

Research Article

Psychiatric Sequelae of Flood-Induced Trauma: The Mediating Role of Social Isolation and Resilience in Older Adults

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ABSTRACT

Floods are one of the most frequent and destructive forms of natural disasters; they are calamitous for vulnerable segments of populations, including older adults. Beyond physical destruction from floods, floods often lead to psychiatric sequelae, including post-traumatic stress disorder (PTSD), depression, and anxiety. This cross-sectional study aimed to investigate the psychological consequences of flood-induced trauma in older adults, focusing on the mediating role of social isolation and resilience. A total of 50 participants, above the age of 60 years, were selected using stratified random sampling from flood-affected areas and rehabilitation centers. Data were collected using structured questionnaires assessing psychiatric symptoms, perceived social isolation, and resilience levels. Findings revealed a significant association between flood-related trauma exposure and elevated psychiatric symptoms. Mediation analysis demonstrated that social isolation intensified adverse mental health outcomes, while resilience functioned as a protective factor, buffering the impact of trauma on psychiatric well-being. These results highlight the dual role of social isolation and resilience in shaping psychological responses to flood trauma in older adults. The analysis suggests preemptive community-based initiatives that expand on provisions for integration and enhance social support structure resilience for vulnerable populations. Strengthening and diversifying these factors may reduce chronic and embedded psychiatric disorders and improve recuperation pathways of older adults exposed to natural disasters.

Keywords: flood, trauma, social isolation, resilience, older adults, Stratified Random Sampling, Social isolation.

INTRODUCTION

It is alarming that Pakistan suffers from natural disasters such as floods due to the country's monsoon climate, geography, and lack of disaster control systems. The government has experienced numerous catastrophic floods in the last two decades, such as the Super Floods of 2010 that affected 20 million people (Naeem et al., 2011), and the 2022 floods that displaced 8 million and affected a third of the population (UNICEF, 2022). These episodes have led to massive displacement, infrastructure devastation, and severe health crises. From a humanitarian perspective, floods can trigger waterborne diseases and malnutrition, but the long-term psychological impacts of floods remain a low priority during disaster response efforts (Shah et al., 2021).

Older Adults as a Vulnerable Group:

Pakistan's aging population constitutes more than 15 million people, and new catastrophe situations only highlight their frail nature. These individuals have complex health issues and aging-related difficulties, often losing their means of mobility and becoming overly dependent on caregivers. Both physical and psychological harm are sustained under these conditions (Ahmed & Siddiqui, 2020). Medications, healthcare, and other facilities of social support are too often disrupted under conditions of war and civil upheaval. The 2010 floods showed older people to be more psychologically ill than younger cohorts and more likely to suffer post-traumatic stress disorder and depression (Naeem et al., 2011). The traditional family support system, because of poverty, makes this population increasingly more exposed to damage (Hameed et al., 2019).

Psychiatric Sequelae of Flood-Induced Trauma:

In the case of flood-induced trauma in Pakistan, the suffering of many people has increased the number of people suffering from psychiatric problems such as post-traumatic stress disorder (PTSD), depression, and anxiety. Naeem et al. (2011) pointed out that PTSD among the 2010 flood survivors was present, at least partially, in 36% of the population. Khalid et al. (2017) also reported significant depression and anxiety among the displaced people. Studies in Sindh suggest that the symptoms of the survivors, at least in some, the psychiatric symptoms of the survivors continue for many years, and the anxiety and distress persist long after the physical rebuilding is done (Saleem et al., 2023). Mental health stigma and the absence of psychiatric treatment are also important for the negative gap in treatment and diagnosis of mental disorders in older adults (Farooq & Khan, 2012).

Social Isolation as a Mediator

Displacement caused by floods often disrupts community ties and increases social isolation, especially in Pakistan, where families and social networks provide vital emotional and financial support. Older adults are vulnerable and at risk, as social networks are not as readily available. Hameed et al. (2019) study found that socially isolated flood survivors in Sindh reported far greater levels of depression and anxiety than those who were connected to families. So too, as noted by Hussain et al. (2021), in Sindh, where flood-related displacement and isolation were especially pronounced, there was greater psychiatric illness in older adults. All of these points lead

to the conclusion that social isolation, rather than being solely a risk factor in flood-related trauma, serves as an important inflection point that exacerbates the trauma induced by floods.

Resilience as a Protective Factor

As a protective factor for the psychiatric consequences that may arise from a disaster, the ability to 'bounce back' from a disaster, or 'adversity' as termed by many, is what is referred to as 'resilience'. In Pakistan, faith, culture, and collective community support are some major contributors to the formation of this phenomenon referred to as 'resilience' (Rana et al, 2020). Aslam & Tariq (2016) claim that resilient individuals, that is, those who possess a good level of resilience, tend to have lower levels of PTSD even after experiencing floods in Khyber Pakhtunkhwa. It is the case in this as well as other research that building resilience, through community faith and other coping programs, leads to lower psychiatric disorders (Rana et al, 2022). In the older age groups, trauma is buffered by resilience through the meaning of life, collective coping, and enhanced recovery.

