International Journal of Science and Research (IJSR)
ISSN: 2319-7064
Impact Factor 2024: 7.101

Measuring the Impact of Cyclones on Women's Mental Health and Social - Psychology in India: Have We Developed an Effective Strategy?

Mahesh Ganguly

Junior Research Fellow, Jamia Millia Islamia, New Delhi, India

Abstract: ***Almost 4 - 6 cyclones hit India every year, out of which 3 are classified as severe. According to N. D. M. A., the rough estimation for the incidence of cyclones in India is nearly 15 - 20%. There is a reciprocal relationship between exposure to cyclonic disaster and the alarming increase in mental disorders, anxiety, depression, somatic complaints and post - traumatic stress disorder (PTSD). The aim of this study is to 1. determine the mental health status of cyclone affected women aged 18 years and above in India; 2. assess whether India has an effective prevention framework to address the above. This paper uses descriptive 'cross - sectional approach' to study the mental health status of women living in cyclone - affected areas, typically 6 to 8 months post - exposure through an online self - report questionnaire and focus group discussions. Further, this study critically examined the Indian disaster mental health preparedness framework, existing strategies, systemic efforts and field implementation like mental health support services in the current scenario. For this purpose, the existing literature on the link between mental health and disasters (over the last 30 years) was thoroughly analysed. The findings of this study shows gross prevalence of mental trauma and PTSD among females and mostly where there is less empowerment of women and women who are forced to stay at home. In addition, intimate partner violence against women increases in the post - cyclone period, contributing to further deterioration of their psychological situation and mental wellness. The study concludes that India's MHP strategy faces major challenges due to the undermining of the 'demand side' of MHP; lack of a strong and well funded framework and unavailability of professionals.***

Keywords: cyclone, mental health, PTSD, MHP

1. Introduction

Cyclones are a recurring natural disaster in India. According to reports from NDMA, India's premier disaster management agency, the coastal regions of India, especially the coastal districts of West Bengal, Orissa, Andhra Pradesh, and Tamil Nadu, are hit by 4 to 6 cyclones every year, which are life - threatening for the communities living there (*Mandal G. S., Mohapatra M., 2010).* Women, due to their social roles and limited access to resources, are particularly vulnerable to the impacts of frequent cyclone disasters. As a result, they suffer the most, which affects their mental health and psyche. There are four main types of mental health symptoms that usually occur in post cyclone or natural calamity atmospheres. These 'emotional' symptoms include frequent panic attacks, irritability, and anger; 'psychosomatic' symptoms include sleep disturbances and headaches; 'cognitive' symptoms include nightmares, flashbacks, and memory problems; and 'behavioral' symptoms include hopelessness, lethargy, and loneliness (*Satapathy Sujata, 2012*). Most studies focus on the impact of cyclones on property damage, loss of infrastructure, physical harm, and other tangible consequences. There are large gaps in the literature when it comes to the impact of cyclones on the mental health of affected communities, especially women.

Objective

The broad research aim of this study are:

1) To identify the mental health status of cyclone - affected women in India aged 18 and abov years of age
2) To assess whether India has an effective mental health prevention and support framework to address these issues.
3) Aim at key policy recommendations.

2. Literature Review

The first literature on the impact of disasters on mental health was published in 1906 in Zurich, Switzerland, in the Indian academic circle, it was Narayan et al. in 1987 who wrote the first well - researched paper on this topic (*Satapathy Sujata, 2012*). Although the two studies mentioned above referred to man - made hazards—mining disasters and fire disasters, respectively—the impact of natural disasters and their consequences on women's mental health and India's disaster mental health preparedness strategy is still very limited. In Indian patriarchal social systems, where women are generally considered inferior and second to men in almost all aspects, the issue of the reciprocal relationship between disasters and their mental state is obviously taken for granted, which further increases their vulnerability. Their preexisting social conditions, such as low economic status, low access to resources, and their confinement to domestic care responsibilities, have further increased their vulnerability towards mental illness in the aftermath of a cyclone disaster (*Parida Pradeep, 2015).* Study finds that there is a sharp increase in the prevalence of intimate partner violence on women by men following cyclonic disaster, further complicating their mental health, thus aggravated trauma (*Fothergill, 1999).* The economic loss, homelessness, loss of jobs all of these put immense pressure on them, and they like to generate a feeling of inadequacy because they are unable to live up to the expectations of their socially constructed gender role. The presence of these conditions unfortunately influences higher numbers of partnered, heterosexual men to act in violent and abusive ways toward the women in their lives" (*Austin, 2008).* In a study conducted after Cyclone Amphaan in the coastal regions of West Bengal, it was found that the loosening of family ties between the male and female, increasing tensions, and attrition led to an increase in cases of

domestic violence in cyclone - affected families (*Das et al.2020*). The level of mental health is so severe in some blocks of the Sundarbans that women are increasingly associated with the direct self - harm or suicide attempts; alprazolam, an antidepressant, is increasingly being used by the females of those regions (*Krishnamurthy Rohini, 2024).*

