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Climate-triggered Flooding and Child Development: Reflecting on Its 'Often Overlooked' Implications for Schoolchildren's Mental Well-being in Bayelsa State, Nigeria

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Abstract

Climate-induced perennial flooding in Bayelsa State, Nigeria, poses a constant hazard for children's mental and educational development. This paper addresses the 'often overlooked' psychological impacts of flooding on schoolchildren, one of the research findings that was not extensively analysed in the recent article, *"Mfon, U. Y. (2024). Climate Change Outcomes and Educational Development: Implication of Flooding on the Well-being and School Attendance of Children in Bayelsa State, Nigeria,"* in *The Climate-Health-Sustainability Nexus: Understanding the Interconnected Impact on Populations and the Environment* (p.483). The focal article employed a qualitative phenomenological research framework to collect data through interviews with schoolchildren, teachers, and parents across the eight LGAs of Bayelsa State. The findings indicate that disruption of education and family displacement can cause significant psychological problems for schoolchildren, including anxiety, depression, and post-traumatic stress disorder. Therefore, this paper recommends the integration of mental health interventions into disaster preparedness in educational frameworks to build resilience among vulnerable populations.

Introduction

Flood events triggered by climate change have brought a recurring nightmare in Bayelsa State, Nigeria, including the disruption of livelihoods and education systems. While economic and physical devastation is the focal point of most discussions on flood impacts, the psychological toll it exerts on vulnerable populations–particularly among schoolchildren–largely remains underexplored. Children in flood-prone contexts experience prolonged school closure, family dislocation, and associated dynamics that may lead to mental health challenges, disrupting their normal cognitive-emotional development curve.

For instance, the recent article, *"Climate Change Outcomes and Educational Development: Implication of Flooding on the Well-being and School Attendance of Children in Bayelsa State, Nigeria,"* in *The Climate-Health-Sustainability Nexus: Understanding the Interconnected Impact on Populations and the Environment*, (pp. 483-503), Cham: Springer Nature Switzerland., passively evaluated themes of the research findings that relate to the implications of floods on schoolchildren's mental well-being. Although it actively explored floods' impacts on physical schools' infrastructure vis-à-vis children's educational access and development, the publication provides a chance to deeply explore the 'often overlooked' yet equally crucial phenomenon—the mental consequences of such disruptions for schoolchildren.

Bayelsa State is susceptible to incessant flooding due to its low-lying topography, proximity to water bodies, and growing extreme weather conditions attributed to climate change. Annual floods in the area disrupt everyday life—displace families, destroy livelihoods and school infrastructures, and impede access to education for vulnerable populations—especially children—whose cognitive and affective development relies upon reliable access to education [1]. Policy responses and research to flood-engendered crises in Bayelsa State are primarily one-sided, not holistic, and do not include a mental health framework. In other words, despite the recurrent character of flood disasters in the Bayelsa context, there is seemingly a lack of focus on how these events impact children's mental well-being.

Considering the passive analysis of this theme in the main article, this commentary fills in a gap by discussing the mental effects of flooding on schoolchildren in Bayelsa State and attempt to understand the efficiency of existing mitigation frameworks. It recommends schoolchildren-centred disaster management strategies that will prioritize mental health as much as infrastructural protection or rebuilding.

Literature Review

Flooding and mental health in Bayelsa state: A critical gap in child development research

People increasingly view flooding, one of the most devastating consequences of climate change, as a global crisis with disproportionate implications for children's educational development [2-4]. Flood-triggered disruptions affect victims' psychological well-being both directly and indirectly, extending beyond physical infrastructure devastation [3]. Young survivors usually respond psychologically to flood disasters according to the degree of their sufferings. The destruction of their homes, family dislocation, school displacement, loss of personal belongings, and loss of support systems trigger these responses.

