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RESEARCH PAPER

Sociodemographic Characteristics as Predictors of Climate Change Anxiety among Adults in Flood Affected Areas of Pakistan

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ABSTRACT

The primary objective of this study was to assess the cognitive, emotional, and functional impairment as well as the psychological well-being of adults. Natural disasters are reoccurring in Pakistan and the mental health consequences of these floods need attention of researchers. The sample of the study included 350 adults, consisting 173 men and 177 women. Climate change anxiety scale along with a demographic questionnaire were used for data collection and all ethics were followed. The findings indicated that climate change affect the cognitive, emotional, and functional abilities of Adults, ranging from mild stress to severe clinical conditions like anxiety. Women showed high levels of climate change anxiety then men. Moreover, individuals with higher education levels generally reported lower anxiety levels than those with lower education levels. Addressing the mental health needs of these vulnerable populations would be a priority for organizations and mental health researchers.

Keywords: Adults, Climate Change Anxiety, Cognitive Emotional, Functional Impairment

Introduction

Natural disasters such as floods frequently result in a subsequent increase in adverse health circumstances within affected regions. This surge in mental health issues is a consequence of the numerous challenges and traumatic experiences that individuals and communities endure during and after a flood. Such experiences may include the loss of homes, possessions, and even loved ones, as well as the disruption of daily life, displacement, and the constant stress associated with the disaster. Considering the current scarcity of resources for psychiatric evaluation and therapy in Pakistan, there is a compelling argument for allocating investment and aid to mitigate the substantial, enduring mental health repercussions that may stem from the recent natural catastrophe.

In addition, there is an increasing worry about the proper way to address the requirements of populations impacted by the humanitarian crisis. As of the conclusion of 2017, an unparalleled 68.5 million individuals had been compelled to leave their homes due to conflict and violence, and over 95 million people had been impacted by natural disasters (Karo et al., 2018; Reed, 2018). Furthermore, the anticipated increase in the number of individuals residing in low and middle-income countries (LMICs) who are disproportionately impacted by humanitarian crises is a result of recent and prolonged conflicts, as well as the heightened risk of extreme weather events and the effects of climate change (Organization, 2013; Walker et al., 2012).

Pakistan ranks 9th out of 162 countries prone to floods, experiencing High River flood peaks and widespread inundation. On an annual basis, approximately 579,732

individuals face potential harm due to flooding. Just last year, the province of Khyber Pakhtunkhwa encountered its most substantial rainfall in the past 80 years, resulting in the tragic loss of over 1600 lives and affecting more than 14 million people. Nevertheless, once the initial emergency situation subsided and the euphoria of surviving the flood diminished, we started to notice the emergence of issues related to post-traumatic stress disorder (PTSD), survivors' guilt, and overall depression lurking in the shadows.(Bhamani et al., 2012).

Literature Review

Studies have demonstrated a clear connection between the occurrence of psychiatric symptoms and the level of satisfaction with the assistance provided during the floods. Furthermore, research has established that the likelihood of developing post-traumatic stress disorder (PTSD) depends on factors such as age and gender. In their examination of the mental health impacts of floods in individuals aged over 60 exhibited a higher prevalence of this condition in comparison to younger survivors (Chae et al., 2005; Telles et al., 2009). Given the current surge in the number of potential psychiatric patients, the state of mental healthcare in low and middle-income countries (LAMICs) like Pakistan is extremely challenging. Research by Kohn et al. (2004) indicates that approximately 78% of adults with mental disorders in these countries do not receive treatment, and the situation is even more concerning for children. In Pakistan, this can be attributed to the limited allocation of public resources (less than 1% of the total health budget) for mental health and the prevalence of out-of-pocket financing systems for mental healthcare, a problem observed in nearly 40% of LAMICs (Hailemichael et al., 2019). While a significant number of individuals manage to maintain their mental well-being by utilizing personal and social resources to bolster their resilience and shield themselves from the negative repercussions of humanitarian crises, the exposure to both brief and prolonged emergencies can exert a lasting influence on the physical and psychological health of individuals (Colliard et al., 2014; Committee, 2006). The primary objective of the current was to comprehensively assess the psychological well-being, cognitive and emotional impairments among adults in flood-affected regions of Pakistan. Furthermore, the study aims to validate a climate change anxiety scale specifically for individuals residing in flood-prone regions. The objective of the study was to assess the level of cognitive, emotional and functional impairment and psychological well-being among adults.

