



Extreme Heat and Child Health Care Practices in Drought-Prone Rural Bangladesh: A Mixed-Method Study

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Declaration

I, **Atiya Khwaja**, hereby declare that this thesis entitled "**Extreme Heat and Child Health Care Practices in Drought-Prone Rural Bangladesh: A Mixed-Method 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.

Atiya Khwaja

Date: 02.06.2026

Approval

The thesis/project titled “Extreme Heat and Child Health Care Practices in Drought-Prone Rural Bangladesh: A Mixed-Method Study” submitted by **Atiya Khwaja, ID-25167002**, of 2026 has been accepted as satisfactory in partial fulfilment of the requirements for the degree of Master of Public Health.

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Ethics Statement

Ethical approval for this study was obtained from the Institutional Review Board (IRB) of the James P. Grant School of Public Health (JPGSPH), BRAC University (Reference No: MPH-2025-002; Approved on 24 February 2026).

Written informed consent was obtained from all participants prior to data collection. Participants were informed about the purpose of the study, voluntary participation, confidentiality, and their right to withdraw from the study at any stage without any consequences.

To ensure privacy and confidentiality, all data were anonymised using unique identification codes and stored in password-protected devices and secure institutional cloud storage accessible only to the research team. Audio recording and photographs were taken only with participants' permission. No personally identifiable information was included in the final report.

Abstract

Background: Extreme heat is an increasing public health concern in Bangladesh, particularly for children under 5. However, existing peer-reviewed studies have not adequately examined how caregivers in drought-prone rural settings recognise, manage, and seek care for childhood illnesses during extreme heat.

Objectives: This study aimed to assess child healthcare practices during extreme heat among children under 5 in drought-prone rural Bangladesh by estimating selected illness prevalence, exploring caregivers' perceptions and home-based coping practices, and identifying reasons influencing care-seeking.

Methods: A mixed-methods study was conducted in Niamatpur Upazila, Naogaon District. The quantitative component used secondary data of 239 children under 5 from the BRAC Health Program surveillance project dataset and was analyzed descriptively using STATA/MP 17.0. The qualitative component included 12 in-depth interviews and 2 focus group discussions with total 27 primary caregivers, all mothers, selected through purposive sampling. Qualitative data were collected using semi-structured guidelines and vignette-based scenarios, and were analyzed thematically.

Results: Fever was the most commonly reported illness (43.9%), followed by cold/cough (33.5%), heat-related illnesses (6.7%), diarrhea (6.3%), and acute respiratory illness (2.5%). Qualitative findings showed that caregivers understood extreme heat through bodily discomfort and recognised children's heat-related illness through crying, irritability, sweating, thirst, reduced movement, and seasonal illness patterns. Home-based cooling and indigenous practices were the first line of care, followed by informal providers and, finally, formal facilities when illness became severe or unresolved. Financial constraints, transport difficulties, distance, uncertainty at facilities, perceived discrimination, and gendered caregiving burden shaped care-seeking decisions.

Conclusions: Extreme heat affects child health as both an environmental exposure and a household caregiving stressor. Interventions should strengthen community-level heat-health messages, promote safe home-based practices, engage informal providers and household decision-makers, and improve timely access to respectful formal healthcare in heat-vulnerable rural communities.

Keywords: Extreme heat; children under 5; heat-related illness; primary caregivers; drought-prone; rural; coping strategies; indigenous method; home management; care seeking behaviour; barriers.

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List of Acronyms

Acronyms	Full Form
AQI	Air Quality Index
ARIs	Acute Respiratory Illnesses
BDHS	Bangladesh Demographic and Health Survey
BMD	Bangladesh Meteorological Department
BHP	BRAC Health Program
CCEH	Centre for Climate Change and Environmental Health
CHCP	Community Health Care Provider
DBA	Drought-Prone and Barind Area
DGHS	Directorate General of Health Services
FGD	Focus Group Discussion
GenAI	Generative Artificial Intelligence
HRIIs	Heat-Related Illnesses
IDI	In-Depth Interview
IPCC	Intergovernmental Panel on Climate Change
IRB	Institutional Review Board
JPGSPH	James P. Grant School of Public Health
MPH	Master of Public Health
NGO	Non-Governmental Organization
ORS	Oral Rehydration Solution
SRQs	Specific Research Questions
USEPA	United States Environmental Protection Agency
WBGT	Wet Bulb Globe Temperature
WHO	World Health Organization
WMO	World Meteorological Organization

Chapter 1: Introduction

1.1 Background and Rationale

Extreme heat is becoming an increasingly important public health concern, particularly for high-risk populations like children under five in climate-vulnerable areas. According to the United States Environmental Protection Agency (2025), extreme heat refers to temperatures that rise well above usual seasonal levels, often accompanied by high humidity. This climatic phenomenon affects a wider range of physical, mental, maternal, and infectious disease outcomes. A scoping review of studies published between the year 2000 and 2025 shows that heat-associated risks such as adverse birth outcomes, gestational diabetes, neurodegenerative diseases, and mental disorders are increasingly recognised as contributors to disease burden (Xu et al., 2025). The same study showed that rising temperatures also increase the risk of infectious disease transmission, particularly vector-borne and waterborne illnesses, due to the temperature-sensitive dynamics of pathogens and vectors (Xu et al., 2025). Globally, record-breaking temperatures in Europe, North America, and Asia in 2024 exposed millions of people to heat-related health risks, while the scale of the threat extends beyond morbidity, with more than 489,000 deaths attributed to heat exposure each year between 2000 and 2019 (Rakesh et al., 2025; Shanmugasundaram et al., 2025).

Although heat affects multiple population groups, earlier research on heat exposure has largely focused on its effects on elderly populations (Hass et al., 2021). However, emerging evidence shows that children are also highly susceptible to extreme heat. According to the WHO, climate change is the “single biggest health threat” facing humanity, and children under five bear an estimated 88% of the additional disease burden (Jhermayne Ubalde et al., 2024). A study conducted by Singh et al. (2019), in Varanasi, India, found that children aged 0–4 years had the highest relative risk of all-cause mortality associated with heatwaves. Given that some level of heat-related illness may persist during extreme heat events, improving child health outcomes depends not only on reducing exposure or prevalence but also on strengthening caregivers’ recognition, management, and timely care-seeking practices. As young children depend heavily on adults for protection, caregivers’ knowledge of symptoms, danger signs, coping strategies, and care-seeking plays a critical role during extreme heat. According to a study conducted in Egypt by Shabban et al. (2025), nearly 46% of primary caregivers demonstrated limited knowledge of climate change and its preventive strategies, and

approximately two-thirds exhibited inadequate practices related to climate change; the same study found a strong, statistically significant positive correlation between mothers' knowledge and their practices ($r = 0.784$, $p < 0.001$). Another study conducted in Ethiopia on inequities in healthcare-seeking behaviour among children under 5 claimed that timely and appropriate care-seeking by caregivers could reduce child mortality by up to 20% (Fekadu et al., 2025).

These findings are particularly relevant for Bangladesh, where extreme heat is increasing, and its impacts are being felt more intensely than ever before (DGHS, 2024). According to the Bangladesh Meteorological Department, extreme heat in Bangladesh is classified as daily maximum temperature exceeding 43°C (BMD, 2017). By 2050, an estimated 35.5 million children, representing 99% of the country's child population, are expected to experience frequent heatwaves, compared with only 2.6 million children in 2020 (Rita, 2024). This rapid escalation highlights children as one of the most exposed and vulnerable groups to heat-related health risks. Although Bangladesh has a good number of government health facilities along with private and NGO-led healthcare initiatives, these services are largely concentrated in urban areas, offering relatively better access for urban slum-dwelling climate migrants, while rural and coastal areas remain underserved due to negligence, geographic isolation, frequent climatic disruptions, and limited healthcare infrastructure (Islam et al., 2025).

Despite this growing vulnerability, there is no peer-reviewed published evidence combining the prevalence of acute heat-related illnesses among children under 5 as well as on caregivers' day-to-day management and care-seeking behaviour during extreme heat in rural Bangladeshi context. Addressing this gap is essential not only for developing context-appropriate and equitable interventions in Bangladesh, but also for strengthening climate-resilient child health strategies in similar low-resource settings. Therefore, this study uses a mixed-methods approach to estimate the prevalence of selected heat-related illnesses among children under five and to explore how caregivers in drought-prone rural Bangladesh recognise symptoms, use home-based and indigenous coping strategies, and make decisions about formal healthcare seeking.

1.2 Problem Statement

Despite increasing exposure to extreme heat in Bangladesh, little to no evidence exists on how primary caregivers in drought-prone rural settings recognise, manage, and seek care for heat-related illnesses among children under 5. This lack of context-specific evidence limits the development of

locally appropriate interventions, particularly in communities where home-based management, informal providers, and structural barriers strongly shape care-seeking decisions.

1.3 Research Questions

General Research Question

Among children under 5 in drought-prone rural Bangladesh, how does extreme heat shape child health care practices and decisions to seek formal health care by the primary caregivers?

Specific Research Questions (SRQs)

SRQ1: What heat-related illnesses are most prevalent among children under 5 during periods of extreme heat?

SRQ2: What are the primary caregivers' perceptions of 'extreme heat' and how do they recognise and interpret heat-related symptoms or illnesses among children under 5?

SRQ3: What childcare practices and coping strategies do caregivers use at home to prevent or manage heat-related illnesses during extreme heat events?

SRQ4: What decision-making processes guide caregivers' choices between home management, informal care, and formal facility care during extreme heat?

SRQ5: What social, behavioural, and environmental barriers hinder caregivers from seeking timely and appropriate formal facility healthcare during extreme heat?

1.4 Structure of the Thesis

This thesis is organized into six chapters. Chapter 1 provides the introduction, background, and research questions. 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 and Bangladesh Evidence on Extreme Heat and Heat-related Health Outcomes

Heatwaves are one of the most dangerous natural hazards, yet they often receive less attention because their impacts, especially deaths, are not always immediately visible (Shanmugasundaram et al., 2025). The Intergovernmental Panel on Climate Change (IPCC) describes a heatwave as an unusually hot weather spell lasting from several days to months, typically relative to local thresholds (DGHS, 2024), while the World Meteorological Organization (WMO) defines it as daily maximum temperatures exceeding the historical average by at least 5°C for five consecutive days or more (DGHS, 2024). Ongoing global climate change has increased human exposure to extreme heat, with extreme temperature events becoming more frequent, longer-lasting, and more intense (Shanmugasundaram et al., 2025). Future climate change is expected to further increase heat exposure, shift the overall disease spectrum, and reshape the global disease landscape (Xu et al., 2025). Continued fossil fuel use could nearly double extreme heat exposure within 25 years; at 2°C warming, 41% of the global population, approximately 3.79 billion people, may face severe heat by 2050, especially in India, Nigeria, Indonesia, Bangladesh, Pakistan, and the Philippines (Lizana et al., 2026). Climate change and extreme weather worsen illness, injury, and mortality while undermining health through pollution, urbanization, and food and water insecurity, making climate change one of the most serious global health threats of this century (Nahian, 2023).

In Bangladesh, this growing global heat burden is reflected in increasing heat stress indicators. Wet Bulb Globe Temperature (WBGT), a comprehensive indicator of heat stress that incorporates temperature, humidity, wind, and solar radiation, has steadily increased in the country by 0.08–0.5°C per decade between 1979 and 2021, particularly during the monsoon season and in the southeast and northeast regions, thereby increasing the risk of heat-related illnesses (Kamal et al., 2024).

2.2 Heat Vulnerability, Caregiving Practices, and Care-Seeking Behaviours During Extreme Heat

2.2.1 Children's Vulnerability to Extreme Heat

Heat exposure in children has been linked to poorer cognitive performance, difficulty concentrating, disrupted sleep, and negative effects on mental and behavioural health (Sampath et al., 2025). Also, greater outdoor exposure and immature thermoregulatory function can limit children's ability to cope with thermal stress (Anderko et al., 2019). Infants are particularly vulnerable due to immature thermoregulatory systems and higher surface-area-to-mass ratios, which cause them to absorb heat more quickly and experience faster increases in body temperature in hot conditions (Xu et al., 2025). Although sweating provides some cooling, it may also lead to faster dehydration, and infants' limited ability to communicate or relieve discomfort without caregiver assistance further reduces their ability to adapt to heat (Xu et al., 2025). According to the DGHS (2024), extreme heat can cause dehydration, jaundice, and neurological problems in infants. A study conducted in Bangladesh showed that intense heat has been shown to increase the risk of stunting, malnutrition, and heat-related health conditions among children (Raza et al., 2025). A study among children aged 24–59 months found that a 1% increase in the total number of extreme heat days during the first 1000 days of life was associated with a 56% increase in the odds of stunting (Raza et al., 2025).

2.2.2 Caregiver Knowledge, Childcare Practices, and Care-Seeking Behaviour

Children under 5 are highly dependent on their primary caregivers for recognising symptoms, maintaining hydration and hygiene, managing discomfort, and making timely care-seeking decisions during extreme heat. In low-resource settings, where access to cooling, transportation, and healthcare is often limited, the added caregiving burden during heat events may delay formal care-seeking, potentially leading to adverse or even fatal child health outcomes. A study conducted in Ethiopia shows that many children continue to die without receiving sufficient treatment because of delayed care-seeking or failure to reach a proper health facility (Fekadu et al., 2025). Therefore, primary caregivers need appropriate knowledge of childcare, including routine practices such as bathing, feeding, changing clothes, and comforting and engaging with children, as these practices may play an important protective role (Crawford et al., 2024).