Gaps in Literature

The ever-growing attention to the mental health consequences of trauma brought on by a disaster has brought to focus the many gaps that still exist. The phenomenon of old age is still not well studied in Pakistan and, therefore, remains a group that is vulnerable and at risk. The protective factor of resilience and the risk factor of social isolation have been studied too little within the mediation model. The majority of research has, however, been focused on longitudinal studies that explore the different phases of psychiatric illness. In Pakistan, the policies pertaining to disaster management still integrate mental health for the elderly survivors; thus, the work of Shah et al (2021) is valued in this regard.

Rationale of the Study

Pakistan's recurrent flood crises and growing population of older adults call for an understanding of social isolation and resilience as potential determinants of psychiatric outcomes in this group. The current study seeks to fill this gap by examining the psychiatric sequelae of flood trauma in older adults and exploring the isolation-resilience social determinants of the sequelae. The outcomes of the study will not only contribute to the theoretical understanding within the field. However, they will also have practical implications for mental health services and community-based disaster preparedness in Pakistan.

Objectives of the Study

1. To describe the demographic characteristics (age, gender, marital status) of older adults affected by floods in Pakistan.
2. To assess the prevalence and severity of psychiatric symptoms (PTSD, depression, and anxiety) among older flood survivors.
3. To evaluate the levels of social isolation and resilience in this population and examine their distribution (low, moderate, high).
4. To analyze the correlations between trauma exposure, social isolation, resilience, and psychiatric symptoms in older adults.

5. To investigate the mediating role of social isolation and resilience in the relationship between flood-related trauma and psychiatric symptoms.

LITERATURE REVIEW

Floods and the Pakistani context

Pakistan is the most flood-affected country in the South Asia region and is one of the countries in the world that suffers from severe flooding. Usually, the flooding occurs as a result of the monsoon rainfall, the melting of glaciers, and the country's lack of preparedness to respond to such disasters (Warraich et al., 2011). The 2010 floods increased the number of people malnourished in Pakistan by 20 million, while the 2022 floods displaced 8 million people and affected 33 million in total (UNICEF, 2022). The repeated floods in Pakistan have led to numerous long-term socio-economic and health problems. Unfortunately, the mental health aspects of these situations have been given little thought and have been a gap in the emergency response systems provided (Shah et al., 2021).

Mental-health consequences of floods in Pakistan

Research consistently shows high rates of psychiatric morbidity among flood survivors in Pakistan. Naeem et al. (2011) reported that 36% of 2010 flood survivors met criteria for PTSD. Similarly, Khalid et al. (2017) found elevated depression and anxiety rates in Punjab's flood-affected populations. More recently, Saleem et al. (2023) documented persistent psychological distress in Sindh even years after floods. A systematic review by Yousuf et al. (2023) confirmed that psychiatric consequences of floods in Pakistan include PTSD, depression, and anxiety, often persisting long-term.

Study variations and methodological considerations

Differences in study design, sampling, and timing have influenced reported prevalence rates. Some surveys relied on validated scales such as the Harvard Trauma Questionnaire, while others used brief screening tools (Iqbal, 2023). Assessments conducted immediately post-disaster often show higher acute stress, whereas later follow-ups identify chronic PTSD and depression in a subset of survivors (Chung et al., 2014). Despite methodological variation, the consensus remains that psychiatric morbidity is significantly higher among flood survivors than in unaffected populations.

Older adults as a neglected group

Although older adults (>60 years) are highly vulnerable due to chronic illness, mobility issues, and dependency on caregivers, few Pakistani studies have focused exclusively on them (Shah et al., 2021). Available evidence suggests that older survivors experience worse psychiatric outcomes than younger populations (Ahmed & Siddiqui, 2020). Limited age-stratified data represent a significant gap in the literature, particularly given Pakistan's rapidly aging population.

Social isolation as a mediator

Flood displacement frequently disrupts family and community ties, producing heightened social isolation. In Pakistan's collectivist culture, this breakdown intensifies psychological distress. Hameed et al. (2019) found that socially isolated older adults in Sindh reported significantly higher

depression and anxiety. Similarly, Hussain et al. (2021) showed that displacement-related isolation in Sindh strongly predicted psychiatric morbidity in older survivors. These findings position social isolation as a critical mediator in the flood–mental health relationship.

