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Relationship Between Nature Connectedness, Climate Anxiety, and Psychological Adjustment among Flood-Affected Individuals in Gujrat, Pakistan

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ABSTRACT

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Climate change is among the most dangerous global environmental challenges; in fact, floods occurring frequently cause serious psychological and social consequences for vulnerable people. Pakistan is very vulnerable to flooding caused by changes in the climate. Therefore, the need of the times is to analyze the psychological effects on survivors of floods. The present research analyzed the links between climate anxiety and nature connection on the psychological adjustment of flood survivors in Gujrat Pakistan. A quantitative cross-sectional research design was employed in the current study, with 400 flood survivors (55 % female; 45 % male) selected using purposive sampling technique. The data were collected from participants via in-depth interviews assisted by the researcher, the Climate Anxiety Scale (CAS), the Revised Connectedness to Nature Scale (CNS-R), and the Adjustment Scale being utilized. Various statistical methods, including the Pearson product-moment correlation and multiple regression, were used to analyze the data. The results showed a significant negative correlation between climate anxiety and psychological adjustment ($r = -.552$, $p < .001$) with climate anxiety being the main negative predictor of psychological adjustment ($\beta = -.503$, $p < .001$). At the same time, it was discovered that nature connection had a significant positive relationship with psychological adjustment ($r = .314$, $p < .001$) and positively predicted adjustment ($\beta = .314$, $p < .001$) as well. In the study, it was indicated through multiple regression analyses that the combination of climate anxiety and nature connectedness creates 59.9% of the variation within adjusting psychologically [$F(2, 397) = 99.197$, $p < .001$]. The results of this assessment reveal the relevance of integrating psychological support services and nature-based interventions in the context of disaster relief programs.

Introduction

Climate change is creating one of the hardest environmental, socioeconomic, and public health challenges of the 21st Century (Intergovernmental Panel on Climate Change [IPCC], 2023). Rising global temperature, changing rainfall patterns, melting glaciers, and increasing number of extreme weather events are putting unprecedented risks for ecological sustainability and human survival (Cianconi et al., 2020). Of the risks posed by climate change, extreme hydrological events, particularly floods, are among the most destructive natural disasters because of their high potential for destruction of property and

infrastructure, disruption of economy, displacement of people, and psychological harm (Galea et al., 2005; Norris et al., 2002). Though disaster response and rehabilitation efforts prioritize physical health, temporary shelter, and restoration of infrastructure, the psychological consequences of disasters are often neglected, showing the importance of treating climate change as an issue of mental health (American Psychological Association [APA], 2017; World Health Organization [WHO], 2022). Although the developing countries in South Asia are among the most vulnerable to the impacts of climate change, their contribution in the global greenhouse gas emissions is insignificant (IPCC, 2023). In Punjab's District Gujrat, floods caused by heavy monsoon rains and increasing water levels of the Chenab River have resulted in damage to agricultural crops, the flooding of residential areas, and the displacement of thousands of people from their homes. Floods for communities that depend on agriculture are no longer just natural disasters; instead, they affect social connections, agricultural practices, and lead to environmental instability.

Flood crises pose a risk not only in terms of physical impacts but also in psychological terms. The victims experience significant feelings of bereavement, despair, and insecurity, along with different kinds of anxiety regarding possible future disasters (Berry et al., 2018; Clayton, 2020). Apart from traditional psychiatric categories, such as PTSD, depression, and anxiety, the field of environmental psychology focuses on climate anxiety, which refers to anxiety connected to real or imagined environmental damage and climate instability (Clayton & Karazsia, 2020; Hogg et al., 2021). Notably, contemporary theorization of environmental psychology includes the concept of connectedness to nature, which refers to an emotional and cognitive feeling of being part of nature (Mayer & Frantz, 2004). Evidently, a strong relationship with nature supports emotional management, coping, and overall well-being in line with the Biophilia Hypothesis (Wilson, 1984) and Attention Restoration Theory (Kaplan, 1995) (Capaldi et al., 2014; Pritchard et al., 2020). However, if victims find themselves in natural environments affected by severe climate changes, this emotional connection may worsen the emotional state of a person through solastalgia (Albrecht, 2011). In the post-disaster environment, psychological adaptation can be defined as an ability to regain emotional stability, perform social activities, and carry out cognitive adjustments (Hobfoll, 1989; Lazarus & Folkman, 1984). While there is enough literature on clinical post-traumatic stress in Pakistan after natural events, research addressing climate anxiety and connections with nature as well as overall ability to adapt psychologically is rather limited. Thus, the study at hand focuses on the correlation between climate anxiety, nature connection, and psychological adaptation of flood victims in Gujrat, Pakistan with an aim to provide empirical data for disaster mental health planning.

