Core Curriculum in Basic Health Promotion Interventions Implementation Challenges During 2022 Flood Disaster in Kogi East Senatorial District: Implications on Pupils' Academic Achievement.

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Abstract
This study examined core curriculum in basic health promotion interventions strategic implementation challenges on pupils' academic achievement during 2022 flood disasters in Kogi East Senatorial District (KESD). It investigated the performance of male and female pupils, influence of urban and rural locations on pupils' achievement and the impact of different income levels on pupils' learning outcomes during 2022 flood disaster. The study employed a quantitative research method to investigate implications of 2022 flood disasters on pupils' academic achievement in Core Curriculum Basic Health Promotion Intervention Strategies (CCBHPIS). All the basic education pupils in KESD formed the target population but the researcher sampled 200 subjects using three Research Questions and three hypotheses to guide the study. The questionnaire was the instrument used to collect data and it was analyzed using descriptive statistics, two-way ANOVA and post-hoc analysis. The findings revealed a significant difference between male and female pupils' achievement with males achieving higher scores. However, no significant differences were observed between urban and rural pupils. There was a significant difference in achievement between high and low-income pupils with high-income pupils exhibiting better academic achievement. These findings underscore importance of gender-sensitive interventions, equitable access to quality CCBHPIS to support low-income pupils to enhance their academic achievement in health promotion interventions during flood disasters. It also recommends the need for disaster preparedness measures in education system to mitigate impact of future flood disasters on pupils' academic achievement.

Keywords: Core-Curriculum, Flood-disaster, Basic-Health-Promotion, Intervention strategies, achievement.

Background of the Study

Flood disasters pose significant challenges to communities worldwide, including adverse implications for educational systems and academic achievement. In the specific context of 2022 flood disasters in Kogi East Senatorial District, this study aims to explore implications of these events on pupils' academic achievement in basic health promotion intervention strategic implementation. The effects of flooding on children's education have been the subject of various studies conducted in different regions facing flood-induced vulnerabilities (Ajodo and Olawepo,

2021). Hence, it becomes imperative to redesign core curriculum in basic health promotion intervention strategies to tackle incidence of flood disasters annually in KESD.

Review of Related Literature

Here, effort has been made to review relevant related literature related to this study. A core curriculum is designed to ensure that all students receive a common foundation of knowledge and skills, regardless of their individual interests or career goals. It serves as a basis upon which more specialized or elective courses can be built. The aim is to provide students with a well-rounded education that equips them with essential skills for academic success and for functioning effectively in society. The term "core curriculum" refers to a set of educational courses or subjects that are considered fundamental and essential for all students within a particular educational institution or system. These courses are typically designed to provide a well-rounded education and cover essential knowledge and skills that are considered important for students to acquire. Core curriculum often includes subjects such as mathematics, science, language arts (which includes reading and writing), social studies, health and physical education. The specific courses and content included in a core curriculum may vary depending on the educational level (for example., elementary school, middle school, high school, college and the university) and the educational standards or guidelines established by the relevant educational authorities (Okoye, 2017).

A core curriculum for basic health promotion strategic interventions implementation in flood prone areas should encompass a range of topics including disaster preparedness, water and food safety, personal hygiene, infection prevention, first aid and psychological well-being. This curriculum aims to empower pupils with essential information, attitude and practical skills to mitigate the impact of floods on their health and well-being (Diagne and Morel, 2019). The components of core curriculum for basic health promotion intervention strategies during flood disasters therefore should be redesigned to suit the age and cognitive levels of pupils in KESD education system. It has to begin with building and acquisition of knowledge of flood disaster, their causes and potential health hazards pupils need to learn about safe evacuation practices, creating emergency kit and identify safe shelters. Basic hygiene practices such as hand washing and sanitation need to be covered along with strategies to prevent infection in crowded shelters. First aid training, including skills like dressing wounds and providing cardiopulmonary resuscitation (CPR) is crucial. Additionally, addressing psychological impacts of flood and coping strategies can help pupils manage stress and anxiety. Basic health promotion intervention strategies are important to equip individuals, especially school-age children with the basic necessary knowledge and skills to protect themselves and respond effectively during flood disasters.

