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The Effect of Health Education in the Prevention and Control of Gastrointestinal Infection in Internally Displaced Persons (IDPS) Camp in Gwoza Local Government Area, Borno State

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Abstract

Background: Gastrointestinal infections remain a significant global health challenge, particularly affecting vulnerable populations such as the elderly, young children, and other individuals in particular the Internally Displaced Persons (IDPs). As of in 2024 study had shown that. Globally, there are approximately 48 million internally displaced persons (IDPs) who have fled conflict and violence.

Methods: The study investigated the effect of health education on the prevention and control of gastrointestinal infections among internally displaced persons (IDPs) in Gwoza Local Government Area, Borno State, Nigeria using quasi-experiment and 150 participants were selected by systematic sampling technique.

Results: The results revealed a significant increase in the number of IDPs who recognized diarrhea as a life-threatening disease, with 73% of respondents agreeing after the health education intervention, compared to 61% before the intervention. Similarly, the number of IDPs who understood the preventability of diarrhea increased from 75% to 87% after the health education intervention. Furthermore, the study found that health education increased IDPs' knowledge about the strategies health educators can use to prevent and control gastrointestinal infections, with 87% of respondents agreeing that raising awareness and expanding knowledge about gastrointestinal infections is essential.

Conclusions: The study concluded that health education is a vital component in reducing the incidence of gastrointestinal infections among IDPs and recommends that health education programs should be integrated into all programs to improve health outcomes in IDP camps.

Keywords: Health Education, Gastrointestinal Infection, Internally Displaced Persons, Diarrhoea, Prevention.

Introduction

Gastrointestinal infections remain a significant global health challenge, particularly affecting vulnerable populations such as the elderly, young children, and other individuals, including the Internally Displaced Persons (IDPs).[1] Globally, there are approximately 48 million internally displaced persons (IDPs) who have fled conflict and violence.[2] Internally Displaced Persons (IDPs) are individuals who have been forced to leave their habitual residences but have not crossed an internationally recognized state border. This distinguishes them from refugees, who cross borders [4]. Internal displacement occurs for a variety of reasons, including armed conflict, natural disasters, and the growing effects of climate change. This displacement is often accompanied by significant human rights violations, exacerbating the vulnerability of IDPs. Despite this, the health of IDPs is understudied compared to other groups affected by conflict, such as refugees and migrants.[3] Given the growing numbers of IDPs due to conflict and violence, and the severe disadvantages they face, the lack of a comprehensive understanding of their health outcomes is a significant gap in global public health research.[4] One of the most pervasive health issues globally, particularly among vulnerable populations like IDPs, is infectious gastroenteritis. This condition is a global health challenge, especially severe among infants, the elderly and immune-compromised individuals, where it can lead to hospitalization due to the risk of dehydration.[5]

According to the World Health Organization (WHO) and the United Nations International Children's Emergency Fund (UNICEF), approximately 1.7 billion cases of diarrheal disease occur each year, resulting in the deaths of approximately 525,000 children under the age of five.[6] Infectious gastroenteritis is caused by a variety of pathogens, including bacteria, viruses, and protozoa. Identifying the specific causative agent based on symptoms alone is often challenging, making rapid and accurate diagnostics crucial for effective treatment and prevention.[7] Diarrhea, one of the main symptoms of infectious gastroenteritis, is defined by the WHO as the passage of three or more loose or liquid stools per day or more frequently than is normal for the individual.[8] It is often accompanied by other symptoms such as vomiting, fever, and abdominal pain.[9] Diarrhea can be caused by various infectious agents, including bacteria, viruses, and parasites, as well as non-infectious factors such as food allergies or new medications.[10] Most diarrheal pathogens are transmitted via the fecal-oral route, primarily through contaminated food, water, and poor hygiene practices.[11] This mode of transmission is

especially concerning in IDP camps, where overcrowded conditions, inadequate sanitation, and lack of clean water facilitate the spread of disease. There are three primary clinical types of diarrheas: Acute Watery Diarrhea (AWD), dysentery, and persistent diarrhea.[12] AWD typically lasts less than two weeks and is commonly caused by rotavirus, accounting for around 40% of hospital admissions due to diarrheal diseases globally.[13] Dehydration is the most common complication of AWD, especially dangerous in infants and young children due to their higher body water content and faster fluid turnover.[14] Dysentery, characterized by diarrhea with blood and mucus, accounts for approximately 10% to 15% of diarrheal episodes in children under five, yet up to 25% of diarrhea-related deaths in this age group.[15]