Regrettably, there is a lack of gender - specific assessments to comprehend the preparedness of mental health in India for disasters. The National Disaster Management Plan of 2009, prepared by the National Institute of Disaster Management, pays little attention to the issue of mental illness in women after a disaster (Roshan et al.2022). The lack of awareness, prevalent social stigmas, and inadequate focus on women's post - disaster mental health and well - being intensify the complexity and critical nature of the situation, demanding immediate and thorough research and attention. (NIMHANS, 2022)

3. Methodology

3.1 Research Design

This paper employed the descriptive design of the cross - sectional approach in reviewing the status of mental health comprising the women of 18 years and older and the residents of areas in India affected by the cyclone. The use of a cross - sectional design will essentially enable data collection to occur at one single instance, after which inferences shall be made regarding the assessment of the current state of mental health status of women after being exposed to the cyclone. This makes this an extremely useful design for putting forth valuable information on the burden of mental health problems, namely anxiety, depression, and PTSD, in a given population of interest.

3.2 Study Population and Sampling

Women from the age of 18 years living in areas that have been highly affected by cyclones within the past 6 to 8 months before the study and who are willing to provide informed consent to participate.

Picking the cyclone affected regions:
The most risked areas were identified using the most recent statistics on cyclonic landfall by the National disaster management authority and Indian meteorological department. These are Odisha, West Bengal, Andhra Pradesh, and Tamil Nadu.

Selecting of Participants: The participants have been drawn from among local communities purely on a random basis using simple random sampling. A list of all possible members has been drawn through assistance from local NGOs and community leadership.

3.3 Data Collection Techniques:

Online Self - Report Questionnaire: The online self - report questionnaire was designed to find out the mental health status of the participants. The demographic information developed for the questionnaire was: Age, education, marital status, number of children, employment status, and socio - economic background.

Psychological Health Measurements: It was decided that different forms of anxiety through the GAD - 7 scale, [1] which had previously been validated, were present and depression as well as the PTSD was determined by the PCL - -C instrument. [2]

Generalised anxiety disorder - 7 item scale: (GAD - 7)

3.3.1 Mechanism and Scoring
Items and Symptoms: There are seven questions in the GAD - 7 that deal with common symptoms of anxiety, such as nervousness; not being able to stop or control the worry; and restlessness. These symptoms were derived from the diagnostic criteria of GAD developed by the DSM.

Response Options: Each of the 7 items is scored on a 4 - point Likert scale based on the frequency by which during the last two weeks the respondent experienced the symptom:
0 = "Not at all"
1 = "Several days"
2 = "More than half the days"
3 = "Nearly every day"
Interpretation: Sum the scores for each of the 7 items to obtain the total GAD - 7 score, which can range from 0 to 21. Interpret the scoring as:
0 - 4: Minimal anxiety
5 - 9: Mild anxiety
10 - 14: Moderate anxiety
15 - 21: Severe anxiety

Clinical Interpretation: Although a score of 10 or more on the GAD - 7 corresponds to a probable anxiety disorder and should be followed up by a primary care clinician or other mental health professionals, the severity of anxiety symptoms increases with the score.

PTSD checklist - civilian version: (PCL - C)

3.3.2 Scoring and Mechanism
Symptoms and Items: There are 17 items in the PCL - C designed after the cardinal symptoms of PTSD, further subcategorized into three clusters:

Re - experiencing (5 items): Intrusive thoughts; flashbacks; and distressing dreams linked to the traumatic event.

Avoidance/Numbing (7 items): Avoidance of reminders of trauma, emotional numbing and feeling detached from others.
Hyperarousal (5 items): Hypervigilance, exaggerated startle response, and difficulty with falling asleep and concentration.

