Climate Change Awareness and Mental Health Impacts among Community College Students in Kathmandu

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Abstract

Growing climate change impact on mental health of human beings is a serious public health problem witnessing everywhere of the universe. The study on mental health of young people is critical for knowledge generation process. The overall objective of the study is to examine awareness of climate change and its impact on reported anxiety among community college students of Kathmandu. Cross-sectional explanatory research design is employed with collecting information from 335 graduate students. Univariate, bi-variate and multivariate analysis was performed. The study revealed that about 23 percent of students who learned about climate change from sources other than school, college, or media have reported anxiety symptoms. Multiple regression analysis shows that climate change awareness and anxiety, students who consider climate change a less significant issue are about 11 times more likely to have anxiety symptoms [OR=11.4 (5.1-17.9)] than those who view it as very important in their lives. The study concludes that climate

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change awareness are critical factor for the self-reported anxiety symptoms of students of community college. While controlling the social factors, the climate change awareness are most influencing factors for anxiety prevalence. This suggests that climatic factors need to be through appropriate strategic approach.

Keywords: Anxiety, climate change, graduate students, mental health and self-reported.

Introduction

Climate change can worsen existing health risks or introduce new public health issues through multiple mechanisms. Since the industrial era, human development has advanced significantly; however, these advancements have come with consequences. Climate-related factors such as rising temperatures, extreme precipitation, severe weather events, and sea-level rise lead to increased exposure to hazards like extreme heat, degraded air, food, and water quality, as well as changes in infectious agents, all of which adversely affect human health (United States Environmental Protection Agency, 2017).

Climate change impacts key social and environmental factors that determine health, such as clean air, safe drinking water, adequate food, and secure housing. Between 2030 and 2050, it is projected that climate change will contribute to around 250,000additional deaths each year due to malnutrition, malaria, diarrhea, and heat stress. By the late 21st century, climate change is expected to increase the frequency and severity of global droughts. Rising temperatures and unpredictable rainfall patterns are likely to reduce food production, leading to higher rates of malnutrition and undernutrition (World Health Organization, 2018). The rapid progression of climate change, combined with persistent health inequalities and infectious diseases, poses a significant public health challenge in Nepal. It is anticipated to raise both mortality and morbidity rates due to vector-borne and zoonotic diseases, waterborne illnesses, flooding, injuries, cardiovascular diseases, and the growing problem of malnutrition in Nepal (Dhital et al., 2016).

According to the World Bank Group, by 2030, climate change could push over 100 million people worldwide into extreme poverty, primarily because of its harmful effects on public health (World Bank, 2017). Low- and middle-income nations are expected to suffer the most, as they are more vulnerable and have weaker health systems and infrastructure. While many countries are striving to meet health-related

Sustainable Development Goals, climate change threatens to undermine these efforts by affecting health and healthcare infrastructure in various ways. The impacts of climate change on health are already evident, including more frequent and severe weather events like storms and floods, as well as increased water scarcity (WHO, 2018; Sambath et al., 2022; Balbus et al., 2016). Therefore, it is crucial to strengthen initiatives aimed at addressing the health impacts of climate change, focusing on both health systems and disease prevention.

Mental health issues in Nepal are increasingly becoming a significant concern for public health and the overall well-being of its population. Recently, there have been efforts to tackle these challenges through research and practical initiatives aimed at gaining a deeper insight into the situation. Several nationwide data collection projects have been carried out to assess mental health conditions. The initial field survey, conducted in Kathmandu in 1984, reported a mental illness prevalence rate of 14 percent (Wright& Hickinbotham,2013). In 2018, a pilot study across three districts found that 13.2 percent of people currently suffered from mental disorders (Jha et al., 2018). A 2020 nationally representative survey by the Nepal Health Research Council (NHRC) indicated that the lifetime prevalence of any mental disorder was 10 percent, while the current prevalence stood at 4.3 percent (NHRC, 2020). Among psychoactive substances, alcohol use disorder was the most common, affecting 4.2 percent of the population. Anxiety disorders accounted for three percent burden, and major depressive disorders had a lifetime prevalence of 2.9 percent, with a current rate of 1 percent. The survey also highlighted that 77 percent of those with mental illness neither sought treatment nor had access to mental health services. These statistics are likely underestimated due to various socioeconomic barriers. Notably, suicide is the leading cause of death among women of reproductive age, representing 16 percent of deaths, and 21 percent of suicides occur in individuals under 18 years old (Suvedi et al., 2009).