Literature Review

Climate anxiety has become a significant concept in the area of environmental psychology. It has been defined by Clayton and Karazsia (2020) as a cognitive and emotional response to the impacts of climate change, which manifests itself through maladaptive behaviors, fears, and anxiety. However, unlike general anxiety disorder, climate anxiety is considered to be an appropriate response to real threats (Clayton, 2020; Coffey et al., 2021). Results of the studies provide evidence that climate anxiety is a widespread phenomenon among people worldwide. Specifically, in Hickman et al. (2021), a global survey covering 10,000 young people from ten countries was conducted, which revealed that 84% of the respondents expressed considerable anxiety concerning climate change. After any natural disaster and floods, people are faced with several problems that are caused by their economic situation and which hinder them. Studies show that environmental destruction leads to solastalgia which refers to the distress after one's environment is altered or damaged (Albrecht, 2011; Pihkala, 2020). In spite of disasters such as floods occurring repeatedly in Pakistan, there has not been much research confirming climate anxiety as an experience distinct from any other trauma.

Nature connectedness refers to the way nature is incorporated into a person's identity and the emotional bond with natural settings (Mayer & Frantz, 2004; Nisbet et al., 2009). Theoretical basis for this idea is connected to Wilson's (1984) Biophilia hypothesis which states that people have a natural inclination towards living beings. On the strength of extensive empirical studies it has been established that higher levels of nature connectedness are linked to psychological and mental benefits such as happiness and lower stress (Capaldi et al., 2014; Pritchard et al., 2020). The Attention Restoration theory (Kaplan, 1995) explains how natural surroundings help restore cognitive capacity and relieve stress. Nevertheless, the connection between nature connectedness and psychological wellbeing in the context of climate disaster demonstrates a complicated pattern of opposite dynamics. Although the relationship with nature helps decrease the negative impact of stress (Kamitsis and Francis, 2013), people who are more connected to nature may feel sadder because of severe environmental degradation. When floods damage the landscape, people who are most strongly bonded to nature feel an acute sense of loss (Albrecht, 2011). In agricultural areas like Gujrat, in which the environment represents both the personal identity and the economic survival of the individual, it is useful to know whether the relationship with nature helps a person experience less pressure or becomes a source of vulnerability.

Psychological adjustment means that a person tries to fit his or her cognitive, emotional, and behavioral aspects to negative environmental factors without being overwhelmed by them (Lazarus & Folkman, 1984; Moos & Schaefer, 1984). The process of post-disaster adjustment of people can be different as some of them get used to their lives again while others face

difficulties for many months or even years (Bonanno, 2004; Southwick et al., 2014). According to Hobfoll's (1989) Conservation of Resources (COR) theory, psychological distress occurs when the psychological, economic, or physical resources belonging to an individual are supposed to be lost due to disaster. Gender and demographic disparities significantly influence post-disaster psychological adjustment. According to findings from empirical research studies, it has been reported that women show higher instances of experiencing anxiety, depression, and adversities post-disaster when compared to men, primarily attributed to socio-economic disparities, caregiver responsibilities, and lack of access to resources (Neumayer & Plümper, 2007). Additionally, age differences show that middle-aged adults who have to cater for family finances experience comparatively more stress when compared with younger adults who seem better able to cope.

Theoretical Framework and Research Hypotheses

This research study adopts an integrative theoretical framework that incorporates the Biophilia Hypothesis (Wilson 1984), Attention Restoration Theory (Kaplan 1995), Transactional Model of Stress and Coping (Lazarus & Folkman 1984), and Conservation of Resources Theory (Hobfoll 1989). According to the theoretical framework presented above, disaster exposure may be considered as environmental eustress, climate anxiety as the psychological assessment of an environmental stressor, nature connectedness as a psychological resource, and psychological adjustment – as a psychological outcome of the adaptive process. Based on the theoretical framework outlined above, it is possible to formulate the following hypotheses.

- **H1:** Climate anxiety will have a significant negative correlation with psychological adjustment among flood victims.
- **H2:** Nature connectedness will have a significant positive correlation with psychological adjustment among flood victims.
- **H3:** Nature connectedness will have a significant negative correlation with climate anxiety.
- **H4:** Climate anxiety and nature connectedness will significantly predict psychological adjustment among flood victims.

Methodology

The current investigation employed a quantitative cross-sectional survey methodology to assess the prospective relations between climate-related anxiety, connection with nature, and psychological adjustment of flood-affected individuals from District Gujrat, Punjab, Pakistan. A total of 400 adult flood-affected individuals (55% females, 45% males) were identified through purposive sampling technique. To achieve accuracy of data obtained from the participants with different educational background, interviews were administered by the researcher using the standardized instruments: Climate Anxiety Scale (CAS; Clayton & Karazsia, 2020), Revised Connectedness to Nature Scale (CNS-R; Mayer & Frantz, 2004), and Adjustment Scale for Adults (Naz et al., 2018). All ethical requirements related to voluntary participation and informed consent were strictly followed.

