



Seasonal Variation of Depression among Male and Female Adults and their Mental Health Perception of Extreme Heat in Niamatpur, Naogaon: A Mixed-Methods Study

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Master of Public Health

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Declaration

I, Sinthia Masud, hereby declare that this thesis entitled "Seasonal Variation of Depression among Male and Female Adults and their Mental Health Perception of Extreme Heat in Niamatpur, Naogaon: A Mixed-Methods Study" is an original work submitted in partial fulfilment of the requirements for the degree of Master of Public Health (MPH) at the James P. Grant School of Public Health (JPGSPH), BRAC University, Dhaka, Bangladesh.

I further declare that this work has not been submitted previously, in whole or in part, for any other degree or examination at this or any other university or institution.

All sources used in this thesis have been duly acknowledged and cited. Any assistance received has been mentioned in the acknowledgements section.

I have also added a separate declaration on GenAI use at the end of this work.

Sinthia Masud

Date: ____ June 2, 2026 ____

Approval

The thesis/project titled "Seasonal Variation of Depression among Male and Female Adults and their Mental Health Perception of Extreme Heat in Niamatpur, Naogaon: A Mixed-Methods Study" submitted by

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Ethics Statement

Ethical approval was obtained from the Institutional Review Board (IRB) of BRAC James P Grant School of Public Health (MPH-2025-012).

Written informed consent was obtained from all participants for voluntary participation. Participants were informed of having no direct benefit or risk of participation. However, they were informed that some sensitive mental health questions might trigger negative emotions. Hence, participants were advised to contact community health workers of BRAC in Niamatpur for mental health screening & referral service if required.

Secondary quantitative data were already collected with prior consent and IRB approval. De-identified and anonymized secondary datasets were analysed as per ethical research standards. Qualitative interview recordings were stored and shared with a unique ID and did not contain any personal identifiable information for confidentiality and anonymity.

Abstract

Background: Extreme heat has an effect on mental health. However, the seasonality of depression among adults and their perceptions of mental health effects are yet to be explored in the Barind area of Bangladesh. Furthermore, targeted intervention requires exploration of mental health program implementation barriers and facilitators.

Objectives: The study aims to compare the seasonality of depression by gender and occupation, explore perceptions and coping strategies of mental health effects during extreme heat, and identify barriers and facilitators of implementing the BHP mental health program in Niamatpur, Naogaon.

Methods: A mixed-method study was conducted among adults in Niamatpur, Naogaon, Bangladesh. Round-wise secondary data of the BHP surveillance project was used to observe seasonal depression patterns. Qualitative exploration is based on purposive sampling of 12 In-Depth Interviews (IDIs) and 5 Key Informant Interviews (KIIs). Quantitative data was analyzed using StataNow/BE 18.5 and descriptive statistics was used to present frequency and percentage. Thematic analysis of qualitative data was done using both inductive and deductive coding.

Results: Depression of adults increased from 8.1% in winter to 12.5% in summer. Females had higher prevalence in both rounds and almost doubled (16%) than males (8.3%) in summer. For all occupations depression notably increased in summer. Extreme heat is mostly normalized although it significantly affects the mental health of outdoor workers (farmers, day labourers) and women for their working environment and gendered role.

Conclusions: Heat is a mental health concern for the vulnerable adults and women and outdoor workers bear the disproportionate burden. The findings have notable implications for public health policy, mental health programme design, and future research in the contexts of heat-vulnerable adult populations.

Keywords: Extreme heat, seasonality, summer, winter, mental health, depression

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List of Acronyms

Acronyms	Full Form
AQI	Air Quality Index
BHP	BRAC Health Program
CFIR	Consolidated Framework for Implementation Research
CHW	Community Health Worker
IDI	In-Depth Interview
IRB	Institutional Review Board
JPGSPH	James P. Grant School of Public Health
KII	Key Informant Interview
LMIC	Low-and-Middle-Income country
M&E	Monitoring and Evaluation
MH	Mental Health
OOPE	Out-of-Pocket Expenditure
PHQ	Patient Health Questionnaire
UP	Union Parishad

Chapter 1: Introduction

1.1 Background and Rationale

Extreme heat has emerged as a rising concern globally impacting the mental wellbeing of vulnerable populations. As a consequence of climate change, rising ambient temperatures have emerged as one of the most concerning environmental threats for humans (Hwong et al., 2022). When daily maximum temperature $>43^{\circ}\text{C}$, it is defined as an extreme heat wave (BMD, 2017). The World Meteorological Organization (WMO) defines heat wave as the period of more than 5 consecutive days of the daily maximum temperature exceeding by 5°C of the average daily maximum temperature (DGHS, 2024). Climate change is leading to more frequent, intense, and prolonged extreme heat events worldwide (Hess et al., 2023).

Heatwaves are among the world's most fatal climate hazards threatening global public health (Shahrujjaman et al., 2025). More frequent and intense heat waves were recorded globally, with temperatures 1.64°C higher compared to preindustrial times (Baecker et al., 2025). In the coming years heatwaves and humid heat stress are predicted to increase in South Asia (IPCC, 2023). Bangladesh has already warmed by 0.5°C since 1976, and may reach 1.4°C by 2050 (Wahid et al., 2023).

Heatwaves directly affect mental health by disrupting the lives of people exposed to excessive heat (Wahid et al., 2023). It affects mental well-being of people through physiological, cognitive, and societal alteration during increased temperature (Thompson et al., 2023). Moreover, heat exposure has been associated with depressive disorders. (Thiel et al., 2025).

A nationwide survey of Finland noted seasonality showed significant association with depression and anxiety among the general adult population (Palmu et al., 2022). A recent panel study in Bangladesh measured seasonality by two timepoints (summer and winter) of survey (Wahid et al., 2023). Hence, exploring seasonal variation of depression could be an aspect to observe depression prevalence during heat exposure.

Even though the physical health effects of heat are well-known, its significant negative effect on mental health is a recent finding (Baecker et al., 2025). While increased temperature can influence

mental health through physical health conditions, a scoping review reported that methods for assessing the relationship between rising ambient temperatures and their effects on mental health remain less recognized. (Hwong et al., 2022). The determinants of common mental disorders have been widely studied globally, however the mental health risks posed by extreme heat remain understudied, particularly in Low-and Middle-Income Countries (LMICs) (Wahid et al., 2023).

Therefore, this study findings would be crucial for future research and policies in Bangladesh as it intends to establish depression prevalence increases during summer for heat exposure through seasonal patterns. This research would also fill a critical gap of contextualization of seasonal variation of depression with community perception and lived experience. Moreover, the research findings would substantially guide targeted mental health interventions for the at-risk population of this community.

1.2 Problem Statement

Although extreme heat contributes to adverse mental health outcomes, no seasonal pattern is explored for depression in the Barind area of Bangladesh to explore the effect of heat. Along with that, community perceptions of mental health effects of extreme heat are yet to be explored in this heat-vulnerable region. Moreover, the implementation barriers and facilitators of mental health programs for this region need to be explored for targeted interventions.

1.3 Study Objectives

1.3.1 Overall Objective

To investigate the seasonal pattern of depression among adults and their perceived mental health effects of extreme heat for informing targeted mental health intervention in Barind region of Bangladesh.

1.3.2 Specific Objectives

The specific objectives of this study are:

1. To compare seasonal (summer vs winter) prevalence of depression among adults and to examine how depression prevalence varies by gender and occupation in Niamatpur, Naogaon.

2. To explore how adults of Niamatpur, Naogaon perceive mental health effects of extreme heat based on gendered roles and working environments and to explore their coping strategies.
3. To explore implementation barriers and facilitators of BHP mental health program in Niamatpur, Naogaon.

1.4 Structure of the Thesis

This thesis is organized into six chapters. Chapter 1 provides the introduction, background, and study objectives. Chapter 2 presents a comprehensive review of existing literature. Chapter 3 outlines the methodology used in this study. Chapter 4 presents the findings. Chapter 5 provides a discussion and interpretation of the results in light of existing evidence. Chapter 6 concludes the thesis with key conclusions, recommendations, and limitations.

Chapter 2: Literature Review

2.1 Global & Bangladesh Evidence

Extreme heat is a worldwide concern that disproportionately affects Bangladesh's growing mental health toll (United Nations Human Rights Office, 2022; IPCC, 2023). A national level study of Bangladesh observed weighted prevalence of common mental disorders; 16.3% for depression, 6.0% for anxiety, and 4.8% for co-occurring depression and anxiety (Wahid et al., 2023). Evidence of Bangladesh suggests increased temperature contributes to more anxiety, and co-occurring depression and anxiety (Wahid et al., 2023). Exposure to extreme heat events also reduces productivity and adversely affects mental health, with an estimated 295 billion potential work hours lost globally in 2020 while the highest losses were observed in Pakistan, Bangladesh, and India, particularly among agricultural workers (Hess et al., 2023).

2.2 Heat and mental health

Heat triggers mental stress by increased irritability, reduced impulse control, and constrained daily activities (Baecker et al., 2025). Psychological symptoms of prolonged exposure to heat include stress, sleep disturbances, decreased mood and enjoyment, reduced motivation, and agitation (Rony & Alamgir, 2023). Recent study in Vietnam noted that heatwaves notably increase the risk of

hospitalization for mental disorders (Dang et al., 2022). Study of Bangladesh identifies heat has the potential to cause chronic mental health stress (Goudet et al., 2024). Increased temperature showed association with anxiety, depression, and suicide (Baecker et al., 2025). A randomized controlled trial of China showed an increased level of anxiety for 1.5 hours-controlled heat exposure (Fang et al., 2023).

2.3 Vulnerable population

Although extreme heat is a universal risk, outdoor agricultural workers have increased risk (Spector et al., 2016) as lower-wage jobs involving outdoor work or no cooling facilities lead to increased heat exposure (Rony & Alamgir, 2023). Extreme heat severely affects the mental health of agricultural workers and women (Alam et al., 2022). Women burdened with caregiving duties during heat suffer from anxiety and symptoms of depression (Goudet et al., 2024). In LMICs, women are particularly exposed to high ambient temperatures due to domestic responsibilities with limited coping mechanisms, which leads to adverse psychiatric, neurocognitive, and neurologic outcomes (Künzel et al., 2025). In the Barind region of Bangladesh, women manage food and other chores, while men suffer severe financial losses from crop failures and lost work, which leads to poor mental health and higher suicide rates were reported in Rajshahi during dry periods (Alam et al., 2022).

2.4 Conceptual/Theoretical Framework

To explore the barriers and facilitators of BHP mental health program implementation in Niamatpur, Naogaon, Consolidated Framework for Implementation Research (CFIR) 2.0 would be followed.

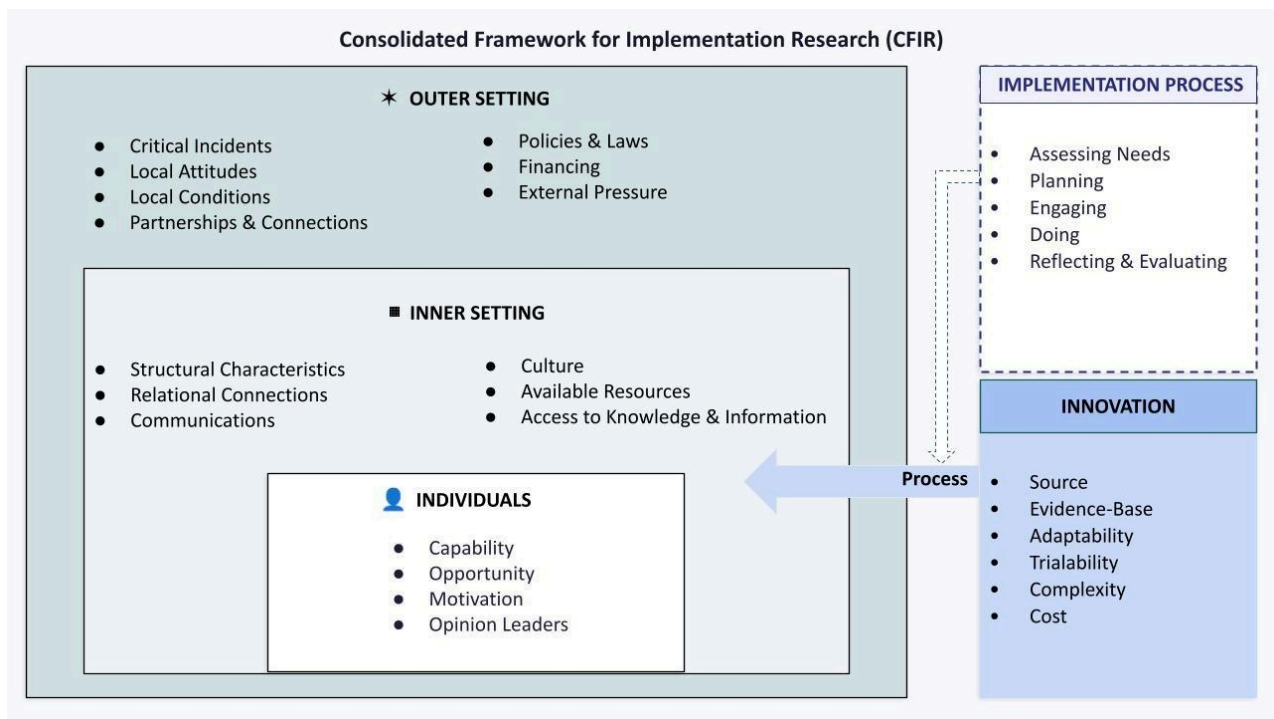


Figure 1: Consolidated Framework for Implementation Research (CFIR) (Damschroder et al., 2022).

The CFIR framework is used in implementation research to understand what facilitates or hinders an intervention from being implemented. The framework is an attempt to map all of those contextual domains of implementation.

The Outer Setting captures the broader environment surrounding the organization responsible for implementation. Inner Setting is the specific community context where the intervention is actually being delivered. At the very centre is Individuals, covering the people most directly involved, whether delivering or receiving the intervention. On the right side, the lower box is Innovation covering all aspects of intervention. The upper box is the Implementation Process, which is not a fixed structure rather an active unfolding process. The blue arrow is labelled Process, which represents the direction of influence.

