Climate Anxiety and its Associated Factors among Indigenous Community from a One Health Perspective: A Mixed Methods Study

Kusumsheela Bhatta[1], Sagar Parajuli[2], Kiran Shrestha[3], Madhusudan Subedi[1]

[1]School of Public Health, Patan Academy of Health Sciences
[2]School of Health and Allied Sciences, Pokhara University
[3]Institute of Medicine, Tribhuwan University

01 Background

Background

- Climate change affects not only physical health but also mental health and climate anxiety.
- Indigenous communities are particularly vulnerable due to climate-dependent livelihoods.
- In Nepal, mental health impacts of climate change remain underexplored.
- This study applies a One Health perspective to understand climate anxiety.

Objectives

- To assess the prevalence of climate anxiety among Tharu community in Chitwan and Nawalparasi districts.
- To identify factors associated with climate anxiety from a one health perspective.
- To examine coping mechanisms utilized by the Tharu population to mitigate adverse effects of climate change on mental well-being.

02 Methods

Study Design

Sequential exploratory mixed-methods design

1

Qualitative Phase (Exploratory)

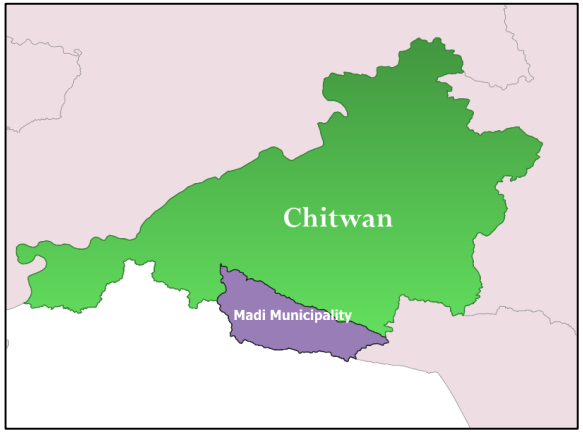
2

Quantitative Phase (Confirmatory)

Study Duration: January 2025 to January 2026

Study Location

- High proportion of Tharu households.
- Climate vulnerability



Selection of Madi Municipality (Wards 1 and 3) from Chitwan

Selection of Madhyabindu Municipality (Wards 2 and 4) from Nawalparasi East

Quantitative Component (Sampling)

Total sample size = 510

Using the single population proportion formula

Adjusted for design effect and finite population correction

Systematic random sampling to select the respondents.

Qualitative Component (Sampling)

→ Indepth Interviews (IDI) = 25 (Proposed)
→ IDI = 23 (Data Saturation)

Judgmental Sampling

- ✓ Individuals of Tharu ethnicity residing in the study area for at least one year

Data Collection Tools and Techniques

Qualitative

- Interview Guide
- Trustworthiness ensured through Guba's construct of rigor

Quantitative

- Structured survey questionnaire (guided by qualitative results)
- Pretesting (10% of study population)
- Use of standardized tools:
  - Climate Anxiety Scale (Cronbach's α = 0.781) , Climate change perpetual awareness scale (α = 0.891)