Material and Methods

Study Design. This study employed a cross-sectional research design to assess the psychological and cognitive impacts of recurring flooding on adults residing in residing in flood affected areas of Pakistan.

Participants. The study sample comprised 350 young adults, including 173 men and 177 women. Participants were selected using a purposive sampling technique, focusing on adults living in flood-affected areas. The inclusion criteria involved individuals aged 18 years or older who had experienced flood during last two years in their residential area.

Instruments. To assess climate change anxiety, a validated climate change anxiety assessment tool was utilized (Clayton & Karazsia, 2020). The Climate Change Anxiety Scale comprises 22 items designed to assess emotional reactions to climate change. This scale encompasses four dimensions, namely cognitive and emotional impairment, functional impairment, personal experience of climate change, and behavioral engagement. Demographic information and relevant contextual data were collected through a structured demographic questionnaire.

Validity relaibilty ethical considerations. Written informed consent was obtained from all participants prior to data collection. Participants were ensured for the confidentiality of the data as well. The data were collected after 06 months of flood. This study followed to ethical guidelines, ensuring the privacy and confidentiality of participants. The relevant institutional review board or ethics committee approved all research procedures. The climate change anxiety scale showed internal consistency with an alpha reliabity of above .85 for all the subscles and .91 for the overall scale.

Results and Discussion

Table 1
Socio-demographic of the Study Participants (350)

		N (%)	Climate Change Anxiety Mean (SD)	p
Gender				.001
	Men	173 (49.04)	38.73 (7.25)	
	Women	177 (50.06)	42.25 (8.75)	
Marital Status				.003
	Single	202 (57.07)	43.22 (11.23)	
	Married	148 (42.03)	37.35 (9.44)	
Education				.07
	Educated	112 (32.0)	35.11 (8.56)	
	Uneducated	238 (68.0)	39.28 (10.37)	
Age				.002
	Adolescent (12-18 Years)	60 (17.0)	30.11 (11.25)	
	Adult (19-60 Years)	186 (53.0)	25.21 (9.23)	
	Old age (above 60 Years)	104 (30.0)	34.33 (12.23)	
Family system				.26
	Nuclear	196 (54.06)	33.26 (11.22)	
	Joint	154 (45.04)	32.21 (11.09)	
Area of living				.37
	Nowshera	210 (60.0)	41.89 (12.44)	
	Charsadda	140 (40.0)	40.93 (12.11)	

SD: Standard Deviation, *p* are based on Welch's statistics

Table 2
Socio-demographic of the Study Participants (N=350)

		n (%)	CEI Mean (SD)	p	FI Mean (SD)	p
Gender				.003		0.01
	Men	173 (49.04)	9.70 (3.25)		10.97 (4.45)	
	Women	177 (50.06)	11.15 (3.75)		13.01 (5.35)	
Marital Status				.02		.05
	Single	202 (57.07)	9.12 (4.20)		9.10 (4.78)	
	Married	148 (42.03)	7.30 (3.84)		5.30 (3.55)	
Education				.02		.02
	Educated	112 (32.0)	7.08 (2.89)		8.08 (3.09)	
	Uneducated	238 (68.0)	9.24 (3.71)		11.24(4.91)	
Age				.004		<.001
	Young adults (18-35 Years)	60 (17.0)	7.11 (4.25)		9.18 (4.87)	
	Middle Adults (36-50 Years)	186 (53.0)	5.21 (3.20)		6.21 (3.98)	

	Old age (above 50 Years)	104 (30.0)	5.87 (3.56)		5.07 (3.16)	
Family system				.26		.05
	Nuclear	196 (54.06)	5.26 (4.29)		6.06 (4.59)	
	Joint	154 (45.04)	5.21 (3.31)		4.01 (3.42)	
Area of living				.37		.19
	Nowshera	210 (60.0)	6.98 (3.44)		5.48 (3.04)	
	Charsadda	140 (40.0)	6.93 (3.11)		6.03 (3.61)	