According to studies, children are easily susceptible to adverse psychological outcomes of climate-induced flood disasters [5,6]. These psychological outcomes have enduring developmental consequences, especially when flood disasters are recurring. Children's loss of their learning environment can result in psychological distress, such as anxiety, fear, stress, depression, post-traumatic stress disorder, and a sense of uncertainty and hopelessness, which can disengage their interest in schooling and lead to long-lasting cognitive and emotional damage.

Save the Children, in its 2023 report, argues that, although more than 88 percent of children under five years globally are at risk from climate change-induced flood diseases, millions more are liable to experience psychological trauma due to food insecurity and displacement. It also demonstrates the potential psychological risk, or heightened emotional vulnerability, of increasing educational and developmental deficits inherent in flood disasters.

Other studies have provided sufficient insight into the adverse socio-economic consequences of flood disasters on vulnerable communities [7]. However, literature suggests a substantial gap in understanding the psychological impacts of flood disasters on children, especially in developing countries such as Nigeria, where child development analysis of climate-induced flood disasters often focuses on socio-economic and physical infrastructural implications. Similarly, Bayelsa State has extensively documented the disruptive physical consequences on children's educational development, but the psychological effects often remain under-explored.

The educational and family systems as a buffer against decline in mental health

Children's family stability and learning environment are inextricably linked to their cognitive and emotional development. Studies have shown that a stable and predictable environment is one of the critical determinants of children's sound mental health [8]. This suggests that education is more than just an intellectual process. Instead, it serves as a crucial safeguard against emotional stress among children. Simply put, the school is not only a space exclusive for children's learning but is also a social environment where children make friends, develop self-esteem, and feel a sense of belonging. A structured educational environment that provides healthy classroom routines and social interactions can promote emotional well-being and stability for children [9]. That is why the destruction of this ecosystem by flood disproportionately affects children's peer relationships, stability, normalcy, safe learning and playing environment, and emotional security, among other things [10]. Inaccessible schools deprive children of a social interaction structure that aids in coping with traumatic experiences (Ibid).

Moreover, for children who are struggling with poverty and food insecurity, most schools often provide them with food and a stable environment where they can temporarily escape their poverty situation. Therefore, flood disruptions can lead to overwhelming psychological and academic consequences. Again, the long-term effects of school absenteeism may lead to feeling of hopelessness, disengagement, isolation, and anxiety as their educational goals appear unattainable. This can foster a sense of defeat, potentially leading to apathy and a lack of motivation, and ultimately have a significant impact on children's long-term academic and personal development.

Additionally, the financial burden associated with flood-triggered displacement can spur emotional unavailability. Parents and carers, who are struggling to rebuild their homes and livelihoods, often lack the emotional capacity to provide support and reassurance that children need during such difficult times. Overall, displacement due to flooding most often has a telling effect on children's mental health. The sudden loss of familiar surroundings and the instability of temporary shelter may cause feelings of insecurity, inferiority, neglect, helplessness, disorientation, fear, and other forms of emotional distress.

School closure deprives many children of community and normalcy, which are basic ingredients for healthy psychological development. In the aftermath of the flood, a lack of mental health support can make it difficult for most children to regain their emotional stability upon returning to school. The main article [11] alluded to this fact by interviewing teachers and parents, who noted that flood events led to behavioural changes such as increased anxiety, inferiority complex, poor academic performance, and reduced participation in school social activities.

In Bayelsa State, beyond the fact that the 2022 floods displaced an estimated 1.4 million people and damaged many schools, the disaster alienated children from their immediate friends and other comfortable support networks provided for them at school. It also separated them from their teachers—supportive adult role models who always provide emotional and psychological support. Additionally, the flood events, which resulted in the forcible eviction and dislocation of families, not only caused a loss of their physical space but also had an impact on the emotional security of children.

Drawing from the reviewed literature, it is pertinent that the direction of flood disaster response frameworks in Bayelsa State needs to shift away from mere infrastructural and economic recovery to child-centred mental health interventions. Programs that address the emotional and psychological needs of children must complement the important protection or rebuilding of physical structures.