The diagram as a whole implies that implementation outcomes are never determined by a single factor as all domains interact with one another and changes to any one of them can affect

implementation. This framework was selected because it offers a structured way to assess all of those domains of implementation as a whole.

Chapter 3: Methods

3.1 Study Design

The study follows a mixed-methods design in which the quantitative and qualitative components address different but complementary objectives.

The study objective was guided by the “BRAC Health Program (BHP) Surveillance: Exploring the impact of Climate Change on Health in the Saline and Drought-Prone Areas in Bangladesh” project, which aimed to monitor evolving health patterns attributed to climate change in two climate stress areas (drought-prone Niamatpur, Naogaon and saline-prone Shyamnagar, Satkhira).

The quantitative section of the study is based on secondary data of drought-prone Niamatpur, Naogaon from the BHP surveillance project. And the qualitative section of the study is completed with primary data.

3.2 Study Area and Setting

The study was conducted in the Drought-prone Barind Area (DBA) of Bangladesh. In the BHP surveillance, Niamatpur upazila of Naogaon district was selected from the DBA region of Bangladesh for its harsh climatic condition and the selected unions of Niamatpur were Chandannagarm, Sreemantapur, Hajinagar, and Rasulpur.

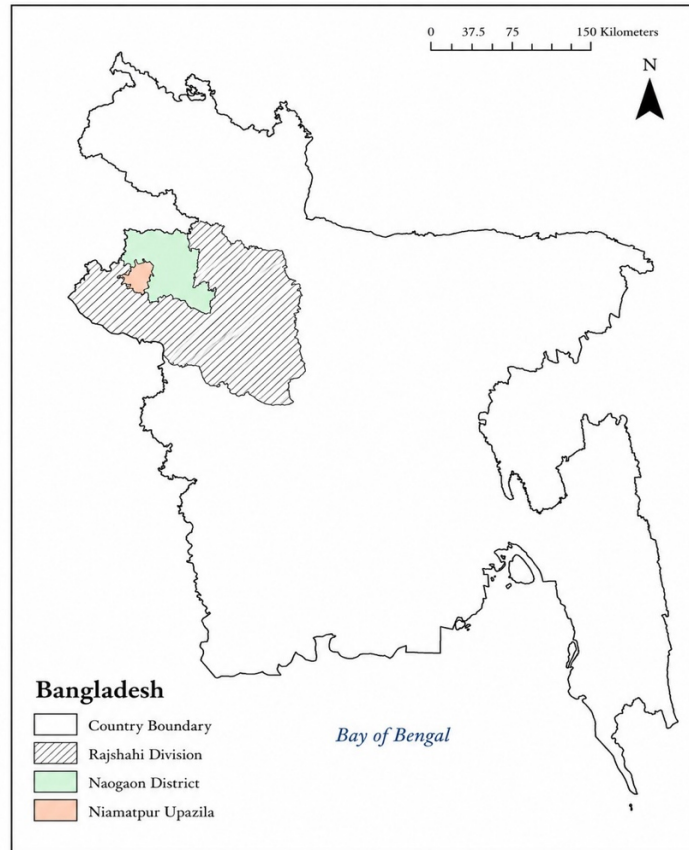


Figure 2: Map of Niamatpur upazila of Naogaon district

Guided by the BHP surveillance study setting, for the qualitative section the study area was Sreemantapur and Rasulpur union of Niamatpur.

3.3 Study Period

The study duration was from January to June 2026. For this study, secondary data of BHP surveillance was collected in rounds. Round I was from December 2024-January 2025 and round II was within May-July 2025. For the qualitative section, the data collection period was in April 2026.

3.4 Study Population

3.4.1 Study Population

For the quantitative section study population was adults (18-59 years) of Niamatpur, Naogaon based on the secondary data from the BHP surveillance project.

For the qualitative section, community residents were interviewed for IDIs. Health professionals of BRAC alongside local community leaders were interviewed for KIIs.

3.4.2 Inclusion and Exclusion Criteria

For IDIs, the study population was adults (18-59 years) residing in Niamatpur upazila of Naogaon district who are vulnerable to extreme heat for their gendered role and occupational exposure.

Inclusion criteria:

- Adults living in Niamatpur, Naogaon for at least 2 years
- Residents giving informed consent for voluntary participation.

Exclusion criteria:

- Adults having any form of physical or mental disability.

People with disabilities were excluded because they are less affected by extreme heat. This study specifically examines perceived mental health effects of extreme heat based on gendered role and working environment. Therefore, the study population was limited to adults who are actively engaged in work or activities as per gendered role.

People with disabilities often have different exposure conditions and support needs, which cannot be appropriately captured using the same tools designed for working adults. Including them would require separate tools and tailored ethical considerations. Thus, the exclusion is solely to maintain alignment with the study objective and methodological consistency. A dedicated study would be more appropriate to explore their perceptions and coping strategies.

For IDIs, participants were recruited either from the same household where BHP surveillance interviews were conducted or from different households based on sampling technique.

For KIIs, the study population was community healthcare workers of BRAC Health Program (BHP), mental health program developers of BRAC Health Program (BHP) and also community/local leaders of Niamatpur, Naogaon.

Inclusion criteria for community healthcare workers of BHP:

- Working in this role in Niamatpur, Naogaon for at least 3 years.
- Respondents providing informed consent for voluntary participation.

Inclusion criteria for mental health program developers of BHP:

- Working in this position for at least 3 years.
- Involved in development and implementation of the mental health program of BHP.
- Respondents providing informed consent for voluntary participation.

Inclusion criteria for community leaders of Niamatpur, Naogaon:

- Residing in Niamatpur, Naogaon for at least 5 years.
- Respondents having power of influence in the community.
- Respondents providing informed consent for voluntary participation.

The reason for including community leaders in this study is to explore demand-side perceived implementation barriers and facilitators of mental health interventions. To understand the contextual demand of the community, local leaders were interviewed for KIIs.

3.5 Sample Size Calculation

For the quantitative section, secondary data from BHP surveillance was used. The sample size for adults (18-59) resulted as follows for Niamatpur, Naogaon in both rounds.

Winter (Round I): HHs = 614, Participants = 1600

Summer (Round II): HHs = 601, Participants = 1482

BHP surveillance project is a longitudinal study, where the same participants were interviewed in both rounds; winter (round I) and summer (round II). However, due to attrition rate there was a difference in participants (sample size) in both rounds and 3082 is the total panel data.

For the qualitative section, sample size depended on data and theme saturation. 12 IDIs and 5 Key KIIs were conducted until data saturation point was reached.

3.6 Sampling Technique

For the quantitative section, secondary data from the BHP surveillance project was used and in that project, a two-stage stratified sampling approach was used where participants were categorized into five age-based strata.

For the qualitative section, purposive sampling with maximum variation (gender, occupation, location) was used to select participants based on inclusion & exclusion criteria. For IDIs, participants were selected based on occupation, gender, and level of heat exposure. For KII, participants were selected based on professional or community role and experience. Both for IDI and KII, sampling was continued until data saturation point was achieved and when no new themes emerged from additional interviews.

3.7 Variables

3.7.1 Dependent Variables

For the quantitative section, the outcome variable is Depression (Yes/No). In the study, depression was assessed using a PHQ-9 score. Evidence shows PHQ-9 score ≥ 10 had a sensitivity of 88% and a specificity of 88% for major depression (Kroenke et al., 2001). Therefore, PHQ-9 score ≥ 10 is considered depression, otherwise no depression.

For qualitative studies, there is no measurable variable, however mental health perception of extreme heat was explored. Thus, respondents were interviewed on perception of extreme heat and mental health separately as well as their perceived understanding of its impact.

3.7.2 Independent Variables

For quantitative studies, independent variables are following: Sociodemographic: (age, gender, occupation, education, wealth index, religion), Economic status: (monthly household income, monthly household expenditure, loan status, land ownership), Health status: chronic disease, heat exhaustion, heat stroke), Out-of-Pocket Expenditure (OOPE) for health and Air Quality Index (AQI)

For qualitative studies, the main domains for IDI were sociodemographic, gender and occupation specific lived experience and coping strategies. The main domains of KII were barriers & facilitators of BHP mental health program.

3.7.3 Operational Definitions

The operational definitions of concepts used during qualitative interview are following:

Extreme heat refers to a level of heat perceived as unbearable or beyond tolerance, causing significant physical or emotional discomfort during daily activities.

Mental health refers to the altered emotional and psychological state, including feelings of irritation, frustration, stress, or emotional disturbance, which is difficult to tolerate or manage.

Community perception refers to personal views, experiences, understanding, and interpretations of community members.

3.8 Data Collection

3.8.1 Data Collection Tools

Although the qualitative interview guideline was drafted prior to conducting my own quantitative analysis, it was conceptually informed by existing quantitative evidence from the BHP surveillance project, where seasonal variation in depression prevalence had already been observed. That prior quantitative evidence guided the development of the qualitative tools.

For the qualitative section, data were collected using semi-structured interview guidelines such as IDI, KII tool and audio recordings of the interviews. Also, reflective memos and field notes were utilized as supporting tools.

3.8.2 Pretesting

The semi structured interview guidelines were pretested with expert professionals as well as peers. Afterwards, minor revisions were made based on feedback such as change of questions order and merging repetitive questions together for better flow of interview.

3.8.3 Data Collection Procedure

For the quantitative section, secondary data from the BHP surveillance project was used. In that surveillance project, climate parameter heat was measured based on outdoor, indoor, and kitchen temperature of the selected households and mental health indicator depression data was collected using Patient Health Questionnaire (PHQ-9).

For the qualitative section, a semi structured interview guideline (IDI and KII) was developed in English & Bangla based on the study objectives. Interviews were conducted in Bangla and audio was recorded with consent and supported with field notes. IDIs & KIIs were approximately 30-45 minutes long.

3.9 Data Management and Quality Assurance

For the quantitative section, secondary data was exported in csv format and opened in StataNow/BE 18.5. To ensure quality of the data, data were cleaned for missing values, inconsistency, and outliers.

For the qualitative section, the collected audio recordings of interviews did not have any personal identifiable information. Research assistants/transcribers were hired for transcription of audio recordings. The recordings were first transcribed in Bangla for analysis and then notable quotes were translated into English.

3.10 Data Analysis

First, the quantitative section compared seasonal (summer vs. winter) prevalence of depression and examined variation of depression prevalence by gender and occupation in rounds. In the quantitative section, season is considered as a proxy for heat exposure, where summer represents the heat-exposed period and winter represents the non-heat-exposed period. Here, seasonal comparison is crucial to compare heat exposed and non-exposed depression prevalence.

Quantitative data was analysed in StataNow/BE 18.5. Descriptive statistics was used to present frequency and percentage of depression of adults for both rounds (summer and winter). Also, descriptive statistics presented variation of depression prevalence by gender and occupation in both rounds. Moreover, descriptive analysis of economic status of households (monthly household income, monthly household expenditure, loan status, land ownership), health status of study participants (chronic disease, heat exhaustion, heat stroke), health OOEPE, and AQI of households were conducted.

The qualitative section then explored perceived mental health effects of extreme heat based on gendered and occupational experiences, coping strategies, implementation barriers and facilitators of the mental health program of BHP.

Qualitative data was analysed using thematic analysis. Data familiarization was done through repeated reading of transcripts. A coding framework was developed using priori codes based on the study objectives for deductive coding and new findings from the quantitative data were analysed through inductive coding. Thus, both inductive and deductive coding was applied to develop sub-themes. Finally, emerging themes were categorized into few themes with notable quotations of respondents.

Integration of quantitative and qualitative findings was done at the interpretation stage. The quantitative section measured and compared the prevalence of depression across seasons, while the qualitative component explored how the community perceive mental health effects of extreme heat and their coping strategies. Triangulation was done by examining whether community perceptions help to explain the seasonal differences found in the survey, support them, or show different patterns.

This allowed the study to understand not only whether depression varies by season, but also why those variations occur.

3.11 Ethical Considerations

Ethical approval was obtained from the Institutional Review Board (IRB) of BRAC James P Grant School of Public Health (MPH-2025-012).

Written informed consent was obtained from all participants for voluntary participation. Participants were informed of having no direct benefit or risk of participation. However, they were informed that some sensitive mental health questions might trigger negative emotions. Hence, participants were advised to contact community health workers of BHP for mental health screening & management referral service if required.

Secondary quantitative data were already collected with prior consent. De-identified and anonymized secondary datasets were analyzed as per ethical research standards. Qualitative interview recordings were stored and shared with a unique ID and did not contain any personal identifiable information for confidentiality and anonymity.

Chapter 4: Results

4.1 Quantitative Findings

Sociodemographic characteristics of participants:

The majority of respondents belong in the 26-35 age group (35.5%). Females (53.7%) slightly outnumbered males (46.3%). Most respondents had completed secondary education (48.9%), while only 4.7% held a graduate degree or above. (see Table 1)

Table 1. Socio-demographic Characteristics of the Study Participants (N = 2,584)

Variable		Frequency (n)	Percentage (%)
Age	18 - 25	581	22.4

	26 - 35	922	35.5
	36 - 45	681	26.2
	46 - 59	413	15.9
Gender	Male	1197	46.3
	Female	1387	53.7
Education Level	Primary	822	37.9
	Secondary	1062	48.9
	Higher Secondary	184	8.5
	Graduate & above	103	4.7
Marital Status	Unmarried	190	7.4
	Married	2333	90.3
	Divorced	13	0.5
	Widow/Widower	33	1.3
	Separated	15	0.6
Religion	Islam	1756	67.9
	Hinduism	736	28.5
	Christianity	92	3.6
Wealth Quintile	Lowest	485	18.9
	Second	487	18.9
	Middle	517	20.1
	Fourth	544	21.1

Highest 539 21.0

Nearly all respondents were married (90.3%), and the religion was largely Muslim (67.9%) followed by Hindu (28.5%). Wealth was relatively evenly distributed across quintiles, with each quantile accounting for roughly 19% to 21% of the sample.