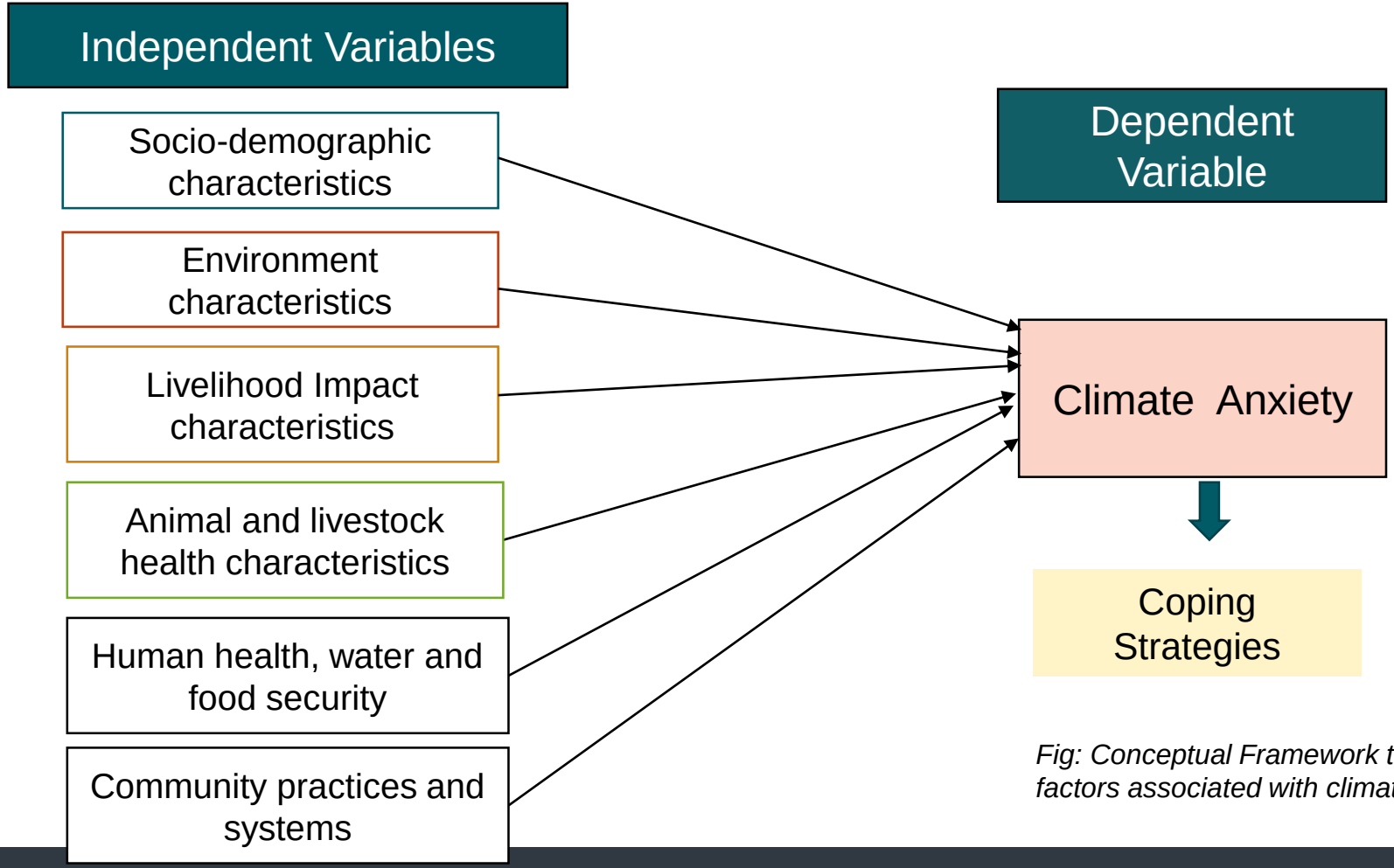
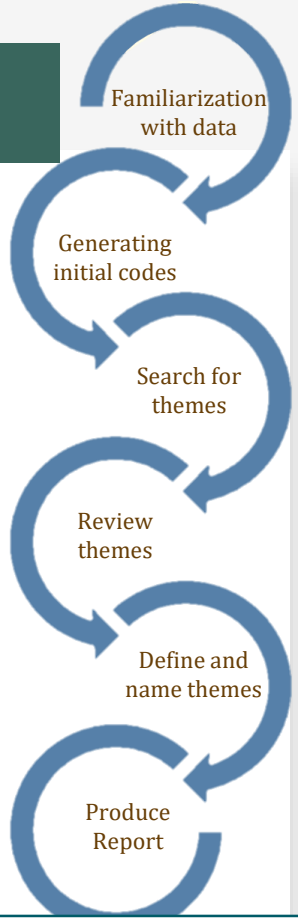


Fig: Conceptual Framework to assess factors associated with climate anxiety

Data Processing and Analysis

- Quantitative Component
  - Collection (KoboToolbox)
  - Cleaning (Excel)
  - Analysis (Stata MP 19 and EZR)
    - Descriptive Statistics
    - Bivariate analysis
    - Multivariate logistic regression
- Qualitative Component
  - Braun and Clarks Six Steps Thematic Analysis
  - Using R-based Qualitative Data Analysis (RQDA)



Braun and Clark's six-step thematic analysis

Ethical Considerations

- Ethical clearance obtained from Nepal Health Research Council
- Prior informed consent obtained from all participants
- Confidentiality of participants' personal information
- Sensitivity to cultural norms of indigenous communities

03 Qualitative Results

Qualitative Results

Organized into a One Health-based framework illustrating how climate change disrupts environmental, animal and human health pathways that collectively influence indigenous mental well-being