2.2.3 Community-Based Adaptation and Indigenous Practices

Heat action plans and heat alert-response systems have often been top-down, with limited input from community members, although adaptation strategies should be designed from a community-based and local perspective because geographical, climatic, cultural, and socioeconomic factors shape how communities respond to heat (Johar et al., 2025). Awareness of heatwaves and practical coping strategies can reduce heat-related harm, but their effectiveness depends on social, economic, cultural, and management factors that vary across communities (Mohammadreza Amiresmaili et al., 2022). The underdiagnosis of heat-related illnesses is also a complex challenge, partly due to inadequate healthcare preparedness and the overlooking of traditional practices in modern medical settings (Shanmugasundaram et al., 2025). Therefore, recognising traditional practices among communities that have lived in extreme climatic conditions for generations may provide valuable insights for preventing, diagnosing, and managing heat-related illnesses, while integrating traditional knowledge with scientific methods may help reduce underdiagnosis and associated health impacts (Shanmugasundaram et al., 2025).

2.2.4 Rural Healthcare Access, Inequity, and Barriers to Formal Care-Seeking

Access to timely formal healthcare is an important part of preventing severe outcomes among children during extreme heat. However, rural populations are underserved partly in this case because of healthcare providers' reluctance to work in those areas and the lack of basic healthcare infrastructure in rural places (Islam et al., 2025). These conditions create significant challenges for caregivers managing child health and seeking formal facility care during extreme heat events.

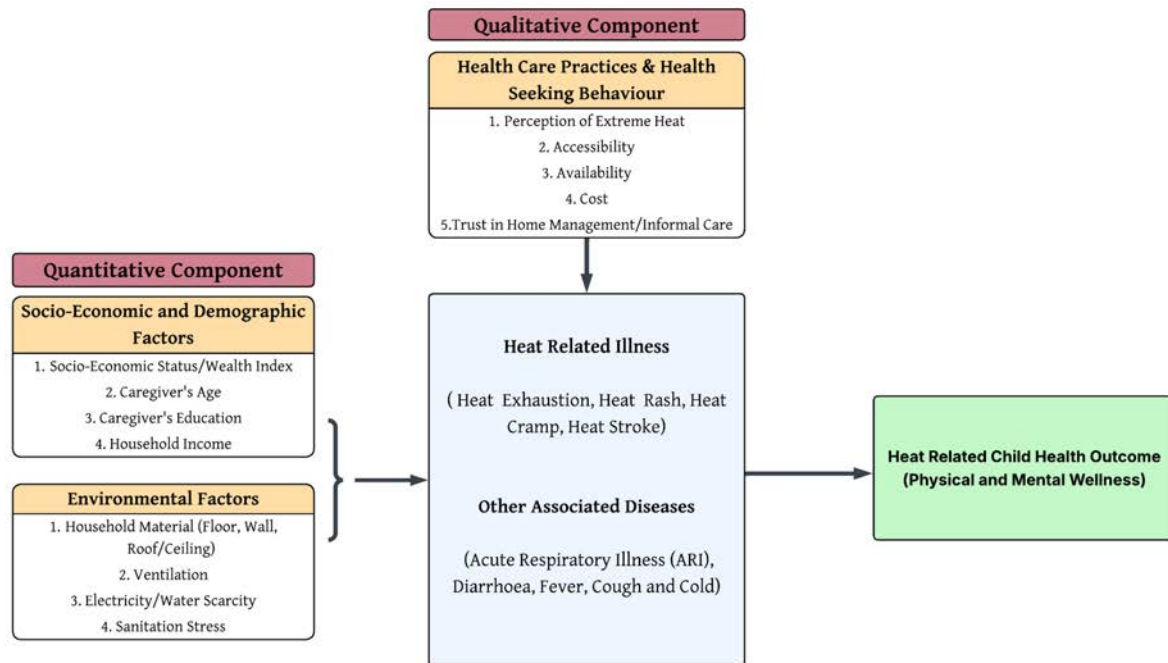
Healthcare-seeking behaviour is also shaped by broader social and economic inequities. To promote health equity, it is essential to understand disparities in healthcare-seeking behaviour based on socioeconomic status, geographic location, education level, and other factors (Fekadu et al., 2025). Although healthcare utilisation has improved over the years, disparities persist across socioeconomic, demographic, and regional factors, underscoring the need for equitable and targeted healthcare policies (Shahrukh Rummana et al., 2025). Yet, despite the growing recognition of heat as a hazard, little is known about how caregivers in high-risk rural settings perceive and respond to such conditions and what factors hinder them from seeking formal facility care.

2.2.5 Summary of Literature Gap

Together, the existing literature highlights children's heightened vulnerability to extreme heat, the importance of caregivers' knowledge, practices, and appropriate care-seeking behaviour, and the role of community-based and indigenous adaptation strategies. However, existing peer-reviewed literature has not adequately captured the combined issues of children's acute heat-related illness prevalence, caregivers' lived understanding of extreme heat, home-based and indigenous management of heat-related illness, and the care-seeking pathway in drought-prone rural Bangladesh. Most existing evidence focuses on physiological outcomes rather than caregiving experiences and remains disproportionately urban-focused. Thus, this study addresses this gap by combining quantitative evidence on selected childhood acute illnesses with qualitative evidence on caregivers' lived experiences, coping strategies, and barriers to formal healthcare in rural low-resource settings.

2.3 Conceptual Framework

The conceptual framework of [Figure 1](#) demonstrates how socio-economic, environmental, caregiving, and health-system factors interact to influence heat-related illnesses and healthcare-seeking behaviour among children under 5 during extreme heat events. It integrates both quantitative components, which assess the prevalence and distribution of selected heat-related illnesses and other demographic and environmental factors, and qualitative components, which explore caregivers' perceptions, home management practices, indigenous coping strategies, and decisions regarding formal and informal healthcare seeking, ultimately shaping child health outcomes. The framework guides the study by linking socio-economic and demographic factors, household vulnerability, environmental exposure and caregivers' practice and decision-making which eventually leads to child health outcomes during extreme heat events.



[Figure 1: Conceptual Framework]

Chapter 3: Methods

3.1 Study Design

This mixed-method study used the BRAC Health Program's (BHP) surveillance project's data for the quantitative component. As the project titled "BRAC Health Program (BHP) Surveillance System: Exploring the impact of Climate Change on Health in the Drought-Prone Areas in Bangladesh" collected its data from the Niamatpur Upazila of Naogaon district (northern-west part of Bangladesh), the qualitative part of the study was also conducted in the same location.

The study estimated the prevalence of heat-related illnesses among children under 5 using the secondary data from the BHP surveillance project. It also explored caregivers' home-based management and indigenous coping practices, as well as the barriers and challenges they faced in seeking formal facility care during extreme heat events, through primary data collection.

Initially, secondary quantitative data taken from the mentioned project were analyzed to determine the prevalence of child health outcomes. The quantitative data provided insights into the prevalence of heat-related health issues among children gave a broad understanding of the health impact of extreme heat on children in the drought-prone area.

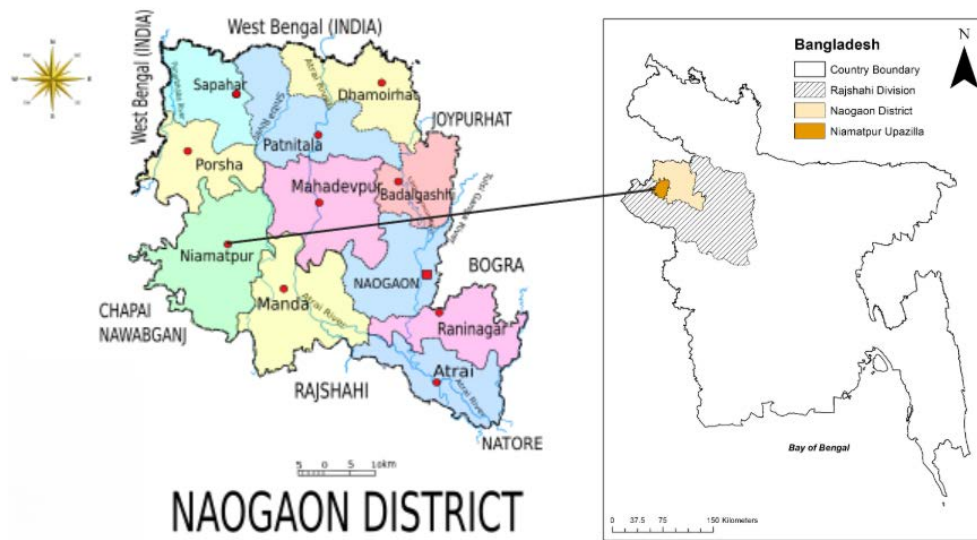
On the other hand, following the quantitative findings, the primary qualitative data were collected to explore the underlying coping strategies, barriers to care-seeking, and adaptation techniques practiced by the community. The qualitative data helped to explore the contextual factors, coping strategies, and decision-making processes behind care-seeking behaviour.

3.2 Study Area and Setting

The study site, Naogaon, is a district in northern Bangladesh and part of the Rajshahi Division. The project was going on in Niamatpur Upazilla of Naogaon district, which is one of the most prominent drought-prone regions of Bangladesh, which falls under the DBA (Drought Prone and Barind Area) climate stress zone (Bangladesh: National Adaptation Plan (2023-2050), 2022).

The district consists of 11 upazilas, including Niamatpur. According to the 2022 Bangladeshi census, Niamatpur Upazila had 73,523 households and a population of 270,452, with the majority depending on agriculture as their livelihood. Among the residents, 8.11% of the population is under 5 years of age (Bangladesh Bureau of Statistics [BBS], 2024).

It hosts the largest ethnic minority population in Bangladesh outside the Chittagong Hill Tracts, including Oraon, Munda, and Santal communities. Bengali (96.2%), Oraon (1.2%), Munda (0.9%), Santal (0.68%), Barman (0.43%), Others (0.65%) (Bangladesh Bureau of Statistics [BBS], 2024).



[Figure 2: Study Site : Niamatpur Upazilla, Naogaon District, Bangladesh]

3.3 Study Period

The total study duration is January 2026-June 2026. The secondary quantitative data for the BHP surveillance project were collected from May 2025 to July 2025. The primary data of this study were collected by the principal investigator from April 1st, 2026, to April 7th, 2026.

3.4 Study Population

3.4.1 Study Population

For the quantitative part, this study used the under-5 children's data from the secondary data source of the BHP surveillance project. The project collected disease-related data on various age groups for this surveillance, including children under 5.

The qualitative component included primary caregivers of children under 5 years of age from Niamatpur Upazila, Naogaon. Although caregivers of any gender were eligible, in reality, all participants were mothers.

3.4.2 Inclusion and Exclusion Criteria

For the primary data (qualitative components), the inclusion and exclusion criteria are:

Inclusion criteria:

1. Primary caregivers of children under 5 (mother/father/others).
2. People who communicate in Bangla.

Exclusion criteria:

1. Primary caregivers who are less than 18 years of age (as they are minors).
2. People with any physical or mental disability.

3.5 Sample Size Calculation

After cleaning the BHP data, there were 239 data points for children under 5 in the secondary dataset.

The qualitative component included 12 in-depth interviews (IDIs) and 2 focus group discussions (FGDs). Each FGD was initially planned to include 8 participants; however, 1 participant of FGD-001 withdrew at the initial stage of the interview, resulting in 7 participants in that group. Therefore, the final qualitative sample consisted of 27 primary caregivers. The number of IDIs was guided by the principle of thematic saturation, as suggested by Guest et al. (2006), who reported that saturation is often reached within the first 12 interviews in qualitative studies. The inclusion of 2 FGDs further allowed exploration of shared and collective experiences, contributing to overall thematic saturation.

3.6 Sampling Technique

For the qualitative component, purposive sampling with maximum variation (age, religion, ethnicity, socio-economic status, education and profession of the parents of the child) was used to recruit primary caregivers of children under 5 years of age living in the drought-prone Niamatpur Upazila. Participants were selected based on their caregiving role, exposure to extreme heat, child age, socioeconomic status, and prior healthcare-seeking experience to capture diverse perspectives.

As the primary data collection took place in the same locality where the BHP surveillance project was conducted, few eligible participants were among the caregivers who previously took part in the project's quantitative survey, though most of them were new. If any caregiver had multiple children who were under 5 years of age, the study interviewed the participant's childcare practice about the youngest child.

Snowball sampling was used selectively to identify hard-to-reach caregivers, particularly in areas with fewer households having children under 5 and to ensure inclusion of ethnic minority households. In such cases, the other participants were asked to help identify nearby households with under-5 children or households belonging to ethnic minority groups.

3.7 Variables

For the quantitative part, the primary outcome variable are heat-related illnesses. In addition, several health conditions reported in the previous studies that occur more frequently during periods of high temperature were also considered in the study, including acute respiratory illness, diarrhea, cough-cold, and fever.