Economic status of households:

Monthly household income increased between rounds, with the mean income rising from 15,677 in winter to 17,776 in summer. However, the substantially higher standard deviation in round II indicates greater income inequality among respondents in the summer. (see Table 2a)

Table 2a. Monthly Household Income and Expenditure (BDT) of the Households

Variable	Statistic	Winter (N = 1,340)	Summer (N = 1,244)
Monthly Household Income (BDT)	Minimum	5000	3750
	Median	15000	15000
	Mean	15677	17776
	SD	6232	9118
	Maximum	42000	99000
Monthly Household Expenditure (BDT)	Minimum	4500	3750
	Median	12000	14000
	Mean	12692	14303
	SD	4370	5419
	Maximum	32000	41000

Monthly household expenditure followed a similar upward trend, with the mean increasing from BDT 12,692 in winter to BDT 14,303 in summer. In both rounds, at the median level expenditure remained below income.

Over 72% in both rounds had taken out a loan in the past five years. Land ownership status was evenly distributed, where 50% had land other than households. (see Table 2b)

Table 2b. Loan Status and Land Ownership of the Households

Variable	Winter (N = 1,340)		Summer (N = 1,244)	
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
Loan Taken (Last 5 years)	968	72.2	915	73.6
Land Ownership (other than house)	676	50.0	N/A	N/A

Participants health status:

Chronic disease was highly prevalent among participants in both rounds, affecting nearly half of the respondents (45.7% in winter and 49.4% in summer). (see Table 3)

Table 3. Health Status of the Study Participants

Variable	Winter (N= 1,340)		Summer (N = 1,244)	
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
Chronic Disease	612	45.7	614	49.4
Heat Exhaustion	6	0.4	40	3.2
Heat Stroke	0	0.0	6	0.5

Heat exhaustion increased from just 0.4% in winter to 3.2% in summer. Heat stroke remained overall low (0.5% in summer).

Participants Out-of-Pocket Expenditure for health:

Health OOPE of BDT 3,000 or above increased over rounds from 49.0% in winter to 53.1% in summer. (see Table 4)

Table 4. Out-of-Pocket Expenditure (OOPE) of the Study Participants for Health

Variable		Winter (N = 1,340)		Summer (N = 1,244)	
		Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
Out-of-Pocket Expenditure	Less than BDT 3,000	458	17.7	427	16.5
	BDT 3,000 and above	1265	49.0	1372	53.1

Households Air Quality:

Air quality improved significantly from winter to summer for all three measurement locations. In winter, around 19% to 23% of kitchen, indoor, and outdoor readings fell in the "Good" category, while over 40% were classified as "Moderate" and nearly 30% as "Unhealthy for Sensitive Groups." (see Table 5)

Table 5. Air Quality Index (AQI) of the Households

AQI	Winter (N = 1,340)			Summer (N = 1,244)		
	Kitchen (n, %)	Indoor (n, %)	Outdoor (n, %)	Kitchen (n, %)	Indoor (n, %)	Outdoor (n, %)
Good	249(18.6)	303(22.6)	299(22.3)	735(59.1)	918(73.8)	918(73.8)

Moderate	552(41.2)	523(39.0)	562(41.9)	268(21.5)	169(13.6)	166(13.3)
Unhealthy (Sensitive Groups)	390(29.1)	396(29.6)	361(26.9)	192(15.4)	139(11.2)	142(11.4)
Unhealthy	84(6.3)	64(4.8)	67(5.0)	43(3.5)	16(1.3)	16(1.3)
Very Unhealthy	61(4.6)	54(4.0)	51(3.8)	6(0.5)	2(0.2)	2(0.2)
Hazardous	4(0.3)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)

However, in summer, the proportion of "Good" readings increased notably to 59.1% for the kitchen and 73.8% for both indoor and outdoor locations.

Depression:

Table 6a. Depression Prevalence (%) by Round (N = 2,584)

Round	Depression	
	Frequency (n)	Percentage (%)
Winter (N = 1,340)	109	8.1
Summer (N = 1,244)	155	12.5

Depression prevalence, defined as a PHQ-9 score of 10 or above, increased notably from 8.1% in winter to 12.5% in summer. (see Figure 3)

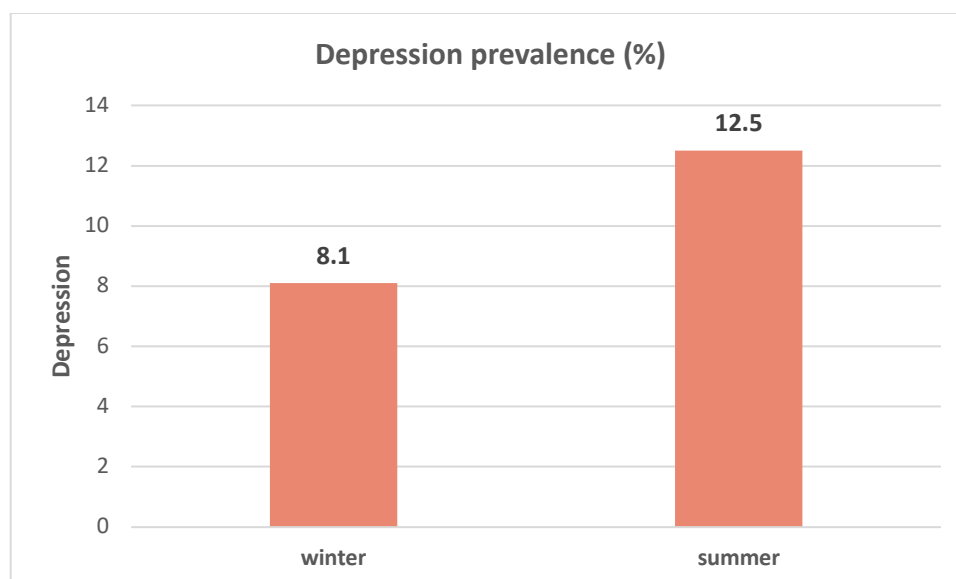


Figure 3: Prevalence of Depression among Study Participants

Table 6b. Depression Prevalence (%) by Gender and Occupation

Variable	Depression Prevalence (%)	
	Winter (N = 1,340)	Summer (N = 1,244)
Gender		
Male	4.3	8.3
Female	11.4	16.0
Occupation		
Agriculture	6.5	11.9
Business/others	2.2	8.3
Skilled labour	6.7	16.0
Unskilled labour	8.3	21.3
Household Work/Unemployed	10.7	14.9

Depression was consistently higher among females than males in both rounds. In winter, 11.4% of women screened positive for depression compared to 4.3% of men. This gap further increased in summer, 16.0% of women and 8.3% of men. (see Figure 4)

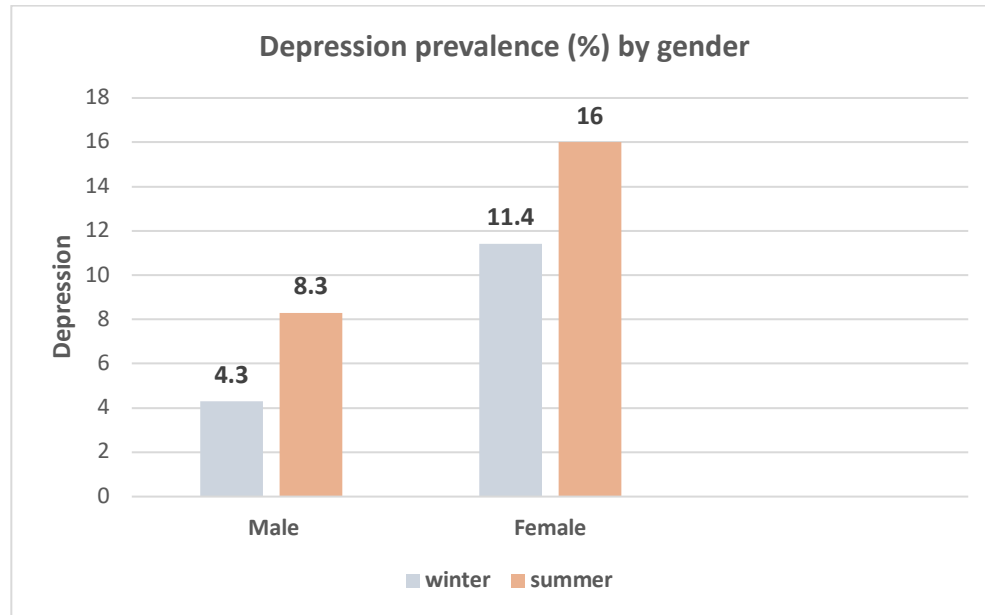


Figure 4: Depression prevalence by Gender

Although both groups saw an increase in summer, the burden remained notably higher among women.

Depression prevalence varied considerably across occupational groups and increased from winter to summer in all categories. Unskilled labour showed the highest depression prevalence in summer at 21.3%. The unemployed group showed the highest prevalence at 10.7% during winter, further increasing to 14.9% in summer. (see Figure 5)

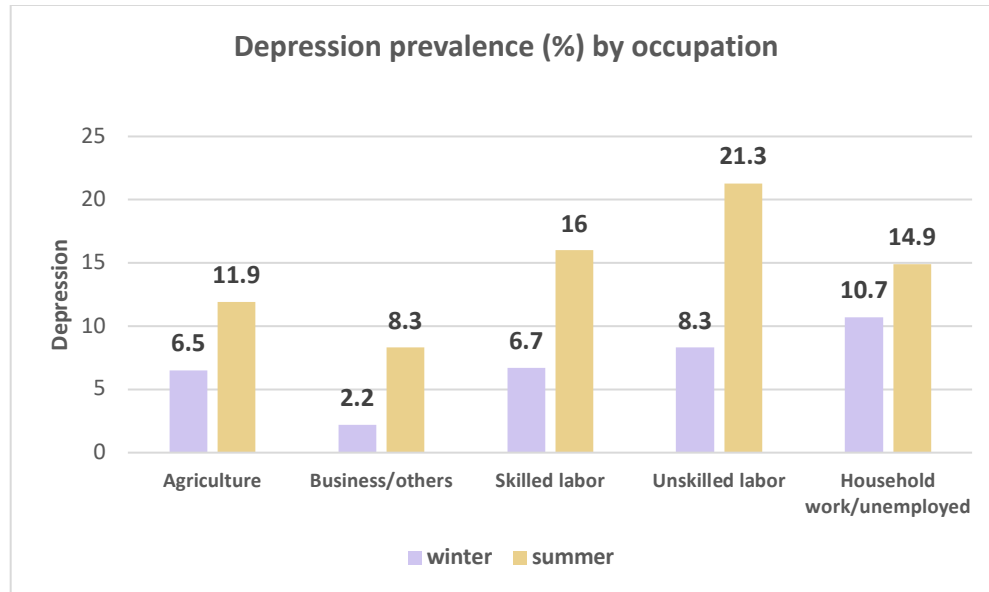


Figure 5: Depression prevalence by Occupation

For agricultural workers, depression prevalence almost doubled, rising from 6.5% to 11.9% between rounds.

4.2 Qualitative Findings

Majority of respondents of IDIs belong in their 30s. Male female participation was equal where most respondents had completed primary education, while only 2 passed higher secondary level and 2 did not receive formal education. Nearly all respondents were Muslim (11 out 12) followed by one Hindu. Occupation was largely farming (both landowners and tenants) for males followed by day labour (farming/van driver/others), while women were mostly housewives with 1 being exception of part-time weaver. (see Table 7)

Table 7: Socio-demographic Profile of Study Participants (N = 17)

Participant ID	Gender	Age (years)	Education level	Occupation	Religion
In-depth interviews: community participants					
IDI 101	Male	50	Primary	Farmer-landowner (father's land)	Muslim

IDI 102	Male	48	Higher secondary	Farmer-landowner	Muslim
IDI 103	Female	30	Primary	Housewife	Muslim
IDI 104	Female	30	Primary	Housewife	Muslim
IDI 105	Female	30	Secondary	Housewife	Muslim
IDI 106	Male	55	No formal education	Farmer-tenant	Muslim
IDI 107	Female	30	Primary	Housewife	Muslim
IDI 108	Female	24	Primary	Housewife	Muslim
IDI 109	Male	36	Secondary (Class 9)	Farmer-tenant	Hindu
IDI 110	Female	37	Secondary (Class 9)	Housewife (part-time weaver)	Muslim
IDI 111	Male	24	Higher secondary	Day labourer (farming/other)	Muslim
IDI 112	Male	55	No formal education	Van driver	Muslim

Key informant interviews: healthcare and community stakeholders

KII 101	Female	-	-	CHW (climate change)	-
KII 102	Female	-	-	CHW/Shashtho Kormi (BRAC)	-
KII 103	Female	-	-	Shastho Shebika (BRAC)	-
KII 104	Male	-	-	Former Union Parishad member	-
KII 105	Female	-	-	Programme manager, Mental Health (BHP)	-

KIIs covered a range of professionals from BHP Mental Health program manager to BRAC CHWs in Niamatpur as well as a former Union Parishad member of the community.

Findings of 12 IDIs and 5 KIIs are categorized into following themes:

Theme 1: Heat as a lived crisis

1a. Perceived worsening of heat

Respondents mostly reported Chaitra, Boishakh, Ashar, and Bhadra as the hottest months of the year. Between 10 AM and 2 PM is perceived as extreme heat hours when temperature becomes unbearable.

"From 11 am onwards it feels that heat would burn the body" - IDI 106

Although the majority responded that temperature has worsened over the past 3-5 years, they perceived extreme heat differently. Most people experienced it through physiological symptoms such as sweat, headache, vomiting and fainting while others in absence of trees.

"Since people and government started cutting off trees for money, the weather has started to feel extremely hot" - IDI 112

Some complained that the blessing of electricity over the past few years has changed their perception of extreme heat.

"Before there were no electric cooling devices available, however the situation is different now and thus temperature feels hotter now" - IDI 105

1b. Normalization of heat

Although respondents' daily life has regularly been affected by heat, they have embraced it as part of life and normalized the experience. The majority did not acknowledge extreme heat as a rising concern although it has increased over the years.

"Heavy workload makes extreme heat difficult for physical and mental health, still as females, can we even blame work pressure!" - IDI 105

1c. Occupational exposure

Although extreme heat is a universal concern, for outdoor workers it becomes insufferable due to prolonged exposure. Farmers, van drivers, and daily labourers continue to work despite the heat

otherwise there would be loss of income. A notable observation was that during Ramadan Muslim farmers struggle to fast in extreme heat while working in the field.

“We (farmers) faint in field during Ramadan while fasting, still some of us are determined to not break our fast even if we die” - IDI 102

Theme 2: Physical toll of extreme heat

Respondents mostly experience dizziness, blackouts upon standing, profuse sweating, headache, nausea and palpitations while exposed to extreme heat. Many respondents acknowledged the risks of heat stroke mostly for farmers working in extreme heat for long hours.