According to [16], diarrhea accounts for 9% of all deaths among children under five, translating to 1,400 child deaths per day, primarily in sub-Saharan Africa and South Asia. In Somalia, for example, the prevalence of diarrhea among children under five years old is 19%, with over 78,000 cases of Acute Watery Diarrhea (AWD) and cholera recorded in 2017, resulting in 1,159 deaths.[17] Access to clean water and improved sanitation are critical to reducing the transmission of diarrheal diseases. However, according to [18], approximately 2.2 billion people still lack access to safely managed drinking water, and 4.2 billion people lack safely managed sanitation services. In Nigeria, while 80% of the population had access to basic drinking water services in 2022, only 25% had access to improved sanitation.[19] Open defecation remains widespread, particularly in rural areas, contributing to the high prevalence of waterborne diseases.[20] Poor hygiene practices, such as inadequate hand washing with soap, further contribute to the spread of diarrheal pathogens, particularly in IDP camps where overcrowding and lack of resources are prevalent.[21] IDP populations face additional health risks due to overcrowding, poor sanitation, and inadequate access to clean water and healthcare. These factors contribute to outbreaks of diseases such as cholera, particularly affecting children and women.[22] Health education, focusing on proper sanitation and hygiene practices, is crucial for preventing and controlling gastrointestinal infections among IDPs.[23] This study will assess the impact of health education on the prevention and control of gastrointestinal infections among IDPs in Gwoza Local Government Area, Borno State, Nigeria, with the aim of reducing the prevalence of infectious gastroenteritis and improving overall health outcomes in this vulnerable population.

Internally Displaced Persons (IDPs) have been among the vulnerable groups at risk of gastrointestinal infections globally, which pose a global health challenge, particularly affecting the elderly, young children, and individuals with compromised immune systems.[24] These infections commonly target the stomach or intestines, often leading to diarrhea. Although gastrointestinal infections are self-limiting and resolve within a few days without medical intervention in some individuals, certain groups, including young children, the elderly, and those with chronic illnesses, face increased risks of dehydration and complications, often necessitating medical attention.[25] Gastrointestinal infections can be caused by a variety of pathogens, including bacteria, viruses, and parasites. The similarity in symptoms makes it difficult to distinguish between these different etiologies without diagnostic testing. The specific microorganisms responsible for gastrointestinal infections vary depending on geographic location, socioeconomic development, and levels of sanitation and hygiene.[26]

In Nigeria, particularly in Borno State, over a decade of Boko Haram insurgency has further weakened healthcare systems and worsened access to clean water, sanitation, and hygiene services. The ongoing instability has significantly contributed to the spread of diarrheal diseases in areas like Gwoza, where insecurity has disrupted basic healthcare and health education initiatives.[27] Although numerous studies have explored the global determinants of gastrointestinal infections.[28] There is a notable lack of research examining the impact of health education on the prevention and control of gastrointestinal infections, especially within internally displaced populations (IDPs). This study aims to fill that gap by generating data on the prevalence, prevention, and control of gastrointestinal infections among IDPs in Gwoza Local Government Area, Borno State. Therefore, the general objective is to determine the effect of Health Education in the prevention and control of gastrointestinal infection among Internally Displaced Persons in Gwoza Local Government Area in Borno State. The specific objectives are to assess the level of awareness and knowledge of IDPs on the prevention and control of gastrointestinal infection in Gwoza Local Government Area, Borno State, to identify specific,

actionable strategies that health educators use to effectively prevent and control gastrointestinal infections in IDP camps in Gwoza Local Government Area, Borno State, determine the post-intervention effect of Health Education in the prevention and control of gastrointestinal infection in IDP camps in Gwoza Local Government Area, Borno State.

Methods

A quasi-experimental design was used. Internally Displaced Persons (IDPs) who have been there for at least six months in Gwoza LGA of Borno State. Internally Displaced Persons (IDPs) who have been there for at least six months in Gwoza LGA of Borno State but found to have auditory impairment. The researcher employed a systematic sampling technique to select participants. This involved listing all individuals within the camp clusters of 1000 individuals and selecting every k-th individual from the list of individuals. To take care of attrition, the sample size was increased to 150 individuals, ensuring a manageable yet representative subset for the study. By systematically selecting every 7th individual, the researcher ensured that the sample was representative of the target population. This method allowed for efficient and unbiased data collection within the IDP camps.