For the qualitative component, variables were not treated as measurable dependent and independent variables in the statistical sense. Instead, the study focused on the central phenomenon of caregivers' childcare practices and care-seeking decisions during extreme heat. The guiding domains included caregivers' perceptions of extreme heat, recognition of child heat-related symptoms, home-based and indigenous management practices, severity assessment, informal and formal care-seeking pathways, barriers to formal healthcare, household decision-making, gender dynamics, and sources of health information. Operational definitions were developed to ensure consistency during data collection, coding, and thematic analysis.

3.8 Data Collection

3.8.1 Data Collection Tools

The data collection tools for the qualitative component were developed after the quantitative analysis was completed using the secondary dataset. For the qualitative data collection, two separate semi-structured interview guidelines were developed for both the IDI and FGD, with a separate socio-demographic information table with the guidelines for each participant. Three context-specific hypothetical scenario-based caregiving vignettes and simple decision-making tasks were also developed on water scarcity, power outages, and competing caregiving responsibilities during extreme heat as a qualitative elicitation technique to examine how caregivers prioritise actions, use available resources, identify barriers, and decide between home management, informal care, and formal healthcare. While in-depth interviews (IDIs) and focus group discussions (FGDs) capture lived experiences and reported practices, vignettes enable participants to reflect on context-specific hypothetical situations that may push a fictional character to an extreme threshold, which are experienced across different climate hazards (Bukuluki et al., 2024).

All of these tools were developed explicitly for this study purpose, by acquiring ideas from the literature review and previous MPH coursework, and consulting with the expert team from both the BHP and CCEH Hub, JPGSPH.

3.8.2 Pretesting

After developing the tools, they were pretested among people with expertise (mentors and other CCEH team members) and other peers who had no prior knowledge about the project. Also, these tools were revised multiple times based on the feedback given by the mentors, supervisors and external juries and later got approved by the board before initiating the study.

3.8.3 Data Collection Procedure

As mentioned earlier, for the quantitative part, data acquired from the BHP surveillance project in collaboration with CCEH Hub, JPGSPH was utilised. The secondary dataset was obtained by following formal procedures and permissions from the stakeholders.

For the qualitative part, face-to-face interviews were conducted using purposive sampling in the

study site (Niamatpur Upazila). At first, written informed consent was obtained from all participants before participation.

Following consent, IDI and FGD sessions were conducted. The data was solely collected by the principal investigator, while there was a BHP field assistant present to help the investigator navigate the locality, crowd control, maintain any specific community protocol, and tackle any language or other barriers. The IDIs took place mostly at the participant's household premises, while in case of FGDs, the interview places were chosen by the participants, resulting one FGD being held in the courtyard of the CHCP's house, and the other in a local NGO community office in the village. The FGD participants were also asked to consent to participate in a vignette after completing the discussion.

3.9 Data Management and Quality Assurance

For the quantitative data, the investigator first finalised the variables. The variables included heat-related illnesses, such as, heat stroke, heat exhaustion, heat cramps and heat rash; other illnesses, such as, acute respiratory illness, diarrhea, cold/cough and fever, air quality index (AQI) for indoor, outdoor and kitchen, and necessary socio-demographic information needed for this study based on the availability on the BHP surveillance dataset and reviewing the relevant literatures (Kibria et al., 2022).

Firstly, the secondary raw dataset was cleaned and processed for the analysis. The processed dataset had the socio-demographic information, heat-related illnesses, other illnesses like acute respiratory illness (ARI), diarrhea, cold/cough, fever, household income and wealth quintile, and air-quality index (AQI) datapoints for the 239 children under 5 years of age of the Niamatpur Upazila, Naogaon.

The dataset was only accessible to the researchers of this study. All the coding and analysis were also done in the principal investigator's personal computer, which was password-protected and backed up in the institutional cloud storage, accessible only to the investigator and the administration.

For qualitative data management, an initial a priori coding framework was developed using insights

from the quantitative analysis, relevant literature, research questions, and expert consultation. The interviews were recorded on the recorder. The anonymity was maintained as no identification information was recorded in any form. Their whereabouts are only known to the principal investigator for the face-to-face interviews, but later the data was saved by code name and was stored, saved and shared with the researchers and transcriber in non-identifiable form, as every participant was given a unique ID. The participants are referred to by their ID number throughout the study report.

To ensure data security and management, a secure institutional cloud storage system accessible only to the investigators was utilised throughout the research so that privacy and confidentiality of the participants were maintained. The researcher is responsible for updating data collection, contacting participants, and checking the relevance of data on the same day during the data collection period.

3.10 Data Analysis

For the prevalence in the quantitative part, the descriptive analysis was done in STATA/MP 17.0 software for frequency and percentage for the heat-related illness and other diseases using the secondary dataset.

The dichotomous outcome variable was "Heat Related Illness", which was generated after data cleaning. If any of the child's caregivers reported that within the last 4 weeks, their child has suffered any one of the following events: 'Heat Rash, Heat Exhaustion, Heat Stroke, Heat Cramp', the child was considered experiencing heat-related illness; if none of the symptoms was reported, the child is considered not experiencing heat-related illness. The participants were also asked about the acute respiratory illness (ARI), diarrhea, fever and cough/cold within the same recall period and reported using the same approach.

Child age was converted into months and divided into categories in such a way that every category consists of at least 30 or more children. Thus, the investigator divided all the 239 children into 3 categories.

According to the definition given by the BDHS, a child is considered to have had symptoms of acute respiratory illness (ARI) if they had a cough combined with short, rapid breathing that is chest-related; and/or difficult breathing that is chest-related (Imran et al., 2019). The investigator followed that definition to determine the ARI prevalence by doing relevant AND/OR operations among the necessary variables. Air quality index (AQI) was categorised into six categories (U.S. Embassy Dhaka, 2023). After running all the code in the STATA environment, the outputs were exported as tables and charts.

After the qualitative data were collected, the interviews were transcribed and then translated into English. Due to time constraints during the analysis process, a transcriber was engaged to support the completion of these tasks. AI-assisted tools were also used occasionally for transcription and translation when necessary; however, all outputs were carefully reviewed and manually corrected to ensure accuracy.

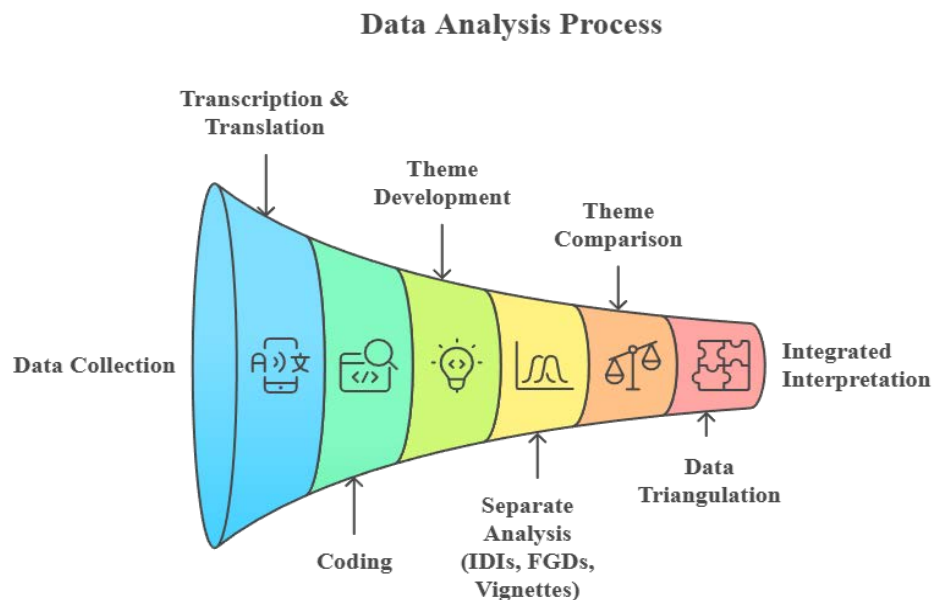
After the translation, the qualitative data analysis for IDIs and FGDs followed a thematic analysis approach. The initial set of a priori codes was there, however, additional inductive codes were incorporated when new themes emerged from the data. Coding and analysis were conducted using Microsoft Excel and Google Sheets. Themes were created from the recurrent patterns related to perceptions of extreme heat, home management practices, care-seeking pathways, and barriers to timely formal healthcare utilisation.

Vignette data were also analyzed using thematic analysis, just like the IDIS and FGDs. Participants' responses to the hypothetical scenario were examined to understand their perceptions and views about the situation, rather than as descriptions of their own behaviour. The transcripts were coded to identify key factors that influence the participants' possible decisions under those environmental challenges. Similar codes were grouped into broader themes to identify common patterns in decision-making and perceived barriers or supports.

As all participants responded to the same vignette, their answers were comparable across different groups of caretakers to strengthen the analysis. By this approach, the IDI, FGD, and vignette themes were identified independently and then compared with each other's findings to examine areas where

findings are similar and where they differ between reported experiences and decision-making logic.

Finally, data triangulation was conducted by comparing selected quantitative findings with relevant qualitative insights to examine how the findings complemented each other. As the quantitative analysis was descriptive in nature and focused on estimating the prevalence of different heat-associated diseases, the qualitative findings were used to provide contextual understanding of the observed prevalence and to explore caregivers' experiences, perceptions, and decision-making processes. The two data sources allowed the study to have a broader interpretation of the findings. The overall qualitative data analysis and mixed-methods integration process is summarized in [Figure 3](#).



[Figure 3: Data Analysis and Mixed-Method Integration Procedure]

3.11 Ethical Considerations

IRB approval was obtained from the Institutional Review Board (IRB) of BRAC JPGSPH on 24 February 2026, after addressing the board's feedback on the initial proposal and study tools. The project reference number is MPH-2025-002.

Ethical approval was obtained before data collection through an IRB form, study tools, and an information sheet, along with a consent form. Participants provided informed consent after receiving information about the study's purpose, voluntary participation, confidentiality, and their right to withdraw at any time. All data were anonymised using code identifiers and stored in a non-identifiable form. Participation did not involve direct benefits; however, small refreshments were provided as a token of appreciation.

With participants' permission, interviews and discussions were audio-recorded to ensure accurate data capture. Some pictures were taken of the interview process and the premises of those who gave consent. Participants were informed of the risks and benefits of the study and also of their right to withdraw from the interview at any time without penalty.

As the FGD place chosen by the participants, it was ensured that the place was a familiar, comfortable and convenient community place for all of the participants. Interviews were conducted in a manner that is respectful of participants' indigenous cultural practices, social norms, and community protocols, including preferences related to space, timing, language, and interpersonal interactions.

Chapter 4: Results

4.1 Participant and Household Characteristics

4.1.1 Secondary Data

The socio-demographic characteristics of the 239 study population for the secondary data are presented in Table 1. The majority of children belonged to the 25–59 months age group, representing the largest proportion of the sample, followed by the 13–24 months group, while the 0–12 months category accounted for the smallest share.

Some variables, including household income, wealth quintile, and AQI, were collected at the household level. Therefore, each household was counted only once, even if multiple children under 5 were present in the same household, resulting in 228 household-level data points. One value was missing for the wealth quintile variable, resulting in 227 data points for that analysis.

Table 1: Socio-Demographic Characteristics of the Quantitative Study Participants

Variable	Category	Frequency (n)	Percentage (%)
Child Age Category (N^a=239)	0-12 months	36	15
	13-24 months	52	21.7
	25-59 months	151	63.1
Religion (N^a=239)	Islam	160	67
	Hinduism	68	28.4
	Christianity	11	4.6
Household Income (BDT) (N^b=228)	Mean±SD	17177±8137	—
	Min-Max	3750-63000	—
Wealth Quintile (N^c=227)	Lowest	56	24.67
	Second	46	20.26
	Middle	41	18.06
	Fourth	47	20.70
	Highest	37	16.32
**N^a= Individual Level N^b= Household Level N^c=One Missing Data For Household Level			

4.1.2 Primary Data

The qualitative sample was selected to explore the lived experiences. Although the qualitative component targeted primary caregivers irrespective of gender or relation with the child, all participants turned out to be mothers. The qualitative sample for 12 IDIs and 2 FGDs included 27

young mothers from low-income rural households, predominantly housewives, while others were involved in poultry/cattle farming, tailoring, or studying, with farming being the dominant occupation among husbands.

The sample also included people from different ethnicities, including Bangali, Oraon, and Munda communities. Overall, the demographic profile reflects economically constrained, agriculture-dependent rural households vulnerable to heat exposure. On the other hand, most of the children in the qualitative sample were aged 25–59 months, and more than half were the firstborn. Exclusive breastfeeding practice was notably low among the children, whereas vaccination coverage appeared relatively satisfactory in the qualitative sample.