Note=SD= Standard Deviation, CEI=Cognitive Emotional Impairment, FI=Functional Impairment

Table 3
Socio-demographic of the Study Participants (N=350)

		n (%)	PECC Mean (SD)	p	BE Mean (SD)	p
Gender				.003		0.03
	Men	173 (49.04)	2.65 (1.05)		11.77 (5.45)	
	Women	177 (50.06)	4.05 (2.15)		9.01 (3.35)	
Marital Status				.25		.001
	Single	202 (57.07)	5.22 (3.10)		6.10 (2.78)	
	Married	148 (42.03)	5.30 (3.32)		9.30 (4.55)	
Education				.001		.03
	Educated	112 (32.0)	9.18 (3.89)		10.08 (4.09)	
	Uneducated	238 (68.0)	7.14 (2.71)		9.24 (3.91)	
Age				.002		<.001
	Adults (18-35 Years)	60 (17.0)	5.21 (3.25)		9.98 (5.87)	
	Middle Adult s (36-50 Years)	186 (53.0)	9.11 (4.21)		6.61 (3.18)	
	Old age (above 50 Years)	104 (30.0)	6.67 (3.96)		4.07 (3.66)	
Family system				.01		.05
	Nuclear	196 (54.06)	8.26 (5.29)		7.06 (4.09)	
	Joint	154 (45.04)	5.11 (3.11)		5.01 (3.22)	
Area of living				.01		.31
	Nowshera	210 (60.0)	8.98 (4.34)		6.18 (3.14)	
	Charsadda	140 (40.0)	5.93 (3.61)		6.07 (3.11)	

Note=SD= Standard Deviation, PECC=Personal Experience of Climate Change, BI=Behavior Engagement

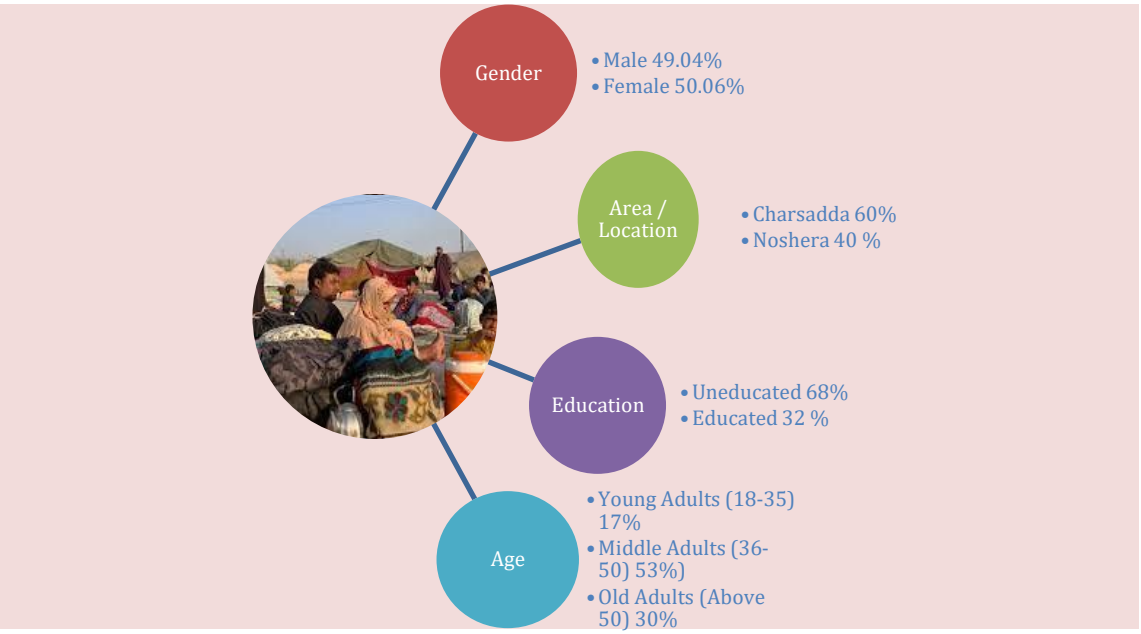

Figure 1. Gender Wise Comparison of Cognitive, Emotional and Functional Impairment among Adults