Housewives experience it differently for their gendered role as they have to complete household chores during the peak heat hours. Women reported distinct heat-related health issues such as urinary tract infections exacerbated by heat and dehydration, dizziness while cooking in fumes, and vomiting.

Frequent power outages at night during heat leads to poor sleep and daytime exhaustion, which compromises functionality and productivity throughout the next day.

Theme 3: Mental health & psychosocial wellbeing

3a. Heat as emotional trigger

Male and female both shared frustration and irritability while exposed to extreme heat. Heat directly triggers short-temperedness, agitation, and lower tolerance of community members. Farmers become 'explosive' after working for hours in the sun and housewives experience 'hot temper' while working in heat. Even though extreme heat was not directly framed as a mental health concern by respondents, they could relate heat with emotional wellbeing.

"During peak heat hour, temperament stays usually high, at that time there is more argument with spouse or family" - IDI 103

Farmers described feeling despair when harvests fail, income lowers or work hours lost. The emotional experiences ranged from panic in extreme heat to existential anxiety about the future.

3b. Domestic conflict and parenting strain

Heat-induced irritability affects household relationships causing marital conflict, harsh parenting, and unrest. One female linked heat to increased scolding of children while another male described anxiety about meeting household obligations when both physical strength and income are compromised in heat.

“If I don’t feel physically or emotionally well, how can I even take care of my children!!” - IDI 104

3c. Social isolation or engagement for coping

Some participants preferred leaving home to find quiet isolated spaces as a stress response. In contrast, others noted that isolation worsens their mental state, preferring social engagement.

“While feeling restless I don’t stay at home, at that time I want to go somewhere remote” - IDI 102

“Staying alone make me more tensed or sad, rather interacting with 5 others make me feel better” - IDI 103

Theme 4: Livelihood & economic stress

4a. Heat productivity income cycle

During extreme heat people relying on daily labour for income are mostly vulnerable since missed days mean no income. Heat reduces both physical capacity and work efficiency and thus tasks that should take two hours often take four raising costs while productivity decreases.

“I estimated to harvest 20 maunds of paddy, but got only 15 maunds for reduced work capacity of labours in heat” - IDI 101

4b. Debt and financial coping

Most of the farmers described debt as a persistent psychological burden as they depend on loans to survive while continuing to feel anxious into the following harvest season. Harvest failure and poor market value leads to recurring cycles of debt and financial stress for farmers. While some reported adjusting daily spending others mentioned avoiding loans for fear of repayment pressure.

Theme 5: Stigma & social responses

5a. Normalization and denial of mental distress

Respondents did not describe their emotional distress as mental health problems or concern rather they describe it as normal consequences of poverty and heat. This normalization prevents help-seeking or active effort of coping strategies.

“To whom can we open our hearts!? What’s the point of telling anyone about our suffering!” - IDI 101

5b. Social ridicule and community judgment

Both male and female respondents expressed that emotional vulnerability is not well appreciated and further invites mocking, blame and social neglect rather than support from the community.

“People mock, make fun, and condemn us saying our situation is the result of our own actions and the consequences of our deeds.” - IDI 102

Theme 6: Gendered dimensions of heat stress

6a. Women's unpaid burden

For women domestic responsibility continues regardless of physical or emotional toll as work never stops despite heat exhaustion. Also, their role is not always limited to household chores and children as sometimes it extends to helping with harvests after bringing it home during peak season.

“Working for my children and husband I don’t feel emotionally distressed, even if the chores take a toll on me, I don’t feel helpless.” - IDI 105

6b. Silencing women’s voice

Women could not express their opinion or distress without hesitation as husbands mostly dominate or interrupt interviews. Some women were scared to participate without their husband's consent. In one interview, husbands attributed his wife’s symptoms of emotional distress to inherent character flaws.

“Most women are not self-reliant so they cannot share their emotional or mental distress” - KII 101

Theme 7: Mental health and service gaps

7a. Mental health awareness gap

The community as a whole lacked mental health awareness and failed to acknowledge its heat related effects. Although irrespective of gender, occupation, and ethnicity mental health is a concern, the ethnic minority group of Niamatpur mostly suffers the most.

"Adibashi women are mostly unaware about mental health and suffer the most"- KII 101

7b. Absence of mental health service

BHP mental health programme manager noted a 92% national treatment gap and CHW of BRAC Niamatpur mentioned mental health programme has not reached in the area. Also, no respondent has ever accessed or referred to a mental health service for screening and treatment. The community clinics have no mental health service provision and nearest specialized service is available in Rajshahi.

7b. Informal mental health support

Respondents reported seeking relief by sharing emotional distress with community members. When distress becomes unbearable, family members, neighbours, and peers become the support system. Women engage in informal chat with female neighbours while men socialize with friends or peer groups at bazaars.

Despite the absence of formal mental health services, CHWs provide incidental emotional support. CHW of BRAC Niamatpur described community members feeling 'lighter' after sharing with her during household visits. However, this informal support is unskilled, unstructured, and unsupervised.

Theme 8: Community demand

8a. Infrastructure

Almost all the respondents demanded shaded areas, accessible clean drinking water and resting spaces near fields and community hubs. Few respondents emphasized on tree plantation for cooling space and shade in this region.

8b. Heat alert systems

Mosque announcements or miking emerged as the single most recommended channel for heat warnings while mobile alerts were considered secondary as it would exclude those without smartphones. BRAC household meetings are further considered to be complimentary for women for their specific role and needs.

8c. Alternate income source

Some respondents (both men and women) advocated for local alternative employment opportunities to reduce agricultural heat stress. Union Parishad Member of the community also advocated for home-based employment to empower women and reduce dependency.

Based on the Consolidated Framework for Implementation Research (CFIR) 2.0, the barriers and facilitators of implementing BHP mental health program in Niamatpur, Naogaon are mapped below across all five dimensions. In the result, barriers and facilitators of each dimension are separately illustrated and the complete CFIR table is included in the appendix.

Note: CHW = Community Health Worker; MH = Mental Health; PHQ-4 = Patient Health Questionnaire-4; UP = Union Parishad; M&E = Monitoring and Evaluation

Innovation:

Dimension	Concept Element	Facilitators	Barriers
	Source	Integrating within BRAC's established primary health care service in Niamatpur.	-

Innovation	Evidence-Base	Pilot study and scaled up in other rural districts of Bangladesh.	No validated screening tool of MH for heat stress. PHQ-4 not tailored for heat related MH. 92% national MH treatment gap as per BHP MH program manager. No evidence for community-based MH provision in Niamatpur.
	Adaptability	CHW model adaptable for MH screening and referral in Niamatpur. MH program can be adapted with existing services; e.g. antenatal care, climate-sensitive disease screening in Niamatpur.	-
	Trialability	The existing health services of BRAC in Niamatpur can serve as a small-scale testing platform of MH program without new infrastructure or manpower.	-
	Complexity	-	Heat and MH integration is multi-sectoral. The PHQ-4 tool requires modification of the heat MH connection and its stressors.
	Cost	-	Training costs of CHWs for MH screening and referral. Costs for designing a modified MH screening tool. Specialist (phycologist/psychiatrist) follow-up and medication costs are unaffordable for daily-wage workers.

Outer Setting:

Dimension	Concept Element	Facilitators	Barriers
Outer Setting	Critical Incidents	-	During Ramadan, farmers collapsed from heat exposure during work but refused to break their fast.
	Local Attitudes	-	Mental illness equates with madness. Social ridicule and mockery of emotional vulnerability. Women's emotional distress is attributed to inherent character flaws rather than heat related stressors.
	Local Conditions	-	Located in Barind region and heat is extreme for deforestation and sparse shading. Temperatures perceived higher than a decade ago. Occupational heat exposure for agriculture-based livelihood. Sleep deprivation and compromised productivity for load-shedding at night.
	Partnerships & Connections	BRAC health services are available at community and upazila level in Niamatpur.	Farmers perceive BRAC's role mostly limited to microcredit loans. No community level MH screening and referral service.
	Policies & Laws	National MH strategy acknowledges 92% MH treatment gap.	-
	Financing	-	No funds allocated for BHP MH program in Niamatpur.

	External Pressure	Former UP member willing to mobilize community support for the MH program.	Women are not independent in their decision-making; husbands or other family members control their choices.
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Inner Setting:

Dimension	Concept Element	Facilitators	Barriers
Inner Setting	Structural Characteristics	-	Community clinics services are limited to providing basic medicines. No MH counselling space in the community. No community level trained staff for MH awareness and service. No safe space for women's MH discussion. Gendered power dynamics is a structural gap for women.
	Relational Connections	BRAC CHWs are trusted in the community and have an intrinsic network.	-
	Communications	Mosque announcements and miking reaches everyone. BRAC household meetings can target women for their gendered role.	Mobile alert system is not inclusive.
	Culture	-	Emotional suppression is the norm of the community. Emotional distress is attributed to personal weakness rather than heat related stressors.

			Community has no shared belief or strategies for mental wellbeing.
	Available Resources	-	No dedicated MH funding, health workers, or counselling space in Niamatpur.
	Access to Knowledge & Information	-	No community level MH awareness available in Niamatpur. No access to information on heat related MH stressors. No community level MH support available. The concept of taking mental health service is not established in the community.

Individuals:

Dimension	Concept Element	Facilitators	Barriers
Individuals	Capability	-	CHWs of BRAC Niamatpur untrained to provide psychosocial support or screen MH using the PHQ-4 tool.
	Opportunity	-	Extreme heat obstructs service delivery for CHWs. Women lack mobility, financial autonomy, and safe spaces. Male presence suppresses women's emotional disclosure. Facility level service uptake is lower for community members during extreme heat events.
	Motivation	CHWs are highly motivated and already provide incidental psychosocial support.	Emotional distress or vulnerability is suppressed and normalized. Help-seeking seemed purposeless as no structured support available.

	Opinion Leaders	Community leaders willing to support through community meetings and awareness sessions.	-
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Implementation Process:

Dimension	Concept Element	Facilitators	Barriers
Implementation Process	Assessing Needs	-	No community level MH service needs assessment done. No community level MH literacy or heat related MH burden assessment done.
	Planning	-	No BHP MH program implementation plan in progress for Niamatpur
	Engaging	BRAC CHWs are available in Niamatpur and have strong community engagement.	-
	Doing	BHP's proven MH program model can be implemented using existing health services in Niamatpur.	-
	Reflecting & Evaluating	-	No M&E plan for MH program evaluation in Niamatpur. No baseline data of MH available for post-implementation comparison.

Chapter 5: Discussion

▪ Summary of Key Findings

The mixed-method study explored the seasonality of depression among adults and perceived mental health effects of extreme heat. The study further explored barriers and facilitators of implementing the BHP mental health program in Niamatpur, Naogaon.

Quantitative findings showed depression of adults increased from 8.1% in winter to 12.5% in summer. Females had higher prevalence of depression in both rounds. In summer, depression almost doubled among women (16%) than men (8.3%). Depression prevalence notably higher in summer than winter for all occupations. Unskilled labour had the highest prevalence of depression in summer at 21.3%. The unemployed carried the burden of depression in both winter (10.7%) and summer (14.9%). Agricultural workers' depression almost doubled from 6.5% in winter to 11.9% in summer.

Qualitative exploration highlighted normalization of extreme heat as a part of life and livelihood. Community people are not consciously worried about this rising concern. Extreme heat affects their mental wellbeing through physiological symptoms and socioeconomic factors and is mostly perceived as a lived crisis. While the whole community struggles with mental health in extreme heat, it disproportionately affects outdoor workers and women. Farmers and day labourers bear the burden of extreme heat for their occupational exposure and women for their gendered role.

The existing gap of mental health service in the community is evident. Although BHP has developed a national mental health program, it is yet to reach Niamatpur, Naogaon. However, the BHP mental health program is not targeted for the mental health effects of extreme heat.

▪ Discussion of Findings

Overall, the sociodemographic profile of the community is homogenous where respondents are predominantly working adults with a low to moderate level educational profile, while wealth quintile indicates a balanced representation.

Although the gap is very minimal between monthly expenditure and income, median expenditure being lower than income suggests saving characteristic of households. More than half the households relying on loan reflect financial vulnerability of the community.

The high burden of chronic disease in both rounds is a concerning factor, as it may trigger vulnerability to heat-related illness and further contribute to psychological distress. Heat exhaustion increased in summer due to heat exposure and no heatstroke in winter followed by six cases in summer implies the risk of extreme heat.

Increased OOPE for health in summer could possibly due to the increase in heat-related illnesses. These figures indicate a considerable financial burden of health expenditure for vulnerable households.

Air quality improvement in summer may reflect seasonal variation in pollution between the two data collection periods.

The increased prevalence of depression over 4 percent in summer suggests that psychological distress worsened over the surveillance period. This pattern is worth further investigation, as it may reflect the effects of heat exposure, socioeconomic stress, or seasonal factors between data collection rounds. Although depression increased in summer for both males and female, however it remained significantly higher among women. The finding is also aligned with household workers showing a notable burden. For agricultural workers, depression prevalence almost doubled between rounds as they likely have greater economic crisis and occupational heat exposure.

Qualitative exploration contextualised the quantitative patterns of depression with description of 'dejected' mind and loss of motivation during extreme heat. Qualitative findings indicate that heat exposure contributes to poor mental well-being through occupational and socioeconomic factors. Women and outdoor workers bear the burden of poor mental health in extreme heat for their work environments and gendered role, which reflects findings of other studies (Florez-Acevedo et al., 2025). Emerging factors of mental vulnerability to extreme heat are low socioeconomic status, insufficient rest breaks, lack of access to fluids, and inadequate heat protection. Prolonged exposure to extreme heat increases physical and mental strain of farmers and day labourers, which is consistent with a recent meta review (Thiel et al., 2025). Hence, working space for low-wage outdoor workers

and housewives requires attention in rural area, as heat exposure is projected to increase with climate change (Florez-Acevedo et al., 2025).