[1] https://adaa.org/sites/default/files/GAD-7_Anxiety-updated_0.pdf?utm_device=cutm_source=googleum_medium=cpcutm_campaign=136246792271ut

[2] https://reference.medscape.com/calculator/548/post-traumatic-stress-disorder-pcl-c

Response Options: Each item of the PCL - C is rated on a 5 - point Likert scale reflecting the frequency of the symptoms over the past month:
1 = "Not at all"
2 = "A little bit"
3 = "Moderately"
4 = "Quite a bit"
5 = "Extremely"

Scoring: A total PCL - C score is obtained by summing all the items with a minimum value of 17 and a maximum of 85. Interpretation of scoring is as follows:
17 - 29: Subthreshold symptoms, below the cutoff score for probable PTSD
30 - 44: Symptomatic of PTSD
45 - 85: Severe PTSD (END)

Stress of the cyclone:
Direct questions on exposure to cyclones, loss of property or livelihood, displacement, and access to relief services.

The survey was shared online through various channels, including WhatsApp, email, and community groups tracked by local NGOs. There was local support available for people with low digital literacy.

3.3.2 Focus Group Discussions (FGDs):

The socio - cultural and psychological factors that influenced the women's mental health were elaborated in terms of FGDs. The discussions were held in groups of 6 - 10 women. The sessions were moderated by a set of trained moderators, guided by a semi - structured guide.

Experiences Before, During, and After the Cyclone: The participants shared the process of their personal experience regarding the cyclone. They narrated the immediate effects on their lives, houses, and families.

Mental Health Challenges: Emotional and psychic problems of the women, their fear, anxiety, depression, and if PTSTD existed.

Social Dynamics and Violence: Changes in social dynamics such as increased domestic violence, changes in household roles, and community relationships.

Mental Health Services: The discussions also captured the access and awareness of mental health services among participants, along with perceptions of how effective they were.
Upon participants' request, the FGDs were audiotaped and later transcribed—orally—for thematic analysis.

4. Findings of the Study

4.1 Prevalence of Mental Health Disorders

A fair load of mental health disorders was found in women living in the areas affected by the cyclone. Almost 63% of the women had symptoms that ranged between moderate to severe anxiety on the basis of GAD - 7 scores. Over 58% of the women suffered from at least moderate to severe depression based on PHQ - 9. Over 42% of participants met the diagnostic criteria for PTSD according to PCL - C, meaning that they must have been highly affected psychologically.

4.2 Socio - Demographic Factors Influencing Mental Health

Results showed a few socio - demographic profiles statistically associated with a higher reporting of psychological distress:

- Age: Psychological distress in terms of suffering from anxiety and depression was more prominent in younger women (18 to 30 years of age) than in their older counterparts. This age could have a wider incidence rate due to a large social and economic outlook disruption in many younger women.
- Marital State: The anxious and depressed states were more among married females compared to the single status, due to increased care responsibility and added economic pressure.
- Socioeconomic status: Women with poor socio - economics had higher levels of anxiety, depression, as well as an increased vulnerability to PTSD. The loss of livelihood, inadequate access to relief, and increased vulnerability towards post - cyclone violence further increased their psychological distress.

Impact of the Cyclone - Related Stressors:
The following are some of the cyclone - related stressors that have a great impact on the mental health of women as per this survey:

- Livelihood Time 70% Source of stress: A great source of stress, as outlined by the participants, was the loss of livelihood. Economic instability had a significant impact on the loss, affecting a greater capacity of the ability to meet the basic needs, creating the feelings of helplessness as well as inducing anxieties on what is going to happen in the future.
- Displacement and Housing Insecurity: Around 45% of the women reported that the cyclone damage had displaced them from their homes. The displacements implied long - lasting instabilities, with many participants reporting that anxiety was building because of the uncertainty of living conditions.
- Increased Domestic Violence: 35% reported facing IPV post–cyclone. Increased IPV, as a contribution of the disaster - related stress and strain on the resources of the household, was found to be very serious in its impact on mental health among women.

4.3 Social Support and Coping Mechanisms:

Availability of Social Support:
The results clearly pointed out that social support was one such critical factor that helped in reducing the psychological impact of the cyclones. There were reduced symptoms of anxiety and depression noted among women with high social support systems. However, 30% claimed that their support systems were shattered by the cyclone, in the sense that many families and communities were displaced or were struggling for survival.

Coping Strategies:
The findings on how women coped with their mental health are as follows:

- Some respondents resorted to religious and spiritual practices to cope with the stress and anxiety befalling them. This was inclusive of prayer, meditation, place of religion, and participation in social activities within churches.
- Some of the women formed or joined informal support groups at the community level, which enabled them to share their experiences and express their feelings. Such support groups worked best in places where there were limited or no professional mental health services.
- An essential part of the coping mechanism for many women in this study was through avoidance or denial. They prepared in terms of engaging in activities required for daily sustenance. They did not wish to acknowledge their psychological issues. Their coping style gave a temporary sense of relief but typically made the symptom severity eventually worsen with time.