Table 2: Socio-Demographic Characteristics of the Qualitative Study Participants

Demography	Category	n(%)
Mother's Age (in Years)	18-20	6 (22.2%)
	21-25	12 (44.4%)
	26-30	8 (29.6%)
	>30	1 (3.7%)
Religion	Muslim	15 (55.6%)
	Hindu	12 (44.4%)
Ethnicity	Bangali	19 (70.3%)
	Oraon	6 (22.2%)
	Munda	2 (7.4%)
Family Income (BDT per Month)	5,000-10,000	18 (66.7%)
	10,000-20,000	8 (29.6%)
	>20,000	1 (3.7%)

Mother's Profession	Housewife	20 (74%)
	Poultry/Cattle Farming	4 (14.8%)
	Cloth Tailoring	2 (7.4%)
	Student	1 (3.7%)
Husband's Profession	Farmer	21 (77.8%)
	Driver	2 (7.4%)
	Laborer	2 (7.4%)
	Madrassa Teacher	1 (3.7%)
	CHCP	1 (3.7%)
Mother's Education	5th Grade-8th Grade	8 (29.6%)
	9th Grade-SSC	10 (37%)
	HSC	4 (14.8%)
	>HSC	5 (18.5%)
Child's Age (Months)	0-12	5 (18.5%)
	13-24	2 (7.4%)
	25-59	20 (74%)
Child's Birth Order	1st Child	14 (51.9%)
	2nd Child	7 (25.9%)
	3rd Child	6 (22.2%)
Exclusive Breastfeeding	Yes	6 (22.2%)
	No	21 (77.8%)

Vaccination Status	Complete	20 (74%)
	Incomplete	7 (25.9%)

4.1.3. Built Environment

Regarding household characteristics, most houses (20 out of 27) were made of mud floors and walls with a ceiling made of tin, except for a very few, which had either a cement or a mud ceiling, typically because an additional storey had been built above them. Only one household had the wall and ceiling both made of tin. In case of ventilation, most of the houses (19 out of 27) had neither windows nor other ventilation options, leaving the doorway as the only source of air circulation.



[Image 1 & 2: Indoor of a house: tin-made wall and ceiling with no ventilation; Outdoor of a house: mud wall and floor with tin roof]

4.1.4. Air Quality Index (AQI)

As the AQI was also collected at the household level, it had 228 data points. The kitchen environment showed the most compromised air quality among the three locations. Just over half of households (58%) had “Good” AQI in the kitchen, while 23% fell under “Moderate”. AQI of the remaining 17% of household kitchens were worse than this.

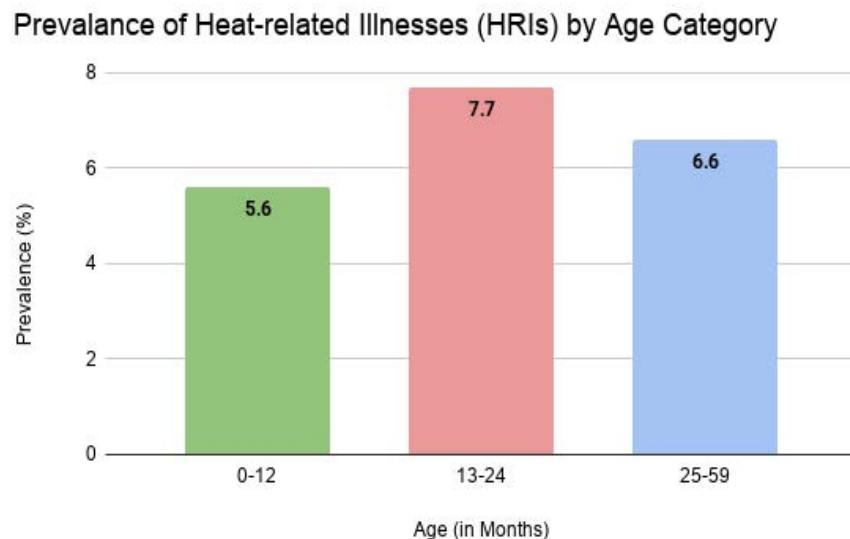
Indoor AQI was found to be better compared to the kitchen. Overall, around 72% of households recorded a “Good” AQI, the highest proportion across all three locations. “Moderate” AQI was recorded in 13% of households. The remaining 14% reached the “Unhealthy for Sensitive Groups” category. Outdoor AQI closely mirrored indoor levels, with 71% of households in the “Good” category. 15% were Moderate, and the rest 12% were in “Unhealthy for Sensitive Groups”.

Table 3: Distribution of Air Quality Index Categories by Household Environment (N^b=228)

AQI Category	Kitchen (n,%)	Indoor (n,%)	Outdoor (n,%)
Good	130(57.02)	165(72.37)	162(71.05)
Moderate	54(23.68)	30(13.16)	35(15.35)
Unhealthy for Sensitive Groups	36(15.79)	32(14.04)	27(11.87)
Unhealthy	8(3.51)	1(0.44)	4(1.75)
Total	228(100.0)	228(100.0)	228(100.0)

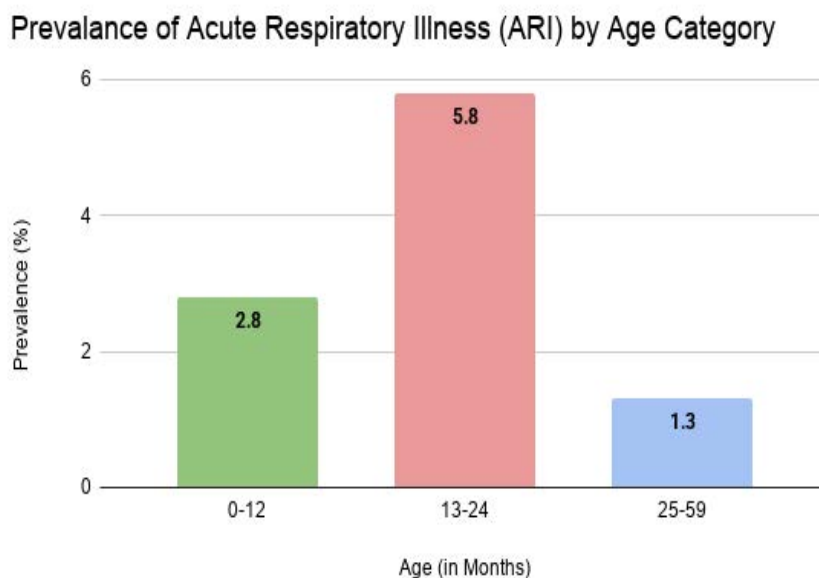
4.2 Prevalence of Childhood Illnesses During Extreme Heat

As for disease prevalence, the bar chart in [Figure 4](#) presents the prevalence of heat-related illnesses (HRIs) across different age categories. The highest prevalence was observed among children aged 13–24 months (7.7%), while children aged 25–59 months followed with a prevalence of 6.6%. The lowest prevalence of HRIs was recorded among children aged 0–12 months (5.6%).



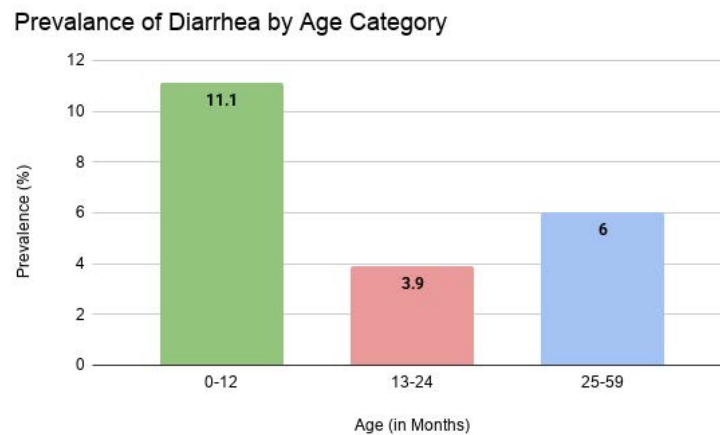
[Figure 4: Prevalence of Heat-related Illnesses by Age Category]

The bar chart of [Figure 5](#) illustrates the prevalence of Acute Respiratory Illness (ARI) across different age categories. The highest prevalence was observed among children aged 13–24 months (5.8%), indicating that this group experienced the greatest burden of ARI within the study population. Children aged 0–12 months had a prevalence of 2.8%, showing a moderate level of occurrence in the youngest age group.



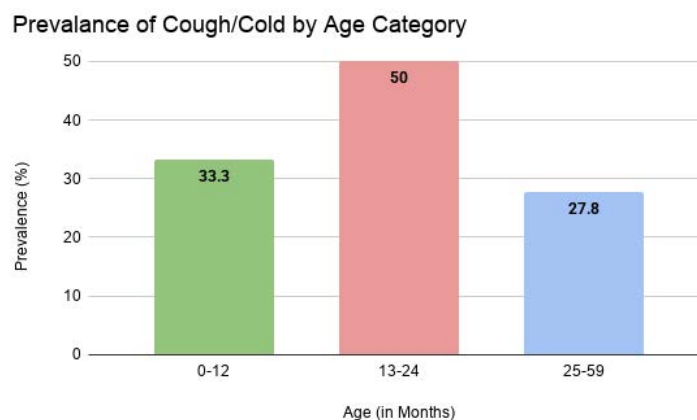
[Figure 5: Prevalence of Acute Respiratory Illness by Age Category]

The bar chart of [Figure 6](#) presents the prevalence of diarrhea across different age categories. The highest prevalence was observed among children aged 0–12 months (11.1%), while children aged 25–59 months followed with a prevalence of 6.0%. The lowest prevalence was recorded among children aged 13–24 months (3.9%).



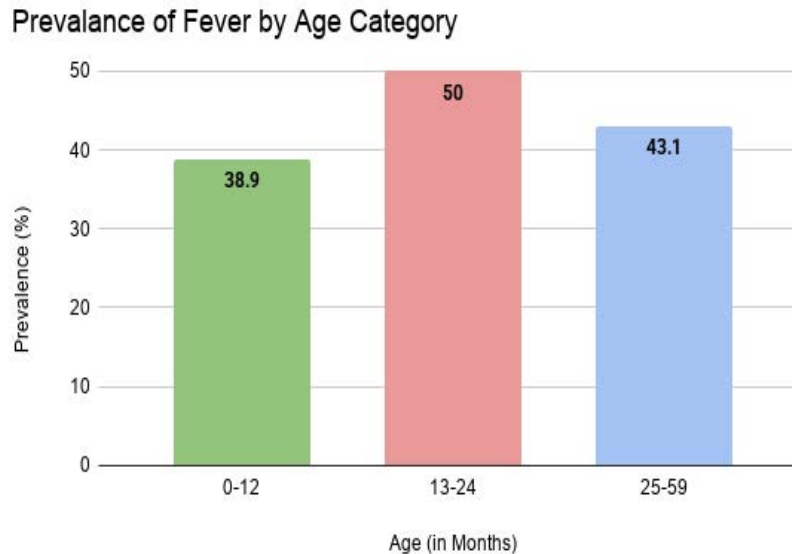
[Figure 6: Prevalence of Diarrhea by Age Category]

The bar chart of [Figure 7](#) presents the prevalence of cold/cough across different age categories. The highest prevalence was observed among children aged 13–24 months (50.0%), indicating that this age group experienced the greatest burden of cold/cough. Children aged 0–12 months had a prevalence of 33.3%, while the lowest prevalence was recorded among children aged 25–59 months (27.8%).



[Figure 7: Prevalence of Cold/Cough by Age Category]

The bar chart of [Figure 8](#) presents the prevalence of fever across different age categories. The highest prevalence was observed among children aged 13–24 months (50.0%), indicating that this age group experienced the greatest fever burden. Children aged 25–59 months had a prevalence of 43.1%, while the lowest prevalence was recorded among children aged 0–12 months (38.9%).



[Figure 8: Prevalence of Fever by Age Category]

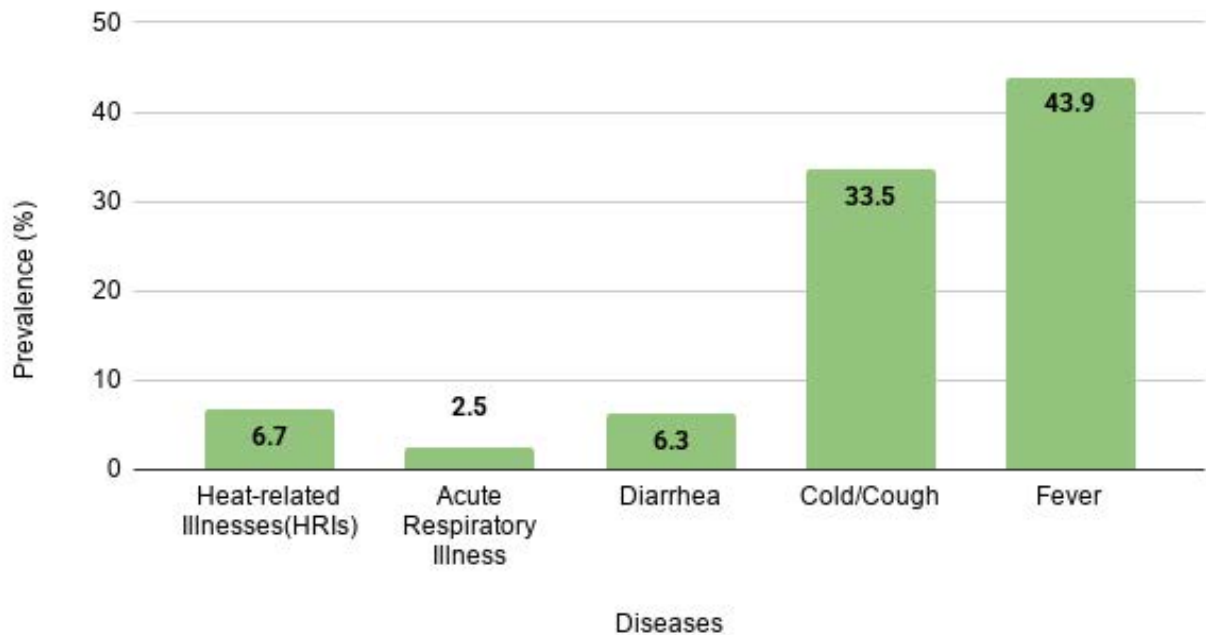
The bar chart of [Figure 9](#) presents the prevalence rates (%) of all the five disease categories considered from the secondary data analysis.