To cope with heat related poor mental health, first understanding and recognizing it is crucial (Rony & Alamgir, 2023). However, the community is yet to understand and acknowledge the mental health toll of extreme heat. Mental health is not considered as a health concern requiring treatment. Social culture of ridicule further makes emotional supersession the defensive norm of the community. Moreover, gendered power dynamics are a structural barrier to mental health support for women. While social isolation indicates psychological withdrawal, community engagement further suggests varied coping strategies of respondents.

▪ **Strengths of the Study**

Several aspects of this study strengthen its findings. The sample ensuring maximum variation (gender, occupation) allows patterns to be identified across groups rather than within a single population.

The triangulation of quantitative and qualitative findings provides cross-validation and contextualization of key findings. When a pattern identified in quantitative surveillance is confirmed by qualitative context, the finding becomes more credible.

Finally, the study's focus on an under-researched setting itself is a strength. The Barind region of Bangladesh lacks focused research on heat, livelihoods, gender and mental health. Hence, the study fills a critical gap of policy relevant findings.

▪ **Limitations of the Study**

Limitations of the study should be acknowledged when interpreting the findings. The sample is drawn from a single upazila hence findings does not represent the whole Barind tract or rural Bangladesh. The study cannot be replicated to other settings without thoughtful consideration of methodological gap and contextual factors.

Seasonality is used as a proxy for heat exposure instead of direct measurement of heat. The study does not observe any causal link of heat and depression, rather observes variation of prevalence by gender and occupation in heat exposed season.

Qualitative exploration has scope for recall bias as respondents were asked to share experiences of recent extreme heat events. The study intended to explore community perception by using non-clinical term of mental health and framing questions about lived experience. Given the community perception against disclosing emotional distress, mental health effects of heat exposure could be under reported particularly for women.

▪ **Implications for Public Health Policy and Practice**

The findings of this study have substantial implications for public health policy, mental health programme design, and future research in the contexts of heat-vulnerable rural communities.

Further research is essential to better understand the direct and indirect effects of extreme heat on mental health of women (Künzel et al., 2025). LMIC context specific research method is required to understand factors affecting women's mental health during extreme heat (Künzel et al., 2025).

Moreover, mental health needs to be integrated into heat related health policies as heat-health action plans worldwide has a systemic policy gap for mental health (Stewart-Ruano et al., 2025).

Social determinants such as gender, income, occupation, housing, and working environment triggering mental distress during extreme heat must be explored in detail for targeted mental health program (Florez-Acevedo et al., 2025).

Chapter 6: Conclusion and Recommendations

6.1 Conclusion

The study concludes that extreme heat exposure is a mental health concern for the vulnerable adults of Niamatpur, Naogaon. While women bear the disproportionate burden of heat mental health toll, outdoor workers' mental wellbeing is affected due to prolonged occupational exposure and financial strain. Although the community is vulnerable to extreme heat for geographic location, no heat mental health action plan is in place for the vulnerable adults. Nonetheless, the community does not acknowledge the significance of mental health effects of extreme heat for their lack of awareness. Community reliance on informal unstructured mental health support as coping strategies further

signifies the service gaps. Although BHP mental health program is nationally scaled up it has not implemented in Niamatpur, Naogaon.

6.2 Recommendations

The study fills a critical gap as the findings can inform future research, policy, and program design. Although mental health effects of heat is a relatively recent finding, future research has the potential to explore causal pathways and measure heat exposure directly. Contextual mental health stressors should be kept in mind for targeted policies and program design. Moreover, mental health needs to be integrated and emphasized into heat related health policies.

The findings further highlight that the community needs to be empowered to cope with physical, financial, and emotional stressors of extreme heat, for which infrastructure, heat alert system, and alternative income should be prioritized. Moreover, mental health burden of women should be explored further in similar context for their unique gendered role and social position. Finally, the study illustrating mental health service gap of the community demands focused mental health intervention targeting the heat mental health toll.

Declaration of GenAI Use

I, Sinthia Masud, declare that in preparing this assignment, I used ChatGPT 5.5 and Claude (Sonnet 4.6) as a support tool to assist with brainstorming ideas, organising the structure of my writing, overcoming writer's block, and improving clarity and language in the text that I drafted myself. I also took support to translate interview guidelines in Bangla and to translate notable interview quotes in English from Bangla transcripts. GenAI was not used to generate original arguments, interpret results, or produce final academic content. All substantive ideas, judgments, references, and conclusions are my own and have been independently verified in line with JPGSPH academic integrity guidelines.

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Appendices

Appendix A: Consolidated Framework for Implementation Research (CFIR) Table

Table 8: Barriers and facilitators of implementing BHP mental health program in Niamatpur, Naogaon identified through CFIR 2.0 framework.

Dimension	Concept Element	Facilitators	Barriers
Innovation	Source	Integrating within BRAC's established primary health care service in Niamatpur	-
	Evidence-Base	Pilot study and scaled up in other rural districts of Bangladesh.	No validated screening tool of MH for heat stress. PHQ-4 not tailored for heat related MH. 92% national MH treatment gap as per BHP MH program manager. No evidence for community-based MH provision in Niamatpur.
	Adaptability	CHW model adaptable for MH screening and referral in Niamatpur. MH program can be adapted with existing services; e.g. antenatal care, climate-sensitive disease screening in Niamatpur.	-

	Trialability	The existing health services of BRAC in Niamatpur can serve as a small-scale testing platform of MH program without new infrastructure or manpower.	-
	Complexity	-	Heat and MH integration is multi-sectoral. The PHQ-4 tool requires modification of the heat MH connection and its stressors.
	Cost	-	Training costs of CHWs for MH screening and referral. Costs for designing a modified MH screening tool. Specialist (phycologist/psychiatrist) follow-up and medication costs are unaffordable for daily-wage workers.
Outer Setting	Critical Incidents	-	During Ramadan, farmers collapsed from heat exposure during work but refused to break their fast.

	Local Attitudes	-	Mental illness equates with madness. Social ridicule and mockery of emotional vulnerability. Women's emotional distress is attributed to inherent character flaws rather than heat related stressors.
	Local Conditions	-	Located in Barind region and heat is extreme for deforestation and sparse shading. Temperatures perceived higher than a decade ago. Occupational heat exposure for agriculture-based livelihood. Sleep deprivation and compromised productivity for load-shedding at night.
	Partnerships & Connections	BRAC health services are available at community and upazila level in Niamatpur.	Farmers perceive BRAC's role mostly limited to microcredit loans.

			No community level MH screening and referral service.
	Policies & Laws	National MH strategy acknowledges 92% MH treatment gap.	-
	Financing	-	No funds allocated for BHP MH program in Niamatpur.
	External Pressure	Former UP member willing to mobilize community support for the MH program.	Women are not independent in their decision-making; husbands or other family members control their choices.
Inner Setting	Structural Characteristics	-	Community clinics services are limited to providing basic medicines. No MH counselling space in the community. No community level trained staff for MH awareness and service. No safe space for women's MH discussion. Gendered power

			dynamics is a structural gap for women.
	Relational Connections	BRAC CHWs are trusted in the community and have an intrinsic network.	-
	Communications	Mosque announcements and miking reaches everyone. BRAC household meetings can target women for their gendered role.	Mobile alert system is not inclusive.
	Culture	-	Emotional suppression is the norm of the community. Emotional distress is attributed to personal weakness rather than heat related stressors. Community has no shared belief or strategies for mental wellbeing.
	Available Resources	-	No dedicated MH funding, health workers, or counselling space in Niamatpur.
	Access to Knowledge & Information	-	No community level MH awareness available in Niamatpur.

			No access to information on heat related MH stressors. No community level MH support available. The concept of taking mental health service is not established in the community.
Individuals	Capability	-	CHWs of BRAC Niamatpur untrained to provide psychosocial support or screen MH using the PHQ-4 tool.
	Opportunity	-	Extreme heat obstructs service delivery for CHWs. Women lack mobility, financial autonomy, and safe spaces. Male presence suppresses women's emotional disclosure. Facility level service uptake is lower for community members during extreme heat events.

	Motivation	CHWs are highly motivated and already provide incidental psychosocial support.	Emotional distress or vulnerability is suppressed and normalized. Help-seeking seemed purposeless as no structured support available.
	Opinion Leaders	Community leaders willing to support through community meetings and awareness sessions.	-
Implementation Process	Assessing Needs	-	No community level MH service needs assessment done. No community level MH literacy or heat related MH burden assessment done.
	Planning	-	No BHP MH program implementation plan in progress for Niamatpur
	Engaging	BRAC CHWs are available in Niamatpur and have strong community engagement.	-
	Doing	BHP's proven MH program model can be implemented	-

		using existing health services in Niamatpur.	
	Reflecting & Evaluating	-	No M&E plan for MH program evaluation in Niamatpur. No baseline data of MH available for post-implementation comparison.

Appendix B: Data Collection Instrument

B1. Semi-structured Interview Guideline for IDI (Bangla)

(IDI) নির্দেশিকা:

গবেষণার শিরোনাম: নিয়ামতপুর, নওগাঁতে বিষণ্ণতার ঋতুভিত্তিক পরিবর্তন ও মানসিক সুস্থতার উপর তীব্র গরমের প্রভাব উপলব্ধি: একটি মিশ্র-পদ্ধতির গবেষণা

তারিখ: _____

সাক্ষাৎকার গ্রহণকারীর নাম: _____

নোট গ্রহণকারীর নাম: _____

সাক্ষাৎকার শুরুর সময়: _____

সাক্ষাৎকার শেষ হওয়ার সময়: _____

সাক্ষাৎকারের পরিবেশ: _____ (স্থান, কারা উপস্থিত ছিলেন)

সনাক্তকরণ নম্বর:

বিষয়/ক্ষেত্র	প্রশ্নসমূহ	সম্ভাব্য অনুসন্ধান
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A. জনতাত্ত্বিক তথ্য	- সাক্ষাৎকার প্রদানকারীর নাম: _____ (শুধুমাত্র ভবিষ্যতে প্রয়োজন হলে যোগাযোগের জন্য) - সাক্ষাৎকার প্রদানকারীর বয়স: _____ - সাক্ষাৎকার প্রদানকারীর লিঙ্গ: _____ - শিক্ষাগত যোগ্যতা: _____ - পেশা: _____ (কৃষক, দিনমজুর, গৃহিণী, অন্যান্য) - বসবাসের সময়কাল: _____ - পরিবারের সদস্য সংখ্যা: _____ - জমির মালিকানা/চাষাবাদের অবস্থা: _____ (মালিক, ভাড়াটে, ভূমিহীন) - পরিবারের প্রধান উপার্জনকারী সদস্য - পরিবারে বয়স্ক সদস্য, ৫ বছরের কম বয়সী শিশু এবং দীর্ঘমেয়াদি অসুস্থ সদস্যের উপস্থিতি - যোগাযোগের তথ্য: _____ (সম্মতি দিলে তথ্য পত্রে নিন)	(তথ্য সংগ্রহ করুন)
B. বাসস্থানের পরিবেশ	- বাসস্থানের ধরন - মেঝে - দেয়াল - ছাদ - সিলিং - শীতল যন্ত্র (সিলিং/টেবিল ফ্যান, অন্যান্য) - বায়ু চলাচল ব্যবস্থা (জানালা/অন্যান্য) - ছাদের উপর গাছ/ছায়া - রান্নাঘরের দূরত্ব (ধোঁয়া ঘরের ভিতরে আসে কি না?) - একই ঘরে বসবাসকারী সদস্য সংখ্যা	
C. প্রাথমিক প্রশ্নসমূহ	- কোন মাসগুলোতে আপনি গ্রীষ্মকালের মাস হিসেবে চিহ্নিত করবেন? - গ্রীষ্মকালের মাসগুলোতে আপনার প্রতিদিনের সাধারণ রুটিন বর্ণনা করতে পারবেন? দিনের কোন সময়টা সবচেয়ে বেশি কষ্টকর মনে হয়? কেন?	যে মাসগুলোতে আপনি সবচেয়ে বেশি গরম অনুভব করেন, অসহনীয় তাপ (গত কয়েক বছরে কি গ্রীষ্মকাল পরিবর্তিত হয়েছে? এখন কি গ্রীষ্ম আরও দীর্ঘ হয়েছে বা কমে গেছে?) (কাজের সময় এবং ঘুম)

	3. ৫ বা ১০ বছর আগের তুলনায় এই এলাকায় গরম কেমন আছে বলে আপনি মনে করেন? 4. গ্রীষ্মের একটি সাধারণ দিন আপনার কাজ করার এবং দৈনন্দিন কাজ সম্পন্ন করার ক্ষমতাকে কীভাবে প্রভাবিত করে? 5. গ্রীষ্মকালে প্রচণ্ড গরম/অসহ্য গরমের দিন সম্পর্কে আপনার ধারণা কী? 6. গত গ্রীষ্মকাল সময়ের কথা চিন্তা করুন (অতিরিক্ত গরম) আপনার জীবন এবং পরিবারে পরিবর্তনগুলো কী ছিল? 7. দৈনন্দিন জীবন এবং মেজাজের দিক থেকে, আপনার এবং আপনার পরিবারের জন্য অতিরিক্ত গরমের সময় কীভাবে ভিন্ন মনে হয়?	আপনি কি এমন কোনো নির্দিষ্ট বছর বা ঘটনার কথা মনে করতে পারেন, যখন তাপ অস্বাভাবিকভাবে তীব্র মনে হয়েছিল? আয়, খাবার, পানি, দৈনন্দিন কাজ, পারিবারিক সম্পর্ক (কাজের সুযোগ, শারীরিক আরাম, সাধারণ চাপের মাত্রা, পারিবারিক পরিবেশ) এই দিনগুলোতে আপনার শরীর ও মন কেমন অনুভব করে?
D. তাপ ও মানসিক স্বাস্থ্যের ধারণা ও জীবন অভিজ্ঞতা	1. আপনার কি মনে হয় অতিরিক্ত তাপ মানুষের মন ও অনুভূতির ওপর কোনো প্রভাব ফেলে? 2. "গ্রীষ্মের মেজাজ" বা "গরমের সময়ের মেজাজ" বর্ণনা করতে আপনি কোন শব্দ বা অনুভূতি ব্যবহার করবেন? 3. কতক্ষণ সময় গরমে থাকলে আপনি বিরক্তি/অস্থিরতা অনুভব করেন? 4. প্রচণ্ড গরম/অতিরিক্ত তাপের সাথে সম্পর্কিত মানসিক অসুস্থতা অনুভব করেছেন কি? কীভাবে সেগুলো বর্ণনা করবেন/আপনার অভিজ্ঞতা বলেন? 5. প্রচণ্ড গরম কি আপনার মানসিক সুস্থতাকে বেশি প্রভাব করে? এটি আপনার নিজেকে বা পরিবারের মধ্যে আপনার দায়িত্ব/ভূমিকাকে কীভাবে প্রভাবিত করে?"	(এটি কি মানুষের চিন্তা, অনুভূতি বা আচরণ পরিবর্তন করতে পারে?) খিটখিটে, ক্লান্ত, হতাশ, অস্থির, রাগান্বিত, দুঃখিত? খিটখিটে, ক্লান্ত, হতাশ, অস্থির, রাগান্বিত বিষণ্ডতা", "মানসিক চাপ", "চিন্তা" স্থানীয় শব্দ (যেমন: মনের রোগ, চিন্তা, ভালো লাগে না)