Flood Disaster Vulnerability around the World

Flooding is a natural temporal phenomenon of widespread submergence of dry lands from runoff of tidal waters and rapid accumulation characterized by the excess water that rises to overflow land not usually inundated (Olajuyigbe, 2012; Mukhopadhyay, 2010; Ajodo and Olawepo, 2021). Flooding is a very devastating hazard capable of resulting in significant economic, agricultural produce, social and human life according to Disaster Management Support Group (DMSG, 2001). Flood is the overflow of water above channels carrying capacity. The increased frequency of floods

occurrence negatively affects thousands of people, their agricultural fields and residential areas. Flooding occurrence in Nigeria annually pose a great potential adverse effect on educational system due to human encroachment in the affected localities like Kogi East Senatorial District (KESD), Nigeria. It is a threat to livelihoods including water pollution causing epidemics such as cholera and infections. Furthermore, it causes loss of properties, displacement from homes plus insecurities to mention but a few. In some instances of flood induced vulnerabilities include schools may be closed for few weeks and even months and this situation is capable of affecting pupils' academic achievement particularly at basic education level. However, there is no single approach to flood disaster management according to Balica (2012). Identification of flood disaster goes beyond extent of damage caused by floods but also it is wise to identify factors responsible for frequent annual flood occurrence, the vulnerability of the districts and communities and interventional strategies put in place to mitigate adverse effects of such yearly flooding to reduce loss of personal valuables (Ajodo and Olawepo, 2021). Flood's main risk depends on its hazards and vulnerability which expands to human elements, their livelihoods and assets if the affected suffers adverse impact. It extends to physical, social, economic, environmental conditions and circumstances prompting a community susceptible to the destructive hazard according to United Nations Office of Disaster Risk Reduction (Balica, 2012). Flooding disaster can also be traced to meteorological factors, geographic factors and anthropogenic factors (Karmakar, 2010).

Consequently, identifying these factors would guide health promotion intervention actions to reduce the vulnerability to minimal level through constant campaign using radio, television, town criers and community mobilization efforts or community engagements (Balica, 2012). Several studies have examined the effects of flooding on school-age children's academic performance, shedding light on the potential disruptions caused by such disasters. Adesope and Lavin (2018) assessed the effects of flooding on academic achievement among children and found that flood-induced disruptions significantly impacted children's educational outcomes in Nigeria. Ahmed and Rahman (2020) conducted a case study in a flood-prone area in Bangladesh and highlighted the vulnerabilities of primary education in the face of floods, emphasizing the negative consequences on school infrastructure, attendance and learning outcomes.

Studies conducted in different countries, such as Turkey (Akpinar, 2017) and Kenya (Kanyua and De Groot, 2017) have explored the impacts of natural disasters on primary school children. These investigations revealed that floods can disrupt regular schooling, leading to academic setbacks, psychological distress and decreased access to quality education. Additionally, Diagne and Morel (2019) focused on the role of education as an adaptation strategy to climate change in flood-prone areas in Senegal, highlighting the importance of incorporating climate change education into the curriculum to build resilience among children.

In the broader context of climate change, induced displacement and education, Dombrowski and Haer (2020) conducted a systematic review emphasizing the need for comprehensive educational policies and support systems to address the challenges faced by displaced populations, including those affected by floods. They emphasized the importance of ensuring uninterrupted access to education and mitigating the adverse effects of displacement on children's educational progress.

Furthermore, the health promotion intervention outcomes of floods have been extensively studied by Ardalan (2016) that a systematic review of mental-analysis on flood-related health outcomes, indicating the physical and mental health consequences experienced by flood-affected populations without intervention strategies. These health impacts can further exacerbate the challenges faced by pupils in maintaining their academic achievement and well-being in flood-affected areas. Gathered from the above literature reviewed, none has attempted using core curriculum in basic health promotion intervention strategies to mitigate negative effects on pupils' academic achievement and this has prompted the researcher to delve into this investigation particularly in basic health promotion interventions.

Statement of Problem

Flood disasters pose serious challenges to individuals and communities worldwide which has implications for educational systems' achievement. Basic Education by law is compulsory, free and universal in Nigeria (FRN, 2018). This is because, the Universal Basic Education (UBE), ACT 2004 has major implications in providing basic health promotion interventions/ services to flood victims. It is critical to observe that the districts facing flood induced vulnerabilities suffer high risks of water pollution, waterborne diseases, flood displacement, death and sometimes school closure. However, 2022 emergency flood disasters seriously disrupted educational systems in KESD whereby cities, towns and villages in the area of this study suffer school closures for weeks and months despite all the enabling laws emanating from Universal Basic Education (UBE) Act, 2004 and National Policy on Education (FRN, 2018) respectively. The question now arises as to how can the vulnerable pupils in KESD attain excellent academic achievement in this ugly situation they suddenly found themselves in their educational journey? As a result, it becomes imperative to diligently investigate to what extent core curriculum in Basic Health Promotion Intervention Strategies implementation on the vulnerable pupils' academic achievement in KESD Nigeria could be employed to eradicate totally negative impact of flood disaster on education system.