Fever is the most prevalent condition at 43.9%, affecting nearly half the children of this study. Cold/Cough ranks second at 33.5%, indicating that respiratory-type symptoms collectively represent a substantial portion of illness burden. Combined with fever, these two conditions account for the majority of reported cases.

Heat-related Illnesses (HRIs) recorded a prevalence of 6.7%, ranking third. While relatively low compared to fever and cold/cough, this rate is noteworthy as HRIs are environmentally driven and

potentially preventable. Diarrhea followed closely at 6.3%, and Acute Respiratory Illness (ARI) had the lowest prevalence at 2.5%.

Prevalence of All Diseases



[Figure 9: Overall Prevalence of Reported Childhood Illnesses]

4.3 Participant's Experience

The qualitative findings are organized around the major themes that emerged from the IDIs, FGDs, and vignette-based discussions. Participants described how extreme heat affects their own bodies, children's health, daily household work, childcare practices, and decisions about seeking treatment. Across the narratives, extreme heat appeared not only as an environmental condition but also as a daily stressor that shaped caregiving, illness management, and access to healthcare. The following sections present these findings under key themes, with necessary sub-themes supported by relevant participant quotations.

Theme 1: Perception and Lived Experience of Extreme Heat

1a: Extreme heat is understood through bodily experience

The participants understood “extreme heat” through their bodily experiences, rather than any temperature scale. They perceive any day as hotter than usual if they experience more sweating, tiredness, weakness, restlessness, thirst, headache, and discomfort compared to usual days. They also mentioned that extreme heat affects their food tolerance, bathing frequency, and digestive comfort.

“In extreme hot days, I sweat more than usual, feel tired, restless and weak... feel thirsty more frequently, often get a headache, that’s how I know all of these are happening because today is hotter than usual.”-IDI-103

“On extremely hot days, even food feels hard to tolerate. People may bathe three to four times a day, and at times, stomach problems also occur.” - IDI-110.

1b: Heat disrupts daily chores, and a change in daily routine is the adaptation strategy

The participants shared that these experiences in high temperature periods significantly disrupted routine activities, forcing caregivers to adjust the timing and pace of daily chores. Mothers often had to pause cooking, cleaning, or other household tasks when children became restless or cried due to the heat. Some of them adapted by delaying household work until later in the day or postponing it entirely. On the other hand, some had to prioritise their household duties by ignoring the child’s needs due to their family circumstances.

“When the child cries (due to heat exhaustion), I have to stop my work to attend to them. After calming the child and putting them to sleep, I return to my tasks. This disrupts my work, so something that should take an hour often ends up taking two to three hours or even more.”- IDI-108.

“Even when there is work to be done, I stay at home with my two children. I either complete the tasks later in the afternoon or postpone them to the next day. My husband does not object if the work is delayed or left unfinished.”-IDI-109.

“No matter whether my child is crying or not or having any discomfort due to heat, I have to cook on time (at noon), because my husband needs food whenever he returns from working in the field.”-IDI-111.

Some adaptation practices were also shaped by collective and generational knowledge. In one FGD, a participant explained,

“We (the ethnic minority Hindu people of the community) traditionally cook our meal very early in the morning on hot days, so that we don’t need to go to the kitchen at noon. This is an age-old generational practice we learned from our ancestors.” -FGD002.

1c: Heat amplifies existing vulnerability rather than acting alone

Participants’ accounts suggest that extreme heat was experienced not merely as a weather event but also as a daily stressor that intensified fatigue, slowed household productivity, increased caregiving demands, and amplified existing vulnerabilities compared to cooler days.

“Unlike cooler days, extreme heat makes the body feel fatigued and weak. During cooler days, the body feels refreshed and more energetic; it feels easier and more enjoyable to do daily tasks, whereas in extreme hot weather, there is a sense of lethargy toward any kind of work.”-IDI-111.

Theme 2: Recognition and Interpretation of Child’s Heat Stress and Heat-Related Illness

2a: Child heat stress is recognised through behavioural signals

Most of the participants shared that they recognise children’s heat-related discomfort mostly through visible behavioural and physical changes. As most of the young children cannot always explain their discomfort verbally, mothers observe changes in the child’s mood, sweating, water intake, playfulness and overall activity level to understand whether the child is being affected by heat.

“When physical condition deteriorates, movement such as running or rushing around decreases, and eventually the child becomes ill.”-IDI-101.

“In excessive heat, children become irritable and cry, they don’t want to stay still, and their bodies become sweaty; these signs make it clear to us.”-IDI-105.

“When he asks for more water or juice, runs to the nearby water pump frequently and gets wet with the pump water several times a day by himself, then it is easily understood that he is feeling very hot.”

2b: Participants associated the higher occurrence of certain diseases in summer with extreme heat exposure and commonly interpreted them as heat-related illnesses.

In addition to the immediate signs, participants also interpreted certain seasonal patterns of illness as being related to heat. An increased prevalence of certain diseases during summer, compared to other seasons, is perceived as heat-related illness. Many caregivers believed that as the diseases such as heat rash, diarrhea followed by indigestion and vomiting, cough/cold, and fever are more common during the summer, therefore these are caused by extreme heat.

“As there are increased mosquitoes and flies on hotter days, children get diarrhea in summer, also (in summer) children face more indigestion and loss of appetite, they also vomit”- FGD-002.

“In the heat, children sweat a lot, and the sweat settles on their chest, which is thought to cause cough and cold... if they run around in the sun, they develop a fever.”- IDI-102

“No Apa, heat rash doesn’t occur in winter. Heat rash always happens in summer, due to the extreme temperature.”-IDI-105.

Overall, caregivers relied on a combination of behavioural cues, physical symptoms, and seasonal patterns to recognise and interpret heat-related illnesses among children.

Theme 3: Home-Based and Indigenous Coping Strategies and Management of Illnesses

3a: Home-based cooling is the primary line of care

The participants reported that home-based cooling is the primary line of care to protect children during extreme heat. These practices are usually simple and immediate, such as bathing the child, changing sweaty clothes, wiping the body with a wet cloth, keeping the child indoors or in a cooler/shaded place, using fans, and preventing the child from roaming in the sun, etc.

“In the morning, after the child wakes up, I give them breakfast. Then he plays; at noon, I bathe him. If he sweats, I change his clothes and wipe his body with a wet cloth several times.”- IDI-101.

“I try to keep her cool (in extreme heat) ... I bathe her, keep her clean, give powder to her body, don't let her roam in the sun.... When she is sweaty, I keep her inside the house and turn on the charger fan.”-IDI-106.



[Image 3: A charger fan inside a participant's house]

This shows that caregivers mainly try to prevent illness by reducing body heat and limiting children's exposure to sunlight.

3b: Some home-based remedies are practised and trusted

Along with cooling practices, participants also used different home-based and indigenous methods to manage common illnesses during extreme heat. For fever, some mothers used sponging the whole body with cool water or putting a wet cloth on the forehead and changing it several times. For cough and cold, mustard oil massage, Tulsi (holy basil) leaf extract and other local practices were reported. For diarrhea, ORS was commonly used, but when ORS was not available, some caregivers prepared homemade oral saline using water, sugar or molasses, and salt. In case of heat rash, all the participants depend on the prickly heat talcum powder.

“When there is fever, I sponge the child’s forehead and body... in cough and cold, I massage mustard oil in the child’s chest and sometimes give the extract of Tulsi (Holy Basil) leaves... for diarrhea, I give ORS... in case of unavailability, I make homemade saline using half a litre of water and one handful of sugar/molasses with a pinch of salt... if heat rash happens, I give him powder... Yes, Apa, these approaches work most of the time”- IDI-107.

Some indigenous practices were specifically reported by ethnic minority Hindu participants, showing that childcare during illness is also shaped by community knowledge and generational practices. For diarrhea, participants mentioned using Thankuni (Indian Pennywort) leaf and the root of the seeded banana tree. For cold, they described giving Chandan (Sandalwood) paste on the child’s forehead or soaking Dhutra (Datura) leaves in mustard oil and applying it to the crown of the child’s head to open the nostrils. For both cough and cold, they also described applying and rubbing a few drops of kerosene oil on the throat and hands, and asking the child to inhale it to keep the nostrils open and clear the throat.

“For cold, I give ‘Chandan’(Sandalwood) paste on my child’s forehead, it helps open the nostrils”- IDI-110.

“If there is diarrhea, we (indigenous, Hindu) give (the child) Thankuni (Indian Pennywort) leaf paste or extract to eat... also, sometimes give the root of the seeded banana tree... for cold, we soak Dhutra (Datura) leaves in mustard oil and apply it to the crown of the head (of child); once the oil dries, we apply it again.... We also apply and rub a few drops of kerosene oil in the throat and hands

(of the child) and ask them to inhale the hand to keep the nostrils open and clear the throat... Most of us follow these because these approaches actually work”-FGD-002.

These findings suggest that home-based and indigenous coping methods and remedies are not only emergency responses, but also trusted caregiving practices that mothers rely on in this community before seeking outside care.

Theme 4: Severity Assessment and Stepwise Care-Seeking Pathway

4a: Lack of improvement after several days of home-based treatment leads caregivers to seek outside care.

The participants usually decide to seek outside care when they feel that the child’s illness is not improving after trying home-based remedies for several days. In most cases, mothers first observe the child’s symptoms and try basic home remedies, but if the illness doesn’t improve within two/three days or the child’s health condition deteriorates, they consider it necessary to seek help from outside.

“When the fever does not subside or becomes even worse (very high) and home measures like cold sponging no longer work, or if the child has diarrhea three or four times and it continues frequently, I realise it is beyond what I can manage at home, so we decide it is time to seek outside help”- IDI-105

This shows that severity was not judged by one symptom only, but by whether the child’s condition was improving or worsening over time.

4b: Informal providers are preferred due to peer review, trust, cost, comfort, and accessibility

Informal providers are the next thing these community people go to after the home remedies fail. These informal providers are preferred over formal hospitals because they are nearby, familiar, accessible, and also trusted by the family or community. Lower overall expenditure compared to formal facilities, along with the option of delayed payment, is one of the most significant causes that strongly influence the participants to choose informal providers as their first source of outside care.

Participants commonly reported visiting village doctors, pharmacy-based providers, or local doctors in nearby markets for initial treatment.

“In our village, there is Ataur Maulvi, who runs a medicine shop and also treats children. Although he does not have the MBBS or any other formal medicine degrees, he is experienced and provides treatment for various conditions. As his treatment was effective before, we usually consult him.”- IDI-105.

“He (the informal provider) provides good treatment... we call him because his treatment works. Also, here, if we do not have money that day, we can tell him, ‘Please take this much now, we will pay the rest later,’ and he accepts that. His behaviour is also very good. Since we know him, he takes comparatively less from us.” -IDI-110.

4c: Seeking formal facility care is the last call for the participants

Formal facility care is usually considered the last option, when even informal providers fail to improve the child’s health condition. Participants move gradually from home care to informal providers, and then to formal facilities, only when the illness management is perceived as beyond the capabilities of informal providers.

“My daughter had diarrhea about three months ago... started passing frequent watery stools... this child of mine is a bit stubborn and always refuse to take oral saline... she wasn’t even responding to the prescription from the village doctor... as the diarrhea persisted for few days even after giving the medicine from the village doctor, we realised we couldn’t wait any longer and took her to Niamatpur Health Complex.” -IDI-108

4d: Personal savings and community people work as a social safety net in times of a child’s health crisis

Personal savings and community people’s financial, logistical and emotional support work as a social safety net in times of a child’s health crisis. Most of the participants share that they depend on personal savings, as most of the time their family income is very low to even smoothly run the month, so having some personal savings is a common practice for most of these community people. Also, borrowing and lending money in emergencies is another common practice within the

community. In case of a child's health emergency, peers, neighbours and community people also help with the arrangement of transportation and sometimes even accompany the child's mother to the facility.

"I was staying at my mother's house when my child fell ill, and due to financial constraints, my aunt took us for treatment and covered all expenses. My daughter received injections for four days, costing about 6500 takas. We repaid her later gradually... and my aunt also brought food from home (to the hospital) so that we don't have to take the costly and unhygienic meals (hospital meals)."-IDI-110.