		বেশি দুঃখ, উদ্বেগ বা খিটখিটে ভাব লক্ষণ যেমন ঘুম না হওয়া, কথা বলতে বা মেলামেশা করতে না চাওয়া, টেনশন/চিন্তিত/মানসিক চাপ/মন খারাপ
E. লিঙ্গ এবং পেশা ভিত্তিক জীবন অভিজ্ঞতা ও মোকাবেলার কৌশল [নোট: যদি উত্তরদাতা কোনো সমস্যা বা উপসর্গের অভিযোগ করেন তাহলে প্রশ্ন ৯-এ যান এবং মোকাবেলার কৌশল সম্পর্কে প্রশ্ন করুন]	1. প্রচণ্ড গরম সময় আপনার জন্য চিন্তা বা মানসিক চাপের স উৎসগুলো কী? কর্মপরিবেশ 2. প্রচণ্ড গরমের কারণে আয় বা কাজের দিন হারানো আপনাকে এবং আপনার পরিবারের সুস্থতাকে কীভাবে প্রভাবিত করে? কাজ না পাওয়ার সময় ঋণ, অগ্রিম বা দেনার ক্ষেত্রে কী ঘটে? 3. ঘণ্টার পর ঘণ্টা প্রচণ্ড গরমে কাজ করার অভিজ্ঞতা বর্ণনা করতে পারবেন? দিনের শেষে এটি আপনাকে কেমন অনুভব করায়? 4. গরমের কারণে ফসল নষ্ট হলে বা কাজ কমে গেলে আপনার আশা এবং পরিকল্পনাগুলোর কী হয়? ছেলে-মেয়ের আলাদা ভূমিকা 5. প্রচণ্ড গরমের সময় আপনার দায়িত্বগুলো (যেমন পানি সংগ্রহ, রান্না, শিশুদের যত্ন) কীভাবে পরিবর্তিত হয়? 6. এই সময়ে পানি এবং খাদ্য নিরাপত্তার জন্য সংগ্রাম আপনাকে আবেগীয়ভাবে কেমন অনুভব করায়? 7. গরমের সময়ে পরিবারের মধ্যে (যেমন সম্পদ নিয়ে, কাজহীন পরিবারের সদস্যদের নিয়ে) চিন্তা কি বাড়ে? আপনি এটি কীভাবে সামলান?	টাকা, স্বাস্থ্য, শিশুরা, পানি, ভবিষ্যতের অনিশ্চয়তা? বাড়িতে ঝগড়া/খাবার কমানো/টাকা ধার করা/ব্যর্থ হওয়ার মত অনুভব করা? শারীরিকভাবে ক্লান্ত/মানসিকভাবে নিঃশেষ/রাগান্বিত/পরিবারের সাথে সময় উপভোগ করতে অক্ষম (উপসর্গ নোট করুন) ভবিষ্যৎ সম্পর্কে অনুভূতি/নিয়ন্ত্রণে না থাকার অনুভূতি পানি ও খাবারের জন্য বেশি সময়/শ্রম/অসুস্থ বা খিটখিটে শিশুদের পরিচালনা/প্রচণ্ড গরমে রান্না ক্রমাগত চিন্তা, অসহায়ত্ব, দায়িত্বের বোঝা স্বামী/স্ত্রী/শিশু/শ্বশুরবাড়ির লোকদের সাথে বেশি ঝগড়া
	8. যখন আপনি গরমের সমস্যাগুলোর কারণে অভিভূত, দুঃখিত বা মানসিক চাপ অনুভব করেন, তখন ভালো বোধ করার জন্য আপনি কী করেন?	বিশ্রাম, কারো সাথে কথা বলা, প্রার্থনা করা, ঠান্ডা জায়গা খোঁজা, অন্য কোনো কার্যকলাপ

	9. এই চাপগুলো সম্পর্কে আপনি কার সাথে কথা বলেন? 10. তাপের কারণে সৃষ্ট মানসিক চাপ ভালোভাবে মোকাবেলা করার জন্য সবচেয়ে বাধাগুলো কী? 11. অতিরিক্ত তাপের সময় পরিবারের সদস্য বা প্রতিবেশীরা কি সম্মিলিতভাবে মোকাবেলার জন্য কোনো কিছু একসাথে করে?” 12. আপনার সমাজে কী কী মানসিক স্বাস্থ্য সেবা রয়েছে?” (আনুষ্ঠানিক/অনানুষ্ঠানিক) 13. আপনি বিষণ্ণতা/দুশ্চিন্তায় ভুগলে সাহায্য পেতে কোথায় যান? 14. আপনার সমাজে, যারা অনেকদিন ধরে বিষণ্ণতা/দুশ্চিন্তায় ভুগছেন তাদের কীভাবে দেখা হয়? এই বিষয়গুলো নিয়ে খোলাখুলি কথা বলা কি সহজ?	স্বামী/স্ত্রী, বন্ধু, বাবা-মা, প্রতিবেশী, ধর্মীয় নেতা, বা কেউ না বিশ্রামের সময় নেই, আর্থিক চাপ, ঠান্ডা জায়গা নেই, কথা বলার মত, বোঝে এমন কেউ নেই, কলঙ্ক আনুষ্ঠানিক: স্বাস্থ্য ব্যবস্থার মধ্যে ও এনজিও সমর্থিত অনানুষ্ঠানিক: উঠান বৈঠক, কবিরাজ/পরামর্শদাতা/অন্যদের কাছ থেকে যদি হ্যাঁ: অভিজ্ঞতা বর্ণনা করুন। এটি কি সহায়ক ছিল? যদি না: কেন নয়? (খরচ, কলঙ্ক, পাওয়া যায় না, এর জন্য মনে করেননি)? দীর্ঘস্থায়ী দুঃখবোধ, উদ্বেগ, বা ঘুমাতে অক্ষমতা দোষারোপ করা হয়/দুর্বল হিসেবে দেখা হয়/সমর্থন দেওয়া হয়/লুকানো হয়
F. পরামর্শ (আর কী করা যেতে পারে এবং কীভাবে)	1. প্রচণ্ড গরমের মানসিক চাপ কমাতে আপনার পরিবেশ বা দৈনন্দিন জীবনের একটি জিনিস পরিবর্তন করতে পারলে সেটা কী হবে? 2. সমাজ বা স্থানীয় সরকারের কাছ থেকে কী ধরনের সহায়তা সত্যিকারের পরিবর্তন আনতে পারে? 3. প্রচণ্ড গরমের সময় শারীরিক এবং মানসিক উভয় স্বাস্থ্য রক্ষা করার বিষয়ে তথ্য কীভাবে সবচেয়ে ভালোভাবে শেয়ার করা যায়?	একটি ঠান্ডা বাড়ি, নির্ভরযোগ্য পানি, ছায়াযুক্ত কর্মস্থল, নিরাপদ আয় ঠান্ডা আশ্রয়কেন্দ্র, পানির পয়েন্ট, নগদ টাকা/ কর্মসূচি, স্বাস্থ্য ক্যাম্প, সামাজিক দল? স্থানীয় নেতা, মসজিদ/মন্দির, মোবাইল বার্তা, দলীয় সভার মাধ্যমে
G. উপসংহার	সব প্রশ্নের উত্তর দেওয়ার জন্য ধন্যবাদ। আপনার দেওয়া তথ্য সত্যিই সহায়ক ছিল। এই এলাকায় প্রচণ্ড গরম এবং মানুষের মানসিক সুস্থতার মধ্যে সংযোগ সম্পর্কে এমন কিছু কি আছে যা আমরা আলোচনা করিনি?	এই বিষয়ের সাথে সম্পর্কিত যা আমি আপনাকে জিজ্ঞাসা করিনি। আপনি যা উল্লেখ করতে ভুলে গেছেন

B2. Semi-structured Interview Guideline for IDI (English)

IDI Guideline:

"#\$%K!]5#B&367'3B!R3A53#57'!7C!)&EA&6657'!347'G!H3B&!3'%!S&43B&!1%\$B#6!3'%!#9&5A!H&'#
D&3B#9!?!&A2&E#57'!7C!TU#A&4&!D&3#!5'!V5343#E\$AP!V37G37'*!1!H5U&%8Ha%6!"#\$%K!

Date:

Interviewer name:

Notetaker name:

Interview starting time:

Interview ending time:

Interview settings: (Place, who were present)

Unique ID:

Domain	Questions	Possible probes
A. Demography	1. Name of interviewee_____ (Only for contacting in the future if needed) 2. Age of interviewee_____ 3. Sex of interviewee_____ 4. Educational level _____ 5. Occupation_____ (Farmer, Day laborer, Housewife, Other) 6. Duration of residence_____ 7. Number of family members_____ 8. Land ownership/cropping status: _____ (Owner, Tenant, Landless) 9. Primary earning member: 10. Presence of elderly, children <5, chronically ill members 11. Contact info_____ (Take in the information sheet if provide consent)	
B. Housing environment	1. Housing type 2. Floor 3. Wall 4. Roof 5. Ceiling 6. Cooling devices (Ceiling/table fan, others) 7. Ventilation (Window/other) 8. Shadow of tree/other over the roof 9. Distance of cooking space (Smoke comes inside the room/not?) 10. No of members living in the same room	
C. Introductory questions	1. Which months would you identify as summer months? 2. Can you describe your typical daily routine during summer months? What part of the day feels most difficult? Why? 3. How would you describe heat in this area compared to 5 or 10 years ago?	The months when you feel most hot weather, unbearable heat (Have summer months changed over the years? Is summer longer or less predictable now?) (Working hours and sleeping) Can you remember a specific year or incident when heat felt unusually severe?

	- How does a typical summer day affect your ability to work and complete your daily tasks? - What is your perception of extreme heat/severe hot days in summer? - Thinking about the last severe summer (extreme heat period), what were the changes in your life and household? - How does the extreme heat period feel different for you and your family, in terms of daily life and mood?	Income, food, water, daily chores, family dynamics (Work availability, physical comfort, general stress level, family atmosphere) How does your body and mind feel during these days?
D. Extreme heat-mental health perception & lived experience	- Do you think extreme heat has any effect on person's mind and emotions? - What words or feelings would you use to describe the "summer mood" or "extreme heat season mood"? - How long exposure to heat affects your mental health? - Have you experienced poor mental health symptoms related to hot weather/extreme heat? How would you describe them/share your experience? - Does extreme heat period affect your mental health more? Why? How does this affect yourself or your role in the family?	(Can it change how people think, feel, or behave?) Irritable, tired, hopeless, restless, short-tempered, sad? feel irritable, tired, hopeless, restless, short-tempered "sadness/hopeless" "mental stress" or "tension" Local terms (e.g., moner rog, chinta, bhalo lage na) (sadness, worry, or irritability) Symptoms like not sleeping, not wanting to talk or socialize, tensed/worried/stressed/upset

E. Gender and occupation specific lived experiences & coping strategies <i>[Note: If the respondent complains about an issue or symptoms move to question 8 and follow up questions about coping strategies]</i>	1. What are the sources of worry or stress for you during extreme heat? Working environment 2. How does the loss of income or work days due to extreme heat affect you and your family's well-being? What happens with loans, advances, or debts when work is lost? 3. Can you describe the experience of working under the scorching heat for hours? How does it make you feel by the end of the day? 4. What happens to your hopes and plans when crops fail or work lost due to heat? Gendered role 5. How do your responsibilities (like water collection,	Money, health, children, water, future uncertainty? Arguments at home/Cutting meals/Borrowing money/Feeling like a failure? Physically exhausted/Mentally drained/angry/unable to enjoy family time (note down the symptoms) Feelings about the future/Sense of not being in control More time/effort for water & food /managing sick or irritated

	cooking, caring for children) change during extreme heat/t? 6. How does the struggle for water and food security during extreme heat make you feel emotionally? 7. Does the tension within the household (e.g., over resources, idle family members) increase during hot periods? How do you manage it?	children/Cooking in intense heat Constant worry, helplessness, Burden of responsibility More arguments with spouse/children/in-laws
	8. When you feel overwhelmed, sad, or stressed by heat related problems, what do you do to feel better? 9. Who do you talk to about these symptoms? 10. What are the barriers to coping well with the mental stress caused by heat? 11. Do families or neighbors do anything together during extreme heat for collective coping? 12. What are the available mental health services in community? (formal/informal)	Rest, talk to someone, pray, seek cooler place, any other activity Spouse, friend, parent, neighbor, religious leader, or no one no time to rest, financial pressure, no cool space, no one who understands, stigma Formal: Within health system & NGO supported Informal: Uthan boithok, kobiraj or counselor/others if YES: Describe the

	13. Where do you go to seek help for mental health symptoms? 14. In your community, how are people viewed who are struggling with persistent mental health symptoms (sadness or mental stress)? Is it easy to talk about these issues openly?	experience. Was it helpful? If NO: Why not? (Cost, stigma, not available, didn't think it was for this)? feelings of prolonged sadness, anxiety, or inability to sleep related to these stresses blamed/Seen as weak/Supported/ Hidden
F. Suggestion (what else could be done and how)	1. If you could change one thing about your environment or daily life to reduce the mental strain of extreme heat, what would it be? 2. What kind of support from the community or local government would make a real difference? 3. How can information about protecting both physical and mental health during extreme heat be best shared?	A cooler home, reliable water, shaded workspaces, secure income Cool shelters, water points, cash/work programs, health camps, community groups? Through local leaders, mosques/temples, mobile messages, group meetings
G. Conclusion	Thank you for answering all the questions. The information you have given was really helpful. Is there anything important about the link between extreme heat and people's mental well-being in this area that we haven't discussed	The things related to this topic but I've not asked you. Anything you forgot to mention

B3.

