Int. j. adv. multidisc. res. stud. 2024; 4(6):374-377

Received: 01-10-2024
Accepted: 10-11-2024

International Journal of Advanced Multidisciplinary Research and Studies

ISSN: 2583-049X

Assessment of Diarrhea Disease and its Determinants among Children under Five Years in Selected Nursery Schools in Karu, Abuja

[1] Onyeforo Gwendolyn Ekele, [2] Sulyman Rukayat Olayinka, [3] Ibrahim Shamsiya, [4] Saba Grace Awawu, [5] Nworie Amos

[1, 2, 3, 4, 5] Department of Public Health, National Open University of Nigeria (NOUN), Abuja, Nigeria

DOI: https://doi.org/10.62225/2583049X.2024.4.6.3447
Corresponding Author: **Onyeforo Gwendolyn Ekele**

Abstract

Diarrhea disease is a leading cause of death among children under the age of five worldwide, ranking as one of the six causes of death. The pathogens that cause diarrhea are typically transmitted through the fecal-oral route, which includes consuming contaminated food, fluid, or coming into direct contact with infected stool. Ingestion of contaminated water is a means of transmission of diarrhea-causing pathogens. The study assessed diarrhea disease and its determinants among children under five years old in selected nursery schools in Karu, Abuja. An assessment of the disease and variables was carried out using a questionnaire in a descriptive research design. A total of 400 respondents were used for the study. Data collected were analyzed using the statistical package for social science software (SPSS 23.0) version. The results were presented using frequency tables. Inferential statistics such as the Chi-square were used to compare relationships between variables; significance was taken at the 0.05 level. The study revealed that a child's age had no significant effect on diarrhea disease. However, handwashing after using the toilet, education level of parents (caregivers), and source of water had a significant effect on diarrhea disease among children under five years old in selected Nursery schools in Karu, Abuja. There is a need to implement educational programs to enhance the knowledge of diarrhea disease, which has been identified as a critical factor influencing health. Additionally, the government should provide clean water for consumption and ensure adherence to sanitation practices among the populace.

Keywords: Assessment, Diarrhea, Disease, Childhood, Determinants

1. Introduction

Diarrhea in childhood is defined as passing three or more loose or watery stools within 24 hours, or an increase in stool frequency or liquidity. Globally, diarrhea disease causes approximately 2.5 million deaths among children under five every year. This makes diarrhea disease the second most significant factor contributing to mortality in this age group. The prevalence of diarrhea brought on by enteric bacteria and protozoans has significantly decreased over the past few decades due to increased handwashing awareness, but viral diarrhea has been less affected (Tagbo *et al*., 2019) [9]. Approximately 494 million individuals still defecate in public, according to this estimate. Regionally, Sub-Saharan Africa has the lowest coverage, with only 33% of the population accessing basic sanitation. Among children under five, breastfeeding and water disinfection using chlorine were protective factors against the spread of diarrhea. For example, reports from scholars in other parts of the world that, despite efforts to control the spread of diarrhea disease, the burden remains high. Studies conducted in Sub-Saharan African (SSA) countries, such as Ethiopia and Ghana, discovered a high prevalence of diarrhea among children under the age of five. According to (Pires *et al*., 2015) [8]. Studies by Akombi *et al.* (2017) [3] showed that children who experienced a recent episode of diarrhea were at a greater risk of being stunted in comparison with those who did not have any recent occurrences of diarrhea. Diarrhea-causing pathogens are typically transmitted through the fecal-oral route, which involves consuming contaminated food, fluid, or direct contact with infected stools. Drinking contaminated water can transmit diarrhea-causing pathogens. Unclean packaging used for storage, using unclean hands during meal time, or exposure to contaminated water can all contribute to contamination. This study will therefore assess the determinants of diarrhea among children under five years in selected nursery schools in Karu, Abuja.

2. Materials and Methods

The study employed a cross-sectional correlational design and a descriptive survey design to assess the diarrhea disease and its determinants among children under five years old in Karu, Abuja. The study was carried out in Karu, Abuja. The population includes diverse individuals residing in this area, representing a wide range of demographic backgrounds, including various age groups, ethnicities, and socioeconomic statuses. The study provided valuable insights into the dynamics of urban life in the context of healthcare, social interactions, and various cultural practices. A stratified random sampling technique was used to choose the sample respondents. Since the study adopted the questionnaire format, the respondents were selected randomly, and the questions were given to them accordingly. The sample for this research was calculated using the Taro Yamane (Yamane, 1973) [11] formula with a 95% confidence level. The data collection technique used was a well-structured questionnaire and interview sessions. The questionnaire included both open-ended and closed-ended question types to gather correct data from respondents on the research problem. The questionnaire was divided into two sections. Section one elicited questions on the socio-demographic data from the respondents, while Section two asked questions to prompt adequate responses to their knowledge of diarrhea disease and its determinants.

Simple percentage formula was used to analyze data from the survey and the data was analyzed using the Statistical Package for Social Science Software (SPSS 23.0 version). The research hypothesis was tested at a 0.05 (5%) level of significance using the Pearson correlation coefficient.