Resilience as a protective factor

Resilience has been identified as a key buffer against trauma-related psychiatric symptoms. Aslam and Tariq (2016) reported that resilient survivors in KP exhibited lower PTSD rates after floods. Khan et al. (2020) further demonstrated that resilience and coping strategies reduced distress levels in disaster-affected populations. More recently, Rana et al. (2022) emphasized that resilience-building interventions, such as psychosocial support programs, can promote recovery among flood survivors. Resilience, therefore, represents a culturally embedded protective factor in Pakistan.

Integrated models: mediators and moderators

Conceptual frameworks suggest that social isolation increases vulnerability, while resilience mitigates it. However, few Pakistani studies have empirically tested these mediating effects using advanced statistical models. Preliminary findings indicate significant correlations between trauma exposure, social isolation, resilience, and psychiatric symptoms (Saleem et al., 2023), but formal mediation analysis remains limited. This gap highlights the need for models that explain how isolation and resilience jointly shape psychological trajectories in older adults.

Service gaps and policy implications

Despite evidence of psychiatric morbidity, mental health services remain scarce in disaster responses. Reports highlight shortages of trained professionals, weak integration of psychosocial care, and persistent stigma around mental illness (Farooq & Khan, 2012; UNICEF, 2022). While NGOs provide psychological first aid, interventions are often short-lived and urban-centric (The Guardian, 2025). Incorporating mental health, particularly geriatric psychiatry, into disaster preparedness is essential to address the unmet needs of older adults.

Overall, Pakistani literature documents high psychiatric morbidity following floods, with social isolation worsening outcomes and resilience mitigating them (Naeem et al., 2011; Hameed et al., 2019; Aslam & Tariq, 2016). However, older adults remain understudied, and mediation frameworks have rarely been tested. This study addresses these gaps by focusing on older adults and examining the mediating role of social isolation and resilience in psychiatric sequelae of flood-induced trauma.

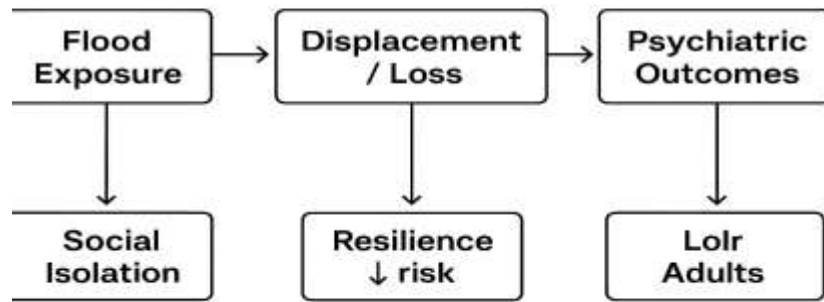


Figure 1: Conceptual Framework: Mediating Role of Social Isolation and Resilience in Flood-Induced Psychiatric Sequelae among Older Adults

METHODOLOGY

Study Design: This cross-sectional research design aimed to understand the psychiatric sequelae of flood-induced trauma in older adults, with particular attention to the mediating roles of social isolation and resilience. The design was appropriate because it allowed the assessment of multiple psychological outcomes and demographic factors at a single point in time.

Setting and Participants: The participants in this research were selected from the community and the rehabilitation centers. Out of the chosen 50 older adults who completed the research, 24 were male and 26 were female. To achieve adequate representation, participants were divided into the following age cohorts: 60-65, 66-70, 71-75, and 76+ years. This strategy added richness to the age range and enabled the research to assess psychiatric outcomes at different phases of later life.

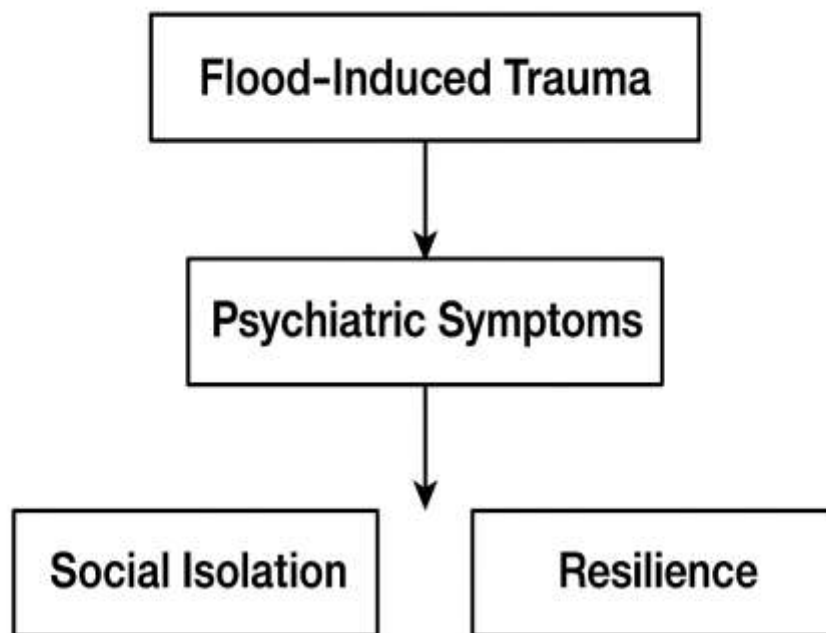
Sampling Technique: A stratified random sampling technique was employed to recruit participants. Strata were based on gender and age group so that both male and female participants, as well as each defined age category, were proportionately included. This method minimized selection bias and ensured that the sample was representative of the broader older adult population in flood-affected regions.