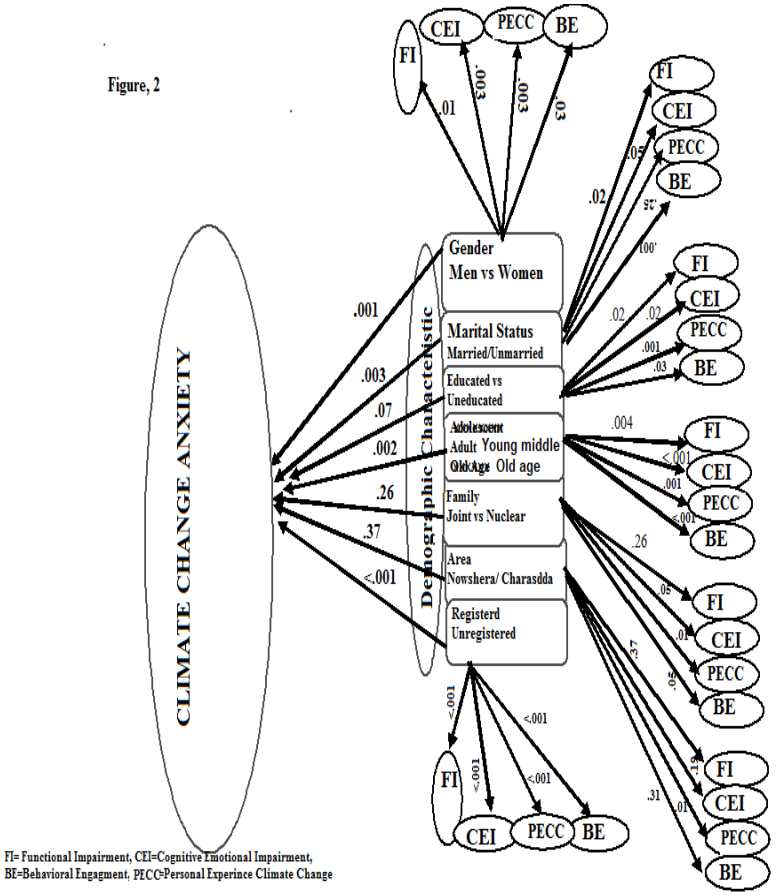

Figure 2. Causal Association of Sociodemographics and Climate Change Anxiety

Table 4
Sociodemographic Predictors of Climate Change Anxiety among Adults

Predictors Variable	*B*	95% CI LL, UL	*SE I*	β	R^2	Δ*R2*
					.3[illegible]	.32**

Constant	16.65**	[13.75, 19.54]	1.4(	
Men vs Women	.24**	[1.13, 2.09]	.24	.46**
Single vs Married	5.01*	[3.46, 5.07]	2.8(	.36*
Educated vs Uneducated	.42*	[.29, 1.55]	.32	.32*
Young vs middle vs old age	.33*	[.12, .53]	.10	.35*
Nuclear vs Joint	.30*	[1.12, 1.98]	.23	.39*
Nowshera vs Charsadda	.41	[.22, .58]	.17	.31

Note. CI = confidence interval * *p<.01.* ** *p*<.001.

