa, Gumbo, Kilankwa, Kwali, and Yangoji. According to information from the department of research, statistics and planning of the council area from the five electoral wards, the population of married women from the selected electoral wards is 38,524 (Kwali Area Council Department of Research, Statistics and Planning, 2019). The choice of this category of persons (married women) was because they have children and know what it takes to manage the cases of diarrhoea on their children. In determining the sample size for this

study, Yamane (1967) statistics technique was used to determine the sample size. Detail of Yamane (1967) statistics formula for calculating sample size. Thus, showing as:

$$n = \frac{N}{1+N\,(e)^2}$$

Where;

N = Total Population
n = required sample size
e = margin error allowed (5%)
1 = Constant
Hence.
e = (0.05)2
N = 38,524

$$n = \frac{38{,}524}{1 + 38{,}525\,(0.0025)}$$

$$n = \frac{38{,}524}{38524\,(0.0025)}$$

$$n = \frac{38{,}524}{96.3125}$$

$$n = 399.98961713173 \quad \text{Apx: } n = 400$$

The study utilized a multistage sampling technique to select respondents in Kwali Area Council. In the first stage, five electoral wards (Dafa, Gumbo, Kilankwa, Kwali Central, and Yangoji) were chosen using simple random sampling (lottery method). In the second stage, four main streets with high population density were randomly selected from each ward, yielding 36 streets. In the third stage, systematic sampling was applied to select 11 houses/compounds with married women aged 18 years and above from each street, resulting in approximately 400 participants. In the fourth stage, respondents were randomly chosen from the selected households, including married individuals aged 18 years and above, who could also be household heads. For in-depth interviews, purposive sampling was used to select ten respondents (two from each ward), including community leaders, religious leaders, traditional rulers, women leaders, and health personnel, to provide insights aligned with the study objectives.

Method of Data Collection

The data for this study were generated through the quantitative method. The quantitative data involved the use of questionnaires, which were administered to all subjects in the areas sampled for the study to elicit information in line with the stated research objectives.

Method of Data Analysis

Data generated in the course of this study were collated, coded and analyzed using descriptive. First, the questionnaires were checked for completeness, accuracy of information and uniformity. The questionnaires were checked to see if there were errors and omissions, adequate information and legibility and relevant responses. Descriptive statistics analysis used simple frequency conversion of responses to percentages (i.e. the use of simple percentages method).

Analysis of the Findings

Table 1: Socio-Demographic Characteristics of Respondents (N=395)

Variables	Category	Frequency	Percentages
Age	18-25	120	30.4
	26-35	160	40.5
	36-45	85	21.5
	46 and above	30	7.6
Educations	No formal education	70	17.7
	Primary education	95	24.1
	Secondary education	150	38.0
	Tertiary education	80	20.3
Occupation	Housewife	110	27.8
	Trader	140	35.4
	Civil-servant	75	19.0
	Farmer	70	17.7
Monthly income	20,000	170	43.0
	21,000-50,000	150	38.0
	51,000-100,0000	55	13.9
	101000-and above	20	5.1
Total		395	100.0%

Source: Field Work, 2025

In terms of age distribution, the majority of respondents were between 26–35 years (40.5%), followed by those aged 18–25 years (30.4%). Respondents aged 36–45 years accounted for 21.5%, while only 7.6% were aged 46 years and above. This indicates that most of the mothers are within their active reproductive and childcare years. Regarding educational attainment, 38.0% of the respondents had secondary education, 24.1% had primary education, and 20.3% attained tertiary education, while 17.7% had no formal education. This reflects a moderate level of educational exposure among mothers, with a considerable proportion having at least some level of formal education, which is important for health literacy and proper child health management.

For occupation, the majority were traders (35.4%), followed by housewives (27.8%), civil servants (19.0%), and farmers (17.7%). This suggests that most mothers are engaged in informal economic activities or unpaid domestic roles, which may influence their financial capacity and access to health resources. In terms of monthly income, a significant proportion (43.0%) reported earning ₦20,000 or below, 38.0% earned between ₦21,000–₦50,000, 13.9%

earned ₦51,000–₦100,000, while only 5.1% earned ₦101,000 and above. This income pattern reveals a predominantly low-income population, which may have implications for the affordability and accessibility of diarrhoea management practices and health services.

Analysis of Study Objectives

Table 2: Prevalence and management practices of childhood diarrhoea among mothers in Kwali Area Council

Management practice	**Frequency (n)**	**Percentage (%)**
Use of oral rehydration solution	180	45.6
Herbal remedies	96	24.3
Increased breastfeeding/feeding	70	17.7
Self-prescribe antibiotics	30	7.6
No treatment	19	4.8
Total	**395**	**100.0**

Source: Field Work, 2025

Table 2: indicate that a majority of mothers (45.6%) used ORS for the management of childhood diarrhoea, which aligns with WHO recommendations. However, about one-quarter (24.3%) relied on herbal remedies, while 7.6% used antibiotics without prescription, potentially contributing to antimicrobial resistance. A notable 4.8% did not provide any treatment, reflecting gaps in awareness and access to effective care.