Inclusion and Exclusion Criteria: The participants had to be informed of the consents, have adequate cognitive capacity, and be over 60 years of age and living in flood-affected areas. People who were unwilling to participate, had considerable cognitive disabilities, and had severe psychiatric disorders not connected to trauma suffered in the flood were excluded from the study..

Data Collection Tools: The Harvard Trauma Questionnaire (HTQ; Mollica et al., 1992) was used to measure trauma exposure and Post-Traumatic Stress Disorder (PTSD) symptoms. It has 30 questions with a possible score of 30 to 120 that uses a 4-point Likert-type scale. It has been validated in multiple disaster studies. Depressive symptoms were measured with the Geriatric Depression Scale-Short Form (GDS-SF; Sheikh & Yesavage, 1986), which includes 15 yes and no questions for the elderly. To measure social isolation, the UCLA Loneliness Scale, Version 3 (Russell, 1996) is used, which measures feelings of loneliness and includes 20 questions

categorized in a 4-point scale from 1 (Never) to 4 (Often), where higher scores indicate more loneliness. To measure psychological resilience, the Connor-Davidson Resilience Scale (CD-RISC; Connor & Davidson, 2003) with 25 questions that employs a 5-point Likert-type scale is used, where higher scores are indicative of more resilience.

Data Collection Procedure: The process of collecting data occurred in person for a period of two months, utilizing structured interviews. The research assistants trained in the administration of questionnaires made the effort to translate the entire questionnaire into the local language of the participants to aid in the understanding of the questionnaires, as well as to ease any barriers that may exist due to a lack of literacy skills. The participants where the interviews were conducted were first asked for their consent before the interview commenced, and each interview, on average, lasted about 30 to 40 minutes. Participation was entirely voluntary, and confidentiality was maintained to the highest standard. The participants were fully informed that they had the option to withdraw from the research study at any time, and it would not result in any penalties.



Data

The Mediating Role of Social Isolation and Resilience in the Psychiatric Sequelae of Flood-Induced Trauma among Older Adults

Analysis Results

Table 1:

Demographic Characteristics of Participants (n = 50)

Variable	Category	Frequency (n)	Percentage (%)
Age (years)	60–65	18	36.0
	66–70	14	28.0
	71–75	10	20.0
	76+	8	16.0
Gender	Male	24	48.0
	Female	26	52.0
Marital Status	Married	32	64.0
	Widowed/Single	18	36.0

Note. Values are presented as frequencies and percentages.

Table 2:

Psychiatric Symptoms Among Participants

Symptom	Mean (M)	Standard Deviation (SD)	Prevalence (%)
PTSD symptoms score	18.6	6.2	46.0
Depression score	15.2	5.8	40.0
Anxiety score	14.8	6.0	38.0

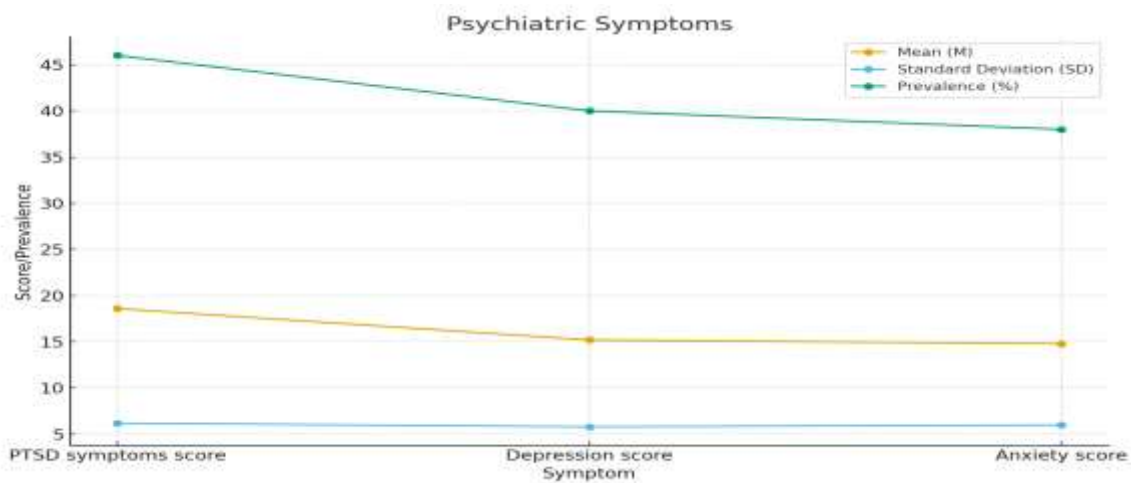


Table 3:

