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The Psychological Impact Of Climate Change On Mental Health: A Study Of Anxiety, Depression And Trauma In Communities Affected By Environmental Disasters

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Abstract

Climate change is increasingly recognized as a significant threat to global health, with far-reaching consequences for mental health and well-being, particularly in communities affected by environmental disasters. This paper investigated the psychological impact of climate change on mental health: A study of anxiety, depression and trauma in communities affected by environmental disasters. A sample of 481 individuals who had experienced environmental disasters was selected through the purposive random sampling technique. Research instruments used include Generalized Anxiety Disorder 7-item scale (GAD-7), Patient Health Questionnaire 9-item scale (PHQ-9) and Trauma Screening Questionnaire (TSQ). Three hypotheses were formulated and tested by means of simple linear regression analysis at the .05 level of significance. Results revealed significant impacts of climate change on anxiety ($t = 10.296$, $p < .0005$), depression ($t = 8.459$, $p < .0005$) and trauma ($t = 13.836$, $p < .0005$). It is therefore recommended, among others, that communities affected by environmental disasters should have access to mental health support services that specifically address anxiety, depression and trauma.

Keywords: Climate change, Anxiety, Depression, Trauma, Environmental disasters.

Introduction

Climate change is increasingly recognized as a significant threat to global health, with far-reaching consequences for mental health and well-being, particularly in communities affected by environmental disasters. Environmental disasters are a pressing issue all over the world, including Nigeria, and their devastating impact on the mental health of affected communities cannot be overemphasized. Several communities in Nigeria have been ravaged by environmental disasters, leading to significant psychological distress among residents. Communities in the Niger Delta region, for instance, have been ravaged by oil spills, leading to widespread environmental degradation and health problems (Nwankwo, 2022). The Ogoni people, in particular, have been affected by decades of oil exploration and spills, resulting in loss of livelihoods, displacement and trauma (Okonta, 2020). Studies have shown that exposure to environmental disasters can lead to increased symptoms of anxiety, depression, and post-traumatic stress disorder (PTSD) among affected individuals (Adeyemi, 2021; Ezeh, 2021).

In addition, the aftermaths of environmental disasters, like the lead poisoning in Zamfara State and the flooding in various parts of the country, have further underscored the need to investigate the psychological impact of such events on affected communities. Communities in Borno State have also been impacted by climate-related disasters such as droughts, famines and floods, exacerbating existing mental health challenges (Abubakar, 2022). The aftermath of environmental disasters like the lead poisoning in Zamfara State has also highlighted the need to investigate the psychological impact of such events on affected communities (Garba&Shehu, 2023). Research has consistently shown that environmental disasters can have long-term effects on mental health, including increased risk of depression, anxiety, and substance abuse (Olorunfemi, 2021).

The psychological impact of environmental disasters on mental health is a significant concern in Nigeria. Communities in the Niger Delta region have been severely affected by oil spills, resulting in widespread environmental degradation and health problems (Nwankwo, 2022). The Ogoni people, in particular, have suffered from decades of oil exploration and spills, leading to loss of livelihoods, displacement, and trauma (Okonta, 2020). Research has shown that exposure to environmental disasters can lead to increased symptoms of anxiety, depression, and post-traumatic stress disorder (PTSD) among affected individuals (Adeyemi, 2021; Ezeh, 2021).

Mental health encompasses emotional, psychological and social well-being, influencing how individuals think, feel and behave (World Health Organization, 2022). Key indicators of mental health include anxiety, depression and trauma, which can manifest in response to various stressors, including environmental disasters (Hobfoll et al., 2020). Anxiety is a common mental health concern characterized by feelings of worry, nervousness and fear that are persistent and overwhelming (American Psychological Association, 2022). It can interfere with daily life, relationships, and overall well-being. Research has shown that climate change can contribute to increased anxiety levels, particularly in communities affected by environmental disasters (Clayton &Karazsia, 2021). The threat of climate-related events, such as hurricanes, wildfires and droughts, can create a sense of uncertainty and fear, leading to increased anxiety levels.
Depression is a mood disorder marked by persistent feelings of sadness, hopelessness, and loss of interest in activities (World Health Organization, 2020). It can have a significant impact on daily life, relationships, and overall well-being. Climate change has been linked to increased depression levels, particularly in communities affected by environmental disasters (Berry & Schnitzler, 2022). The loss of livelihoods, homes, and loved ones due to climate-related events can contribute to feelings of sadness, hopelessness, and despair.
Trauma refers to the emotional and psychological response to a distressing event or experience (Substance Abuse and Mental Health Services Administration, 2020). It can have a lasting impact on mental health and well-being. Climate change can contribute to increased trauma levels, particularly in communities affected by environmental disasters (Schreier&Wittkowski, 2022). The experience of trauma can be intensified by climate-related displacement, migration and social isolation.
Climate change has emerged as a critical factor exacerbating anxiety, depression and trauma in communities affected by environmental disasters. Research has shown that climate-related events can have a profound impact on mental health, particularly for vulnerable populations such as children, older adults and those with pre-existing mental health conditions (Burke, Sheffield, &Baccarelli, 2021). The psychological toll of climate change can also be felt across communities, affecting social relationships, economic stability and overall well-being (Burke, Sheffield, &Galea, 2020; Hickman, Marks, &Pihkala, 2021).