"We have a practice to save some money for future emergencies, as sometimes we don't have any running income for months. Most of the time, we use these savings in case of child health emergencies"-FGD-002

Together, these accounts show that care-seeking followed a gradual pathway from home remedies to informal providers and, finally, to formal facilities when the child's condition was perceived as severe or unresolved.

Theme 5: Barriers and Inequality in Accessing Formal Care

5a: Financial and infrastructural barriers delay the seeking of formal healthcare

Participants described multiple barriers that delay or discourage seeking formal healthcare, among which financial and infrastructural barriers were two of the most commonly reported challenges, particularly during emergencies or at night. Caregivers explained that sudden illness becomes difficult to manage because money is not always available, and transportation in rural areas can be limited, especially after dark. Also, formal facilities were often perceived as expensive and distant, which further discouraged timely care-seeking.

"Sudden illness creates problems because money and transport are not always available, and getting a vehicle difficult in rural areas, especially if it is night" -IDI-101.

"Going to a big facility means you need money... without money, how will they treat us? Treatment there costs money, and it's also quite far." - IDI-107.

5b: Mothers feel emotionally overwhelmed with the whole procedure of seeking formal facility care

Beyond financial and infrastructural difficulties, mothers also described feeling emotionally overwhelmed throughout the process of seeking formal care. Participants talked about fear, uncertainty, and anxiety regarding whether their child would recover from the disease or would deteriorate, whether proper treatment would be available, whether they would face a long waiting time, whether the doctor would communicate with them effectively, who would accompany and finance them, or whether they might need to stay overnight away from home, leaving other children (if any) and family members unattended for a few days.

“When a child falls ill, a mother cannot feel at ease... there is constant worry and unrest... Going to the formal facility brings more uncertainty, like whether the doctor will be available or not, whether there will be a crowd or long waiting time, whether proper treatment and medicine will be available, or whether we might have to return without the proper care after so many hassles.. only Allah knows. The fear that the child may not receive proper treatment increases the anxiety.” -IDI-107.

5c: Discrimination and favouritism exist in formal facilities

The study also explored participants' experiences and perceptions regarding discrimination in formal healthcare facilities. While some participants believed that most people are treated equally, they acknowledged that individuals with personal connections often receive quicker attention or other advantages.

“I feel that everyone is generally treated equally, though some people do face neglect. However, those with personal connections tend to receive slight advantages, such as getting advice more quickly or being moved ahead in the queue.”-IDI-101.

“We did not have to wait. My uncle-in-law is a doctor and was sitting in the emergency department. When we arrived, they saw us a bit earlier and told us to take the child to the emergency... it was an advantage for me, but it probably caused some inconvenience for others.” – IDI-108.

At the same time, some ethnic minority participants, particularly from indigenous Hindu communities initially hesitated to share their experience openly but later disclosed experiences of disrespect and neglect in healthcare settings.

“Our indigenous community, Hindu people, are treated with a lot of disrespect... I have seen that they don’t easily want to handle our children, ma’am...they don’t even want to hold the child.... they speak in a very rude way.” -FGD-002.

These experiences suggest that both structural barriers and perceived social inequality shape caregivers’ experiences and decisions regarding formal healthcare seeking.

Theme 6: Power and Gender Dynamic in Care Giving, Decision Making and Care Seeking

6a: Mothers' physical and mental health comes last

Childcare responsibilities were almost entirely centred around mothers, who were identified as the primary caregivers in all participating households. Participants described that during extreme heat, mothers continue managing household responsibilities such as collecting firewood under the sun, bathing and feeding the cattle, cooking, etc., along with their daily religious and childcare practices simultaneously, often while neglecting their own physical and emotional well-being. One mother explained that she usually fasts most of the day to avoid cooking extra food for herself and also save the time of her eating, and some of the mothers she knows from her locality also have the same practice of frequent fasting due to the same reason. She also said that even after fasting and completing all household tasks, she would give away the little food or drink available for her to break her fast in the evening, to her child if the child asked for it. These accounts suggest that mothers prioritise children’s needs over their own, even under physically demanding conditions.

“Even after fasting and doing all the household work and child caring, when in the evening I want to end my fast with an egg or one glass of juice or one fruit, if my child wants that, I give that away... Because there’s only one available and the child will cry if I don’t give that... Also I myself will be unable of eating that food thinking of the child’s desire... even when I feel sick and exhausted from the heat, the child still comes first, while my own wellbeing comes last.” – IDI-102



[Image 4: Principal investigator taking the IDI of one of the primary caregivers of children under five years of age (the participant and her husband, both consented to capture and share images showing their faces and house premises)]

6b: Fathers' minimum contribution is glorified, while mothers have the highest load of caregiving and household chores

Although some fathers were described as helping occasionally with childcare, mothers continued to carry the main caregiving and household burden. Participants appreciated even minimal involvement from fathers, such as carrying the child, changing clothes, helping during bathing, buying snacks, taking them outside for evening walks, etc., and often described these contributions positively, while at the same time viewed child caregiving primarily as the mother's responsibility.

“Yes, he helps with childcare. He carries the child when the baby cries, changes clothes after urination or stool, and helps during bathing sometimes... but if the child's father wakes up at night hearing him crying, he calls me saying, ‘The baby is crying, take the baby’... Since I am the mother, naturally, a little more pressure falls on me. And after all, he is a man; he has to work outside. How much can he really do? Still, whatever he does, he does more than enough.” -IDI-105

6c: The fathers have the decision-making power, and the mothers generally agree with them

Decision-making regarding childcare and healthcare-seeking was also largely influenced by husbands. Although many mothers understood what actions should be taken for their child's health, they explained that seeking their husband's involvement and approval was considered necessary, and making decisions independently was often beyond their usual practice or social expectations. When the participants were asked about whom they consulted for advice for the child's health, almost all of them identified their husbands as the main, and often only, decision-maker. Although many described these decisions as mutual and reported no conflict of interest, further discussion suggested that they often accepted their husbands' preferences without expressing any independent opinions, particularly in situations involving conflicting views.

"I do not make decisions on my own; they are made through my husband... Even if sometimes I think I understand better what is good or bad (for my child) as I spent most of the time (with the child), I still need to keep my husband involved, don't I? Otherwise, nothing will work. Is it possible for any wife to make any decision without her husband's approval? ... So ultimately, we discuss with each other and the final decisions are mutual" – IDI-103

6d: Mother is the only person to blame if the child gets sick, even by herself

At the same time, mothers described carrying the emotional burden and blame when a child became sick. Participants often blamed themselves if a child developed illness after staying in the sun, bathing excessively, or for other perceived caregiving "mistakes." Interestingly, some participants also internalised this blame, believing that others' criticism towards them as mothers was somewhat justified.

"If the child develops a fever after excessive bathing or staying too long in the sun, I blame myself for it. While I fall asleep, and if they become sick afterwards, I feel it happened because I was careless and left them in the sun... In the end, everything falls on me... I am the only one to be blamed... no one else is responsible, everyone blames me... I feel bad... As a mother, I always want the best for my child, why would I want my child to be sick? But then again... the blame others gave me is also somewhat valid to some extent" – IDI-110.

Theme 7: Knowledge Source

7a: Trusting information provided by the health workers rather than village elders

Participants generally expressed greater trust in information provided by community health workers or other health professionals compared to advice from village elders or other community members. Health workers were perceived as knowledgeable and trained, and therefore their guidance was considered more reliable. Despite this trust, participants reported that there has been no dissemination of information by any health worker regarding extreme heat and its health effects. While health workers frequently visit the communities to discuss vaccination, TB and other maternal-child health issues, participants noted that extreme heat is rarely addressed in these interactions.

“I will follow the advice of the health worker because whatever they say is for our well-being... They speak based on knowledge and understanding of these matters, they are trained for this, whereas other people in the village speak without really knowing anything about the topic.” – IDI-112.

“Many health workers come to talk about vaccination, but I have never heard anyone talk about extreme heat or heat-related illness management.”-FGD-002.

7b: Face-to-face knowledge dissemination is preferred over media and printed form

Participants also discussed preferred methods for receiving health-related information. Courtyard meetings facilitated by health workers and village-wide miking were two of the most mentioned ways, which were considered more effective than posters, banners, or media advertisements. Many participants explained that not everyone has access to television, smartphones, internet connection, or sufficient literacy or patience to understand written materials. Therefore, face-to-face discussions in community settings were viewed as more engaging, understandable, and trustworthy. Participants emphasised that sitting together in a courtyard meeting and discussing “do’s and don’ts” regarding extreme heat would have the greatest impact within the community. “

As not everybody has a TV, smartphone or internet connection, so they can’t see the advertisements... Also, not everybody can read properly or have the patience to read... Miking across the village can be a good way to disseminate knowledge... Also, if someone like you comes

to disseminate knowledge about ‘do’s and dont’s’ in extreme heat and sit with us like this in a courtyard meeting, this will affect the most”-FGD-001.

Theme 7: Vignette-based Decision Logic

As some hypothetical vignette-based situations on water scarcity, power outage, competing caregiving responsibilities, and illness progression in extreme heat periods were given to the participants taking part in the focus group discussions, alternative solutions came from the caregivers based on available resources and practical adjustments. In situations of water shortage, participants explained that they prioritise essential activities such as cooking, while temporarily stopping tasks like bathing or washing clothes. Similarly, during electricity outages, participants described relying on hand fans or rechargeable fans as alternative cooling methods. These responses demonstrate how caregivers actively adapt their daily practices and make resource-based decisions during extreme heat and heat-related disruptions of daily routine.

“If for some reason there is no water in the motor, Salma (the hypothetical vignette character) should skip the cloth washing and bathing for that day. She can bring stored water from the neighbouring houses where water is available and only do the cooking on those days.” - FGD-001.

“If there is no electricity, there is no other option without a hand fan, and if Rina (the hypothetical vignette character) have the charging fan, she can charge it when there is electricity available so that she can use it later in case of a power cut”-FGD-001.



[Image 5: The investigator taking FGD in the village CHCP's house premises]

These responses demonstrate how caregivers actively adapt their daily practices and make resource-based decisions during extreme heat and related disruptions.

Theme 8: Context-Specific Recommendations from the Participants

Participants suggested several context-specific measures to reduce the impact of extreme heat on children and caregivers. Many emphasised the need for environmental modifications, such as planting more trees and digging ponds, to create a cooler surrounding environment within the community. Participants also proposed the establishment of community-level cooling spaces with proper ventilation where mothers and children could stay during periods of excessive heat.

“A shaded space could be built in an open area with seating arrangements, swings and other playing equipment where children can play, and mothers can bring their children.” – IDI-112.

Participants additionally highlighted the importance of reliable electricity for operating fans and other cooling devices during extreme heat. Because power cuts were described as common, some participants recommended installing solar power systems as an alternative energy source. They also emphasised the need for more formal healthcare facilities within closer proximity to rural communities so that timely treatment can be accessed more easily during emergencies and extreme weather conditions.

“Planting solar panels for electricity can really be a good option for us, it powers from sunlight, and we can use the light and the fan when necessary”- FGD-002.

These recommendations reflect the participants’ preference for practical, locally accessible solutions that support both cooling and childcare.

Chapter 5: Discussion

5.1 Summary of Key Findings

This study explored child healthcare practices during extreme heat among children under five in drought-prone rural Bangladesh by examining the prevalence of selected illnesses, caregivers’ perceptions of extreme heat, home-based and indigenous management practices, and decisions around formal healthcare seeking.

The quantitative findings showed that fever and cold/cough were the most commonly reported illnesses, while diarrhea, heat-related illnesses, and acute respiratory illness were reported at lower levels across all under-five age groups but varied by disease type and age category.

The qualitative findings demonstrated that caregivers recognised extreme heat mainly through bodily discomfort and behavioural changes among children, such as sweating, crying, irritability, and reduced activity. Home-based cooling measures and indigenous remedies were commonly used as the first response before seeking outside care. Care-seeking generally followed a stepwise pathway from home remedies to informal providers and finally to formal healthcare facilities if the child’s condition worsened.

The study also identified important barriers to healthcare seeking, including financial hardship, transportation difficulties, limited trust in formal healthcare facilities for systemic flaws and perceived discrimination. In addition, childcare responsibilities were highly gendered, with mothers carrying the primary caregiving burden while husbands largely influenced healthcare decisions.

5.2 Discussion of Findings

The findings suggest that extreme heat affects child health not only as an environmental exposure but also as a social and caregiving stressor, often intensifying the pre-existing vulnerabilities. The study contributes context-specific evidence regarding how caregivers in rural Bangladesh recognise illness, manage symptoms, and make healthcare decisions during periods of extreme heat.

The caregivers understood extreme heat through lived bodily experience rather than temperature measurements. Participants perceive extreme heat through sweating, fatigue, weakness, thirst, headache, restlessness, food intolerance, and reduced ability to perform daily tasks. Also, the AQI findings suggested that kitchens had relatively poorer air quality than other household environments, likely due to cooking-related smoke and heat. Qualitative interviews and field observations supported this through data triangulation, as many kitchens were poorly ventilated and closely linked with women's heat exposure during cooking and caregiving activities. Mothers also described extreme heat as affecting other daily tasks, including childcare, firewood collection, cleaning, and livestock management. Thus, extreme heat was experienced not only as a weather condition but also as a daily stressor that increased caregiving burden and reduced physical capacity.