Levels of Social Isolation and Resilience

Variable	Low (%)	Moderate (%)	High (%)	Mean (SD)
Social Isolation	20.0	48.0	32.0	11.4 (3.6)
Resilience	28.0	42.0	30.0	22.8 (5.1)

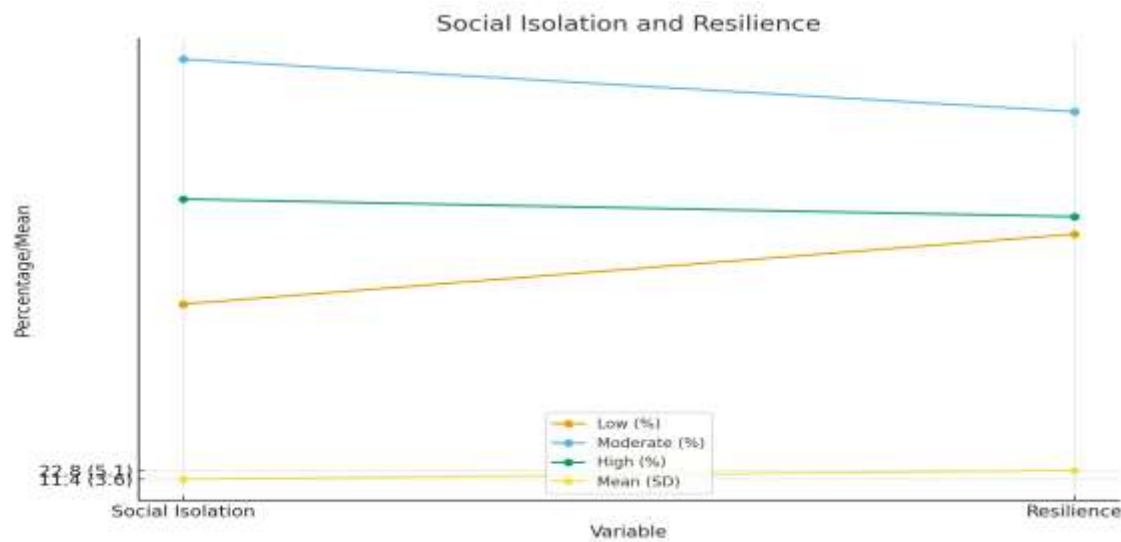


Table 4:

Correlations between Trauma, Social Isolation, Resilience, and Psychiatric Symptoms

Variables	Trauma Exposure	Social Isolation	Resilience	Psychiatric Symptoms
Trauma Exposure	1	.42**	-.28*	.51**
Social Isolation	.42**	1	-.35*	.47**
Resilience	-.28*	-.35*	1	-.40**
Psychiatric Symptoms	.51**	.47**	-.40**	1

Note. * $p < .05$, ** $p < .01$.