Research approach and design—relevance to mental health research

The focal study [11] that this piece seeks to complement leveraged qualitative phenomenological research frameworks to appropriately explore the lived experiences of schoolchildren, parents, and teachers affected by flood events in Bayelsa State. Qualitative phenomenological data can provide a better insight into the multidimensional impacts of floods on children's education and mental well-being. It proves to be more valuable in uncovering emotional and psychological responses, often concealed with personal experiences and community narratives.

Bayelsa State has peculiar ecological terrain, making it predisposed to the dynamic implications of climate change, especially flooding. Such environmental conditions create a natural laboratory that provides an in-depth opportunity to study the psychological consequences of disaster-induced educational interruptions. The research was conducted in eight local government areas (LGAs), using qualitative research framework to uncover how climate change impacts children's emotional well-being in these LGAs.

Sampled population, research instruments, and their justifications

The study was conducted in 16 schools across the eight (8) LGAs in Bayelsa State. A purposive sampling method was used to select schools and communities based on their varying degrees of flood exposure. Indeed, the deliberate selection was important to capture the diverse range of experiences, especially in terms of how socio-economic and cultural factors influence resilience to climate change-induced flood disasters.

Children's socio-economic background often influences their emotional responses to flood disaster-related educational disruptions. For instance, children from low-income families may face additional stressors, including non-payment of school fees and food insecurity. These also have psychological impact. By selecting respondents from diverse socio-economic settings, the study explored in-depth the dynamic psychological responses of children in the rural and urban areas of Bayelsa State to flood disasters.

One hundred and four (104) respondents participated in the study. The study employed a semi-structured interview and questionnaire to gather data from schoolchildren, teachers, and parents, with the aim of examining the psychological effects of floods. A total of thirty-two (32) schoolchildren were interviewed, and were administered to forty-eight (48) teachers and twenty-four (24) parents whose primary school-aged children were either impacted by or are still experiencing the impact of flooding events at the time of the study.

The interviews with children and their careers were necessary to assess how children access mental health care services during flood crises. Regular educational research often underexplores the psychological consequences for children during flood crises. Thus, semi-structured interviews allowed respondents to highlight their emotional responses to schools' disruption, thereby giving room for a deeper exploration of the mental health implications.

The interviews were also a necessary tool to spot the early signs of emotional struggle, such as fear and withdrawal, in children from flood disaster-prone areas. Information from teachers and parents added additional layers of understanding of how floods directly or indirectly affect children's emotional status by disrupting their academic routines and sense of security.

Similarly, giving out copies of the study questionnaires was an extra and useful way to understand the depth of lived experiences of flood impacts in addition to the interviews that captured the wider patterns and trends. Although the interviews extensively explored the subjective experiences of the respondents, questionnaires offered organized insights and allowed comparisons across participants. Furthermore, the use of questionnaires ensured more reliable and enriched data through juxtaposing findings from the interviews. It also facilitated a broader sampling and inclusive participation of respondents who were unwilling to grant interviews.

Data collection procedure, limitations, and ethical considerations

The interviews were conducted during the dry season to ensure accessibility and emotional stability of respondents. Selection bias, a general limitation of the purposive sampling approach, may have excluded certain demographics. This limitation is crucial from the mental health perspective

because of its tendency to under-represent children with pre-existing psychological vulnerabilities. Additionally, the study took place in a period with minimal precipitation. This limits the opportunity to fully observe first-hand the immediate impacts of flood disasters on children's wellbeing.

Ethical safeguards for child respondents were heavily considered. The most basic elements of the research design consisted of informed consent, assurance of privacy, a debriefing process, and emotional support. Psychological research necessitated the use of such ethical precautions, particularly when asking children to recount traumatic experiences. Hence, the ethical framework prioritized protecting children's well-being by ensuring supportive adults were present during the interviews to provide emotional support.