Ethical clearance was obtained from the Federal Capital Territory Health Research Ethics Committee, Abuja. To maintain confidentiality, study participants were requested to provide written informed consent and their data was not requested. Respondents were required to voluntarily affirm their consent and willingness to provide necessary responses to questions, with the assurance of complete confidentiality of the responses provided and the freedom to opt out without penalty.

3. Results and Discussion

Test for hypothesis

Ho_1: Hypothesis (H_{01}): Hand washing with soap after using the toilet had no effect on the prevalence of diarrhea disease among children under five years old in selected nursery schools in Karu, Abuja.

Table 1 showed the P value of hand washing after using the toilet is 0.006. This implies that there was a statistical significant association ($p< 0.05$) between the respondent's washing their child's hands with soap after using the toilet and diarrhea disease.

Table 1: Hand washing with soap after using the toilet as a contributing factor to the frequency of diarrhea episodes among the respondent's child/children

	Prevalence of Diarrhea in the last four (4) four months?			χ^2	
	Yes	No	Total		
Variables	**F (%)**	**F (%)**	**F (%)**		**P-Value**
Do you wash your child's hands with soap after using the toilet?					
Yes	134 (33.5)	202 (50.5)	336 (84.0)		
No	37 (9.3)	27 (6.8)	64 (16.0)	7.063	0.006
Total	171 (42.8)	229 (57.3)	400 (100.0)		

Hypothesis (H_{02}): Source of water has no influence on diarrhea disease among children under five years old in selected nursery schools in Karu, Abuja.

Table 2 indicated that the p-value for the source of water was 0.006. This implies that there was a statistical significant association ($p< 0.05$) between the respondent's source of water on the influence of diarrhea disease.

Table 2: Source of water as a contributing factor to the frequency of diarrhea episode among the respondent's child/children

	Prevalence of Diarrhea in the last four (4) four months?			χ^2	
	Yes	No	Total		
Variables	**F (%)**	**F (%)**	**F (%)**		**P-Value**
What is your source of water? Pipe borne	32 (8.0)	97 (24.3)	129 (32.3)		
Stream	10 (2.5)	10 (2.5)	20 (5.0)		
Well	24 (6.0)	40 (10.0)	64 (16.0)		
Borehole water	31 (7.8)	147 (36.8)	178 (44.5)		
Sachet water	0 (0.0)	1 (0.3)	1 (0.3)		
Pipe borne & well	0 (0.0)	1 (0.3)	1 (0.3)	21.662	0.006
Table water & sachet water	1 (0.3)	4 (1.0)	5 (1.3		
Borehole and well	1 (0.3)	0 (0.0)	1 (0.3)		
Bottle water & sachet water	0 (0.0)	1 (0.3)	1 (0.3)		
Total	99 (24.8)	301 (75.3)	400 (100.0)		

Hypothesis (H_{03}): The educational qualification of parents (caregivers) had no influence on the prevalence of diarrhea

Table 3 Indicated that the p-value for educational qualification is 0.000. This implies that there was a statistical significant association ($p< 0.05$) between the respondent's educational qualifications as an influencing factor of diarrhea disease.

Table 3: Educational Qualification of the respondents as an influencing factor for the prevalence of diarrhea disease

	Prevalence of Diarrhea in the last four (4) four months?				
	Yes	No	Total	χ^2	
Variables	**F (%)**	**F (%)**	**F (%)**		**P-Value**
Highest Educational Qualification					
WASSCE	54 (13.5)	30 (7.5)	84 (21.0)		
OND/HND/BSC	83 (20.8)	146 (36.5)	229 (57.3)		
MSC/PGD	27 (6.8)	44 (11.0)	71 (17.8)	20.531	0.000
PhD	7 (1.8)	9 (2.3)	16 (4.0)		
Total	171 (42.8)	229 (57.3)	400 (100.0)		

Hypothesis (H_{04}): Child's age had no influence on diarrhea disease among children under five years old in selected nursery schools in Karu, Abuja.

Table 4 indicated that the P-value for child's age was 0.524. This means that there was no statistical significant association ($p< 0.05$) between the respondent's child's age as an influencing factor of diarrhea disease.

Table 4: Respondents child's age as an influencing factor for the prevalence of diarrhea disease

	Prevalence of Diarrhea in the last four (4) four months?			χ^2	
	Yes	No	Total		
Variables	**F (%)**	**F (%)**	**F (%)**		**P-Value**
Child's Age in Nursery School					
1 Year old	14 (3.5)	22 (5.5)	36 (9.0)		
2 years old	39 (9.8)	48 (12.0)	87 (21.8)		
3 years old	56 (14.0)	64 (16.0)	120 (30.0)	3.205	0.524
4 years old	38 (9.5)	49 (12.3)	87 (21.8)		
5 years old	24 (6.0)	46 (11.5)	70 (17.5)		
Total	171 (42.8)	229 (57.3)	400 (100.0)		

The World Health Organization defined diarrhea as "the passage of three or more loose or liquid stools per day or more frequent passage than is normal for the individual" (WHO, 2005; Ugboko *et al.*, 2021). Diarrhea has frequently been ranked as one of the six causes of death, the top three causes of death for infectious disease, and the top two causes of death considering years of life lost, according to reports (Ajide *et al.*, 2021).