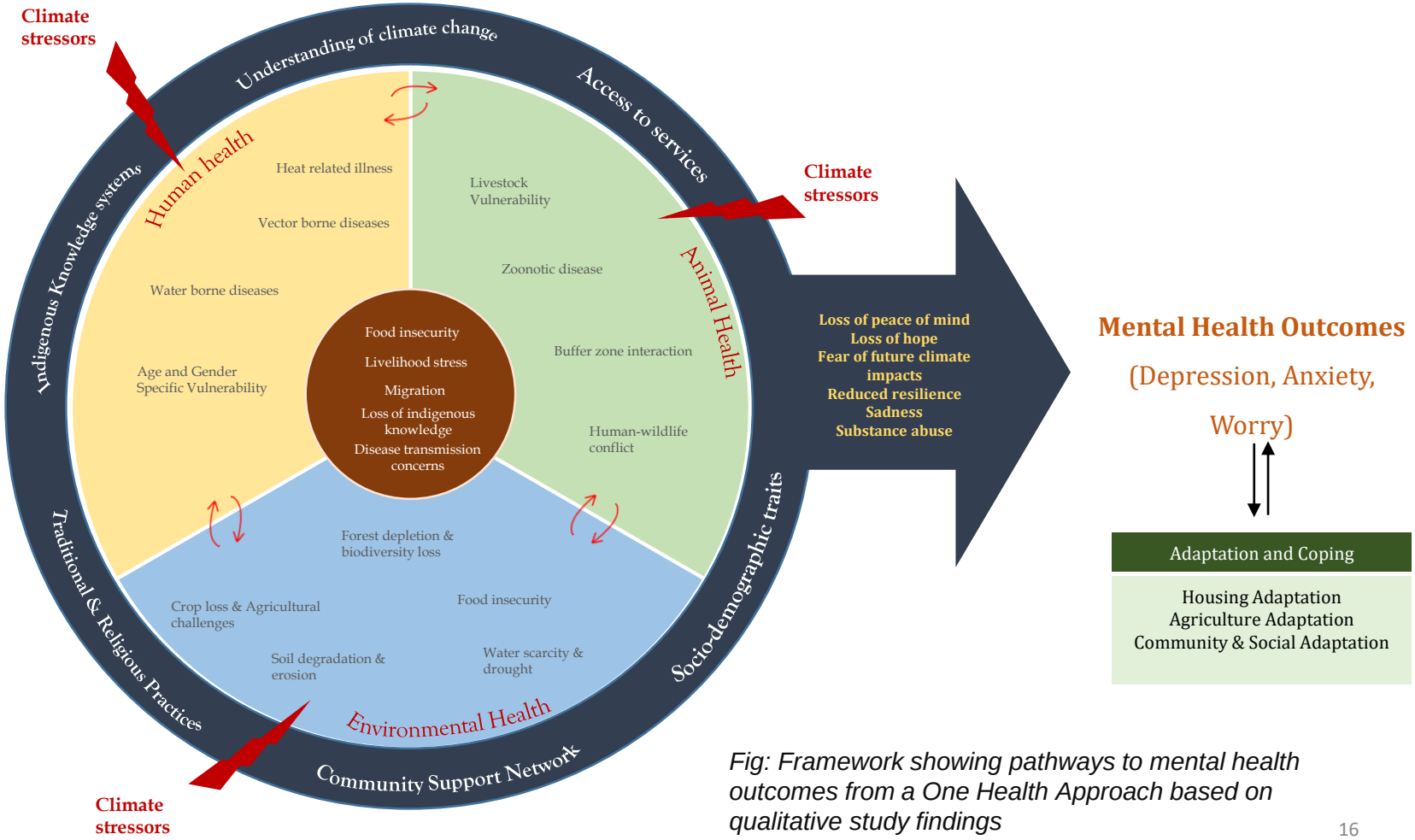


Fig: Framework showing pathways to mental health outcomes from a One Health Approach based on qualitative study findings

Climate Mental Health Pathway Themes

Theme 1: Immediate Climate-Related Stressors

Theme 2: Human Health Pathways

Theme 3: Environmental Health Pathways

Theme 4: Animal Health Pathways

Theme 5: Sociocultural and Structural Mediators

Theme 6: Mental Health Outcomes

Theme 6: Mental Health Outcomes

Subthemes:

1. Psychological Stress and Climate-Induced Anxiety
2. Social and Gendered Impacts on Mental Health
3. Social Cohesion, Isolation, and Behavioral Consequences
4. Coping Mechanisms and Access to Support

"Mental health is significantly affected by climate change. During floods, stress and sleepless nights arise as we fear for our homes and family safety. I recall a flood during my daughter-in-law's delivery, which caused extreme fear."