The findings further support existing evidence that children are particularly vulnerable to heat exposure due to immature thermoregulation, increased dehydration risk, and dependence on caregivers (Xu et al., 2025; Anderko et al., 2019). Caregivers recognised children's heat-related discomfort mainly through visible signs such as crying, irritability, sweating, thirst, reduced movement, and reduced playfulness. Since younger children often cannot clearly communicate discomfort, mothers relied heavily on observation and caregiving experience to recognise illness. Participants also linked other illnesses, such as fever, cough/cold, diarrhea, vomiting, and heat rash, with summer and extreme heat, because these diseases are more frequent in hotter periods. Similar findings have been reported in previous studies where caregivers linked seasonal illness patterns with increasing heat exposure and environmental change (Shanmugasundaram et al., 2025). These

interpretations were shaped by seasonal observation and caregiving experience. Some participants additionally believed that mosquito-borne and infectious diseases increased during hotter periods.

Home-based cooling and indigenous care practices were usually the first response to heat-related illness. Common practices included bathing, wet cloth wiping, ORS, homemade saline, shade, light clothing, fanning, herbal remedies, and oil rubbing. Similar findings have been reported in a systemic review examining 10 studies on community-based heat adaptation interventions improving heat literacy, behaviours, and health outcomes (Johar et al., 2025). Participants generally trusted these methods because they were familiar, inherited, and considered effective. While some practices, such as ORS and hydration, may be beneficial when practised correctly, others may require careful public health guidance. These findings suggest that interventions should recognise existing community practices while promoting safer approaches where necessary.

Care-seeking followed a gradual and stepwise pathway. Most caregivers first used home remedies, then consulted informal providers such as village doctors or pharmacy-based providers, and sought formal healthcare only when the child's condition worsened or did not improve. Informal providers were preferred because they were nearby, familiar, trusted, affordable, and flexible with payment. For many low-income households, they served as the most accessible first point of care, and further formal follow-up was often not considered if the child recovered. Financial, infrastructural, logistical, and emotional barriers strongly influenced formal healthcare seeking. Participants described difficulties related to money, transport, distance to facilities, lack of vehicles at night, uncertainty regarding treatment, and the need for someone to accompany the mother. A study conducted in Ethiopia on inequities in healthcare-seeking behaviour among children under 5 shows similar healthcare pathways in rural low-resource settings where participants can't seek formal care due to financial and infrastructural constraints (Fekadu et al., 2025). Along with the financial and structural barriers, similar emotional and logistical barriers have been widely reported in a study examining healthcare access among climate migrants in rural Bangladesh (Islam et al., 2025).

Participants also described emotional stress associated with caring for sick children during extreme heat while simultaneously managing household responsibilities. Social support networks also played an important role, as relatives, neighbours, community members, and personal savings often helped families manage transport, expenses, food, and emotional support during child health emergencies.

These findings suggest that care-seeking during extreme heat was not a single decision, but a gradual process shaped by perceived severity, cost, trust, household resources, and community support.

The study also found that perceived social inequality influenced experiences within formal healthcare facilities. Some participants reported that individuals with personal connections received faster services, while ethnic minority Hindu participants described experiences of disrespect and neglect. A study conducted on inequalities in health care seeking behaviour for childhood illness in Bangladesh has similarly shown that social marginalisation and discrimination can reduce healthcare utilisation and trust in formal services (Shahrukh Rummana et al., 2025). These findings suggest that healthcare access is shaped not only by distance, cost, or availability of services, but also by respectful treatment, trust, and social inclusion. Fear of neglect or discrimination may discourage caregivers from seeking formal care unless the child's condition becomes severe, raising important concerns regarding health equity among socially marginalised communities.

Another major finding was the gendered nature of caregiving. Although the study included primary caregivers irrespective of gender, all eligible qualitative participants were mothers, reflecting the local reality that childcare is largely considered a maternal responsibility. Mothers described managing household chores, cooking, fuel collection, livestock care, and childcare during extreme heat, often while neglecting their own well-being. Some mothers also described giving up their own food, rest, or comfort for their children. Although fathers sometimes helped with childcare, these contributions were usually occasional, while mothers carried the main responsibility. Similar gendered caregiving burdens have been reported in studies examining climate-related vulnerability among women in low-resource settings (Crawford et al., 2024).

Decision-making was also gendered, as many mothers reported that healthcare decisions required their husband's involvement or approval. Although they often described the decisions as "mutual," their narratives suggested that mothers had limited independent voice or autonomy in deciding when and where to seek care. A systematic review also supported this finding by reporting that male involvement in decision-making may have ambiguous effects on women's autonomy and can sometimes weaken women's decision-making power if not carefully implemented (Tokhi et al., 2018). This indicates that delayed care-seeking may not only result from cost or transport barriers, but also from household power dynamics and limited maternal decision-making authority.

The findings also indicate a gap in heat-related health communication. Most participants trusted health workers more than village elders or informal advice sources, yet reported that extreme heat and its health effects and management were never discussed by the health workers. Participants preferred courtyard meetings and miking over posters, banners, or media advertisements because not everyone had access to television, smartphones, the internet, or adequate literacy to understand written messages.

Together, the quantitative and qualitative findings of the study captured both broader disease patterns and the lived experiences of mothers from low-resource, rural, and ethnically diverse households and contributed context-specific evidence that can support more realistic, culturally sensitive, and gender-responsive child health interventions in rural Bangladesh.

5.3 Strengths of the Study

This study has several strengths. First, the mixed-methods design allowed both quantitative assessment of illness patterns and qualitative exploration of caregivers' lived experiences, perceptions, and healthcare practices. The integration of quantitative and qualitative findings provided a broader understanding of the frequent childhood illnesses and child healthcare during extreme heat.

Second, the study explored an under-researched topic in Bangladesh by focusing specifically on caregiving experiences and healthcare practices during extreme heat in drought-prone rural settings. The study additionally examined indigenous practices, social barriers, and gendered caregiving burdens, which are often underexplored within climate and child health research.

Third, the use of in-depth interviews, focus group discussions, field observations, and vignette-based discussions strengthened data triangulation and improved contextual understanding. The inclusion of participants from Bangali and ethnic minority communities also improved diversity and enabled the identification of disparities in experiences across the findings.

5.4 Limitations of the Study

This study also has some limitations. The quantitative component used secondary data, so analysis was limited to available variables and did not include detailed heat exposure, outdoor activity, household cooling infrastructure, or clinically confirmed illness outcomes. Reported illness

outcomes may also involve recall bias, and caregivers' perception of heat-related illness may differ from biomedical classification. On the other hand, the qualitative findings were collected from only one rural upazila, aligning with the quantitative study site, limiting wider generalizability, although they provide rich contextual insight. Finally, indigenous practices were self-reported and not clinically evaluated; therefore, they should be understood as reported beliefs and practices, not clinical recommendations.

5.5 Implications for Public Health Policy and Practice

The findings of this study have several implications for public health policy and practice in Bangladesh. First, heat-related child health awareness should be integrated into existing maternal and child health programs, particularly within climate-vulnerable rural communities. Community health workers may play an important role in educating caregivers regarding early signs of heat stress, hydration, safe cooling practices, and need for timely healthcare seeking.

Secondly as the informal providers are frequently used as the first point of care, future interventions should consider involving village doctors and pharmacy-based providers within community-level heat-health education and awareness initiatives, alongside the development of a robust referral systems through these providers.

Third, improving rural healthcare accessibility, emergency transport support, and respectful treatment within healthcare facilities may help reduce delays in healthcare seeking during extreme heat, particularly among socially marginalised communities.

Finally, the findings highlight the need for gender-sensitive and community-based approaches within climate and child health programs. Since mothers carried the major caregiving burden while often having limited decision-making autonomy, future interventions should involve both mothers, fathers and other household decision-makers of both genders. Public health communication strategies should also prioritise culturally appropriate face-to-face approaches, such as courtyard meetings and village miking, which were preferred by participants.

Overall, the findings support the importance of developing climate-resilient and community-centred child health strategies that recognise the social, cultural, and structural realities shaping caregiving practices in rural Bangladesh.

Chapter 6: Conclusion and Recommendations

6.1 Conclusion

This study found that fever and cold/cough were the most commonly reported childhood illnesses during the study period, while heat-related illnesses, diarrhea, and acute respiratory illness were reported at lower levels. Across age groups, children aged 13–24 months showed a relatively higher burden of several illnesses, whereas diarrhea was more common among infants aged 0–12 months.

Caregivers understood extreme heat through their own bodily discomfort and recognised their children's heat-related distresses mainly through the child's visible physical and behavioural changes, such as sweating, thirst, crying, irritability, reduced movement, and seasonal illness patterns. To manage these conditions, mothers first relied on home-based cooling and indigenous practices, including bathing, wet cloth wiping, ORS/homemade saline, home-based herbal remedies, oil massage, and other community-based methods.

Care-seeking usually followed a stepwise pathway from home management to informal providers, and finally to formal healthcare facilities when illness became severe or unresolved. However, informal providers are trusted over the formal providers as financial constraints, transport difficulties, distance, uncertainty at facilities, perceived discrimination, and gendered caregiving responsibilities contributed to delays in seeking formal care. Overall, the findings highlight the need for context-specific, community-based, and gender-responsive interventions to protect children under five during extreme heat in rural Bangladesh.

Therefore, child health protection during extreme heat should be addressed as both a healthcare issue and a household-level caregiving challenge in heat-vulnerable rural communities.

6.2 Recommendations

Based on the findings of this study, the following recommendations are proposed:

Include heat-health messages in community health worker activities

Community health care workers can play a vital role in sharing information, spreading knowledge, as they are the first line source of information for the community during household visits, courtyard meetings, vaccination sessions, and maternal-child health activities. They can be trained to disseminate the knowledge on recognizing child danger signs, preventing dehydration, safe cooling, breastfeeding during heat, and when to seek formal care to provide better support for heat-related illnesses.

Use locally preferred communication channels

Since participants preferred courtyard meetings and miking over posters and written materials, these channels should be used for heat-related health communication for more positive outcomes.

Engage mothers, fathers, and other household decision-makers

Since mothers are the primary caregivers but may not always make healthcare decisions alone, interventions should be designed involving all the stakeholders, such as fathers, husbands, mothers-in-law, father-in-law, grandparents and other family decision-makers, for a comprehensive approach. This can support faster decisions during child health emergencies.

Work with informal providers for early identification and referral

Since caregivers often seek care first from village doctors or pharmacy-based providers, these providers should be oriented on heat-related danger signs, ORS use, dehydration, referral needs, and when to advise formal facility care. This suggests that child health interventions during extreme heat should consider the role of informal providers, train them with the basics, especially in early recognition, referral, and danger-sign communication.

Build on safe and effective home-based practices while evaluating other ones

Programs should acknowledge known and trusted home-based and indigenous practices instead of dismissing them. Safe practices such as ORS, homemade saline prepared correctly, wet cloth wiping, shade, and hydration should be reinforced, while other traditional practices are a future scope of study to be evaluated for effectiveness and safety.

Support household and community-level cooling options

Practical interventions such as tree plantation, shaded community spaces, improved ventilation, access to safe drinking water, and solar-powered fans or backup electricity may help reduce heat exposure among children and caregivers.

Promote respectful and equitable care in formal healthcare facilities

Efforts should be made to strengthen respectful and non-discriminatory care within formal healthcare facilities, particularly for socially marginalized and ethnic minority communities. Training healthcare providers on cultural sensitivity, respectful communication, and equitable service delivery may help improve trust in formal healthcare services and encourage timely care-seeking.