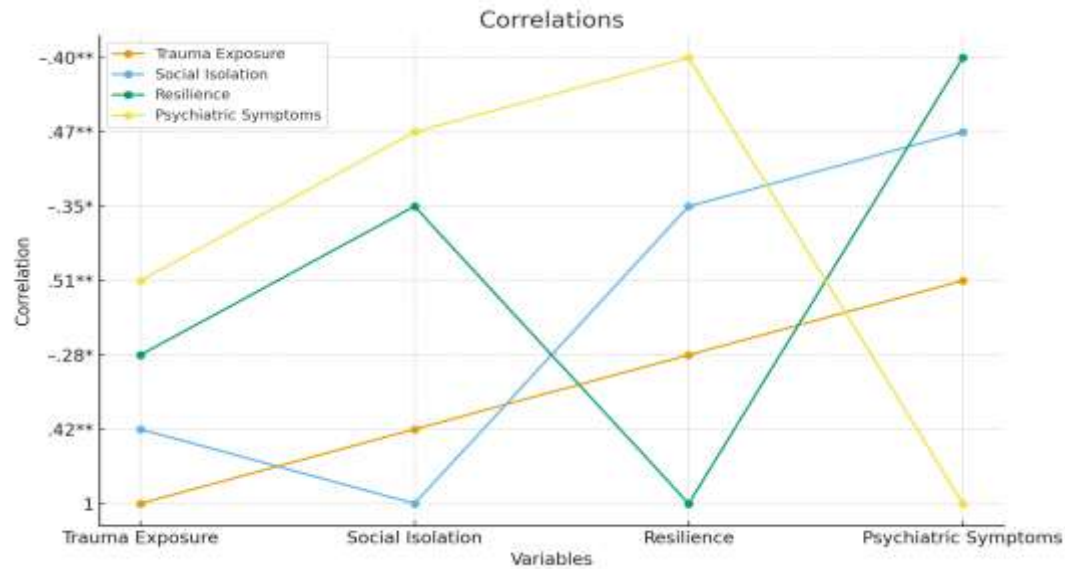
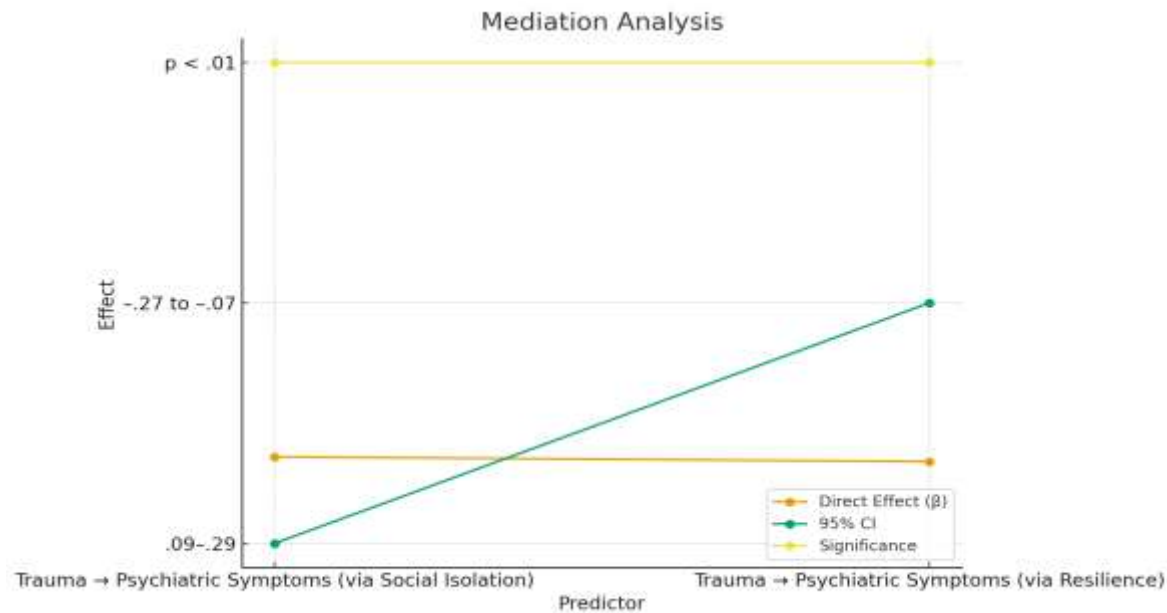


Table 5:
Mediation Analysis: Social Isolation and Resilience as Mediators

Predictor → Outcome	Direct Effect (β)	Indirect Effect (β)	95% CI	Significance
Trauma → Psychiatric Symptoms (via Social Isolation)	0.36	0.18	.09–.29	p < .01
Trauma → Psychiatric Symptoms (via Resilience)	0.34	–.15	–.27 to –.07	p < .01



DISCUSSION

Psychiatric Impact of Flood Exposure:

This study revealed that floods have been shown to impact people negatively as a consequence of their mental well-being. With aging people, the consequences are more severe and can lead to more troubling psychiatric disorders, case in point, depression, anxiety, and PTSD. This study confirms what has been proven before, that older floods have been shown to lead to more mental disorders in the population. For example, Law et al. (2025) studied the psychological impact of climate-related floods on older adults and the subsequent PTSD and depression associated with it. Likewise, Rahman et al. (2025) noted the increase in depression, anxiety, and stressful situations and their occurrence predominantly within the older age group.