Mental health is an essential component of overall health and well-being. Globally, around one in eight individuals experience a mental health disorder, with anxiety and depression being the most common (Risal, 2011; WHO, 2022). Evaluating the impact of mental health issues highlights the urgent need for increased investment in mental health care. In Nepal, barriers such as limited awareness, social stigma, discrimination, and inadequate access to services hinder people from seeking help (MoHP et al. 2023). Several tools are available to assess mental health at the

population level. The 2022 Nepal Demographic and Health Survey (NDHS) featured a mental health section that employed two well-established screening instruments to identify symptoms of anxiety and depression, along with questions related to treatment and care-seeking behavior (MoHP et al., 2023).

Understanding global environmental issues is a key component of the worldwide effort to tackle climate change. Raising awareness about climate change enables young people to understand and respond to the effects of global warming. It also promotes shifts in attitudes and behaviors and supports their ability to adapt to climate-related challenges (WHO, 2018; Gianfredi et al., 2024; Ge et al., 2025). In Nepal, climate change education has been integrated into various school subjects since 2014 to help students learn about the issue.

Climate change knowledge is considered an aspect of formal environmental education that fosters a sense of responsibility by building informed awareness. This type of awareness is essential for encouraging students to take meaningful and proactive steps (Rahman et al., 2014). Research suggests that students generally possess a moderate understanding of climate change and its impact on mental health in various settings. However, the majority of climate change studies have predominantly focused on environmental consequences, even though its risks to human health are well established.

The Mental Health Module uses the Generalized Anxiety Disorder 7 scale (GAD-7) to assess symptoms of anxiety. This seven-item tool focuses on detecting persistent and disruptive worry, which is a key characteristic of anxiety (Spitzer et al., 2006). In addition to generalized anxiety, the GAD-7 also captures symptoms related to panic disorder, social anxiety disorder, and posttraumatic stress disorder. The scale is known for its strong reliability and validity across multiple dimensions—including criterion, construct, factorial, and procedural validity (Spitzer et al., 2006). It also shows high diagnostic accuracy, with 89% sensitivity and 82% specificity at a cut-off score of 10 for identifying generalized anxiety disorder (Kroenke et al., 2007).

Objective of the Study

The aim of this study is to explore climate change as an increasingly urgent global concern and the rising awareness of it among different groups, particularly university students. This growing awareness may have notable effects on mental

health, potentially contributing to higher anxiety levels. Using an explanatory research design, the study seeks to investigate this issue by collecting and analyzing factual data for a thorough understanding. The specific objectives of the study are as follows:

- To assess the prevalence of reported anxiety symptoms among community college in Kathmandu, and
- To examine the reported anxiety symptoms with climate change awareness and social factors

Methods and Materials

The study design is explanatory-cross sectional, measuring reported anxiety symptoms. Quantitative methods were employed to identify the mental health condition, specifically anxiety, among graduate (under and post graduate) level students. The focus was on determining the impact of climate change awareness, along with broader social and environmental factors, on the students of Baneshwor Multiple Campus (BMC). This study design facilitates a comprehensive quantitative analysis, enabling the researchers to quantify the extent of mental health issues and their correlation with climate change awareness and other influencing factors.

Both male and female students studying at the under and post-graduate level students are included in the study irrespective of their age. The participants were selected from three disciplines: Humanities and Social Sciences, Management, and Education, at Baneshwor Multiple Campus. This diverse selection ensured a comprehensive representation of the student body, capturing a wide range of perspectives and experiences. At the first stage, the college is purposively chosen and samples are selected randomly. After that the list of all students of BMC were obtained from which 335 students selected by using systematic random sampling. At college level, classes were randomly chosen and students present on the day of the interview in the sampled classes were requested to participate in the study. Students were selected randomly as per the sample size assigned to that college. Hence, at least 70 students were chosen from each disciplines of the campus.