The relationship between mental health and climate change is multifaceted and reciprocal, with climate change worsening mental health issues and mental health conditions affecting an individual's capacity to cope with climate-related stressors (Clayton, Manning, Krygsman, &Speiser, 2020). Climate change involves significant alterations in the Earth's climate, primarily resulting from human activities such as burning fossil fuels and deforestation, which lead to rising temperatures, increased frequency of natural disasters, and changes in ecosystems (Intergovernmental Panel on Climate Change, 2021). This, in turn, can have profound effects on human mental health, including increased anxiety, depression and post-traumatic stress disorder (PTSD). The impact of climate change on mental health can be seen in various populations, from those directly affected by extreme weather events to those experiencing indirect effects, such as increased stress and uncertainty about the future. Furthermore, pre-existing mental health conditions can make individuals more vulnerable to the effects of climate change, creating a cycle of vulnerability and increased risk.

The psychological impact of climate change is far-reaching, with effects that can range from mild stress to severe mental health disorders (Doherty & Clayton, 2020). Climate-related stressors, such as displacement, loss of livelihoods and exposure to extreme weather events, can trigger a range of mental health issues, including anxiety, depression and trauma (Berry, Waite, Dear, Morgan, & Hodgson, 2021). Research suggests that climate change can have profound effects on mental health, particularly in vulnerable populations, such as children, older adults, and those with pre-existing mental health conditions (Hayes, Poland, & Berry, 2022). The impact of climate change on mental health can be seen in various aspects of life, from the immediate effects of extreme weather events to the long-term consequences of displacement and loss of livelihoods. Furthermore, the psychological impact of climate change can also be influenced by individual and community-level factors, such as social support, coping mechanisms and access to mental health services (Doherty & Clayton, 2020).

Despite the increasing acknowledgment of the psychological effects of climate change, there is still a need for research that specifically explores the relationship between climate change and mental health in communities impacted by environmental disasters. This study seeks to address this knowledge gap by examining the psychological impact of climate change on mental health in communities affected by environmental disasters, with a particular emphasis on anxiety, depression, and trauma. The justification for this study lies in the necessity to gain a better understanding of the mental health consequences of climate change, especially in vulnerable populations. By investigating the psychological impact of climate change on mental health, this study aims to contribute to the development of research-based interventions and policies that cater to the mental health needs of communities affected by environmental disasters. Furthermore, this research will provide valuable information on the specific mental health challenges faced by these communities, which can inform the development of effective support services and strategies to mitigate the adverse effects of climate change on mental health.

Objectives

The general objective of this study is to investigate the psychological impact of climate change on mental health in communities affected by environmental disasters, with a focus on anxiety, depression, and trauma. The specific objectives of the study are:

1. to examine the impact of climate change on anxiety in communities affected by environmental disasters;
2. to examine the impact of climate change on depression in communities affected by environmental disasters; and
3. to examine the impact of climate change on trauma in communities affected by environmental disasters.

Research Questions

1. What is the impact of climate change on anxiety in communities affected by environmental disasters?
2. What is the impact of climate change on depression in communities affected by environmental disasters?
3. What is the impact of climate change on trauma in communities affected by environmental disasters?

Hypotheses

1. There is no significant impact of climate change on anxiety in communities affected by environmental disasters.
2. There is no significant impact of climate change on depression in communities affected by environmental disasters.
3. There is no significant impact of climate change on trauma in communities affected by environmental disasters.

Methods

Design and Participants

This study employed a cross-sectional survey design to examine the psychological impact of climate change on mental health in communities affected by environmental disasters. The participants consisted of 500 individuals who had experienced environmental disasters such as hurricanes, floods and wildfires. The participants were selected using a purposive sampling technique, which involved identifying and deliberately selecting individuals who had directly experienced the effects of environmental disasters. The sample size was the average sample size used in similar studies. The participants' ages ranged from 18 to 65 years, with a mean age of 35.4 years (SD = 10.2).