Table 1 of the study involved 350 participants, with nearly an equal distribution of men (49.04%) and women (50.06%). Most participants were single (57.07%) compared to married (42.03%). In terms of education, the majority were educated (68.0%) versus uneducated (32.0%). Regarding age, there was a diverse representation with 17.0% young adults (18-35 years), 53.0% middle age adults (36-50 years), and 30.0% in old age (above 50 years). Family systems were predominantly nuclear (54.06%) compared to joint (45.04%). In terms of area of living, more participants were from Nowshera (60.0%) compared to Charsadda (40.0%). The gender wise distribution was also shown in figure1. These findings shows that factors such as gender, marital status, age, and registration status are significantly associated with climate change anxiety levels among the study participants. However, education level, family system, and area of living do not demonstrate significant associations with anxiety levels in this study. Table 2 indicates a significant correlation between sociodemographic factors including gender, marital status, education, age, and registration status with functional impairment and cognitive emotional impairment. Additionally, Table 3 reveals a positive and significant correlation of behavioral engagement and personal experience of climate change with gender, age, and level of education. In addition, table 4 shows significant predictors included gender (B = 0.24, p < .001), marital status (B = 5.01, p < .05), education level (B = 0.42, p < .01), age category (B = 0.33, p < .01), and family system (B = 0.30, p < .01. These findings suggest that gender, marital status, education, age, family structure, and registration status are important factors influencing climate change anxiety among flood-affected individuals. The figure 2, showed the causal association of sociodemographic characteristics and climate change anxiety and its subdomains.

Discussion

The main goal of the study was to find out the association between demographic characteristics with climate change anxiety among adults residing in flood affected areas. The findings indicated that certain demographic factors, including gender, marital status, age, and education levelof participants showed a significant correlations with levels of climate change anxiety among the participants. The findings revealed that women show a higher level of climate change anxiety compared to men. Furthermore, participants with higher levels of education tended to experience lower levels of anxiety than those with lower levels of education. Similarly, both adolescents and older individuals showed heightened levels of climate anxiety in comparison to adults. Moreover, participants who self-identified as men demonstrated lower intensity of anxiety in contrast to women. These findings indicate that gender, education level, age, and registration status significantly influence individuals' experiences of climate change anxiety. Conversely, factors such as family structure and residential location did not show statistically significant associations with anxiety levels in this study. This suggests that while certain personal characteristics may impact individuals' climate change anxiety, others may have less influence within this specific study context. Previous research has suggested that adolescents may bear a disproportionate burden when confronted with severe weather events such as droughts, heatwaves, or floods due to their heightened vulnerability and limited capacity for

adaptation or resilience. They face higher mortality risks compared to adults, particularly concerning vector-borne and water-borne diseases such as malaria, dengue, cholera, diarrhea, and typhoid, which are likely exacerbated by the climate crisis (Patel & Rajak, 2023; Rees, 2021). Moreover, research has indicated that adolescents reveal higher levels of anxiety and concern, somatic symptoms, mood disturbances, and behavioral alterations compared to adults following significant climate events (Meltzer et al., 2021; Newnham et al., 2020). Adolescents are particularly vulnerable to the secondary consequences of climate-related events, such as food insecurity (Oskorouchi & Sousa-Poza, 2021), economic instability (Behera et al., 2002), early marriage (Ahmed et al., 2019), school dropout (Alam & Singh, 2020), forced migration (Fisher, 2010), trafficking, and physical and sexual exploitation (Fisher, 2010; Mainlay & Tan, 2012). Moreover, adolescents who are directly affected by acute events, perceive a greater threat to life, suffer the loss of loved ones, or are displaced to welfare camps, typically experience heightened levels of distress compared to their peers (Dissanayake, 2013).

In addition, the previous studies revealed that negative mental health impacts were linked to six categories of severe weather events: floods, storm surges, typhoons, cyclones, extreme heat, and riverbank erosion. The results showed the outcomes characterized by identifiable symptoms, such as post-traumatic stress disorder, depression, anxiety, overall psychological distress, emotional anguish, and suicide (Patwary et al., 2024). Research conducted in Pakistan revealed that monsoon floods had added to significant levels of physical, psychological, and emotional distress among adults (Swaroop et al., 2015).

Conclusion

The research findings highlighted the significant association between sociodemographic characteristics and climate change anxiety among adults. The study has highlighted the discriminating vulnerability of adults to the effects of climate change, worsened by their limited political, economic, and physical resources, as well as precarious living conditions in areas lacking essential survival necessities.

Recommendations of the study

Addressing the mental health needs of these vulnerable populations would be a priority for organizations and mental health institutions, with ongoing efforts focused on providing tailored mental health and psychosocial support to alleviate their psychological distress. Psychologists and researchers must plan localized evidence-based internvtion studies for mental health support of adults.

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