Data collection involved structured questionnaires based on the standardized mental health assessment tools to ensure the reliability and validity of the findings. Quantitative data were collected by a pre-tested self-administered structured assessment tool. The content of the assessment tool was entirely based on surveys

previously used and validated for use in Nepal. Statistical techniques were applied to analyse the data, which provided insights into the prevalence and severity of anxiety among the students. The data were presented in percentage IQR. Data were summarized using frequency distribution tables. For descriptive and inferential statistics: bivariate and multivariate (logistic regression analysis) analysis were utilized. Bivariate analysis was performed using quantitative variables to find the significant association between anxiety reported systems and other selected variables including climate change awareness at $p<0.05$ ($\chi 2$ association) whereas logistic regression analysis identified most predictable factor of reported anxiety symptoms of climate change awareness.

Ethical clearance was obtained from the RMC of Baneshwor Multiple Campus (BMC), Kathmandu. The study and the applicable procedures were made clearly explained to the participants. They were informed about the voluntary participation and given information used for the research purpose only. Written informed consent was taken from all the respondents for the interview. They were assured that their responses are treated with enough confidentiality and anonymity by using strict coding measures.

Theoretical Framework

The global climate crisis poses a significant threat to human existence and must be treated as a global emergency (Bronfenbrenner, 1992). According to international collaborations such as the Lancet Countdown on health and climate change, climate change has severe impacts on both physical and mental health. The framework contains nested layers of determinant categories that all interactively influence each other and ultimately the mental health and wellbeing of an individual. The determinants, their interactions, and their influence on mental health and wellbeing have been changes over time. Changes over time include: changes across the life course, increasing frequency and severity of extreme weather events, exposure to multiple climate impacts, and the time since the climate impact occurred. These dynamic shifts reflect the evolving nature of both individual experiences and broader environmental factors.

It is adopted from Dahlgren and Whitehead's model, with influences from Bronfenbrenner's Ecological Systems Theory and the Lancet Commission for Global Mental Health and Sustainable Development (Patel et al., 2018; Dahlgren &

Whitehead, 1991; Bronfenbrenner, 1992), the framework highlights the complexity of mental health determinants. The model integrates socioeconomic, cultural, and environmental dimensions, acknowledging the multifaceted and interdependent nature of these influences. By emphasizing the interconnectedness of various factors, it highlights the importance of considering a wide range of influences focusing climate change awareness when addressing mental health issues.

Results

This section analyzes the symptoms of anxiety within the social, demographic, cultural, family factors and climate change awareness context of the graduate students. This includes analyzing the prevalence of symptoms of anxiety identifying the coping mechanisms students employ to manage these feelings. By understanding the association between climate change awareness and mental health, it provides deeper understanding of issue.

Background Characteristics of Students

The socio-demographic, cultural and climate change awareness related characteristics of the study population included sex, duration of stay in Kathmandu, caste/ethnicity, working out of college time, father's occupation, source of climate change knowledge, importance of climate change issue, personal feeling of climate change, possibility of controlling climate change impacts, efforts to preventing climate change and nexus between climate change and mental health are assessed. It is believed that these factors affect the anxiety as mental disorder of students. Gender-wise, 39.4 percent of the students were male, and 60.6 percent were female.

Table 1

Percent distribution of students by background characteristics, 2024

Background characteristics	Percent	Number
Sex		
Male	39.4	132
Female	60.6	203
Duration of stay in Kathmandu		
< 5yrs.	53.4	179
5 and above yrs.	29.9	100

Background characteristics	Percent	Number
Always	16.7	56
Caste/ethnicity		
Hill Brahmin/Chhteri	47.8	160
Madheshi Caste Group	12.2	41
Janajati	28.7	96
Others	3.9	13
Dalits	7.5	25
Working out of college time		
Services related work	13.7	46
Other work	12.2	41
Government and non-government job	9.0	30
No work	65.1	218
Father's Occupation		
No Work	9.6	32
Services related work	20.3	68
Agriculture	27.5	92
Foreign labour migration	9.3	31
Government and non-government job	17.3	58
Household work	6.6	22
Others	9.6	32
Sources of climate change knowledge		
Media	52.8	177
School/college	40.6	136
Others	6.6	22
Importance of climate change issue personally		
Very important	68.4	229
Important	28.3	95
No so important	3.3	11
Personally feel affected by climate change		
No	16.4	55
Yes	83.6	280
Controlling of climate change impact		

Background characteristics	Percent	Number
Not possible	28.4	95
Possible	71.6	240
Efforts to prevent from climate change*		
No	49.6	166
Yes	50.4	169
Nexus between climate change and mental health		
No	11.6	39
Yes	88.4	296
Total	100.0	335

Source: Survey, 2024.