The result of this research showed that a statistically significant association ($p<0.05$) was observed between the respondents washing their child's hand with soap after using the toilet, source of water supply, and education level; these variables are shown as contributing factors to the occurrence of diarrhea among the respondents. However, there was no statistical association between a child's age in nursery school and the prevalence of diarrhea disease among the respondents' children. According to Ugboko *et al.* (2021), the percentage of respondents that use borehole water is 16.79% and 27.27% for controls, and cases do not correspond with the percentage that consume borehole water (44.5%) in this present study. It was revealed that there was a significant association between hand washing with soap after using the toilet, and this aligns with what Ejemot *et al.* (2015) said, "proper hand hygiene significantly reduces the risk of diarrhoeal diseases by interrupting the transmission of fecal-oral pathogens".

Research studies conducted by Checkley *et al.* (2008) [4] and Liu *et al.* (2012) do not agree with the findings of this study that age cannot play a significant role in the prevalence of diarrhea. The study further identified another significant association between the highest educational qualifications and the prevalence of diarrhea. The observation that children born by mothers with at most West African Senior School Certificate Examination (WASSCE) are more predisposed to have diarrhea than a child of a more educated mother and this is supported by studies conducted in Lagos by Akinyemi (2019) [2] and Osun and Oyo State (Mesagan *et al.*, 2018) [6]. In every community, literacy has long been identified as a key factor influencing health, particularly for female education. Women with higher levels of education are more aware of proper nutrition, personal hygiene, and how to use the healthcare system (Ugboko *et al.*, 2021).

4. Conclusion

The study concluded that some significant contributing factors can keep children safe from episodes of diarrhea and its frequency. The observed factors among the respondents included; hand washing after using the toilet, the source of water supply, and the educational level of parents (caregivers). However, no significant association was found between the child's age and diarrhea disease. Most of the respondents of this study are aware of diarrhea disease and would promote personal hygiene among their children.

5. Recommendations

1. Increase awareness of the diarrhea disease and its determinants.
2. The government should implement effective educational programs that emphasize environmental health and sanitation practices.
3. The government should provide clean water for consumption
4. Parents /caregivers should proceed to the hospital for proper treatment and guidance once they observe the signs and symptoms of diarrhea among their children.
5. The government should provide clean and good sanitary facilities for the populace.

6. Acknowledgment

We thank Professor Nworie Amos for his mentorship and contribution to this work.

7. Funding

No financial support.

8. Conflicting Interest

No conflict of interest.

9. References

1. Ajide BA, Sobayo AA, Kanyi OI. Prevalence of Rotavirus in Children with Diarrhea Attending Hospitals in Nasarawa State as a case study. Asian Journal of Immunology. 2020; 4(4):36-46.

2. Akinyemi YC. Spatial pattern and determinants of diarrhoea morbidity among under-five-aged children in Lagos State, Nigeria. Cities & Health. 2019; 6(1):180-119.
3. Akombi BJ, Agho KE, Hall JJ, Wali N, Renzaho AMN, Merom D. Stunting, Wasting and Underweight in Sub-Saharan Africa: A Systematic Review. International Journal of Environmental Research and Public Health. 2017; 14(8):863.
4. Checkley W, Buckley G, Gilman RH, Assis AMO, Guerrant R L, Morris SS, *et al*. The Childhood Malnutrition and Infection Network. Multi-country analysis of the effects of diarrhoea on childhood stunting. International Journal of Epidemiology. 2008; 37(4):816-830.
5. Ejemot-Nwadiaro RI, Ehiri JE, Arikpo D, Meremikwu MM, Critchley JA. Hand-washing promotion for preventing diarrhoea. The Cochrane database of systematic reviews. 2021; 12(1)CD004265.
6. Mesagan PE, Adeniji-Ilori OM. Household Environmental Factors and Childhood Morbidity in South-Western Nigeria. Fudan Journal of the Humanities and Social Sciences. 2018; 11(3):411-425.
7. Liu L, Oza S, Hogan D, Perin J, Rudan I, Lawn J, *et al*. Global, regional, and national causes of child mortality in 2000-13, with projections to inform post-2015 priorities: An updated systematic analysis. Lancet (London, England). 2015; 385(9966):430-440.
8. Pires SM, Fischer-Walker CL, Lanata CF, Devleesschauwer B, Hall AJ, Kirk MD, *et al*. Aetiology-Specific Estimates of the Global and Regional Incidence and Mortality of Diarrhoeal Diseases Commonly Transmitted through Food. PLoS ONE. 2015; 10(12):e0142927.
9. Tagbo BN, Chukwubike CM, Ezeugwu RI, Ani EO. Adenovirus and Rotavirus Associated Diarrhoea in under 5 Children from Enugu Rural Communities, South East Nigeria. World Journal of Vaccines. 2019; 9(3):123-130.
10. WHO diarrheal disease Fact sheet, 2015.
11. Yamane T. Statistics: An Introductory Analysis. 2nd Edition. New York, Harper & Row, 1973, 886.