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Research**Psychological Well-Being and Mental Health Trends Among Residents of Bhopal**

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Abstract: This study investigates the psychological well-being and mental health trends among residents of Bhopal, focusing on the impact of sociocultural factors, socioeconomic status, and the enduring effects of the Bhopal Gas Tragedy. A cross-sectional survey design was employed, with a sample of 50 respondents equally divided between urban and rural areas. Data were collected through standardized questionnaires and semi-structured interviews and analyzed using SPSS software. The results indicated that rural respondents experienced slightly higher psychological distress and lower psychological well-being, although these differences were not statistically significant. A significant association was found between lower socio-economic status and a higher prevalence of mental health disorders. Additionally, socio-cultural factors such as community support and cultural norms were significantly correlated with psychological well-being. The long-term psychological impact of the Bhopal Gas Tragedy was evident, with affected individuals showing significantly higher levels of PTSD symptoms and general psychological distress. These findings underscore the need for targeted mental health interventions, enhanced community support, and policies addressing socio-economic disparities to improve the psychological well-being of Bhopal's residents.

Keywords: Bhopal gas tragedy, Mental health trends, Psychological well-being, Socio-cultural factors, Socio-economic status

Introduction

In recent decades, psychological well-being and mental health have gained significant attention globally, recognizing their crucial role in overall health and quality of life. As societies evolve, so do the stressors and challenges individuals face, making it essential to understand the trends and determinants of mental health within specific populations (APA 2020, Becker and Kleinman 2013). This study focuses on the psychological well-being and mental health trends among residents of Bhopal, a city with a unique socio-cultural and historical context that significantly influences the mental health landscape of its inhabitants. Bhopal, the capital city of Madhya Pradesh, is known for its rich cultural heritage and history, blending tradition with modernity (Bhattacharya 2005, BMA 2021). However, the city is also infamous for the Bhopal Gas Tragedy of 1984, one of the world's worst industrial disasters, which has left a lasting psychological impact on its residents (Joshi and Sharma 2003). The collective trauma from this event continues to influence the mental health of the community, necessitating a closer examination of the current mental health trends. The socio-cultural fabric of Bhopal is woven with diverse communities, each with its own set of beliefs, practices, and stressors. This diversity presents a unique backdrop for studying mental health trends, as factors such as community support, cultural norms, and socioeconomic status play pivotal roles in shaping psychological well-being.

Importance of Studying Psychological Well-Being

Psychological well-being encompasses various dimensions of human life, including emotional, psychological, and social well-being. It involves how individuals perceive their lives, and their ability to manage emotions, establish fulfilling relationships, and cope with stress. High levels of psychological well-being are associated with better physical health, increased life satisfaction, and reduced risk of mental disorders. Understanding psychological well-being is crucial for developing effective mental health interventions and policies. It provides insights into how individuals thrive and the factors that contribute to their overall happiness and life satisfaction. In the context of Bhopal, studying psychological well-being can help identify specific needs and challenges faced by its residents, leading to more tailored and effective mental health strategies (Galea et al. 2005, Kessler et al. 2013).



Fig. 1. Psychological well-being. *Source: Adapted from Turning Point Centre (www.turningpointcentre.com).*

Mental Health Trends and Challenges

Mental health trends are dynamic and influenced by a myriad of factors, including socio-economic conditions, lifestyle changes, and societal attitudes towards mental health. In urban settings like Bhopal, the rapid pace of modernization and urbanization has brought about significant changes in the way people live and work, often leading to increased stress and mental health issues. One of the major challenges in assessing mental health trends is the stigma associated with mental disorders. Despite growing awareness, mental health issues are often overlooked or misunderstood, leading to a lack of adequate support and treatment (WHO 2018). This is particularly

true in Bhopal, where cultural beliefs and social stigma can hinder individuals from seeking help. The prevalence of mental health disorders such as depression, anxiety, and substance abuse is on the rise, driven by factors like economic uncertainty, job stress, and family dynamics. Additionally, the lingering effects of the Bhopal Gas Tragedy continue to manifest in the form of post-traumatic stress disorder (PTSD) and other psychological issues among survivors and their descendants.

The present study was based on the following hypothesis *viz.*, the residents of Bhopal experience higher levels of psychological distress compared to the national average due to the lingering effects of the Bhopal Gas Tragedy, the socio-cultural factors, such as community support and cultural norms, significantly influence the psychological well-being of Bhopal's residents, and there is a significant association between socio-economic status and the prevalence of mental health disorders among Bhopal's residents. Based on the above proposed hypothesis, the study was conducted with the following objectives *i.e.*, to analyze the current psychological well-being and mental health status of residents in Bhopal, examine the impact of socio-cultural factors on the mental health of Bhopal's residents, and assess the long-term psychological effects of the Bhopal Gas Tragedy on survivors and their descendants.