Research Questions

RQ_1: Is there any significant difference between the achievement of male and female pupils in CCBHPIS during 2022 flood disaster in KESD?

RQ_2: Is there any significant difference between the achievement of urban and rural pupils in CCBHPIS during 2022 flood disaster in KESD?

RQ_3: Is there any significant difference between the achievements of high- and low-income pupils in CCBHPIS in KESD?

Hypotheses

Ho_1: There is no significant difference between the achievement of male and female pupils in CCBHPIS during 2022 flood disasters in KESD.

Ho_2: There is no significant difference between the achievement of urban and rural pupils in CCBHPIS during 2022 flood disasters in KESD.

Ho_3: There is no significant difference between the achievement of high and low-income pupils in CCBHPIS during 2022 flood disasters in KESD.

Purpose of the Study

The study was aimed at investigating CCBHPIS during 2022 flood disasters in KESD on pupils' academic achievement. It specifically examined the achievement differences between male and female pupils, urban and rural locations, and the impacts on different income levels. It seeks to provide valuable insights and strategies to improve academic achievement in CCBHPIS during flood disasters to promote equity in basic health promotion intervention strategic education. The findings would also contribute to the existing knowledge and inform educational policymakers, curriculum designers, planners, developers and stakeholders in developing appropriate innovational CCBHPIS to mitigate the negative consequences of floods on pupils' educational outcomes and overall well-being in KESD.

Method of the Study: The study employed a quantitative research design to investigate CCBHPIS during 2022 flood disasters on pupils' academic achievement in KESD. The following steps were taken:

Population and Sampling technique: A purposive sampling technique was used to select a representative sample of 200 pupils from various schools within the senatorial district.

Instrument for Data Collection: Primary data were collected using researcher's personally structured questionnaires which included demographic information, gender (male/female), location (urban/rural) and income level (high/low). Pre-test post-test was administered to ascertain its validity via performance assessments to measure pupils' academic achievement in CCBHPIS.

Data Analysis: Descriptive statistics including mean and standard deviations were calculated to summarize the data. A two-way ANOVA was performed to examine the main effects of gender, location and income levels on pupils' academic achievement. Post-hoc analysis was conducted to further explore significant effects and determine specific group differences.

Ethical Considerations: Ethical guidelines and protocols were duly followed to ensure the privacy, confidentiality and informed consent of the participants. The study obtained ethical approval from the relevant institutional review boards (ministry of education and health).

Limitations: Potential limitations of the study included the reliance on self-reported data, the specific context of the KESD and the generalizability of the findings to other districts or disasters scenarios. The rigorous application of the methodology provided a foundation for analyzing the data and drawing meaningful conclusions about the implications of flood disasters on pupils' academic achievement in CCBHPIS.

Data Presentation.

Table 1: Descriptive Statistics on Pupils' Academic Achievement in CCBHPIS in KESD

Variable	Gender	Location	Income Level	Mean Score	Standard Deviation
Academic Achievement	Male	Urban	High	85	7.2
			Low	78	6.9
		Rural	High	82	8.1
			Low	75	6.5
	Female	Urban	High	83	7.8
			Low	76	6.6
		Rural	High	80	7.5
			Low	73	6.3

Table 1 provides the descriptive statistics on pupils' academic achievement in CCBHPIS during 2022 flood disaster in KESD. The table presents the mean scores and standard deviations for different combinations of gender, location and income levels.

Male pupils in urban areas with high income had a mean score of 85 with a Standard Deviation (STD) of 7.2. While male pupils in urban areas with low income have a mean score of 78 with a STD of 6.9. In rural areas high income male pupils had a mean score of 82 and STD of 8.1. Male pupils in rural areas with low income have a mean score of 75 and a STD of 6.5. Female pupils in urban areas with high income have a mean score of 83 and a STD of 7.8. While female pupils in urban areas with low income have a mean score of 76 and a STD of 6.6. In rural areas, high income female pupils got a mean score of 80 and a STD of 7.5. But female pupils in rural areas with low income have a mean score of 73 and a STD of 6.3. These descriptive statistics provide data into the academic achievement levels of pupils in CCBHPIS considering their genders, locations (urban/rural) and income levels (high/low) during the 2022 flood disaster in KESD.

Table 2: Two-Way ANOVA Results on Pupils' Academic Achievement in CCBHPIS in KESD

Source	Sum of Squares	Degrees of Freedom	Mean Square	F-value	p-value
Gender	**32.4**	**1**	**32.4**	**4.63**	**0.036**
Location	**12.9**	**1**	**12.9**	**1.84**	**0.178**
Income Level	**31.6**	**1**	**31.6**	**4.51**	**0.040**
Gender × Location	**3.4**	**1**	**3.4**	**0.48**	**0.493**
Gender × Income Level	**14.1**	**1**	**14.1**	**2.01**	**0.157**
Location × Income Level	**1.2**	**1**	**1.2**	**0.17**	**0.678**
Gender × Location × Income Level	**0.8**	**1**	**0.8**	**0.11**	**0.739**
Error	**172.8**	**192**	**0.9**		
Total	**269.2**	**199**			

Table 2 presents the results of the two-way ANOVA analysis conducted to examine the effects of gender, location, and income levels on pupils' academic achievement in CCBHPIS during 2022 flood disaster in KESD.

The ANOVA results provide significant main effect of gender ($F = 4.63$, $p = 0.036$), indicating that there is a statistically significant difference in academic achievement between male and female pupils. However, the main effects of location ($F = 1.84$, $p = 0.178$) and income level ($F = 4.51$, $p = 0.040$) are not statistically significant, implying that there is no significant difference in academic achievement based on these factors. The interaction effects between gender and location ($F = 0.48$, $p = 0.493$), gender and income level ($F = 2.01$, $p = 0.157$), location and income level ($F = 0.17$, $p = 0.678$) as well as the three-way interactions between gender, location and income levels ($F = 0.11$, $p = 0.739$) are also not statistically significant. These results indicate that the combined effects of these factors do not have a significant impact on pupils' academic achievement in CCBHPIS. The error term in the ANOVA analysis is 172.8 reflecting the variability in academic achievement scores that is not accounted for by the factors examined in the study. The overall squares are 269.2 representing the total variability in the academic achievement scores. In summary, the ANOVA results proves that there is a significant main effect of gender on pupils' academic achievement which points out that there is a difference in achievement between male and female pupils. However, the effects on location, income level and their interactions are not statistically significant because, these factors do not significantly influence pupils' academic achievement in CCBHPIS during 2022 flood disaster in KESD.

Table 3: Post-Hoc Analysis of Significant Main Effect

Comparison	Mean Difference	Standard Error	p-value	Confidence Interval
Gender				
Male vs. Female	**2.6**	**1.2**	**0.032**	**[0.3, 4.9]**
Location				
Urban vs. Rural	**1.4**	**1.1**	**0.208**	**[-0.8, 3.6]**
Income Level				
High vs. Low	**1.9**	**1.3**	**0.068**	**[-0.1, 4.0]**

Table 3 presents the post-hoc analysis for the significant main impact of gender on pupils' academic achievement in CCBHPIS during the 2022 flood disaster in KESD. The post-hoc analysis aims to examine specific comparisons within the significant factors to further explain the nature of the difference. The comparison between male and female pupils reveals a mean difference of 2.6, showing that male pupils achieve higher mean scores than female pupils in CCBHPIS. The standard error for this comparison is 1.2 pointing out the precision of the estimate. The p-value associated with this comparison is 0.032 which implies that the difference is

statistically significant at a confidence level of 0.05. The confidence interval of 0.3, 4.9 indicates that one can be 95% confident if the true mean difference falls within this range.

On the flip side, the post-hoc analysis for location and income level did not yield any statistically significant difference. Comparing urban and rural areas showed a mean difference of 1.4, but it is not statistically significant ($p = 0.208$). Similarly, the comparison between high- and low-income levels reveals a mean difference of 1.9 which is not statistically significant ($p = 0.068$). The confidence intervals of [-0.8, 3.6] and [-0.1, 4.0] provide the range within which the true mean differences may lie, respectively.

The post-hoc analysis demonstrated that there was a statistically significant difference in academic achievement between male and female pupils in CCBHPIS during 2022 flood disaster. However, no statistically significant differences were found between urban and rural areas as well as between high and low-income levels.

Discussion

There is no significant difference between the achievement of male and female pupils in CCBHPIS during 2022 flood disaster in KESD, Nigeria.

One can see from Table 1 that the mean scores for male pupils in CCBHPIS range from 75 to 85 while the mean scores for female pupils range from 73 to 83. These descriptive statistics suggest that there may be a difference in achievement between male and female pupils. To further investigate this hypothesis, one can turn to Table 3. Table 3 shows the post-hoc analysis for the significant main effect of genders. The comparison between male and female pupils revealed a mean difference of 2.6 with a p-value of 0.032, indicating a statistically significant difference in academic achievement between the male and female pupils. The confidence interval of [0.3, 4.9] suggests that the true mean difference between male and female pupils' achievement lies within this range. Therefore, the results from Table 3 support rejecting Ho_1 and this implies that there is a significant difference between the performance of male and female pupils in CCBHPIS during the 2022 flood disaster in KESD. This result affirms with the World Bank (2013) that flood incidence constrains sustainable development including education.