Role of Social Isolation:

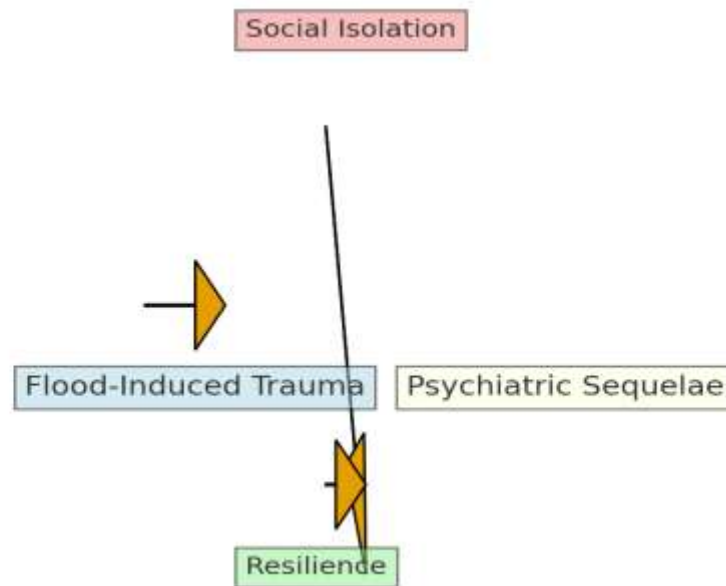
This information illustrates the important aspect of social isolation in the case of amplification of psychiatric symptoms after any calamity. This phenomenon has been documented by Song et al. (2025), where, after the flood, the social isolation of the elderly with very scant social support became the norm. This is associated with social isolation, which is very sad because it is the elderly who, unlike the rest of the population, have been documented to use social networks primarily to seek support and not the other way round.

Protective Role of Resilience:

The findings of the current study suggest that the primary protective factor is resilience. This is in line with the work of Saputra et al. (2025), where they outline the multitude of factors that facilitate positive recovery of older persons to flood hazards. Moreover, Yu et al. (2025) highlight the importance of the psychological dimension of resilience, which predicts lower odds of depression and PTSD in older persons, and in this context, the need to foster resilience and pose a mental health threat.

Implications for Pakistan:

Pakistan is in a miserable position, as stated by The Guardian 2025, cited in Gill et al. In 2025, McGowan highlighted that the recent floods and their psychological toll inflicted on the populace, especially the elderly, were worsened by the overwhelming absence of mental health support. Responding to the flood, mental health protective services are absent (Nina,2025).



CONCLUSION

This research sought to understand the psychological impact of floods on older adults, focusing on the mediating effects of social isolation and social resilience. The research findings suggest that floods increase the prevalence of depression, anxiety, and PTSD among older individuals. The neglect and fallout from the social isolation mental health framework are profoundly concerning, and social resilience does buffer the impact of such trauma. The findings substantiate the social and psychological constructs of the mental health framework, in relation to older adults, following natural disasters from the mental health perspective. The findings indicate that the need to enhance the recovery and resilience in the social isolation, post-disaster, mental health framework offers critical support to this vulnerable population.

Limitations

Significant findings easily change or disappear when a study has limitations. The first limitation is the sample size of 50 older participants because, with this small number, the study's findings cannot be used to conclude broader populations or different regions. The second limitation is the presence of a cross-sectional design, which refrains from establishing cause-and-effect relationships among the different variables of flood exposure, social isolation, social resilience, and different psychiatric symptoms. The third limitation is the focus on self-reports on the questionnaires, which may lead to recall bias or social bias. Other elements like pre-existing

psychiatric illnesses, socioeconomic standing, and family support were also not entirely controlled. Lastly, the psychological impact of trauma due to floods on older adults has mostly been neglected, as assessments were done only once.

Future Suggestions

The sequential designs needed in future studies that focus on the limitations of the current research are to monitor the evolution of psychiatric disorders and establish causal relationships. Broader and more varied research subjects would improve the aforementioned study's focus. The implementation of clinical techniques and other tangible clinical assessment techniques would enhance the accuracy of the information. Other studies that focus on the consequences of social support and resilience training provided to older people in flood-impacted regions would be beneficial. Furthermore, the study of the economic, social, cultural, and familial components of isolation, mental health, interpersonal resilience, and the correlating psychosocial sequelae of flood-related trauma would greatly expand the understanding of the flood trauma's psychological effects.