Research Findings

The original article identified several critical themes that broadly relate to the implications of climate-triggered events on children's psychological well-being and their educational development in Bayelsa State. The underlisted themes highlight the complex relationship of climate change-triggered flooding, educational development, and children's psychological well-being in this context.

School accessibility barriers and emotional distress

The study indicated that disrupted access to education due to floods causes immense psychological distress among children. School closure and its utilization as temporary shelters contribute to instability, making children feel uncertain and anxious about their future in school.

Longer school closures, typically lasting 30 days or more, disrupt children's routines and support networks. Children's absence from a structured educational setting causes emotional strain, academic failure anxiety, and a decline in motivation to go back to school. The burden of classroom maintenance creates another layer of psychological stress. Expecting children to participate in post-flood cleanup tasks like washing flooded floors leads to increased stress, frustration, and powerlessness.

Effect of repurposing schools as shelters for internally displaced persons (IDP)

The study findings suggested that the conversion of schools into IDP shelters constitutes significant emotional distress for children. Witnessing the misuse or destruction of school facilities—classroom items turned into dividers or sleeping materials—can create a sense of loss and instability. Consequently, when children return to school after flooding, they encounter unhygienic conditions, stagnant water, and foul smells. Such conditions take away the sense of safety among children and heighten their fears, apprehensions, and reluctance to return to school.

Academic achievements and cognitive growth

Research findings showed that flooding impacted children's preparation and readiness for crucial examinations. Flooding often destroys instructional materials and disrupts lesson time, leaving children unprepared for crucial examinations. This often leads to subpar performance in state and national common entrance examinations, thereby jeopardizing their self-confidence and motivation. It also impacts children's cognitive development. Prolonged interruptions impede children's ability to concentrate and develop critical thinking and problem-solving skills. The study demonstrated that children from impoverished families experience a disproportionate impact, thereby contributing to the perpetuation of social inequalities, poverty, and exclusion.

Developmental psychology has clearly established a connection between academic performance and mental well-being. Children who go through continued stress and trauma, particularly those whose lives are disrupted due to flood disasters, experience serious inability to concentrate and retain information, ultimately affecting their performance at school.

Health hazard and mental traumas

In addition to the multiple layers of displacement caused by the flood menace, parents have pointed out that it also exposes children to severe health risks, specifically waterborne diseases, which in turn exacerbates their psychological distress. Children are vulnerable to various health hazards, such as waterborne diseases like malaria and typhoid, as well as physical dangers like drowning and reptile bites like snakes, following exposure to polluted floodwaters. These health risks, due to the recurrent nature of flooding in Bayelsa State, heighten children's psychological trauma—fear, stress, PTSD, and withdrawal levels during and after floods.

The psychological toll of children's involvement in adaptive responses

The study findings clearly suggest that children often assist teachers in repositioning school materials to higher grounds and mopping the flood-stricken classrooms. While this demonstrates resilience, it also places an undue emotional burden on children, as they feel responsible for preserving their disrupted educational environment. As a result, many children experienced difficulties in adjusting to school and re-establishing emotional stability.

Broader Mental Health Concerns of the Research Findings

Undoubtedly, frequent flood-induced displacements

often punctuate and destabilize the lives of affected children. According to the research finding, children miss school in addition to losing crucial social contact and support systems provided by regular schooling. Furthermore, social isolation, displacement, inaccessibility to the school system, and economic hardship lead to social isolation, which puts significant psychological burden on children.

Additionally, many children may not have the linguistic or cognitive abilities to communicate their emotional struggles, which can result in undiagnosed psychological problems. Due to the frequency of flooding in Bayelsa State, such undiagnosed psychological problems can advance into full-blown post-traumatic stress disorder (PTSD), anxiety disorders, or depression. The recurring nature of these traumatic experiences can create an environment where mental health crises among children can easily escalate if left untreated.