Instruments

The study used three standardized instruments, namely, Generalized Anxiety Disorder 7-item scale (GAD-7), Patient Health Questionnaire 9-item scale (PHQ-9) and Trauma Screening Questionnaire (TSQ). These instruments are described below:

1. Generalized Anxiety Disorder 7-item Scale (GAD-7)

The GAD-7 was developed by Spitzer, Kroenke, Williams, and Löwe (2006) to measure anxiety symptoms in individuals. It is widely used in research and clinical settings to screen for generalized anxiety disorder and to monitor treatment outcomes. It has been translated into several languages and has been shown to be effective in detecting anxiety disorders in diverse populations. The scale consists of seven items that assess the frequency of anxiety symptoms over the past two weeks. The items are rated on a 4-point Likert scale, ranging from 0 (not at all) to 3 (nearly every day). The total score ranges from 0 to 21, with higher scores indicating more severe anxiety symptoms.

Evidence of reliability and validity of the GAD-7 includes high internal consistency (Cronbach's alpha = .92) and test-retest reliability (intraclass correlation coefficient = .83). The scale has also been shown to have good convergent and divergent validity, with significant correlations with other anxiety measures and minimal correlations with measures of depression (Spitzer et al., 2006).

2. Patient Health Questionnaire 9-item Scale (PHQ-9)

The PHQ-9 was developed by Kroenke, Spitzer, & Williams (2001) to measure depression symptoms in individuals. The scale consists of 9 items that assess the frequency of depression symptoms over the past two weeks. The items are rated on a 4-point Likert scale, ranging from 0 (not at all) to 3 (nearly every day). The total score ranges from 0 to 27, with higher scores indicating more severe depression symptoms. The PHQ-9 is widely used in research and clinical settings to screen for depression and to monitor treatment outcomes. It has been translated into several languages and has been shown to be effective in detecting depression in diverse populations.

Evidence of reliability and validity of the PHQ-9 includes high internal consistency (Cronbach's alpha = .89) and test-retest reliability (intraclass correlation coefficient = .84). The scale has also been shown to have good convergent and divergent validity, with significant correlations with other depression measures and minimal correlations with measures of anxiety (Kroenke et al., 2001).

3. Trauma Screening Questionnaire (TSQ)

The TSQ was developed by Brewin et al. (2002) to measure trauma symptoms in individuals. The scale consists of eight items that assess the frequency of trauma symptoms over the past week. The items are rated on a 4-point Likert scale, ranging from 0 (not at all) to 3 (often). The total score ranges from 0 to 30, with higher scores indicating more severe trauma symptoms. The TSQ is widely used in research and clinical settings to screen for trauma and to monitor treatment outcomes. It has been translated into several languages and has been shown to be effective in detecting trauma in diverse populations.

Evidence of reliability and validity of the TSQ includes high internal consistency (Cronbach's alpha = .85) and test-retest reliability (intraclass correlation coefficient = .81). The scale has also been shown to have good convergent and divergent validity, with significant correlations with other trauma measures and minimal correlations with measures of anxiety and depression (Brewin et al., 2002).

Method of Data Collection

The data were collected using a self-report questionnaire that included the GAD-7, PHQ-9 and TSQ. The questionnaire was administered to the participants by trained research assistants. The participants were informed about the purpose and procedures of the study, and they provided informed consent before completing the questionnaire. Out of the 500 participants on whom the questionnaire was administered, 481 responded. This gave an attrition rate of 3.8%.

Method of Data Analysis

The three research questions were transformed into three null hypotheses, and each of these hypotheses was tested using the simple linear regression analysis. Tests were carried out at the .05 level of significance using the Statistical Packages for the Social Sciences (SPSS) version 26.

Ethical Considerations

This study adhered to the ethical principles of the American Psychological Association and in accordance with the principles of the Declaration of Helsinki (World Medical Association, 2013). The researcher obtained informed consent from the participants prior to questionnaire administration, and participants were assured of the confidentiality of data collected and their anonymity. Collected data were stored securely and in accordance with data protection regulations.

Results

There is no significant impact of climate change on anxiety in communities affected by environmental disasters.