(A5, 66 years, Male, Madi)

04

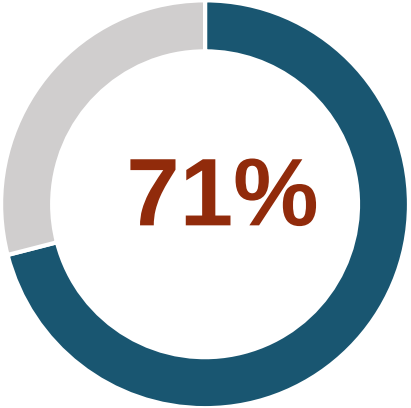
Quantitative Results

Socio-demographic characteristics (n=510)

Variables	Frequency	Percentage
Age		
15 to 24	31	6.1
25 to 44	217	42.5
45 to 64	200	39.2
65+	62	12.2
Years of living		
2 to 9	39	7.6
10 to 19	71	13.9
20-39	200	39.2
40-80	200	39.2
Gender		
Male	253	49.6
Female	257	50.4

Variables	Frequency	Percentage
Occupation		
Agriculture	405	79.4
Professional/technical/managerial	20	3.9
Skilled manual	27	5.3
Sales and services	22	4.3
Unemployed	21	4.1
Unskilled manual	8	1.6
Foreign Employment	6	1.2
Clerical	1	0.2

Prevalence of Climate Anxiety (n=510)



Multivariate logistic regression: Factors associated with Climate anxiety

Variables with VIF of more than 2 and a p-value of more than 0.25 were excluded from the final model

Variable	UOR	p-value	AOR	p-value
Use fertilizers				
Yes	3.592 (1.668-7.867)	<0.001	7.340 (2.38-22.600)	<0.001
No	1			
Traditional/indigenous farming methods		<0.001		
Yes	0.219 (0.141-0.337)		0.156 (0.080-0.301)	<0.001
No				
Early warning systems				
Yes	1.975 (1.313-2.974)	<0.001	2.590 (1.440-4.670)	0.0014
No				
CCPAS		<0.001		
Low awareness	0.282 (0.185-0.428)		0.243 (0.134-0.443)	<0.001
High awareness				

Summary of Factors Associated

Increasing Climate Anxiety

Chemical Fertilizer Use

AOR= 7.34

Receiving Early Warning System

AOR= 2.59

Decreasing Climate Anxiety

Indigenous Farming Practices

AOR= 6.41

Low Climate Change Awareness

AOR= 4.11

Coping Strategies

Variables	Frequency	Percentage (%)
Community help each other	497	97.5
Changed farming methods	141	27.6
Various strategies adopted		
Talking to family or friends	130	80.2
Prayer or religious practices	109	67.3
Seeking health worker help	26	16
Taking rest	81	50
Smoking/ drinking	12	7.4
Use of boring	3	1.9

05 Conclusion

Conclusion (Key Takeaways)

- Climate anxiety is highly prevalent among Tharu community : under recognized mental health burden.
- Traditional farming practices appear protective thus, strengthen indigenous knowledge systems.
- Lower awareness linked with lower reported anxiety suggests need for balanced risk communication that informs without increasing distress.
- Design early warning systems with psychosocial support components, not just risk alerts.
- Integrate mental health support into climate change adaptation programs (applying one health approach).

Acknowledgements

- Supervisor Professor Madhusudan Subedi
- Dr. Sabina Pokharel (Livestock Development Officer, Ministry of Agriculture and Livestock Development, Government of Nepal)
- Mr. Jeevan Kafle (Engineer, Madhyabindu Municipality)
- Mr. Manoj Shrestha (Agriculture Student)
- Data Collectors, Community Members, Respondents
- RSTMH for providing research grant

BIO

Kusumsheela Bhatta holds a Master of Public Health and currently serves as a Public Health Officer at the Ministry of Health, Gandaki Province. Her work focuses on mental health, gender, indigenous health, climate change, and health systems strengthening. She is an early career researcher and has worked with government, NGOs, and international research collaborations.

For further queries or communication:
bhattakusum3@gmail.com I mph.kusumsheelabhatta@pahs.edu.np