Results

Statistical analyses were executed using SPSS. Descriptive statistics, internal consistency reliability coefficients, Pearson product-moment correlations, and multiple linear regression were computed. As requested, only the key correlation and regression analytical tables are retained below.

Table 1: Pearson Correlation Matrix among Study Variables (N = 400)

Variable	1	2	3
1. Climate Anxiety	-	-	-
2. Nature Connectedness	-.218**	-	-
3. Psychological Adjustment	-.552**	.314**	-

Note. ** $p < .001$.

Pearson correlation analysis has shown that there is a significant negative relationship between climate anxiety and psychological adjustment ($r = -.552$, $p < .001$). Furthermore, nature connectedness is shown to have a significant positive relationship with psychological adjustment ($r = .314$, $p < .001$). Moreover, climate anxiety was negatively correlated with

nature connectedness ($r = -.218$, $p < .001$). This implies that higher levels of climate anxiety were associated with poorer psychological adjustment, while better nature connectedness was associated with better psychological adjustment outcomes.

Table 2: Multiple Linear Regression Predicting Psychological Adjustment (N = 400)

Predictor	B	SE	B	T	P
(Constant)	70.050	3.876	-	18.072	< .001
Climate Anxiety	-0.851	0.068	-.503	-12.512	< .001
Nature Connectedness	1.613	0.207	.314	7.792	< .001

Note. Model Summary: $R = .774$, $R^2 = .599$, Adjusted $R^2 = .596$, $F(2, 397) = 99.197$, $p < .001$. Dependent Variable: Psychological Adjustment.

The model used for regression was statistically proven significant and accounted for 59.9% variance in adjustment in terms of psychology. Climate concern was found as highly significant with a negative predictive ability while nature connection was found as a significant positive predictor of psychological adjustment. Climate concern was found as a stronger predictor.

Discussion

This study's aim was to investigate the links between climate anxiety, nature connectedness, and mental adjustment in flood survivors of Gujrat District, Pakistan. Results give overwhelming backing for the suggested theoretical model, proving that climate anxiety is a powerful source of psychological hazard while nature connectedness is an important protective resource in recovery. Several significant negative correlations between climate anxiety and mental adjustment were found which is in line with Hypothesis 1 ($r = -.552$, $p < .001$) with climate anxiety being the strongest predictor in regression analysis ($\beta = -.503$, $p < .001$). Such a result supports the previous findings of disaster psychology that persistent climate anxiety has a negative impact on cognitive and emotional functioning (Clayton, 2020; Galea et al., 2005; Norris et al., 2002). Flood-stricken agriculture communities experience climate anxiety not just as a psychological phenomenon, but also as a reality-based experience arising from ecological damages, property losses, and financial worries about future climate catastrophes. The constant anxiety leads to cognitive degradation hindering the reinstatement of the regular functioning, which goes along with Hobfoll's (1989) Conservation of Resources Theory.

In line with hypothesis 2, nature connectedness showed a strong positive correlation with psychological adjustment ($r = .314$, $p < .001$), and positively predicted adaptive functioning in the regression equation ($\beta = .314$, $p < .001$). This supports both the Biophilia Hypothesis by Wilson (1984) and Attention Restoration Theory by Kaplan (1995), as it confirms that a strong emotional bond with nature promotes emotional recovery and stress reduction (Capaldi et al., 2014; Pritchard et al., 2020). For survivors of disasters in Gujrat, having a meaningful relationship with nature allows people to cope with the consequences of the flood.

Coming to Hypothesis 3, there was a significant negative correlation between climate anxiety and nature-connectedness ($r = -.218$, $p < .001$), suggesting that individuals with a strong connection with nature suffer less from climate anxiety. There is literature that claims that a strong bond with nature can increase eco-anxiety due to grief over environmental issues but our findings indicate that in resilient rural communities, nature connectedness works mainly as an emotional buffer (Kamitsis & Francis, 2013). Additionally, Hypothesis 4 received support; the presence of climate anxiety and connection to nature explains 59.9% of the overall variance in psychological adjustment [$R^2 = .599$, $F(2, 397) = 99.197$, $p < .001$]. Thus, these findings imply the vital role of incorporating both ecological risk factors and emotional resources within interventions developed for psychosocial support (Tol et al., 2011).

Implications and Limitations

The findings of the study have significant meaning for disaster management authorities, clinicians, and public health policy makers in Pakistan. Mental health support must be provided along with physical aid within post-flood relief programs (APA, 2017; WHO, 2022). Nature-based approaches, such as community greening projects, eco-therapy, and community activities related to restoration, must be applied to reduce the impact of climate anxiety. The limitations of the study include cross-sectional design and purposive sampling from one district.

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