4.4 Sustainability of the Disaster Mental Health Preparedness Framework in India:

4.4.1 Awareness and Accessibility to Mental Health Services:
Identification of major gaps in women living in a cyclone - affected area, relating to awareness of available mental health services and accessibility to the services:

Awareness: Only 25 percent were aware of any service availability for their mental health post - disaster. The lack of awareness was visible in the rural areas, where knowledge spreading is relatively less.

Only 18.0% accessed the mental health services among those who were aware of the services. The reasons for not accessing services were that they were not available in their localities, a large distance to the service provider, and cultural stigma.

Few of those who participated in the study reported a positive experience with the services—both in counselling and the support groups, most especially when one's animating them were certainly more sensitised with services structured by NGOs and community - based organisations.

The others reported negatively due to a lack of culturally relevant support, low levels of follow - up, and the impersonal nature to some of the larger orgs. Quite a few investigators also commented about services being too much of a focus on a response to crisis versus long term support in mental health.

4.4.2 Stakeholder Views
Stakeholder analysis reveals a number of challenges and shortcoming of the disaster mental health preparedness framework of India.

Poor Integration: This was observed to be maybe the largest source of failure in the offering of mental health services. In many instances, it has failed to integrate mental health services with the rest of the efforts being offered within the disaster response.

Inadequate Funding: It was observable that stakeholders pointed out the chronic under - funding of mental health services in areas that are prone to disaster.

Cultural Sensitivity: All the stakeholders unanimously agreed that mental health interventions have to be much more sensitive to culture and, in general, more community - based. The current top - down approach was perceivably aloof in most cases from the subtleties and local needs of the cyclone - affected women.

4.4.3 Gaps in the Preparedness Framework
The critical gaps identified by this research in the current disaster mental health preparedness framework of India are:

Ignoring critical areas of women's mental health, such as gender - based violence and socio - economic vulnerabilities, that many women experience.

There are no community - based mental health initiatives to deal with much - needed post - disaster support.

Training and Capacity Development: The study showed an absence of the training of the first line of response and community workers on the identification and management process of mental health problems.

5. Discussion

5.1 Interpretation of Key Findings

The present study finds that the prevalence rate of mental health disorders in women from the cyclone - affected areas of India is high, representing the deep psychological impact of such natural calamities on the vulnerable target population. The high rates of anxiety, depression, and post - traumatic stress disorder identified in this study match global research data highlighting that, during natural disasters, women bear an increased mental health burden (Neria et al., 2008; WHO, 2013).

5.1.1 Socio - Demographic Vulnerabilities
The most vulnerable groups identified with a higher prevalence of suffering from poor mental health after the cyclone were young women, married women, and those from low socio - economic backgrounds. This adds to a large pool of evidence showing that socio - demographic factors, such as age, marital status, and economic insecurity, can act as multipliers of indirect and direct psychological effects, thereby triggered by disasters. Aggravated vulnerability for young women could be seen in this context: disruption at life milestones both through education and working and increased anxiety about the future. Other added stressors that would accrue for the married women, especially those with young children, include the effects of caregiving and managing household recovery in the presence of limited resources.

5.1.2 Impact of Intimate Partner Violence
The fact that the research found IPV to rise after cyclones is quite alarming and also one of the most important points on raises within the context of this discussion. Increases in IPV during post - disaster periods have been documented elsewhere, with commonly cited contributing factors being

stress, displacement, and economic hardship (Enarson, 1999; Parkinson & Zara, 2013). Most importantly, it emphasises that the increasing incidence of IPV and its robust hypothetical association with the severe anxiety/depression level of women further signals that integrating the prevention and response to gender - based violence will play a critical role in disaster preparedness and recovery efforts.

5.2 Review of India's Framework on Disaster Mental Health Preparedness

As far as women affected by cyclones, it exposes large chinks in India's disaster mental health preparedness framework. Though there are mental health policies and programs for disaster response, such efforts, as observed in this study, are piecemeal, underfunded, and not integrated within larger strategies for disaster management.

5.2.1 Ineffectiveness of Gender - Sensitive Approaches

One of the critical gaps noted is that the existing mental health preparedness framework does not embed any gender - sensitive strategies. [3] In this paper, the analysis indicated that the post - cyclone mental health services were not equipped to deal with the numerous women - specific issues, like IPV, significant care - giving responsibilities, and economic insecurity. The absence of such targeted interventions means not only does potential effectiveness of mental health services get defeated but also that the potential for gender inequality escalates.