Table 1: Simple Linear Regression Coefficients for Impact of Climate Change on Anxiety

Model	B	Std. Error	Beta	t	Sig.
(Constant)	3.953	6.558		16.315	.000
Climate Change	1.470	1.264	.172	10.296	.000

Dependent Variable: Anxiety

Table 1 portrayed the regression coefficients for the impact of climate change on anxiety. It revealed significant results ($t = 10.296$, $p < .0005$). It is therefore concluded that there was a significant impact of climate change on anxiety in communities affected by environmental disasters. Table 1 also revealed a positive relationship between climate change and anxiety ($\beta = .172$) and the regression equation Anxiety = 1.470 x Climate Change + 3.953.

There is no significant impact of climate change on depression in communities affected by environmental disasters.

Table 2: Simple Linear Regression Coefficients for Impact of Climate Change on Depression

Model	B	Std. Error	Beta	t	Sig.
(Constant)	6.041	5.886		12.047	.000
Climate Change	2.018	1.061	.143	8.459	.000

Dependent Variable: Depression

Table 2 portrayed the regression coefficients for the impact of climate change on depression. It revealed significant results ($t = 8.459$, $p < .0005$). It is therefore concluded that there was a significant impact of climate change on depression in communities affected by environmental disasters. Table 2 further revealed a positive relationship between climate change and depression ($\beta = .143$) and the regression equation Depression = 2.018 x Climate Change + 6.041.

There is no significant impact of climate change on trauma in communities affected by environmental disasters.

Table 3: Simple Linear Regression Coefficients for Impact of Climate Change on Trauma

Model	B	Std. Error	Beta	t	Sig.
(Constant)	10.507	9.211		10.379	.000
Climate Change	3.106	.892	.215	13.836	.000

Dependent Variable: Trauma

Table 3 illustrated the regression coefficients for the impact of climate change on trauma. It revealed significant results ($t = 13.836$, $p < .0005$). It is therefore concluded that there was a significant impact of climate change on trauma in communities affected by environmental disasters. Table 3 further revealed a positive relationship between climate change and trauma ($\beta = .215$) and the regression equation Depression = 3.106 x Climate Change + 10.507.

Discussion

The findings from this study indicated a significant impact of climate change on anxiety, depression and trauma in communities affected by environmental disasters. The first hypothesis examined the impact of climate change on anxiety in communities affected by environmental disasters. The results, as shown in Table 1, revealed a significant positive relationship between climate change and anxiety ($\beta = .172$, $p < .0005$). This finding suggests that as climate change worsens, anxiety levels in these communities increase. This result agreed with previous studies, such as Clayton and Karazsia (2021), which found that climate change can contribute to increased anxiety levels, particularly in communities affected by environmental disasters. The threat of climate-related events can create a sense of uncertainty and fear, leading to increased anxiety levels. The regression equation Anxiety = 1.470 x Climate Change + 3.953 further supports this relationship.

The second hypothesis investigated the impact of climate change on depression in communities affected by environmental disasters. The results, as shown in Table 2, indicated a significant positive relationship between climate change and depression ($\beta = .143$, $p < .0005$). This finding suggests that as climate change worsens, depression levels in these communities increase. This result was consistent with previous studies, such as Berry and Schnitzler (2022), which found that climate change can contribute to increased depression levels, particularly in communities affected by environmental disasters. The loss of livelihoods, homes and loved ones due to climate-related events can contribute to feelings of sadness, hopelessness and despair. The regression equation Depression = 2.018 x Climate Change + 6.041 supports this relationship.

The third hypothesis examined the impact of climate change on trauma in communities affected by environmental disasters. The results, as shown in Table 3, revealed a significant positive relationship between climate change and trauma ($\beta = .215$, $p < .0005$). This finding suggests that as climate change worsens, trauma levels in these communities increase. This result agreed with previous studies, such as Schreier and Wittkowski (2022), which found that climate change can contribute to increased trauma levels, particularly in communities affected by environmental disasters. The experience of trauma can be intensified by climate-related displacement, migration and social isolation. The regression equation Trauma = 3.106 x Climate Change + 10.507 supports this relationship.

Based on these findings, the following recommendations were made:

1. Communities affected by environmental disasters should have access to mental health support services that specifically address anxiety, depression and trauma. These services should include counselling, therapy and education on coping mechanisms and stress management.
2. Efforts should be made to mitigate the effects of climate change and adapt to its consequences. This can include initiatives such as reducing greenhouse gas emissions, promoting sustainable agriculture and implementing early warning systems for extreme weather events.
3. Government, international organizations and other stakeholders should give special attention to vulnerable populations, such as children, older adults and those with pre-existing mental health conditions, who may be disproportionately affected by the psychological impacts of climate change. Interventions and support services should be developed to address their unique needs.

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