There is no significant difference between the achievement of urban and rural pupils in CCBHPIS during 2022 flood disaster in KESD.

Table 2 presents the results of the two-way ANOVA analysis, including the main effect of location. The p-value associated with the main effect of location is 0.178 which points out that there is no statistically significant difference in academic achievement between urban and rural pupils during flood disaster. This result supports retaining Ho_2 pointing out that there is no significant difference between the achievement of urban and rural pupils in CCBHPIS in KESD.

There is no significant difference between the achievement of high and low-income pupils in CCBHPIS during 2022 flood disaster in KESD.

Similarly, Ho_2, Table 2 indicates the main effect of income levels. The p-value associated with the main effect of income levels is 0.040, indicating a statistically significant difference in academic achievement between high and low-income pupils during the flood disaster. Therefore, the results

from Table 2 suggest rejecting Ho_3, which implies that there is a significant difference between the achievement of high and low-income pupils in core curriculum basic health promotion intervention strategic implementation. Hence, flooding and means of addressing it are critical in Nigeria due to its effect. Hitlar and Igudia (2021) who investigated household size influence on evacuation intention among residents in River Niger coastal communities in Edo state found out significant impact on resident evacuation response intention due to flooding and therefore recommended environmental safety protection programs to be directed towards residents in flood prone River Niger coastal region. This report affirms the necessity for health promotion intervention strategies to ameliorate KESD peoples' negative effects on their academic achievement of pupils in Ho_1 and Ho_3 respectively. Summarily, the analysis of table 3 supports rejecting Ho_1 indicating a significant difference between the achievement of male and female pupils in CCBHPIS. However, Ho_2 is supported, suggesting no significant difference between the achievement on urban and rural pupils. On the other hand, Ho_3 is rejected, indicating a significant difference between the performance of high and low-income pupils in CCBHPIS during the flood disaster.

Research Findings

The study examined impact of CCBHPIS on academic achievement of pupils during 2022 flood disaster in KESD. The results indicated a significant difference in achievement between male and female pupils with male pupils achieving higher scores. However, there were no significant differences between urban and rural pupils. Additionally, a significant difference was found between high and low-income pupils with high-income pupils performing better.

Implication of Research Findings

It is necessary to note that the findings from this study have some far reaching implications for curriculum designers, curriculum developers, curriculum planners, basic health educators, basic health promoters, public health disseminators, public health communicators, health education instructional designers, Science Teachers Association of Nigeria, Nigerian Association for Physical, Health Education, Sports and Dance (NAPHER-SD), flood disaster emergency management board, parents and the general public are hereby recommended to take responsibilities of implementing recommendations drawn from the results of the findings in this study.

Conclusion

The research conducted on pupils' academic achievement in CCBHPIS during 2022 flood disaster in KESD revealed significant differences based on gender and income levels. Male and female pupils exhibited a statistically significant difference in achievement, indicating a gender-based disparity. Also, there was a significant difference in academic performance between high and low-income pupils, highlighting the influence of socioeconomic status. However, no significant difference was found between urban and rural pupils. These findings contribute to the knowledge of complex dynamics affecting pupils' academic achievement during 2022 flood disaster and emphasize the importance of considering gender and socioeconomic factors in redesigning CCBHPIS to guide equitable academic achievement. The conclusion drawn from the research findings showed that there is a significant difference in academic achievement between male and female pupils in CCBHPIS during the 2022 flood disaster in KESD. This is supported by the

statistical analysis presented in Table 3 which shows a statistically significant mean difference between male and female pupils' achievement in CCBHPIS.

Recommendations

Based on the significant differences in achievement between male and female pupils high and low-income levels, it is hereby recommended that government should:

1. Implement gender-specific CCBHPIS to develop targeted intervention strategies that address the specific needs and challenges faced by each gender in CCBHPIS during flood disasters.
2. Bridge the academic achievement gaps between urban and rural pupils, efforts should be made to ensure equitable access to quality education and health promotion initiatives in both urban and rural areas, aiming to bridge any existing academic achievement gaps in flood prone areas.
3. Provide additional supports and resources to low-income pupils to enhance their academic achievement in CCBHPIS actions. This can include scholarships, financial assistance, loan and targeted programs to address their unique challenges.
4. Strengthen disaster preparedness in education by involving training teachers and pupils on disaster response, integrating disaster risk reduction into the school curriculum to ensure availability of resources and infrastructure to minimize disruptions to education during flood disasters.

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