The duration of stay in Kathmandu varied among students, with 53.4 percent having stayed for less than 5 years, 29.9 percent for 5 years and above, and 16.7 percent always staying in Kathmandu. Table1 indicates that there are variations in the distribution of students according to their socio-cultural background. Almost 50 percent of the students are from the Hill Brahmin/Chhetri caste group, whereas only 7.5 percent are from the Dalit. Hill Brahmin/Chhetri and Janajati are pre-dominant caste/ethnic groups among students in the college. The findings of the study show that about 40 percent of students worked in various types of jobs besides their studies. Almost 14 percent students were engaged in the service-related works.

Table 1 shows that 27.5 percent of fathers of the students are engaged in agriculture whereas 6.6 percent in household work. A significant proportion (17%) of fathers of the students is also engage in the governmental and non-governmental occupations. The diversity of occupation found among the fathers of the students. Media exposure is the most influential factor for the acquiring the climate change knowledge. More than half of the students got knowledge from the media whereas 41 percent got knowledge from the school/college. In case of impotence of climate change issues, more than two thirds of the students reported that it is very important issue for the young people. About 84 percent of the students feel that climate change affected their lives.

Awareness about controlling climate change is high among students, with 72 percent reporting that they believe it is possible to manage climate change conditions. This optimism reflects a strong sense of agency and responsibility among the student

body regarding environmental issues. Additionally, around 50 percent of students have actively tried to cope with the effects of climate change, engaging in behaviors and practices aimed at mitigating its impact. Furthermore, a significant majority, about 88 percent of students, recognize a connection between climate change awareness and mental health. This acknowledgment indicates an understanding of the psychological implications of climate change, such as eco-anxiety, stress, and overall mental illness.

Bi-variate Analysis of Socio-climate Change and Prevalence of Anxiety Symptoms

By examining variables such as sex, duration of stay in Kathmandu, caste/ethnicity, working out of college time, father's occupation, source of climate change knowledge, importance of climate change issue, personal feeling of climate change, possibility of controlling climate change impacts, efforts to preventing climate change and nexus between climate change and mental health, this study seeks to identify patterns and correlations between these socio-climate change awareness factors and the prevalence of symptoms of anxiety.

By gender, female students were more likely to have anxiety symptoms than male students (14.8% vs. 12.0%). Table 2 shows that more than one fifth of the students (21.4%) those always living in Kathmandu had the highest anxiety symptoms than those living more than five years in Kathmandu (7.0%) which is statistically significant at $p<0.01$.

Table 2 shows that 56 percent of the *Dalits* students having anxiety symptoms whereas *Janajati* students have the lowest level anxiety symptoms. This indicates that the caste/ethnicity of the students matters the anxiety symptoms. In addition, 16.5 percent of students those are not working status having reported anxiety symptoms rather than other working status (4.9%).

Table 2

Bi-variate of students by reported anxiety symptoms and selected socio-economic, cultural and climate change factors, 2024

Background characteristics	Percent	Number
Sex		
Male	12.1	132

Background characteristics	Percent	Number
Female	14.8	203
Duration of stay in Kathmandu		
< 5yrs.	15.1	179
5 and above yrs.	7.0	100
Always	21.4	56
Caste/ethnicity		
Hill Brahmin/Chhteri	10.0	160
Madheshicaste group	17.1	41
Janajati	9.4	96
Others	0.0	13
Dalits	56.0	25
Working out of college time		
Services related work	8.7	46
Other work	4.9	41
Government and non-government job	13.3	30
No work	16.5	218
FathersOccupation		
No Work	15.6	32
Services related work	27.9	68
Agriculture	9.8	92
Foreign labour migration	16.1	31
Government and non-government job	8.6	58
Household work	0.0	22
Others	9.4	32
Sources of climate change knowledge		
Media	10.7	177
School/college	16.2	136
Others	22.7	22
Importance climate change issue personally		
Very important	14.5	229
Important	13.7	95
No so important	18.2	11

Background characteristics	Percent	Number
Personally feel affected by climate change		
No	5.5	55
Yes	15.4	280
Controlling of climate change impact		
Not possible	12.6	55
Possible	14.2	280
Efforts to prevent from climate change*		
No	16.3	166
Yes	11.2	169
Nexus between climate change and mental health		
No	7.7	39
Yes	14.5	296
Total	13.7	335

Source: Survey, 2024.