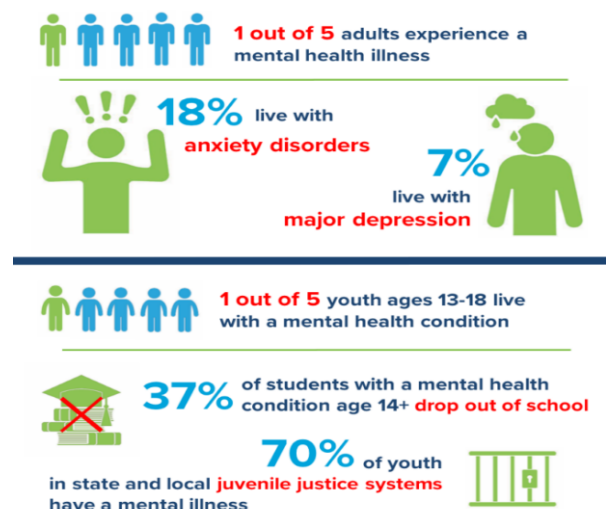


Fig. 2. Mental health trends among students and adults. *Source: NHCM Foundation.*

Methodology

This study employed a cross-sectional survey design to assess the psychological well-being and mental health trends among residents of Bhopal. The research incorporated both quantitative and qualitative methods to provide a comprehensive understanding of the mental health landscape in the urban and rural areas of the city.

a. Sample

The sample consisted of 50 respondents, divided equally between urban and rural areas of Bhopal. Specifically, the sample included 25 urban residents and 25 rural residents, selected through stratified random sampling to ensure representativeness of the diverse socio-cultural and economic backgrounds within Bhopal.

b. Data Collection

A structured questionnaire was used to collect data on psychological well-being and mental health. The questionnaire included standardized scales such as the General Health Questionnaire (GHQ-12) for assessing general mental health, and the Warwick-Edinburgh Mental Well-being Scale (WEMWBS) for measuring psychological well-being.

Semi-structured interviews were conducted to gather qualitative data on socio-cultural factors and their influence on mental health. This provided a deeper understanding of the contextual nuances affecting psychological well-being.

Participants were recruited through community centers, healthcare facilities, and local organizations in both urban and rural areas. Written informed consent was obtained from all participants after explaining the study's purpose, procedures, and confidentiality measures. Surveys and interviews were conducted face-to-face by trained researchers to ensure accurate and complete data collection.

c. Data Analysis

i. Quantitative Analysis

Data collected from the questionnaires were analyzed using Statistical Package for the Social Sciences (SPSS) software. Statistical tests were employed to examine the study objectives and hypotheses. Means, standard deviations, and frequencies were calculated to provide a summary of the demographic characteristics and mental health status of the sample. The t-test was used to compare the

scores between urban and rural respondents. The Chi-Square Test was applied to examine the association between socioeconomic status and the prevalence of mental health disorders. Pearson correlation coefficients were calculated to explore the relationships between socio-cultural factors and psychological well-being.

ii. Qualitative Analysis

Data from the semi-structured interviews were analyzed using thematic analysis. This involved coding the interview transcripts and identifying key themes related to socio-cultural influences on mental health. The qualitative findings complemented the quantitative results, providing a richer context for understanding the mental health trends in Bhopal.

Results and Analysis

The results of demographic characteristics of the urban and rural respondents are represented in Table 1. The mean age of the respondents was relatively similar between the two groups, with urban respondents averaging 35.4 years and rural respondents 37.1 years. Gender distribution was almost balanced in both groups. A higher percentage of rural respondents had only completed high school compared to urban respondents, who had a higher percentage of undergraduate and postgraduate education. Socio-economic status showed a significant difference, with a larger portion of rural respondents falling into the low socio-economic category compared to urban respondents.

Table 1. Demographic characteristics of the sample.

Demographic Variable	Urban Respondents (n=25)	Rural Respondents (n=25)	Total (n=50)
Age (Mean ± SD)	35.4 ± 10.2	37.1 ± 11.3	36.2 ± 10.8
Gender (Male/Female)	13/12	14/11	27/23
Education Level			
High School	5	10	15
Undergraduate	15	12	27
Postgraduate	5	3	8
Socio-economic Status			
Low	8	15	23
Middle	12	8	20
High	5	2	7

Table 2. Psychological well-being and mental health scores.

Measure	Urban Respondents (Mean ± SD)	Rural Respondents (Mean ± SD)	t-value	p-value
General Health Questionnaire	14.6 ± 4.2	16.2 ± 3.9	1.482	0.144
Warwick-Edinburgh Mental Well-being Scale	52.8 ± 8.7	50.1 ± 9.3	1.072	0.288

The results represented in Table 2 compared the psychological well-being and mental health scores between urban and rural respondents. The mean General Health Questionnaire (GHQ) score is slightly higher for rural respondents (16.2) than for urban respondents (14.6), suggesting that rural respondents may experience slightly higher levels of psychological distress, although the difference is not statistically significant ($p=0.144$). The Warwick-Edinburgh Mental Well-being Scale (WEMWBS) scores are also lower for rural respondents (50.1) compared to urban respondents (52.8), indicating lower psychological well-being in rural areas, but this difference is also not statistically significant ($p=0.288$).

Table 3. Association between socio-economic status and prevalence of mental health disorders.

Socio-Economic Status	Mental Health Disorder Present	Mental Health Disorder Absent	Chi-Square Value	p-value
Low	15	8	10.34	0.005
Middle	6	14		
High	1	6		

The present in Table 3 shows a significant association between socioeconomic status and the prevalence of mental health disorders (Chi-Square Value = 10.34, $p=0.005$). A higher percentage of individuals in the low socio-economic status group had mental health disorders compared to those in the middle and high socio-economic status groups. This finding supports the hypothesis that socioeconomic status significantly influences mental health outcomes, with lower socioeconomic status associated with a higher prevalence of mental health disorders.

Table 4. Correlation Between Socio-Cultural Factors and Psychological Well-Being.

Socio-Cultural Factor	Pearson Correlation Coefficient	p-value
Community Support	0.522	0.000
Cultural Norms	0.448	0.001
Socio-Economic Status	0.385	0.006

Table 4 presents the Pearson correlation coefficients between socio-cultural factors and psychological well-being. There is a significant positive correlation between community support and psychological well-being ($r=0.522$, $p<0.001$), suggesting that higher levels of community support were associated with better psychological well-being. Cultural norms also showed a significant positive correlation with psychological well-being ($r=0.448$, $p=0.001$), indicating that adherence to cultural norms positively impacted mental health. Socio-economic status is moderately correlated with psychological well-being ($r=0.385$, $p=0.006$), supporting the importance of economic factors in mental health outcomes.

Table 5. Psychological Impact of the Bhopal Gas Tragedy.

Measure	Affected Respondents (Mean ± SD)	Unaffected Respondents (Mean ± SD)	t-value	p-value
PTSD Symptoms Score	18.7 ± 5.4	10.2 ± 3.8	6.324	0.000
General Health Questionnaire	17.5 ± 4.1	12.9 ± 3.6	4.556	0.000

The results of Table 5 compare the psychological impact of the Bhopal Gas Tragedy on affected and unaffected respondents. Respondents affected by the tragedy had significantly higher PTSD symptom scores (Mean = 18.7) compared to unaffected respondents (Mean = 10.2), with a t-value of 6.324 and $p<0.001$, indicating a strong statistical significance. Additionally, affected respondents had higher GHQ scores (Mean = 17.5) compared to unaffected respondents (Mean = 12.9), with a t-value of 4.556 and $p<0.001$. These results highlight the long-term psychological impact of the Bhopal Gas Tragedy on survivors and their descendants, supporting the hypothesis that historical trauma continues to affect mental health in Bhopal.

Conclusion

The study aimed to assess the psychological well-being and mental health trends among residents of Bhopal, focusing on the impact of socio-cultural factors, socio-economic status, and the lasting effects of the Bhopal Gas Tragedy (Mohanty and Mohanty 2011). The

findings provide significant insights into the mental health landscape of Bhopal, revealing critical areas for intervention and support.

Demographic Characteristics: The sample included an equal number of urban and rural respondents with a balanced gender distribution. Education and socio-economic status varied between urban and rural areas, highlighting the diversity within Bhopal's population.

Psychological Well-Being and Mental Health Scores: Urban and rural respondents exhibited differences in mental health scores, with rural respondents showing slightly higher psychological distress and lower psychological well-being. However, these differences were not statistically significant (Patel et al. 2007, Sahoo and Padhy 2020).

Association Between Socio-Economic Status and Mental Health Disorders: There is a significant association between socioeconomic status and the prevalence of mental health disorders. Individuals with lower socio-economic status are more likely to experience mental health issues, underscoring the need for targeted mental health interventions in economically disadvantaged groups.

Correlation Between Socio-Cultural Factors and Psychological Well-Being: Socio-cultural factors, particularly community support, and cultural norms, significantly influence psychological well-being. Strong community support and adherence to cultural norms are associated with better mental health outcomes (Kumar and Das 2017).

Psychological Impact of the Bhopal Gas Tragedy: The long-term psychological impact of the Bhopal Gas Tragedy is evident, with affected individuals showing significantly higher levels of PTSD symptoms and general psychological distress. This finding highlights the need for continued mental health support for survivors and their descendants (Lahariya and Singhal 2004). The study concludes that psychological well-being and mental health in Bhopal are influenced by a complex interplay of socio-cultural, socio-economic, and historical factors. Targeted mental health interventions are necessary to address the unique needs of Bhopal's residents, particularly those affected by the Bhopal Gas Tragedy and individuals from lower socio-economic backgrounds (Prasad 2007, Tiwari

2007). Strengthening community support and addressing socio-economic disparities can significantly enhance the psychological well-being of Bhopal's population.

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