REFERENCES

1. Ahmed, R., & Siddiqui, A. (2020). Vulnerability of older adults in disasters: Lessons from Pakistan. *Pakistan Journal of Public Health*, 10(3), 152–158.
2. Aslam, N., & Tariq, N. (2016). Psychological resilience and posttraumatic stress disorder among flood victims of Pakistan. *Pakistan Journal of Social and Clinical Psychology*, 14(1), 28–35.
3. Chen Song, Funda Atun, Justine I. Blanford, Carmen Anthonj, Impact of flooding on the social and mental health of older adults- A scoping review, *Water Security*, Volume 25, 2025, 100190, ISSN 2468-3124, <https://doi.org/10.1016/j.wasec.2025.100190>
4. Chung, M. C., AlQarni, N., Al Muhairi, S., & Al Mazrouei, S. (2014). Posttraumatic stress disorder and psychiatric co-morbidity among flood survivors in Pakistan. *Psychiatry Research*, 219(3), 496–502. <https://doi.org/10.1016/j.psychres.2014.06.001>
5. Farooq, S., & Khan, M. N. (2012). Stigma and mental health in Pakistan. *Journal of Pakistan Psychiatric Society*, 9(1), 17–20.
6. Hameed, S., Zafar, M., & Saeed, F. (2019). Social isolation and disaster vulnerability in Pakistan: Implications for mental health. *Pakistan Journal of Medical Research*, 58(4), 144–150.
7. Hussain, W., Rehman, S., & Ali, A. (2021). Disaster displacement and social isolation among older adults: A study of flood survivors in Sindh, Pakistan. *Ageing International*, 46(3), 221–234.
8. Iqbal, S. (2023). Psychological impacts of natural disasters: A review of flood-related trauma in Pakistan. *Pakistan Journal of Clinical Psychology*, 22(2), 55–68.
9. Khalid, A., Malik, A., & Riaz, M. (2017). Psychiatric morbidity among flood-affected individuals in Pakistan: Findings from Punjab province. *Journal of the College of Physicians and Surgeons Pakistan*, 27(6), 329–333.

10. Khan, S., Bukhari, S., & Niazi, R. (2020). Resilience and coping strategies among disaster survivors in Khyber Pakhtunkhwa, Pakistan. *Journal of Behavioral Sciences*, 30(2), 99–113.
11. Law S, Marinova T, Ewins L, Marks E. Understanding the psychological impact of flooding on older adults: A scoping review. *Ann N Y Acad Sci*. 2025 Jun;1548(1):99-115. doi: 10.1111/nyas.15356. Epub 2025 May 14. PMID: 40369703; PMCID: PMC12220290.
12. Naeem, F., Ayub, M., Masood, K., Gul, H., Khalid, M., Farrukh, A., & Chaudhry, H. R. (2011). Prevalence and psychosocial risk factors of PTSD: 2010 flood survivors in Pakistan. *Social Psychiatry and Psychiatric Epidemiology*, 46(11), 1097–1104.
13. Nina Lakhani (2025). Climate justice reporter. Mental health and poverty remain a struggle for Maui wildfire survivors, a new study says. *The Guardian*,
14. Qasim, M. (2016). Resilience and psychological adjustment among flood survivors in Pakistan. *Pakistan Journal of Social Sciences*, 36(1), 455–466.
15. Rana, M. H., Ahmed, N., & Tariq, S. (2022). Building resilience in flood-affected communities: A psychosocial approach in Pakistan. *Pakistan Journal of Clinical Psychology*, 21(2), 54–63.
16. Rahman, M., Shobuj, I.A., Alam, S. et al. The unforeseen tide: exploring mental health impacts of the 2024 flash flood in Bangladesh. *BMC Public Health* 25, 2728 (2025). <https://doi.org/10.1186/s12889-025-24118-9>.
17. Saleem, A., Javed, S., & Irfan, M. (2023). Long-term mental health outcomes of flood exposure: Evidence from Sindh, Pakistan. *BMC Psychiatry*, 23, 112–120. <https://doi.org/10.1186/s12888-023-05068-3>
18. Saputra H, Iswara PW, Nor NNFM, Usman F. Multidimensional factors shaping older persons' resilience to floods in Madura Island. *Jamba*. 2025 Jun 17;17(1):1755. doi: 10.4102/jamba.v17i1.1755. PMID: 40611945; PMCID: PMC12223997.
19. Shah, S. A., Qureshi, M. A., & Hassan, S. (2021). Health impacts of recurrent flooding in rural Pakistan: A focus on older adults. *Pakistan Journal of Public Health*, 11(2), 77–83.
20. UNICEF. (2022). Pakistan floods 2022: Emergency report—United Nations Children's Fund. <https://www.unicef.org/appeals/pakistan/floods>.
21. Warraich, H., Zaidi, A. K. M., & Patel, K. (2011). Floods in Pakistan: A public health crisis. *Bulletin of the World Health Organization*, 89(3), 236–237. <https://doi.org/10.2471/BLT.11.085449>.
22. Wister A, Kim B, Levasseur M, Poulin V, Qiu S, Yuwono E, Meynet S, Beadle J, Kadowaki L, Klasa K, Linkov I. Resilience applications to social isolation and loneliness in older adults: a scoping review to develop a model and research agenda. *Front Public Health*. 2025 Aug 15;13:1589781. doi: 10.3389/fpubh.2025.1589781. PMID: 40893194; PMCID: PMC12394976.
23. Yousuf, U., Iqbal, Z., & Saeed, K. (2023). Mental health burden of natural disasters: A systematic review of flood-related studies in Pakistan. *Frontiers in Psychiatry*, 14, 1122334. <https://doi.org/10.3389/fpsy.2023.1122334>.