Family-related factors play a significant role in the mental health of young students attending community colleges. Statistical analysis indicates a relationship between family variables—such as the father's occupation—and the presence of anxiety symptoms in their children. As shown in Table 2, 28 percent of students reported anxiety symptoms whose fathers wereemployed in service-related jobs, while none of the students whose fathers are household workers report such type of symptoms.

The central claim of the study is to assess the climate change awareness and symptoms of anxiety. It is well understood that there are association between climate change awareness and mental illness. This section of analysis shows the statistical association between climate change importance issue, efforts to prevent the climate change impacts, sources of climate change knowledge and nexus between climate change impact the mental health with anxiety symptoms among the graduate students.

Table 2 indicates that 15 percent of students who personally feel the effects of climate change exhibit anxiety symptoms. Additionally, there is a statistically significant relationship between the sources of knowledge about climate change and its impact on anxiety symptoms. Students who are aware of the connection between climate change and mental health show higher levels of anxiety compared to those

who are not aware. It is found that students those having higher levels of climate change awareness having higher level reported anxiety symptoms.

Multiple Regression Analysis of Anxiety Symptoms

In this analysis, there are numerous variables which explained the reported symptoms of anxiety of community college students. The bi-variate analysis shows the some of the independent variables are statistically significant but only provide the gross effect of independent variables on anxiety dependent variable. All 11 variables are introduced in the regression equation and calculated the net effect of social and climate change awareness variables and symptoms of anxiety presented in the table 3.

Table 3

Multiple regression analysis of symptoms of anxiety among students by explanatory variables

Explanatory variables	Odds ratio	95% CI	
		Lower	Upper
Sex			
Male	1.0		
Female	2.6*	0.2	5.5
Duration of stay in Kathmandu			
< 5yrs.	1.0		
5 and above yrs.	0.4	0.1	1.1
Always	3.3**	1.1	4.5
Working out of college time			
Services related work	1.0		
Other work	0.0	0.0	2.1
Government and non-government job	1.7	1.2	2.1
No work	1.9	0.2	3.8
Father's Occupation			
No Work	1.0		
Services related work	1.7	0.5	6.4
Agriculture	0.5	0.1	1.9

Explanatory variables	Odds ratio	95% CI	
		Lower	Upper
Foreign labour migration	0.5	0.1	2.9
Government and non-government job	0.6	0.1	3.2
Household work	1.7	0.5	6.4
Others	0.5	0.1	1.9
Sources of climate change knowledge			
Media	1.0		
School/college	0.5	0.1	3.1
Others	0.5	0.1	3.1
Importance climate change issue			
Very important	1.0		
Important	0.8	0.3	2.2
No so important	11.4***	5.1	17.7
Personally feel affected by climate change			
No	1.0		
Yes	13.2*	1.0	27.5
Controlling of climate change impact			
Not possible	1.0		
Possible	0.8**	0.3	2.2
Efforts to prevent from climate change*			
No	1.0		
Yes	1.5	1.2	3.5
Nexus between climate change and mental health			
No	1.0		
Yes	2.9***	1.6	4.2

Source: Survey, 2024.

*Note: *** indicates the significance at p<0.01, ** indicates p<0.05 and * indicates p<0.10.*

While controlling the caste/ethnicity variable, the logistic regression analysis provides the results in Table 3.

Students' awareness of climate change and their perceptions of its importance are closely linked to their mental health, particularly symptoms of anxiety. Specifically, students who view climate change as a less significant issue in their lives are approximately 11 times more likely to experience anxiety symptoms compared to those who regard it as a very important concern (OR=11.4 [5.1–17.7]) statistically significant at $p<0.01$. This strong association suggests that lower prioritization or awareness of climate change may contribute to heightened anxiety among community college students in Kathmandu.