B3. Semi-structured Interview Guideline for KII (Bangla)

KII নির্দেশিকা

গবেষণার শিরোনাম: নিয়ামতপুর, নওগাঁতে বিষণ্ণতার ঋতুভিত্তিক পরিবর্তন ও মানসিক সুস্থতার উপর তীব্র গরমের প্রভাব উপলব্ধি: একটি মিশ্র-পদ্ধতির গবেষণা

তারিখ:

সাক্ষাৎকারগ্রহণকারীর নাম:

নোট নেওয়ার ব্যক্তির নাম:

সাক্ষাৎকার শুরুর সময়:

সাক্ষাৎকার শেষের সময়:

সাক্ষাৎকারের স্থান ও পরিবেশ: (কোথায় হয়েছে, কারা উপস্থিত ছিলেন)

সাক্ষাৎকারদাতার নাম: _____ (প্রয়োজনে ভবিষ্যতে যোগাযোগ করার জন্য)

সনাক্তকরণ নম্বর:

ভূমিকা:

1. আপনি বর্তমানে এই প্রতিষ্ঠানে কী দায়িত্বে কাজ করছেন?

+O এই দায়িত্বে আপনি কতদিন ধরে কাজ করছেন? [আপনি কি আগে তীব্র/ অতিরিক্ত গরমের সময় এই এলাকায় কাজ করেছেন? (SS/SK এর জন্য)]

VO আপনার প্রতিষ্ঠান মানসিক স্বাস্থ্য নিয়ে কী ধরনের কাজ বা সেবা দেয়? [আনুষ্ঠানিকভাবে কী কী সেবা দেওয়া হয়? বাস্তবে কোনগুলো সত্যিই কাজ করে?]

bO এই সেবাগুলো মূলত কোন বয়সের বা কোন ধরনের মানুষের জন্য?

!

মানসিক স্বাস্থ্য:

1. আপনার কাজের জায়গা বা ক্লিনিকে গড়ে প্রতিদিন বা প্রতি সপ্তাহে কতজন মানুষ মানসিক সমস্যার লক্ষণ নিয়ে আসে? Y১০ জন প্রাপ্তবয়স্ক মানুষের মধ্যে কয়জন মানসিক সমস্যায় ভোগে? পুরুষ ও নারীর মধ্যে কি কোনো পার্থক্য আছে? গ্রীষ্ম ও শীতকালে কি এই সংখ্যার পার্থক্য হয়? [এই প্রশ্ন শুধু স্বাস্থ্যকর্মীদের/ স্বাস্থ্যসেবিকাদের জন্য]

+O সাধারণত মানুষ কী ধরনের মানসিক সমস্যার কথা বলে বা কী লক্ষণ নিয়ে আসে? এই সমস্যাগুলো বোঝাতে মানুষ সাধারণত কী কী স্থানীয় শব্দ ব্যবহার করে?

VO এই এলাকায় মানসিক সমস্যায় আক্রান্ত হলে মানুষ চিকিৎসার জন্য কোথায় যায়? সাধারণত প্রথম ধাপটি কী? যদি সেটি কার্যকর না হয়, তাহলে কী ঘটে?

bO আপনার প্রতিষ্ঠানে মানসিক রোগ চিহ্নিত করার (স্ক্রিনিং) কোনো ব্যবস্থা আছে কি? থাকলে কী কী? (এই সেবাগুলো কতটা ধারাবাহিকভাবে প্রদান করা হয়? স্ক্রিনিংয়ের মাধ্যমে কোনো সমস্যা শনাক্ত হলে কী ঘটে?)

,O আপনার প্রতিষ্ঠানে মানসিক রোগের চিকিৎসা বা ব্যবস্থাপনার কী কী সেবা আছে?

বাধা ও সহায়ক বিষয়:

1. মানসিক সমস্যায় ভোগা মানুষ কেন ঠিকমতো চিকিৎসা নিতে পারে না? সমাজ বা কমিউনিটি পর্যায়ে কী কী বাধা আছে, আর কী কী বিষয় মানুষকে চিকিৎসা নিতে সাহায্য করে?
2. স্বাস্থ্যকেন্দ্র বা হাসপাতাল পর্যায়ে কী কী বাধা ও সহায়ক বিষয় আছে? [অতিরিক্ত গরম কীভাবে স্বাস্থ্য প্রতিষ্ঠানের কার্যক্রমকে প্রভাবিত করে (কর্মীদের ক্লান্তি, রোগীর সেবা গ্রহণের প্রবাহ, অবকাঠামো)]?
3. আপনার প্রতিষ্ঠান কেন এই মানসিক স্বাস্থ্য কর্মসূচি বা সেবা চালু করেছে?
4. নিয়ামতপুর, নওগাঁ এলাকায় এই সেবা কেন নেই? (নিয়ামতপুরকে অন্যান্য এলাকার তুলনায় কম অগ্রাধিকার দেওয়ার কারণ কী?) এখানে এই সেবা চালু করতে কী কী সমস্যা বা বাধা আছে?
5. বিদ্যমান স্বাস্থ্য ব্যবস্থার সঙ্গে নতুন কী কী সেবা যোগ করলে মানসিক রোগীদের ভালোভাবে চিকিৎসা দেওয়া যাবে?
6. এই নতুন সেবাগুলো চালু করতে কী কী সমস্যা হতে পারে, আর কী কী বিষয় সাহায্য করতে পারে?
7. নিয়ামতপুর, নওগাঁ এলাকায় এমনভাবে মানসিক স্বাস্থ্য সেবা কীভাবে দেওয়া যায় যাতে মানুষ বেশি করে সেবা নেয়? এই এলাকায় এই সেবা চালু করতে প্রধান চ্যালেঞ্জগুলো কী?

পরামর্শ:

1. গ্রাম বা কমিউনিটির মানুষের কাছে মানসিক স্বাস্থ্য সেবা পৌঁছাতে আপনি কী কী পরামর্শ দেবেন?
2. মানসিক স্বাস্থ্য সেবার সঙ্গে কোন কোন বিষয় বা কোন ধরনের মানুষকে বেশি গুরুত্ব দিয়ে যুক্ত করা উচিত বলে আপনি মনে করেন?
3. মানসিক রোগে ভোগা রোগীদের জন্য এক জায়গা থেকে আরেক জায়গায় সহজে চিকিৎসা পাওয়ার (রেফারাল) ব্যবস্থা কীভাবে গড়ে তোলা যায়?

সব প্রশ্নের উত্তর দেওয়ার জন্য আপনাকে ধন্যবাদ। আপনি যে তথ্য দিয়েছেন তা সত্যিই সহায়ক ছিল। অতিরিক্ত তাপ এবং এই এলাকার মানুষের মানসিক সুস্থতার মধ্যে সংযোগ সম্পর্কে গুরুত্বপূর্ণ এমন কিছু কি আছে যা আমরা আলোচনা করিনি?

KII নির্দেশিকা (সম্প্রদায়/স্থানীয় নেতা ও কৃষি জমির মালিক)

গবেষণার শিরোনাম: নিয়ামতপুর, নওগাঁতে বিষণ্ণতার ঋতুভিত্তিক পরিবর্তন ও মানসিক সুস্থতার উপর তীব্র গরমের প্রভাব উপলব্ধি: একটি মিশ্র-পদ্ধতির গবেষণা

তারিখ:

সাক্ষাৎকার গ্রহণকারীর নাম:

নোট গ্রহণকারীর নাম:

সাক্ষাৎকার শুরুর সময়:

সাক্ষাৎকার শেষ হওয়ার সময়:

সাক্ষাৎকারের পরিবেশ (স্থান, কারা উপস্থিত ছিলেন):

সাক্ষাৎদাতার নাম: _____ (ভবিষ্যতে প্রয়োজনে যোগাযোগের জন্য)

সনাক্তকরণ নম্বর:

ভূমিকা:

1. আপনি কি সম্প্রদায়/কৃষিকাজে আপনার বর্তমান ভূমিকা ও দায়িত্ব বর্ণনা করতে পারবেন?
2. আপনি কতদিন ধরে এই সামাজিক ভূমিকায় জড়িত আছেন?

৩. স্থানীয় সম্প্রদায়ে আপনার অবদানকে আপনি কীভাবে বর্ণনা করবেন?

অতিরিক্ত গরম/তাপ:

১. অতিরিক্ত তাপ এই সম্প্রদায়ের দৈনন্দিন জীবনকে কীভাবে প্রভাবিত করেছে?
২. অতিরিক্ত তাপের কারণে জীবিকায় আপনি কী পরিবর্তন লক্ষ্য করেছেন? [বিভিন্ন পেশা, লিঙ্গ] (খাদ্য ঘাটতি, পানির ঘাটতি, কৃষি জমির ক্ষতি, কাজের ক্ষতি)
৩. এই এলাকায় কোন বয়সের লোক তাপদাহে সবচেয়ে বেশি ক্ষতিগ্রস্ত হয়? আপনি কেন তা মনে করেন?
৪. কষ্ট, কাজ, আয়/জীবিকা এবং ফসল উৎপাদনের দিক থেকে গ্রীষ্মকাল শীতকাল থেকে কীভাবে আলাদা?

সম্প্রদায়ের মানসিক স্বাস্থ্য:

১. এই সম্প্রদায়ের মানুষ কি কোনো মানসিক অসুস্থতায় ভোগেন এবং লক্ষণগুলো নিয়ে আলোচনা করেন? (চাপ, দুঃখবোধ, উদ্বেগ, পারিবারিক দ্বন্দ্ব, হতাশা)? গ্রীষ্মকাল ও শীতকালে এটা কি আলাদা?
২. অতিরিক্ত তাপের সময় মানুষ কী ধরনের মানসিক বা আবেগজনিত সমস্যায় ভোগেন?
৩. ১০ জন প্রাপ্তবয়স্কের মধ্যে গড়ে কতজন প্রাপ্তবয়স্ক এই মানসিক স্বাস্থ্য লক্ষণে ভোগেন (পুরুষ ও নারীদের মধ্যে কোনো পার্থক্য আছে কি? গ্রীষ্মকাল ও শীতকালের মধ্যে?)
৪. অতিরিক্ত গরমের সাথে সম্পর্কিত মানসিক বা আবেগজনিত সমস্যার লক্ষণ (চিন্তা/টেনশন/উদ্বেগ) মোকাবেলায় মানুষ সাধারণত কীভাবে চেষ্টা করে?
৫. সমাজের মানুষ প্রথমে কোথায় সাহায্য খোঁজেন – পরিবার, প্রতিবেশী, সামাজিক নেতা, স্বাস্থ্যকর্মী/পেশাদার, এনজিও, নাকি কবিবরাজ?
৬. অতিরিক্ত গরমের সময় মানসিক চাপ/চিন্তা/উদ্বেগে মানুষকে সহায়তা করতে সামাজিক নেতা কী কোনো ভূমিকা পালন করেন?
৭. তাপদাহের সময় মানুষের মানসিক সুস্থতায় সহায়তা করার জন্য কোনো স্থানীয়/সাংগঠনিক উদ্যোগ আছে কি? (কৃষি, পানি, জীবিকা, বা সামাজিক সুরক্ষার সাথে সহযোগিতায়)

বাধা ও সহায়ক বিষয়:

১. সম্প্রদায়ের মানুষকে মানসিক স্বাস্থ্য সমস্যার জন্য সাহায্য চাইতে কী বাধা দেয়? (কলঙ্ক, খরচ, দূরত্ব, সচেতনতার অভাব, বা সাংস্কৃতিক/ধর্মীয় বিশ্বাস)?
২. মানুষকে মানসিক স্বাস্থ্যসেবা নিতে সাহায্য করার জন্য কোনো চলমান সম্প্রদায়-পর্যায়ের উদ্যোগ আছে কি?
৩. এই সম্প্রদায়ে মানসিক স্বাস্থ্যসেবা চালু করতে কী কী বাধা রয়েছে?
৪. এই সম্প্রদায়ে মানসিক স্বাস্থ্যসেবার গ্রহণযোগ্যতা ও ব্যবহার বাড়াতে কোন বিষয়গুলো সহায়ক হতে পারে?

পরামর্শ:

১. সম্প্রদায়ে মানসিক স্বাস্থ্য সহায়তা বাস্তবায়নের জন্য আপনার সুপারিশ কী হবে? (কোন জনগোষ্ঠী বা বয়সের দলকে অগ্রাধিকার দেওয়া উচিত)?
২. এই এলাকায় সমাজের মানুষের কী ধরনের মানসিক স্বাস্থ্য সচেতনতা ও সেবা প্রয়োজন?
৩. মানসিক স্বাস্থ্যের বোঝা কমাতে সম্প্রদায়ের জন্য সামাজিক নেতা কীভাবে অবদান রাখতে পারেন?

সব প্রশ্নের উত্তর দেওয়ার জন্য আপনাকে ধন্যবাদ। আপনি যে তথ্য দিয়েছেন তা সত্যিই সহায়ক ছিল। অতিরিক্ত তাপ এবং এই এলাকার মানুষের মানসিক সুস্থতার মধ্যে সংযোগ সম্পর্কে গুরুত্বপূর্ণ এমন কিছু কি আছে যা আমরা আলোচনা করিনি?

B4. Semi-structured Interview Guideline for KII (English)

KII Guideline: (Healthcare professionals & mental health program developers)

"#\$%K!]5#B&367'3B!R3A53#57'!7C!)&EA&6657'!347'G!H3B&!3'#!S&43B&!1%\$B#6!3'#!#9&5A!H&'#
D&3B#9!?!&A2&E#57'!7C!TU#A&4&!D&3#!5'!V5343#E\$AP!V37G37'*!1!H5U&%8Ha%6!"#\$%K!

Date:

Interviewer name:

Notetaker name:

Interview starting time:

Interview ending time:

Interview settings: (Place, who were present)

Name of interviewee: _____ (Only for contacting in the future if needed)

Unique ID:

Introduction:

1. Can you please describe your current role/position in this organization?
2. How long have you been working in this role/position? [Have you worked in this area during previous severe/extreme heat periods? (for SS/SK)]

3. Please describe mental health related programs or services your organization provides? (What services are officially offered? What services actually function in practice?)
4. To what population or age groups does this program mainly provide service?