The technique used in the study was questionnaires, which were both closed and open-ended. It enabled the researcher to reach a large number of respondents. Questionnaires were used for data collection because they offer considerable advantages in the administration: questionnaires present an even stimulus to large numbers of people simultaneously and provide the investigator with an easy accumulation of data. They give respondents freedom to express their views or opinions and to make suggestions. The questionnaires were divided into two parts. The first part of the questionnaire was the introduction, and it explained the purpose of the questionnaire, stating clearly that the data obtained is for academic purposes. It also explained the instructions on how to answer the questions. The other parts covered questions regarding personal data.

A letter of introduction duly signed seeking permission to research the effect of Health Education in the prevention and control of gastrointestinal infection in the Internally Displaced Persons (IDPs) camp in Gwoza Local Government Area, Borno State. The letter will give the researcher easy access to the respondents in the IDPs camp in Gwoza L.G.A. A total of 150 copies of the instrument were administered to the respondents with the help of the research assistants. The researcher utilized a structured fixed-response questionnaire as the primary data collection instrument. The returned questionnaires were collated and cross-checked for completeness. Frequency and percentage were used to analyze the data and answer the research questions. The highest modal frequency was used to determine the effect of health education on the prevention and control of gastrointestinal infections. A t-test was employed to test the hypotheses, comparing the mean scores of the experimental and control groups.

RESULTS

Table 1: Baseline Responses on the level of awareness and knowledge of IDP on the prevention and control of gastrointestinal infection before Health Education

S/N	ITEM	SA	A	U	D	SD	Agreed	Disagreed	Total
	Diarrhea is a life-threatening disease	57 38%	34 23%	9 6%	34 23%	16 10%	91 61%	59 39%	150 100%
2.	Diarrhea is a non-contagious disease	37 25%	28 19%	14 9%	51 34%	20 13%	65 44%	85 56%	150 100%
3.	Diarrhea can be prevented	69 46%	43 29%	4 3%	26 17%	8 5%	112 75%	38 25%	150 100%
4.	Diarrhea can be controlled at home	22 15%	35 23%	7 5%	63 42%	23 15%	57 38%	93 62%	150 100%

5.	Diarrhea can be treated with oral rehydration solution.	45 30%	28 19%	6 4%	49 33%	22 14%	73 49%	77	51%	150 100%	

Table 2: Level of awareness and knowledge of IDP on the prevention and control of gastrointestinal infection after Administering Health Education

S/N	ITEM	SA	A	U	D	SD	Agreed	Disagreed	Total
1	Diarrhea is a life-threatening disease	70 (47%)	40 (27%)	15 (10%)	18 (12%)	7 (5%)	110 (73%)	40 (17%)	150 (100%)
2	Diarrhea is a non-contagious disease	30 (20%)	32 (21%)	22 (15%)	44 (29%)	22 (15%)	62 (41%)	88 (44%)	150 (100%)
3	Diarrhea can be prevented	85 (57%)	45 (30%)	5 (3%)	8 (5%)	7 (5%)	130 (87%)	20 (10%)	150 (100%)
4	Diarrhea can be controlled at home	50 (33%)	40 (27%)	15 (10%)	30 (20%)	15 (10%)	90 (60%)	60 (30%)	150 (100%)
5	Diarrhea can be treated with oral rehydration solution	65 (43%)	50 (33%)	10 (7%)	20 (13%)	5 (3%)	115 (77%)	35 (17%)	150 (100%)

Table 3: Responses on the role of Health Educators in the prevention and control of gastrointestinal infection

S/N	ITEM	SA	A	U	D	SD	Agreed	Disagreed	Total
	Washing of hands after using toilets	55 37%	37 24%	5 3%	43 29%	10 7%	92 61%	58 39%	150 100%
2.	Cleaning of the surrounding environment	61 41%	42 28%	7 5%	23 15%	17 11%	103 69%	47 31%	150 100%
3.	Educating the people on the uses of ORT and salt sugar solution and how to prepare them during diarrhea help to prevent dehydration	72 48%	45 30%	6 4%	16 11%	11 7%	117 78%	33 22%	150 100%
4.	By educating the people on the prevention of diarrhea	61 41%	37 25%	10 7%	28 19%	14 9%	98 65%	52 35%	150 100%
5.	By organizing seminars on the importance of WASH	67 45%	41 27%	9 6%	18 12%	15 10%	108 72%	42 28%	150 100%

Table 4: Responses on the strategies health Educators can use in the prevention and control of gastrointestinal infection in IDPs camp (Before Administering Health Education)

S/N	ITEM	SA	A	U	D	SD	Agreed	Disagreed	Total

	To raise awareness on the prevention and control of gastrointestinal infection in IDPs camp	64 43%	39 26%	32 %	27 18%	17 11%	103 69%	47	31%	150 100%
2.	To expand the knowledge of the people on the prevention and control of gastrointestinal infection in IDPs camp	59 39%	36 24%	8 5%	19 13%	28 19%	95 63%	55	37%	150 100%
3.	By informing the public on the causes of gastrointestinal infection and its prevention	73 49%	44 29%	4 3%	14 9%	15 10%	117 78%	33	22%	150 100%
4.	By influencing people behaviour and attitude using basic health information	62 41%	34 23%	7 5%	21 14%	26 17%	96 64%	54	36%	150 100%
5.	By providing modern facilities in the toilets	54 36%	38 25%	11 7%	27 18%	20 14%	92 61%	58	39%	150 100%

Table 5: Knowledge of the Strategies Health Educators Can Use in the Prevention and Control of Gastrointestinal Infection in IDP Camps (After Administering Health Education)

S/N	ITEM	SA	A	U	D	SD	Agreed	Disagreed	Total
1	To raise awareness on the prevention and control of gastrointestinal infection in IDP camps	80 (53%)	50 (33%)	5 (3%)	10 (7%)	5 (3%)	130 (87%)	15 (10%)	150 (100%)
2	To expand the knowledge of the people on the prevention and control of gastrointestinal infection in IDP camps	75 (50%)	55 (37%)	5 (3%)	10 (7%)	5 (3%)	130 (87%)	20 (13%)	150 (100%)
3	By informing the public on the causes of gastrointestinal	85 (57%)	45 (30%)	5 (3%)	10 (7%)	5 (3%)	130 (87%)	20 (13%)	150 (100%)

	infection and its prevention								
4	By influencing people's behavior and attitude using basic health information	78 (52%)	50 (33%)	7 (5%)	10 (7%)	5 (3%)	128 (85%)	22 (15%)	150 (100%)
5	By providing modern facilities in the toilets	70 (47%)	50 (33%)	10 (7%)	15 (10%)	5 (3%)	120 (80%)	30 (20%)	150 (100%)

Table 6: Mean score, standard deviation, mean difference and paired "t" test of pre and post and test

Knowledge	Mean score	Std Deviation	Mean difference	t-test	P. value
Pre test	1.269	0.479	0.555	16.20	0.001
Post test	1.824	0.377			

Discussion

The results from Tables 1 and 2 revealed that 61% of the respondents agreed that diarrhea is a life-threatening disease, 44% agreed that diarrhea is a non-contagious disease, 75% agreed that diarrhea can be prevented, 38% of the respondents agreed that diarrhea can be controlled at home, 49% agreed that Diarrhea can be treated with oral rehydration solution. Regarding awareness and knowledge of gastrointestinal infections, specifically diarrhea, following health education intervention, the result showed that the health education initiative has successfully improved awareness about the seriousness and preventability of diarrhea among IDPs, with notable knowledge of ORS. However, there are gaps in understanding regarding its contagious nature and home management, indicating areas for further educational focus. In evaluating the baseline awareness and knowledge of IDPs about gastrointestinal infections before health education, it was notable that 61% recognized diarrhea as a life-threatening disease. However, misconceptions were evident; for instance, 56% disagreed that diarrhea is a non-contagious disease. The educational intervention significantly improved the respondents' understanding, with 73% acknowledging diarrhea's severity and 87% understanding its preventability post-education. This indicates a successful health education initiative, aligning with findings[29], which emphasised the importance of health education in enhancing disease awareness among vulnerable populations. Despite the overall improvement, gaps remained in understanding the home management of diarrhea, with only 60% agreeing that it can be controlled at home after the intervention. This highlights a critical area for further educational initiatives, suggesting that more emphasis should be placed on practical home-based care strategies, as effective management at the household level can significantly reduce morbidity and mortality associated with diarrhea.[30]

Result from Table 3 revealed that 61% of the respondents agreed that washing of hands after using toilets prevents and control gastrointestinal infection, 69% agreed that cleaning of the surrounding environment, 78% agreed that by educating the people on the uses of oral rehydration therapy and salt sugar solution and how to prepare them during diarrhea help to prevent dehydration, 69% agreed that by educating

the people on the prevention of diarrhea is one of the role of Health Educators in the prevention and control of gastrointestinal infection. 72% agreed that organizing seminars is one of the roles of Health Educators in the prevention and control of gastrointestinal infection. It was also revealed that 69% agreed that raising awareness on the prevention and control of gastrointestinal infection in IDP camps is one of the strategies health Educators can use in the prevention and control of gastrointestinal infection in IDP camps. Therefore, the majority of the respondents agreed that by informing the public on the causes of gastrointestinal infection and its prevention, the strategies health Educators can use in the prevention and control of gastrointestinal infection in IDP camps. The results regarding the role of health educators demonstrate a clear consensus among respondents on the essential practices for preventing and controlling gastrointestinal infections. The majority agreed on the importance of hand hygiene (61%), environmental cleanliness (69%), and educating communities about oral rehydration therapy (78%). These findings resonate with existing literature that emphasizes the pivotal role of health educators in fostering community awareness and behavior change through effective communication strategies.[31]

Table 5 outlines the responses of internally displaced persons (IDPs) regarding their knowledge of strategies health educators can employ to prevent and control gastrointestinal infections after receiving health education. A significant 87% believe that raising awareness about the prevention and control of gastrointestinal infections is essential, with 53% indicating strong agreement. Similarly, 87% agree on the importance of expanding knowledge in this area, with 50% strongly agreeing. In terms of public information dissemination, 87% feel that informing the public about the causes and prevention of gastrointestinal infections is vital, with 57% expressing strong agreement. Additionally, 85% agreed that influencing behavior and attitudes through basic health information is effective, with 52% strongly agreeing. Finally, 80% believe that providing modern toilet facilities is crucial for infection control, although only 47% strongly agreed.

Overall, the health education initiative has effectively increased IDPs' understanding of various strategies to prevent and control gastrointestinal infections, highlighting the importance of awareness, knowledge expansion, behavior modification, and improved sanitation facilities. Table 6 presents the mean score, standard deviation, mean difference, paired t-test, and p-value for the pre-test and post-test knowledge scores of the respondents. The mean score for the pre-test knowledge was 1.27, with a standard deviation of 0.48, indicating that the respondents had a relatively low level of knowledge about Cholera before the educational intervention. The mean score for the post-test knowledge was 1.82, with a standard deviation of 0.37, indicating that the respondents' knowledge of Cholera significantly improved after the educational intervention.

Hand washing complies with manually getting rid of visible short-term contaminants from hands by using soap and water.[32] Antiseptic hand wash involves performing hand washing with any detergents which have an antiseptic content. Hand washing may seem to be an easy task, but certain measures are essential to follow to decrease the number of microbes on hands and prevent infection.[33] The steps necessary to be followed include first taking away any rings or bracelets from the wrist or fingers and wetting the hands with water. Then soap is added and all folds and surfaces of the hands, including the back of the hand and nails, must be lathered and cleaned with the soap for not less than 15 seconds. Hand washing with soap and water is always more efficient in removing and reducing the number of microbes on the hands. It is more effective to perform both hand hygiene and use antiseptic alcohol base hand rubs. The use of alcohol hand sanitizers is mostly implemented when there is no soap and water. Other instances hinder the individual’s ability to perform hand washing with soap and water. The use of alcohol hand-based disinfectants containing 60% alcohol is used in such cases.[34]

Moreover, the strong support for organizing seminars on WASH (Water, Sanitation, and Hygiene) indicates a community readiness to engage in discussions that promote health education.[35] This suggests a proactive approach among IDPs to tackle the challenges associated with gastrointestinal infections, reflecting potential for community mobilization in health promotion efforts. The knowledge of strategies that health educators can utilize to prevent and control gastrointestinal infections shows a significant shift following the health education

intervention.[36] The statistical analysis of pre- and post-intervention knowledge scores indicated a significant improvement, with a paired t-test revealing a p-value of 0.001. The mean score increased from 1.269 pre-intervention to 1.824 post-intervention, illustrating the effectiveness of the health education initiative. This reinforces the notion that structured educational programs can lead to enhanced knowledge and behavioral change among vulnerable populations.[37] The findings underscore the critical role of health education in enhancing awareness and knowledge about gastrointestinal infections among IDPs in Gwoza Local Government Area.

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Declarations

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