5.3 Poor Integration and Resourcing

The article also posits the low integration of mental health services into other disaster response activities in a critical view. It is seen and acted on most times as an appendage to disaster management, not a core part of it. It is for this reason that the poor response takes place, and mental health therefore remains a lone ranger and appears isolated from other critical services such as housing, food security, and economic recovery.

Such challenges are further compounded by underfunding, and mental health services are a bare area in as far as adequate funding is concerned. At the bedrock of these challenges lie impediments to effective service delivery; the presence of chronic shortages of mental health professionals leading to inadequate facilities and limited outreach programs. This finding is effective in echoing other concerns by scholars regarding the level of underinvestment in mental health, more so in low - and middle - income countries. This does not only entail adding more funds but it also means effectively investing in training, capacity building, and the development of community - based mental health programs.

5.3.1. Strengthening the Disaster Mental Health Framework:

The existing disaster mental health framework of India needs to be strengthened to bridge the gaps available in the present framework. This can be done in the following steps:

Integrating Mental Health in Disaster Management Plans: Mental health services should be integrated into the general disaster management framework, with an assurance of their implementation in any form of intervention from the initial response, through to all, and during the recovery stage. This includes deployment of trained mental health professionals in a disaster response team and the setting up of a mobile mental health unit in affected areas. [4]

Design gender - sensitive interventions: Disasters mental health programming should be designed in a way to actively deal with special needs of the females in prevention and response of IPV. Sometimes, this may include training community health workers on the identification and response to signs of IPV, creating safe spaces for women, and ensuring that there is access to and appropriateness of mental health services in the culture. [5]

Community - Based Approaches: There lies possibly an important place for these psychosocial interventions at the community level, which would therefore be able to support continuously in post - disaster situations. Such programs must be culturally appropriate and also necessarily should engage specifically local stakeholders, be they community leaders, NGOs, or even affected women themselves, while planning and implementing these programs. [6]

Addressing Socio - Economic Vulnerabilities:

Given the fact that socio - economic status has a very close relation to mental health outcome, disaster response strategies need to incorporate how the economic vulnerabilities of the affected populations will be addressed. This may include:

Livelihood support programs, especially cash transfer interventions, should be fast - tracked for women in cyclone - affected areas and linked, in the long term, to interventions like skills development and microcredit access. This will reduce the stress that this economic crisis causes, resulting in poor mental health later on.

Housing and Displacement Services: Housing safe and stable women after the cyclone is the most leading factor for the mental well - being of women. These are to be incorporated as the primmer most priority issues under the disaster recovery planning process of rebuilding homes and safe and supportive support homes and temporary shelters.[7]

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[3] Gender-responsive and inclusive implementation of the Sendai Framework for Disaster Risk Reduction (2015-2030). https://wrd.unwomen.org/sites/default/files/2022-07/Merged%20ESARO%20SF%20tools.pdf

[4] https://www.researchgate.net/publication/377518064_National_Disaster_Management_Guidelines_on_Mental_Health_and_Psychosocial_Support_Services_in_Disasters

[5] https://disasterphilanthropy.org/resources/women-and-girls-in-disasters/

[6] https://nidm.gov.in/PDF/pubs/NDMA/8.pdf

[7] In response to the alarming situation faced by widows, destitute orphans, children, the elderly and persons with disabilities, a unique initiative called Mamta Gruha, meaning "abode of love and affection," was established under the Sneha Abhiyaan project. This initiative was developed through collaboration between the Centre, the Odisha government, UNICEF, the National Institute of Mental

6. Conclusion

In the present study, it has been brought out about the deep psychological issues women cyclone victims have to suffer in India. Depression, PTSD and other anxiety disorders are common among them if there are other predisposing factors such as socio - demographic risks, poor economic stability, displacements and high levels of IPU. Even though social support and coping strategies intervene to some extent, present mental health services in India are grossly inadequate to being gender sensitive and responsive to the requirements of women in disaster prone regions.

There has been a lack of awareness, availability and use of culturally appropriate mental health services following disasters and therefore the need for more incorporation of community - based response to DMHSPs. To enhance the sheer and mental health of the female populace in these cyclone - exposed territories, there is every imperative call for India to similarly ramp up its catastrophe mental health scheme of hurting with gender sensitive, culturally endorsed, and sufficiently funded programs.

The present research, therefore, urges policy makers, mental health practitioners and community based organisations to ensure that women's mental health is not sidelined and addressed in disaster management and recovery processes such that they are not left behind in the aftermath of cyclone disasters.

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