Strategies for intervention in Bayelsa state: Building resilience and providing support

The Sendai Framework for Disaster Risk Reduction of 2015-2030 advocates for proactive actions to limit the adverse impacts of flood disasters, yet Bayelsa seems inadequately prepared in terms of institutional resilience and child-centred disaster management strategies. Catastrophic flood disasters require strategic and multi-layered responses to safeguard children's access to education and mental health administration or protection. This research argues that the institutional responses to flood events have often been reactive rather than proactive, with the government and relief agencies limiting themselves to rescue missions and offering temporary relief.

This implies that the local and state educational systems administrators or policymakers should fully integrate the Sendai Framework for Disaster Risk Reduction, a multilayered approach that promotes resilience in disaster management by leveraging both infrastructural and psychological preparedness. While the construction of flood-resistant school infrastructure, improved drainage systems, and enhanced flood preparedness are vital to mitigating frequent flood disruptions, educational planning will have to integrate psychological counselling to address the psychological implications of this menace for children in Bayelsa State. Investing in flood-resistant educational infrastructure, like elevated school buildings and improved drainage systems, could significantly reduce the immediate physical damage resulting from floods. But alongside this, the government should give equal attention to the psychological resilience of the schoolchildren. Schools should establish long-term mental health programs that would offer emotional support to children coping with flood-related trauma.

Similarly, mental health assistance should be part of the emergency response system. Trained counsellors and psychological support services should be available in every school in flood-prone areas to help children cope with the stress and trauma of disaster events. Teachers, frequently displaced by floods, could also benefit from this.

By integrating a comprehensive mental health support service into the Bayelsa State educational curriculum, training teachers in this area, and hiring psychologists to provide professional mental assistance, the government can reduce or utterly alleviate the emotional burdens that flood-displaced children face. This type of professional, when integrated into the school-based mental support framework, will also assist teachers in processing their emotions and developing coping mechanisms to deal with the anxiety and fear caused by flooding. It will also prepare schoolchildren well enough to deal with both the physical and emotional challenges of living in a flood-prone area.

Lastly, communities should have a public-private sector-led, community-based mental health support system to provide long-term psychological support to children and their families affected by flood disasters. The government should develop community-based proactive disaster management protocols in alignment with the Sendai Framework to ensure preparedness, resilience, and rapid recovery from flooding events.

Conclusions and Future Directions

Flooding is a global reality, and Bayelsa State continues to face the harsh impact of climate change. Flood events continue to pose significant barriers to children's education and well-being in this context and portend substantial danger to the achievement of Sustainable Development Goals 1, 2, 3 and 4 with reference to children's development. A more integrated and systematic approach is required to address this crisis, prioritizing not only infrastructural solutions but also long-term mental health interventions for children affected by flooding disasters.

This pressing issue raises the call for urgent sustainable mitigation and intervention. Children's educational development and well-being depend on a paradigm shift in disaster preparedness and subsequent mental health support. It is only this way that we can even hope to mitigate the far-reaching consequences of climate change on vulnerable populations, such as the schoolchildren of Bayelsa State.

The dominant issues highlighted provide a chance for a future study that could explore broader-scale mental health interventions in educational settings during and after environmental disasters. First, future research should examine how the government and multinational oil and petrochemical companies operating in Bayelsa State can integrate mental health services into disaster response, particularly in fragile educational settings. It should also explore how schools can become physical and emotional resilient centres for children and their communities.

Overall, future research should investigate scalable mental health interventions specifically designed for educational settings in flood disaster-prone regions like Bayelsa State, to prepare vulnerable populations for the complex challenges posed by climate-induced flooding. This integrated approach will not only enhance children's resilience but also contribute to their long-term educational and developmental outcomes.

In conclusion, addressing the educational and mental health challenges posed by flooding requires a coordinated effort between policymakers, educators, the private sector, all levels of government and mental health professionals to create a supportive school environment that educators can leverage to mitigate the emotional toll that climate-induced flooding has on children and foster a sense of resilience and hope in the face of adversity.

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