Students who recognize a connection between climate change awareness and mental health are found to be three times more likely to report symptoms of anxiety compared to those who do not perceive any relationship between the two factors (OR=2.8 [1.0–8.2]) which is statistically significant ($p<0.01$). This finding highlights a significant association between students' perceptions of the climate change-mental health nexus and their own mental well-being.

Discussion

This relationship between climate change awareness and anxiety is complex and can be influenced by various psychological and social factors. The study has found that students of permanent resident of Kathmandu were three times more likely to have reported anxiety symptoms than less than 5 years duration of study. Similarly, women students are more likely to have reported anxiety symptoms. Research indicates that adolescents and young adults are especially vulnerable to emotional distress related to climate change, experiencing emotions such as fear, sadness, worry, anger, and helplessness, which can develop into persistent anxiety if unaddressed (Ge et al., 2025). The interplay between climate change awareness and anxiety is not one-directional; higher awareness of climate change can both increase anxiety and, conversely, anxiety about climate change can drive individuals to seek more information, further elevating their awareness (Ge et al., 2025). This creates a feedback loop where anxiety and awareness reinforce each other over time.

Moreover, longitudinal studies have shown that young people who are already anxious are more likely to worry about climate change as they grow older, and those with greater climate worry tend to report higher levels of concurrent anxiety, depression, and even self-harm behaviors (Vergunst et al., 2024). Media exposure also plays a role, as increased exposure to climate change information

through media channels has been found to raise climate anxiety among college students (Maduneme, 2024). Interestingly, moderate levels of climate anxiety can motivate positive pro-environmental intentions, while very high anxiety may have adverse effects on students' mental well-being and engagement.

As the association between climate change awareness and anxiety among community college students are found to be significant and multifaceted. The study found that students who view climate change as a less significant issue in their lives are approximately 11 times more likely to experience anxiety symptoms compared to those who regard it as a very important concern (OR=11.4 [5.1–17.7]). Students who underestimate the importance of climate change are at a much higher risk of experiencing anxiety, and this relationship is shaped by emotional responses, prior mental health status, media exposure, and the ongoing feedback between awareness and anxiety (Ge et al., 2025;Vergunst, 2024; Maduneme, 2024).

Expanding on this, research consistently shows that heightened awareness or perception of climate change is linked to a range of adverse mental health outcomes, including anxiety, depression, eco-anxiety, and stress (Gianfredi et al., 2024). The psychological impact can be particularly pronounced among young people, who may experience feelings of hopelessness, uncertainty about the future, and emotional distress as a result of their concerns about the climate crisis (Smith, 2023). These emotions can be intensified when individuals feel that their personal or collective actions are insufficient to address the magnitude of the climate threat, leading to a persistent sense of worry or even despair.

Furthermore, the association between climate change awareness and mental health is not limited to anxiety alone. It is found that students who recognize a connection between climate change awareness and mental health are found to be three times more likely to report symptoms of anxiety compared to those who do not perceive any relationship between the two factors (OR=2.8 [1.0–8.2]). Studies have found that increased perception of climate risks is also related to symptoms such as depression, adjustment disorders, and even thoughts of self-harm, underscoring the broad mental health implications of climate change awareness (Gianfredi et al., 2024). The relationship is complex and may be influenced by factors such as media exposure, community vulnerability to climate events, and the availability of social support (Wang & Liu, 2024).

Overall, these findings suggest that students who are more attuned to the links between climate change and mental health are at greater risk for anxiety and other mental health challenges, emphasizing the need for targeted mental health support and interventions for this population (Gianfredi et al., 2024).

Conclusions

The findings of the study indicate that climate change awareness factors, are highly significant predictors of anxiety symptoms among community college students. Students from the higher level awareness of climate change have higher likelihood of experiencing self-reported anxiety symptoms compared to students from lower level of awareness. In addition to these awareness of climate change also plays a critical role in the probability of developing anxiety. When controlling for socio-cultural factors, climate-related factors emerge as a major cause of anxiety among community college students. This suggests that both socio-cultural and climatic factors need to be addressed to effectively manage and reduce anxiety symptoms in this population.

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