Context- mental health

1. On average how many patients with mental health symptoms do you see per week or per day in your work area/clinic? (for SS/SK)
(Among 10 adults, how many suffer from mental health disorder? Is there any difference between this number among adult males and females? Is there any difference between this number between summer and winter?)
2. What kind of mental health complaints/symptoms are people usually present with? What local terms do people use to describe these problems?
3. Where does a person with mental health disorder go to seek health care in community? What is usually the first step? What happens if that does not help?
4. What are the mental health screening services provided in your facility/program (if any)? (How consistently are these services delivered? What happens when screening identifies a problem?)
5. What are the mental health management services provided in your facility/program (if any)?

Barriers & facilitators

1. Why are people with mental health disorders unable to seek appropriate care? What are the community-level barriers and facilitators of seeking appropriate care for mental health complaints?
2. What are the health-facility level barriers and facilitators of seeking appropriate care for mental health complaints? [How does extreme heat affect facility functioning (staff fatigue, patient flow, infrastructure)]?
3. What motivated your organization to initiate or develop this program or provide this service?
4. Why is this program or service not available in Niamatpur, Naogaon? (What makes Niamatpur less prioritized than other areas?) Are there any specific barriers of implementing this service in this region, if so, mention those?

5. What new services can be integrated into the existing health system to provide appropriate care for mental health disorders?
6. What are the barriers & facilitators of providing or implementing these new services (if any suggestion)?
7. How to design and provide mental health service for Niamatpur, Naogaon so that community level uptake is high, what are challenges to design or implement such service in this region?

Recommendation

1. What would be your recommendations to facilitate delivery of mental health service to community people?
2. What components or population do you recommend to integrate into mental health service?
3. How to establish a referral system for seamless continuum of care for patients suffering from mental health disorder?

Thank you for answering all the questions. The information you have given was really helpful. Is there anything important about the link between extreme heat and people's mental well-being in this area that we haven't discussed?

KII Guideline (Community/local leaders)

"#\$%K!J5#B&*367'3B!R3A53#57'!7C!)&EA&6657'!347'G!H3B&!3'%!S&43B&!1%\$B#6!3'#!#9&5A!H&#D&3B#9!?!&A2&E#57'!7C!TU#A&4&!D&3#!5!V5343#E\$AP!V37G37'*!1!H5U&%8Ha%6!"#\$%K!

Date:

Interviewer name:

Notetaker name:

Interview starting time:

Interview ending time:

Interview setting (place, who were present):

Name of interviewee: : _____ (Only for contacting in the future if needed)

Unique ID:

Introduction:

1. Can you please describe your current roles and responsibility in the community?
2. How long have you been involved in this community role?
3. How would you describe your contribution to local community?

Extreme Heat

1. How has extreme heat affected daily life in this community?
2. What changes have you observed in livelihoods due to extreme heat? [different occupation, gender] (food scarcity, water scarcity, loss of agricultural land, loss of work)
3. Which groups are most affected by extreme heat in this area? Why do you think so?
4. How is summer different from winter in terms of hardship, work, income/livelihood and crop yield?

Mental health of community:

1. Do people of this community suffer from mental illness and discuss about symptoms? (stress, sadness, worry, family conflict, hopelessness)? Is this different during summer and winter?
2. What kinds of emotional or mental problems do people suffer from during extreme heat?
3. Among 10 adults, how many adults on average suffer from these mental health symptoms (Is there any difference between men and women? Between summer and winter?)
4. How do people usually cope with mental health symptoms (stress/tension/worry) related to extreme heat?

5. Where do they seek help first – family, neighbors, community leaders, health workers/professionals, NGOs, or traditional healers?
6. What role do community leaders play in supporting people to cope with the symptoms during extreme heat?
7. Are there any local/organizational initiatives to support people's mental well-being during extreme heat? (in collaboration with agriculture, water, livelihoods, or social protection)

Barriers & facilitators:

1. What prevents community people from seeking help for mental health problems? (stigma, cost, distance, lack of awareness, or cultural/religious beliefs)?
2. Are there any existing community-level initiatives helping people to seek mental health care?
3. What are the barriers to introducing mental health services in this community?
4. What factors could facilitate acceptance and uptake of mental health services in this community?

Recommendations:

1. What would be your recommendations to implement mental health support in the community? (Which population or age groups should be prioritized)?
2. What kind of mental health awareness and services do community people need in this area?
3. How can community leaders contribute to the community to reduce mental health burden?

Thank you for answering all the questions. The information you have given was really helpful. Is there anything important about the link between extreme heat and people's mental well-being in this area that we haven't discussed?

APPENDIX C: Informed Consent Form

C1. Information Sheet & Consent Form (Bangla)

তথ্যপত্র

ভূমিকা: আসসালামু আলাইকুম/নমস্কার, আমার নাম সিনথিয়া মাসুদ এবং আমি ব্র্যাক জেমস পি গ্রান্ট স্কুল অব পাবলিক হেলথ থেকে এসেছি। আমি আমার এমপিএইচ থিসিসের অংশ হিসেবে “নিয়ামতপুর, নওগাঁতে বিষণ্ণতার ঋতুভিত্তিক পরিবর্তন ও মানসিক সুস্থতার

উপর তীব্র গরমের প্রভাব উপলব্ধি: একটি মিশ্র-পদ্ধতির গবেষণা” শীর্ষক একটি গবেষণা পরিচালনা করছি। এই গবেষণাটি ব্র্যাক হেলথ প্রোগ্রামের সহযোগিতায় এবং ব্র্যাক জেমস পি গ্রান্ট স্কুল অব পাবলিক হেলথের এমপিএইচ টিমের অর্থায়নে পরিচালিত হচ্ছে।

সিরিয়াল নং: [প্রোটোকল নম্বর]

উদ্দেশ্য: এই গবেষণার উদ্দেশ্য হলো নিয়ামতপুর, নওগাঁতে প্রাপ্তবয়স্কদের মধ্যে ঋতুভিত্তিক বিষণ্ণতার হার তুলনা করা, মানসিক সুস্থতার উপর তীব্র গরমের প্রভাব সম্পর্কে মানুষের ধারণা ও মোকাবেলার কৌশল অনুসন্ধান করা এবং মানসিক স্বাস্থ্য প্রকল্প বাস্তবায়নের সহায়ক ও প্রতিবন্ধক বিষয়গুলো চিহ্নিত করা।

অংশগ্রহণের যৌক্তিকতা: অংশগ্রহণকারীদের সাক্ষাৎকার নেওয়া গুরুত্বপূর্ণ, যাতে তাদের ধারণা, অভিজ্ঞতা এবং মোকাবেলার কৌশলগুলির পাশাপাশি বাস্তবায়নের বাধা ও সহায়ক দিকগুলি জানা যায়; অন্যথায় বাস্তব অভিজ্ঞতা ও প্রেক্ষাপট যথাযথভাবে অনুধাবন করা সম্ভব হবে না।

পদ্ধতি: আপনি লিখিত সম্মতি প্রদান করলে প্রায় ৪০–৬০ মিনিটের একটি সাক্ষাৎকার গ্রহণ করা হবে। নির্দেশিকা অনুসরণ করে তথ্য সংগ্রহ করা হবে এবং আপনার সম্মতি নিয়ে উত্তরসমূহ রেকর্ডিং ডিভাইসের মাধ্যমে অডিও রেকর্ড করা হবে।

অংশগ্রহণের সুবিধা: এই গবেষণায় অংশগ্রহণের কোনো প্রত্যক্ষ উপকার নেই। তবে গবেষণার ফলাফল ভবিষ্যতে এই এলাকার মানুষের জন্য উপযোগী ও কার্যকর মানসিক স্বাস্থ্য প্রকল্প পরিকল্পনায় ও বাস্তবায়নে সহায়তা করবে।

পারিশ্রমিক: এই গবেষণায় অংশগ্রহণের জন্য কোনো ধরনের আর্থিক পারিশ্রমিক প্রদান করা হবে না।

ঝুঁকি: এই গবেষণায় অংশগ্রহণ করলে আপনার শারীরিক বা মানসিক ক্ষতির কোনো ঝুঁকি নেই। কিছু সংবেদনশীল প্রশ্ন করা হতে পারে, যা আপনাকে সাময়িকভাবে অস্বস্তিতে ফেলতে পারে। আপনি চাইলে যেকোনো প্রশ্নের উত্তর না দিতে পারেন এবং আপনার সিদ্ধান্তকে সম্পূর্ণভাবে সম্মান করা হবে।

গোপনীয়তা ও পরিচয় গোপন রাখা: তথ্য সংগ্রহের সময় কোনো ব্যক্তিগত পরিচয়সংক্রান্ত তথ্য রেকর্ড করা হবে না। প্রতিটি অংশগ্রহণকারীর উত্তর একটি ইউনিক আইডি মাধ্যমে সংরক্ষিত হবে। বাংলা তথ্য অনুবাদের জন্য ইন্টারনেটের (এআই) সহায়তা নেওয়া হতে পারে, তবে কোনো ব্যক্তিগত পরিচয় প্রকাশ করা হবে না। সকল তথ্য সংস্থার সেটারেজে পাসওয়ার্ড-সুরক্ষিত ফাইলে সংরক্ষণ করা হবে এবং শুধুমাত্র গবেষণা দলের সদস্যরা এতে প্রবেশাধিকার পাবেন। ভবিষ্যতে প্রকাশনায় অংশগ্রহণকারীর পরিচয় শনাক্ত করা যায় এমন কোনো তথ্য প্রকাশ করা হবে না।

অংশগ্রহণের স্বৈচ্ছাসেবিতা: এই গবেষণায় অংশগ্রহণ সম্পূর্ণ স্বৈচ্ছাসেবামূলক। কোনো প্রকার চাপ বা বাধ্যবাধকতা নেই। সাক্ষাৎকার চলাকালীন যেকোনো সময় আপনি অংশগ্রহণ প্রত্যাহার করতে পারবেন। কিন্তু একবার তথ্য সংগ্রহ সম্পন্ন হলে এবং গবেষক সাক্ষাৎকার স্থান ত্যাগ করলে, অংশগ্রহণকারী আর অংশগ্রহণ প্রত্যাহার করতে পারবেন না।

যোগাযোগ: গবেষণা সম্পর্কে কোনো প্রশ্ন থাকলে যোগাযোগ করুন: সিনথিয়া মাসুদ, ফোন: ০১৭৯৮১২১৭৫৫। নৈতিক বিষয়ের জন্য যোগাযোগ: ইনস্টিটিউশনাল রিভিউ বোর্ড (IRB), ফোন: +৮০১৯৯৩৩৭৯৫১২, ইমেইল: irb-jpgsph@bracu.ac.bd।

সম্মতিপত্র

গবেষণার শিরোনাম: নিয়ামতপুর, নওগাঁতে বিষণ্ণতার ঋতুভিত্তিক পরিবর্তন ও মানসিক সুস্থতার উপর তীব্র গরমের প্রভাব উপলব্ধি: একটি মিশ্র-পদ্ধতির গবেষণা

আপনি যদি এই গবেষণায় অংশগ্রহণে সম্মত হন, অনুগ্রহ করে আপনার স্বাক্ষর/আঙুলের ছাপ প্রদান করুন।

আপনি কি সাক্ষাৎকার অডিও রেকর্ড করার অনুমতি দেন? ☐ হ্যাঁ ☐ না

আপনি কি আপনার তথ্য শেয়ার করার অনুমতি দেন? ☐ হ্যাঁ ☐ না

আপনি কি ছবি তোলার অনুমতি দেন? ☐ হ্যাঁ ☐ না

আপনি কি ছবিগুলো শেয়ার করার অনুমতি দেন? ☐ হ্যাঁ ☐ না

আপনি কি ভবিষ্যতে তথ্য সংগ্রহের জন্য পুনরায় যোগাযোগ করার অনুমতি দেন? ☐ হ্যাঁ ☐ না

যদি হ্যাঁ হয়, যোগাযোগ নম্বর লিখুন: _____

আপনার কি কোনো প্রশ্ন আছে? ☐ হ্যাঁ ☐ না

যদি প্রশ্ন থাকে, লিখুন: _____

সাক্ষাৎকারগ্রহণকারীর নাম:
সাক্ষাৎকারগ্রহণকারীর স্বাক্ষর:
তারিখ:

উত্তরদাতার নাম:
উত্তরদাতার স্বাক্ষর/আঙুলের ছাপ:
তারিখ:

C2. Information Sheet & Consent Form (English)

Information Sheet

Introduction: Greetings, my name is Sinthia Masud, and I come from Brac James P Grant School of Public Health. I am conducting a study as part of my MPH thesis on **Q"&367'3B!R3A53#57'!7C)&EA&6657'!347'G!H3B&!3'!S&43B&!1%\$B#6!3'!#9&5A!H&'#3B!D&3B#9!?'&A2&B&57'!7C!TU#A&V5343#E\$AP!V37G37'*!1!H5U&%8Ha%6!2#5B&Q A3#57'!W5#9!;A32!D&3B#9!A7GA34P C\$'%%&!K!H?D!#&34P!;A32!>34&6!?!@A3#!"2977B!7C!?\$:B52!D&3B#9O!!!**
Serial no.: [Protocol number]

?%\$ The study aims to compare seasonal prevalence of depression among adults, to explore E&A2&E#57'6!3'#!27E5'G!6#A3#&G5&6!7C!4&'#3B!9&3B#9!&CC&2#6!7C!&U#A&4&!9&3#P!3'#!#7! 54EB&4&'#3#57'!:3AA5&A6!3'!C325B5#3#7A6!7C!4&'#3B!9&3B#9!&V5343#E\$AP!V37G37'O

Justification of participation: It is important to interview the participants to explore perception, and coping strategies along with implementation barriers and facilitators, otherwise real insights would not be understood.

Do you give permission to take photos?	Yes	No
Do you give permission to share the photos?	Yes	No
Do you give permission to contact you again for data collection?	Yes	No
If yes, share contact no:		
Do you have any question?	Yes	No
State the question if yes:		

Interviewer name:

Respondent's name:

Interviewer signature:

Respondent's signature/thumbprint:

Date:

Date: