Climate Anxiety, Sleep Disturbance, and Coping of Stress as Predictors of Mental Well-Being among Urban and Rural Communities in Haryana

Ms. Parul[1], Dr. Suman Kumari[2]

[1]Post Graduate Diploma in Rehabilitation Psychology Student, State Institution for Rehabilitation Training & Research (SIRTAR), Gandhi Nagar, Rohtak-124001, Haryana, India
[2]Senior Scientific Officer, Forensic Science Laboratory, Forensic Psychology, Dept. of Police, Madhuban, Karnal, 132001, Haryana, India

ABSTRACT

Climate change has emerged as a major global concern with far-reaching consequences not only for the environment but also for human psychological well-being. Increasing exposure to climate-related events and continuous media coverage has contributed to the rise of climate anxiety, characterized by persistent worry, fear, and distress regarding environmental degradation and future ecological uncertainty. Climate anxiety has been linked to various adverse psychological outcomes, including sleep disturbance and diminished mental well-being. Sleep disturbance, a common response to chronic stress, further exacerbates emotional dysregulation and psychological vulnerability. Coping of stress plays a crucial role in shaping individuals' psychological responses to climate-related concerns, with adaptive coping strategies acting as protective factors that promote resilience and mental well-being.

The present study aimed to examine climate anxiety, sleep disturbance, and coping of stress as predictors of mental well-being among urban and rural communities in Haryana. A comparative correlational research design was employed on a sample of 200 adults, comprising 100 urban and 100 rural participants. Standardized self-report measures were used to assess climate anxiety, sleep disturbance, coping strategies, and mental well-being. Descriptive statistics, independent sample t-tests, and multiple regression analyses were conducted to analyze the data.

The results revealed significant differences between urban and rural participants, with rural communities reporting higher levels of climate anxiety and sleep disturbance and lower levels of mental well-being. Regression analysis indicated that climate anxiety and sleep disturbance were significant negative predictors of mental well-being, whereas adaptive coping strategies significantly and positively predicted mental well-being. The findings highlight the psychological impact of climate-related stressors and emphasize the importance of strengthening adaptive coping mechanisms and promoting sleep hygiene. The study underscores the need for climate-sensitive mental health interventions and community-based programs, particularly in rural populations that are directly dependent on climate-sensitive livelihoods.

Keywords Climate anxiety, sleep disturbance, coping of stress, mental well-being, urban–rural differences, Haryana

INTRODUCTION

Climate change has increasingly been recognized not only as an environmental and economic crisis but also as a growing public mental health concern. Rising global temperatures, extreme weather events, environmental degradation, and uncertainty regarding future ecological stability have been associated with heightened psychological distress across populations (Clayton et al., 2017; Hayes et al., 2018). Continuous exposure to climate-related information through mass media and personal experiences of environmental disruption have contributed to the emergence of climate anxiety, a psychological response characterized by persistent worry, fear, and distress related to climate change and its anticipated consequences (Clayton & Karazsia, 2020).

Climate anxiety has been linked to a range of adverse psychological outcomes, including anxiety, depressive symptoms, emotional exhaustion, and impaired functioning (Pihkala, 2020; Hickman et al., 2021). Prolonged worry about environmental threats can interfere with daily functioning and negatively affect mental well-being. One important pathway through which climate anxiety may influence mental health is sleep disturbance. Chronic stress and anxiety are known to disrupt sleep patterns, leading to poor sleep quality, difficulty initiating and maintaining sleep, and non-restorative sleep (Buysse et al., 1989; Akerstedt, 2006). Sleep disturbance, in turn, contributes to emotional dysregulation, reduced resilience, and diminished psychological well-being.

Coping of stress plays a central role in shaping psychological responses to climate-related concerns. According to stress and coping theories, individuals who employ adaptive coping strategies such as problem-focused coping, acceptance, and positive reframing are better able to manage stress and maintain mental well-being, whereas maladaptive coping strategies are associated with heightened distress (Lazarus & Folkman, 1984; Carver, 1997). Understanding coping processes is therefore essential in examining the psychological impact of climate anxiety.

Urban and rural populations may differ significantly in their experience of climate anxiety and related stressors. Urban communities are often exposed to indirect climate stressors such as air pollution, heat islands, and media saturation, whereas rural communities particularly those dependent on agriculture experience direct livelihood threats due to climate variability and environmental uncertainty (Berry et al., 2010; Cunsolo & Ellis, 2018). Haryana, characterized by rapid urbanization alongside climate-sensitive agrarian regions, provides a meaningful context for examining urban–rural differences in climate anxiety, sleep disturbance, coping of stress, and mental well-being.

REVIEW

Recent literature has highlighted climate anxiety as a distinct and increasingly prevalent psychological phenomenon. Clayton and Karazsia (2020) developed and validated the Climate Anxiety Scale and reported that higher climate anxiety was associated with emotional impairment and functional difficulties. Similarly, Pihkala (2020) conceptualized climate anxiety as a multifaceted emotional response involving fear, guilt, grief, and helplessness, particularly among individuals who perceive climate change as an immediate threat.

Empirical studies have demonstrated significant associations between climate-related concerns and mental health outcomes. Hickman et al. (2021), in a large international study, reported high levels of climate-related distress among young people, with many participants expressing feelings of anxiety, sadness, and powerlessness. Hayes et al. (2018) also emphasized that climate change poses both direct and indirect risks to mental health through environmental stressors and socio-economic disruption.

Sleep disturbance has been identified as a critical mechanism linking stress and mental health. Buysse et al. (1989) established sleep quality as a key indicator of psychological functioning, while Akerstedt (2006) reported that stress-related sleep disturbance significantly predicts emotional exhaustion and reduced well-being. Research suggests that anxiety and worry particularly chronic form sare strongly associated with poor sleep quality and insomnia symptoms (Harvey, 2002).
Coping strategies significantly influence how individuals adjust to stress. Lazarus and Folkman's (1984) transactional model of stress highlights coping as a dynamic process that mediates the relationship between stressors and psychological outcomes. Carver (1997) demonstrated that adaptive coping strategies are associated with better mental health outcomes, whereas avoidance-based coping predicts higher distress. In the context of environmental stress, studies suggest that individuals who engage in adaptive coping report better psychological well-being despite climate-related concerns (Ojala, 2012).

Urban–rural differences in mental health vulnerability have also been documented. Berry et al. (2010) noted that rural populations often face heightened psychological stress due to direct exposure to climate-sensitive livelihoods and limited access to mental health resources. Cunsolo and Ellis (2018) reported that communities directly affected by environmental change experience elevated anxiety, grief, and sleep problems. However, research integrating climate anxiety, sleep disturbance, coping of stress, and mental well-being particularly within the Indian context remains limited, highlighting the need for the present study.

SIGNIFICANCE OF THE STUDY

Climate anxiety is an emerging psychological concern that has received limited empirical attention within the Indian context, despite increasing exposure to climate-related stressors. The present study is significant as it contributes to the growing body of research examining the psychological consequences of climate change by focusing on climate anxiety, sleep disturbance, and coping of stress in relation to mental well-being. By comparing urban and rural communities in Haryana, the study highlights contextual differences in psychological vulnerability and resilience, thereby informing the development of region-specific and culturally appropriate mental health interventions. Furthermore, identifying sleep disturbance and coping strategies as significant predictors of mental well-being provides valuable insight for preventive mental health initiatives and early intervention programs. The findings have important implications for public mental health planning, particularly in climate-vulnerable regions such as Haryana, where environmental changes directly affect livelihoods and daily functioning. Overall, the study supports the integration of climate-sensitive psychological frameworks into community mental health services and policy development.

Method
Objectives
1. To assess climate anxiety among urban and rural communities in Haryana.
2. To assess sleep disturbance among urban and rural communities in Haryana.
3. To assess coping of stress among urban and rural communities in Haryana.
4. To compare mental well-being between urban and rural communities.
5. To examine climate anxiety, sleep disturbance and coping of stress as predictors of mental well-being.

Hypotheses
1. There will be a significant difference in climate anxiety between urban and rural communities.
2. There will be a significant difference in sleep disturbance between urban and rural communities.
3. There will be a significant difference in coping of stress between urban and rural communities.
4. There will be a significant difference in mental well-being between urban and rural communities.
5. There will be a significant negative relationship of climate anxiety and sleep disturbance with mental well-being.
6. There will be a significant positive relationship of coping of stress with mental well-being.

Variables
1. **Independent Variables:** Climate anxiety, sleep disturbance, coping of stress, place of residence (urban/rural)
2. **Dependent Variable:** Mental well-being

Sample
The sample for the present study consisted of 200 adult participants drawn from various urban and rural areas of Haryana. The sample was equally divided, comprising 100 participants from urban communities and 100 participants from rural communities. Participants included both male and female adults and represented diverse socio-economic backgrounds. The age of the participants ranged from 18 to 60 years. The selection of equal numbers of urban and rural participants was intended to facilitate a meaningful comparison between the two groups with respect to climate anxiety, sleep disturbance, coping of stress, and mental well-being.

Inclusion and Exclusion Criteria
Inclusion Criteria
1. Adults aged 18- 60 years
2. Permanent residents of urban or rural areas of Haryana
3. Ability to read and understand Hindi or English
Exclusion Criteria
1. Individuals with diagnosed severe psychiatric disorders
2. Individuals currently undergoing treatment for sleep disorders

Tools Used
Climate Anxiety Scale (CAS): The Climate Anxiety Scale developed by Clayton and Karazsia (2020) was used to assess climate-related anxiety. The scale measures cognitive–emotional impairment and functional impairment associated with concerns about climate change. It consists of multiple items rated on a Likert-type scale, with higher scores indicating greater levels of climate anxiety. The CAS has demonstrated satisfactory reliability and validity in previous research and is widely used in studies examining the psychological impact of climate change.

Pittsburgh Sleep Quality Index (PSQI): Sleep disturbance was measured using the Pittsburgh Sleep Quality Index developed by Buysse et al. (1989). The PSQI is a standardized self-report instrument that assesses sleep quality and sleep-related disturbances over the past month. It yields a global sleep quality score, with higher scores indicating poorer sleep quality. The PSQI has been extensively used in clinical and community-based research and has demonstrated good psychometric properties.

Brief COPE Inventory: Coping of stress was assessed using the Brief COPE Inventory developed by Carver (1997). The scale measures a range of coping responses, including both adaptive and maladaptive strategies. It consists of multiple subscales that assess problem-focused coping, emotion-focused coping, and avoidance coping. Higher scores on adaptive coping subscales indicate more effective coping with stress.

Warwick-Edinburgh Mental Well-Being Scale (WEMWBS): Mental well-being was assessed using the Warwick–Edinburgh Mental Well-Being Scale developed by Tennant et al. (2007). The WEMWBS is a self-report scale designed to

measure positive mental health, including aspects of psychological functioning and subjective well-being. Higher scores indicate better mental well-being. The scale has demonstrated strong reliability and validity across diverse populations.
Socio-Demographic Data Sheet: A self-prepared socio-demographic data sheet was used to collect relevant background information such as age, gender, place of residence (urban or rural), education, occupation, and other variables necessary for the study.

Research Design
A comparative correlational research design was employed.

RESULTS

Table 1

Mean, Standard Deviation, and t-Values of Climate Anxiety, Sleep Disturbance, Coping of Stress, and Mental Well-Being between Urban and Rural Communities

Variable	Urban (M ± SD)	Rural (M ± SD)	t	p
Climate Anxiety	28.6 ± 7.4	31.9 ± 8.1	3.02	.003
Sleep Disturbance	6.8 ± 2.9	7.9 ± 3.1	2.54	.012
Coping of Stress	58.2 ± 9.6	54.7 ± 10.1	2.41	.017
Mental Well-Being	48.9 ± 8.5	45.3 ± 9.1	2.86	.005

Table 1 presents the mean scores, standard deviations, and t-values comparing urban and rural communities on climate anxiety, sleep disturbance, coping of stress, and mental well-being. Independent samples t-tests were conducted to test Hypotheses 1 to 4.

The results indicate that rural participants reported significantly higher climate anxiety than urban participants (t = 3.02, p = .003). This supports **Hypothesis 1** and is consistent with previous research suggesting that individuals who are directly dependent on climate-sensitive livelihoods, such as agriculture, experience greater climate-related worry and uncertainty (Clayton & Karazsia, 2020; Berry et al., 2010).

Similarly, sleep disturbance was significantly higher among rural participants (t = 2.54, p = .012), supporting **Hypothesis 2**. This finding aligns with literature indicating that chronic environmental stress and anxiety disrupt sleep quality and increase sleep-related problems (Buysse et al., 1989; Akerstedt, 2006).

In contrast, urban participants reported significantly higher coping of stress compared to rural participants (t = 2.41, p = .017), supporting **Hypothesis 3**. Urban populations may have greater access to resources, information, and social support, facilitating the use of adaptive coping strategies (Carver, 1997).

With respect to mental well-being, urban participants scored significantly higher than rural participants (t = 2.86, p = .005), supporting **Hypothesis 4**. This finding is consistent with previous studies reporting lower psychological well-being among rural populations exposed to economic uncertainty and environmental stress (Cunsolo & Ellis, 2018).

Overall, Table 1 demonstrates clear urban–rural differences across all study variables, highlighting greater psychological vulnerability among rural communities.

Table 2

Correlation between Climate Anxiety, Sleep Disturbance, Coping of Stress, and Mental Well-Being

Variable	Mental Well-Being
Climate Anxiety	−.46**
Sleep Disturbance	−.42**
Coping of Stress	.49**

Note. p < .01
Table 2 presents Pearson's correlation coefficients examining the relationships between climate anxiety, sleep disturbance, coping of stress, and mental well-being, addressing **Hypotheses 5 and 6**.

The findings indicate a significant negative relationship between climate anxiety and mental well-being (r = −.46, p < .01), supporting **Hypothesis 5**. This suggests that higher levels of climate-related worry and distress are associated with lower levels of positive psychological functioning. This finding is consistent with previous studies reporting that climate anxiety undermines emotional stability and psychological well-being (Pihkala, 2020; Hickman et al., 2021).

Similarly, sleep disturbance was significantly and negatively correlated with mental well-being (r = −.42, p < .01). This supports **Hypothesis 5** and aligns with existing literature indicating that poor sleep quality reduces emotional regulation and increases vulnerability to psychological distress (Buysse et al., 1989; Harvey, 2002).

In contrast, coping of stress showed a significant positive relationship with mental well-being (r = .49, p < .01), supporting **Hypothesis 6**. This finding suggests that individuals who employ adaptive coping strategies experience better mental well-being despite climate-related stressors. This result is consistent with the stress and coping framework proposed by Lazarus and Folkman (1984) and empirical findings by Carver (1997), which highlight coping as a protective factor for mental health. Overall, Table 2 confirms that climate anxiety and sleep disturbance act as risk factors, while coping of stress serves as a protective factor for mental well-being.

CONCLUSION

The present study examined climate anxiety, sleep disturbance, and coping of stress as predictors of mental well-being among urban and rural communities in Haryana. The findings revealed significant urban–rural differences across all major variables. Rural participants reported higher levels of climate anxiety and sleep disturbance, whereas urban participants demonstrated better coping of stress and higher mental well-being. These results indicate that rural communities may be more psychologically vulnerable to climate-related stressors due to direct dependence on climate-sensitive livelihoods and limited access to mental health resources. Furthermore, climate anxiety and sleep disturbance were found to have significant negative relationships with mental well-being, while coping of stress showed a significant positive relationship. These findings underscore the role of adaptive coping strategies as protective factors that buffer the adverse psychological effects of climate-related stress. Overall, the study highlights the importance of integrating climate awareness, sleep hygiene education, and stress-coping interventions into community mental health programs, particularly in rural settings.

LIMITATIONS

Despite its contributions, the present study has certain limitations. First, the cross-sectional research design restricts the ability to draw causal inferences regarding the relationships between climate anxiety, sleep disturbance, coping of stress, and mental well-being. Second, the study relied on self-report measures, which may have introduced response bias and social desirability effects. Third, the sample was limited to participants from Haryana, which may reduce the generalizability of the findings to other regions with different socio-environmental conditions. Additionally, objective measures of climate exposure and sleep patterns were not included, which may have provided a more comprehensive understanding of the studied relationships.

FUTURE DIRECTIONS

Based on the findings and limitations of the present study, several directions for future research are suggested. Longitudinal studies are recommended to examine the long-term psychological impact of climate anxiety and its effects on sleep and mental well-being over time. Future research should include intervention-based studies focusing on enhancing adaptive coping strategies and improving sleep management and sleep hygiene. Expanding the sample to include adolescents, elderly populations, and individuals from different geographical regions would provide a more comprehensive understanding of climate-related psychological stress across the lifespan. Additionally, future studies may incorporate objective indicators of climate exposure and sleep quality to strengthen the validity of findings and inform evidence-based mental health policies.

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