Table 2: Cross-Tabulation of Socio-Economic Characteristics and Management of Childhood Diarrhoea

Socio-Economic Factor	**Category**	**Major Management Practice Adopted**
Educational level	No formal education (64)	High reliance on herbal remedies (41%)
	Secondary & above (21)	High use of ORS (52%)
	₦20,000 (105)	Herbal remedies and delayed treatment (37%)
Monthly income	₦40,000 (148)	ORS and prompt health facility visits (61%)
Total	**395**	**100.0**

Source: Field Work, 2025

Education and income were strongly linked to appropriate management of childhood diarrhoea. Mothers with higher education and better income levels were more likely to use ORS and seek professional care, while those with low income and no formal education often resorted to traditional methods.

Table 3: Challenges Mothers Encounter in the Management of Childhood Diarrhoea

Challenges	Frequency (n)	Percentages (%)
Lack of funds for proper treatment	155	39.2
Inadequate access to health facilities	110	27.8
Cultural beliefs/traditional influence	78	19.7
Lack of awareness about ORS/home remedies	52	13.2
Total	**395**	**100.0**

Sources: Field Work, 2025

Table 3: show that the main challenge reported was lack of funds (39.2%), followed by poor access to health facilities (27.8%). Cultural influences also played a significant role (19.7%), indicating the need for health education and improved accessibility.

Table 4: Pathways Mothers Adopt in the Management of Childhood Diarrhoea

Pathways chosen	Frequency (n)	Percentages (%)
Public health facilities	142	36.0
Private clinics/pharmacies	110	27.8
Traditional healers/home remedy	98	24.8
Community health worker	45	11.4
Total	**395**	**100.0**

Sources: Field Work, 2025

Table 4 show that public health facilities were the most utilized pathway (36%), followed by private clinics (27.8%). However, nearly a quarter (24.8%) still relied on traditional healers or home remedies, indicating the persistence of non-formal treatment methods.

Discussion of Findings

The findings of this study provide significant evidence on the practice and treatment of childhood diarrhoea among Kwali Area Council mothers. The outcome is that oral rehydration solution (ORS) remains the most favored practice, with 45.6% of the mothers practicing it (Table 2). This outcome concurs with the World Health Organization (WHO) recommendation of ORS as a first-line treatment for childhood diarrhoea, which has been demonstrated to reduce morbidity and mortality substantially (WHO, 2017). However, the high reliance on herbal remedies (24.3%) and self-medication with antibiotics (7.6%) also suggests a long-term lack of adequate healthcare-seeking behavior, potentially placing children at risk for unsafe practice and transmission of antimicrobial resistance, as suggested by Oloruntoba et al. (2018).

The socio-economic profile and diarrhoea care practices cross-tabulation (Table 2) also shows educational level and household income's influence on health decisions. The less educated mothers and those with lower monthly earnings depended mostly on herbal treatment and delayed health facility visits (41% and 37%, respectively), whereas the secondary and higher-

educated mothers and better-income earners (₦40,000 and more) used more of the ORS and had earlier visits to health facilities (52% and 61%, respectively). This agrees with findings by Adeyemi et al. (2019), where they mentioned that maternal education contributes to enhancing knowledge in respect to effective diarrhoea management practices as well as the timely use of institutional care.

Issues raised by mothers in diarrhoea management among children (Table 3) are lack of money (39.2%), poor access to health facilities (27.8%), culture (19.7%), and insufficient awareness (13.2%). They explain structural and systemic barriers to successful diarrhoea control, consistent with UNICEF's (2020) observation that socioeconomic and cultural determinants significantly hinder diarrhoea prevention and treatment in peri-urban and rural Nigerian communities. The widespread influence of cultural belief underlines the need for context-appropriate health education campaigns to counter misconceptions about causation and treatment of diarrhoea.

For healthcare-seeking pathways (Table 4), most used were public health centers (36%), followed by private clinics and drugstores (27.8%). Still, nearly a quarter (24.8%) utilized traditional healers and home treatments, and a smaller proportion (11.4%) used the services of community health workers. This is typical of the co-existence of formal and informal health systems, and as noted by Iwu et al. (2021), accentuates the need for complementary integration of community-based health interventions with formal health systems to strengthen early case detection and management of diarrhoea.

Conclusion

This study examined the determinants of childhood diarrhoea management among mothers in Kwali Area Council, FCT, Abuja. The findings revealed that maternal age, education, and income significantly influenced the choice and effectiveness of diarrhoea management practices. Mothers with higher education and better income levels demonstrated improved knowledge and adoption of appropriate management methods, while younger and less educated mothers faced greater challenges in accessing effective care. These results underscore the importance of enhancing maternal socio-economic status and health education as crucial strategies for improving childhood diarrhoea management and reducing its prevalence in the study area.

Recommendations

i. Government and non-governmental organizations should strengthen healthcare infrastructure and ensure the availability of affordable diarrhoea management services, including oral rehydration therapy (ORT), zinc supplementation, and prompt medical consultation for children.
ii. There should be targeted health education campaigns should be intensified to improve mothers' knowledge and awareness about childhood diarrhoea prevention, early detection, and proper management techniques.
iii. The local council chairman should provide policies and programs aimed at improving women's income levels through skill acquisition, microfinance schemes, and

entrepreneurship support should be implemented.

iv. Community health workers should be trained and mobilized to provide household-level interventions, monitor diarrhoeal cases, and offer immediate guidance to mothers, especially in rural and underserved communities.

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