Declaration of GenAI Use

I, Atiya Khwaja, declare that in preparing this assignment, I used ChatGPT 5.5 and Grammarly as support tools to assist with brainstorming ideas, organizing the structure of my writing, overcoming writer's block, and improving clarity and language in the text that I drafted myself. 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: Data Collection Instrument

A1 : Semi-Structured Guideline for In-Depth Interview (IDI) in Bangla

ব্যক্তিগত বিস্তারিত সাক্ষাৎকারের (IDI) নির্দেশিকা:

গবেষণার শিরোনাম: “বাংলাদেশের গ্রামীণ এলাকায় তীব্র তাপদাহের সময় শিশু স্বাস্থ্যের জন্য প্রাতিষ্ঠানিক স্বাস্থ্যসেবা গ্রহণে প্রতিবন্ধকতা এবং মোকাবিলা কৌশল: খরা-প্রবণ বরেন্দ্র অঞ্চলে একটি মিশ্র-পদ্ধতির গবেষণা”

তারিখ:

সাক্ষাৎকারগ্রহীতার নাম:

নোটকারের নাম:

সাক্ষাৎকার শুরুর সময়:

সাক্ষাৎকার শেষের সময়:

সাক্ষাৎকারের স্থান: (যারা উপস্থিত ছিলেন)

ডোমেইন	প্রশ্নাবলি	সম্ভাব্য অনুসন্ধান প্রশ্ন (Probes)
A. জনসংখ্যাগত তথ্য	1. অংশগ্রহণকারীর আইডি _____ 2. অংশগ্রহণকারীর বয়স _____ 3. অংশগ্রহণকারীর লিঙ্গ _____ 4. শিক্ষাগত যোগ্যতা _____ 5. জাতি _____ 6. ধর্ম _____ 7. পেশা _____ 8. পরিবারের আয় _____	

	9. আবাসনের সময়কাল _____ 10. পরিবারের সদস্যদের সংখ্যা _____ 11. সন্তানের তথ্য: i. প্রথম সন্তান? (হ্যাঁ/না) _____ ii. সন্তানের বয়স (মাসে) _____ iii. শিশুর সাথে সম্পর্ক _____ iv. শিশু কি একচেটিয়াভাবে বুকের দুধ খাওয়ানো হয়েছে? (হ্যাঁ/না) _____ v. শিশুটি কি সম্পূর্ণ টিকা (বয়স পর্যন্ত) পেয়েছে কিনা? (হ্যাঁ/না) _____ 12. আবাসনের ধরণ: i. মেঝে _____ ii. দেয়াল _____ iii. ছাদ _____ iv. সিলিং _____ v. কুলিং ডিভাইস (সিলিং/টেবিল ফ্যান, অন্যান্য?) _____ vi. বাতাস চলাচল (জানালা/অন্যান্য?) _____ vii. ছাদের উপরে গাছের ছায়া/অন্যান্য _____ viii. রান্নার জায়গার দূরত্ব (ধোঁয়া ঘরের ভেতরে আসে/না?) _____ ix. একই ঘরে শিশুসহ বসবাসকারী সদস্যের সংখ্যা _____ যোগাযোগের তথ্য _____ (সাক্ষাৎকার সম্পন্ন করার পরে জিজ্ঞাসা করুন)	
B. পরিচর্যার প্রেক্ষাপট ও দৈনন্দিন জীবন	1. আপনি নিজের সম্পর্কে কিছু বলবেন কি? ছোট শিশুর একজন পরিচর্যাকারী হিসেবে আপনার একটি সাধারণ দিন কেমন কাটে? 2. খুব গরমের দিনে আপনার দৈনন্দিন	গরম দিন ও ঠান্ডা দিনের মধ্যে পার্থক্য কাজের চাপ, শিশুর যত্ন নেওয়ার দায়িত্ব, ঘরের কাজ পানি ব্যবহার, ঘুম, বিশ্রাম

	জীবন এবং শিশুর দেখাশোনা কীভাবে বদলে যায়?	এবং শারীরিক ক্লান্তি আগের বছরগুলোর তুলনায় কী পরিবর্তন লক্ষ্য করেছেন একাধিক শিশু বা পরিবারের অন্য সদস্যদের দায়িত্ব সামলানো
C. অতিরিক্ত গরম (এক্সট্রিম হিট) ও শিশুর স্বাস্থ্য সম্পর্কে বোঝাপড়া	1. আপনার কাছে “অতিরিক্ত গরম” বলতে কী বোঝায়? এই গরম এই এলাকার ছোট শিশুদের ওপর কীভাবে প্রভাব ফেলে বলে আপনি মনে করেন? 2. আপনি কীভাবে বুঝতে পারেন যে গরম শিশুর জন্য ক্ষতিকর হয়ে উঠছে?	গরমের সময় শিশুর আচরণ বা স্বাস্থ্য কী কী পরিবর্তন লক্ষ্য করেন অতিরিক্ত গরমে শিশুদের মধ্যে কোন কোন স্বাস্থ্য সমস্যা বেশি দেখা যায় এই এলাকায় মানুষ গরম ও অসুস্থতা নিয়ে কীভাবে কথা বলে এসব সমস্যা কি আগেও ছিল, নাকি সময়ের সঙ্গে বেড়েছে বলে মনে হয়
D. অসুস্থতা বোঝা ও ঘরে বসে মোকাবেলার কৌশল	অতিরিক্ত গরমের সময় আপনার শিশু অসুস্থ হলে আপনি কীভাবে বুঝতে চেষ্টা করেন যে কী	ঘরে বসে কী ধরনের যত্ন বা ব্যবস্থা নেন (খাবার দেওয়া,

	হচ্ছে, আর সাধারণত প্রথমে কী করেন? আপনি কীভাবে সিদ্ধান্ত নেন যে এটি একটি "সাধারণ অসুস্থতা" নাকি গরমের কারণে হওয়া সমস্যা?	পানি/ওআরএস খাওয়ানো, গোসল করানো, ঠান্ডা রাখা, বিশ্রাম দেওয়া) পরিবার বা কমিউনিটিতে ব্যবহৃত কোনো ঐতিহ্যবাহী বা দেশীয় পদ্ধতি বয়স্ক সদস্য, প্রতিবেশী বা অন্যদের কাছ থেকে পাওয়া পরামর্শ কোন পদ্ধতিগুলোকে আপনি সবচেয়ে বেশি ভরসা করেন এবং কেন
E. অসুস্থতার তীব্রতা বোঝা ও সিদ্ধান্ত নেওয়া	1. আপনি কীভাবে বুঝতে পারেন যে ঘরের যত্নই যথেষ্ট, নাকি ঘরের বাইরে সাহায্য নেওয়া দরকার?	কোন লক্ষণ বা পরিবর্তন আপনাকে সবচেয়ে বেশি চিন্তায় ফেলে বাইরে সাহায্য নিতে যাওয়ার আগে সাধারণত কতক্ষণ অপেক্ষা করেন এমন কোনো সময় যখন কী করবেন বুঝতে না পেরে দ্বিধায় পড়েছিলেন অন্যদের পরামর্শ কীভাবে

		আপনার সিদ্ধান্তকে প্রভাবিত করেছে সাম্প্রতিক কোনো অভিজ্ঞতা যা আপনার মনে বিশেষভাবে আছে
F. চিকিৎসা নেওয়ার পথ ও প্রতিবন্ধকতা	অতিরিক্ত গরমের সময় আপনার শিশুর জন্য চিকিৎসা নিতে যাওয়ার অভিজ্ঞতা সম্পর্কে বলবেন?	সাধারণত প্রথমে কোথায় যান এবং কেন স্বাস্থ্যকেন্দ্রে যেতে কোন বিষয়গুলো সহজ করে বা কঠিন করে তোলে যাতায়াত, দূরত্ব, খরচ, অপেক্ষার সময়, গরমের মধ্যে চলাচলের কষ্ট আগের কোনো ভালো বা খারাপ অভিজ্ঞতা ভয়, দ্বিধা, ভরসা বা আত্মবিশ্বাসের মতো অনুভূতি
G. ক্ষমতা, তথ্যের উৎস ও আড়ালে থাকা চ্যালেঞ্জ	আপনার শিশুর চিকিৎসা-সংক্রান্ত সিদ্ধান্তগুলো কে বা কারা নেন? এই বিষয়টি আপনার সিদ্ধান্ত নেওয়া বা কাজ করার ক্ষমতাকে কীভাবে প্রভাবিত করে?	লিঙ্গভিত্তিক ভূমিকা, অনুমতির প্রয়োজন, অন্যদের ওপর নির্ভরশীলতা বিচারিত হওয়ার ভয়,

		দোষারোপ বা অবহেলার আশঙ্কা বৈষম্য বা অসম আচরণের কোনো অভিজ্ঞতা শিশুস্বাস্থ্য নিয়ে তথ্য কোথা থেকে পান এবং কার পরামর্শকে সবচেয়ে বেশি বিশ্বাস করেন ভিন্ন কমিউনিটি বা জাতিগত গোষ্ঠীর মধ্যে পার্থক্য থাকলে তা কীভাবে প্রভাব ফেলে
H. উপসংহার	1. আপনার মতো পরিচর্যািকারীদের জন্য কী ধরনের সহায়তা থাকলে অতিরিক্ত গরমের সময় শিশুদের সুরক্ষা ও যত্ন নেওয়া সহজ হতো বলে আপনি মনে করেন?	আপনার মতে, এই এলাকায় অতিরিক্ত গরমের সময় শিশুদের যত্ন নেওয়ার ক্ষেত্রে বাইরের মানুষরা (যেমন ডাক্তার, এনজিও কর্মী, গবেষকরা) কোন বিষয়গুলো ঠিকভাবে বোঝেন না বা ভুলভাবে বোঝেন?

A2 : Semi-Structured Guideline for In-Depth Interview (IDI) in English

IDI Guideline:

Study Title: Extreme Heat and Child Health Care Practices in Rural Bangladesh: A Mixed-Methods Study

Date:

Interviewer name:

Notetaker name:

Interview starting time:

Interview ending time:

Interview settings: (Place, who were present)

Domain	Questions	Possible probes
A. Demography	1. Participant ID _____ 2. Age of the participant _____ 3. Sex of the participant _____ 4. Educational level _____ 5. Ethnicity _____ 6. Religion _____ 7. Occupation _____ 8. Household Income _____ 9. Duration of residence _____ 10. Number of family members _____ 11. Child Info: i. First child ? (Yes/No) ii. Age of the child (in months) _____ iii. Relation with the child _____ iv. Did the child received exclusive breastfeeding? (Yes/No) v. Did the child got full EPI till age? (Yes/No) 12. Housing Type : i. Floor ii. Wall iii. Roof iv. Ceiling v. Cooling devices (Ceiling/Table Fan, Others?) vi. Ventilation (Window/Other?) vii. Shadow of tree/other over the roof viii. Distance of cooking space (Smoke comes inside the room/not?) ix. No of members live with the same room with child	

	13. Contact info _____ (Ask after completing IDI)	
B. Caregiving Context & Daily Life	1. Can you tell me about yourself and what a typical day looks like for you as a caregiver of a young child? 2. How does your daily life—and caring for your child—change during very hot days?	Differences between hot and cooler days Workload, childcare responsibilities, household chores Water use, sleep, rest, and physical exhaustion Changes compared to previous years Managing multiple children or other family responsibilities
C. Understanding Extreme Heat & Child Health	1. What does “extreme heat” mean to you, and how do you feel it affects young children in this community?	How do you recognize when the heat becomes harmful? Changes you notice in your child’s behavior or health Common health problems seen in children during extreme heat How people in the community talk about heat and illness

		Whether these problems feel new or have increased over time
D. Interpreting Illness & Home-Based Coping	1. When your child becomes unwell during extreme heat, how do you understand what is happening and what do you usually do first?	How you decide whether it is a “normal illness” or heat-related Home care practices (feeding, fluids, ORS, bathing, cooling, rest) Traditional or indigenous practices used in the family/community Advice from elders, neighbors, or others Which practices you trust the most and why
E. Assessing Severity & Making Decisions	1. How do you decide when home care is enough and when you need to seek help outside the home?	Signs or changes that worry you the most How long you usually wait before seeking outside care Situations when you felt unsure or confused about what to do Advice from others that influenced your decision

		A recent experience that stands out to you
F. Care-Seeking Pathways & Barriers	1. Can you describe your experience of seeking healthcare for your child during extreme heat?	Where you usually go first and why What makes it easier or harder to go to a health facility Transport, distance, cost, waiting time, heat exposure Past experiences with health facilities (good or bad) Feelings such as fear, hesitation, trust, or confidence
G. Power, Information, and Hidden Challenges	1. Who is involved in making decisions about your child's healthcare, and how does that affect what you are able to do? 2. Are there challenges or worries related to child healthcare during extreme heat that people do not usually talk about openly?	Gender roles, permission, dependence on others Fear of being judged, blamed, or ignored Experiences of discrimination or unequal treatment Access to information and whose advice is trusted

		Differences across communities or ethnic groups
H. Conclusion	1. What kind of support would make it easier for caregivers like you to protect children during extreme heat?	What do you think outsiders (doctors, NGOs, researchers) often misunderstand about caregiving during extreme heat here?

A3 : Semi-Structured Guideline for Focus Group Discussion (FGD) in Bangla

সমবেত দলীয় আলোচনার (FGD) নির্দেশিকা:

গবেষণার শিরোনাম: “বাংলাদেশের গ্রামীণ এলাকায় তীব্র তাপদাহের সময় শিশু স্বাস্থ্যের জন্য প্রাতিষ্ঠানিক স্বাস্থ্যসেবা গ্রহণে প্রতিবন্ধকতা এবং মোকাবিলা কৌশল : খরা-প্রবণ বরেন্দ্র অঞ্চলে একটি মিশ্র-পদ্ধতির গবেষণা”

তারিখ:

সাক্ষাৎকারগ্রহীতার নাম:

নোটকারের নাম:

সাক্ষাৎকার শুরুর সময়:

সাক্ষাৎকার শেষের সময়:

সাক্ষাৎকারের স্থান: (যারা উপস্থিত ছিলেন)

ডোমেইন	প্রশ্নাবলি	সম্ভাব্য অনুসন্ধান প্রশ্ন
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		(Probes)
A. সামাজিক ও জনসংখ্যাগত তথ্য (এই অংশটি প্রতিটি অংশগ্রহণকারীর জন্য আলাদাভাবে মুদ্রিত হবে।)	1. অংশগ্রহণকারীর আইডি _____ 2. অংশগ্রহণকারীর বয়স _____ 3. অংশগ্রহণকারীর লিঙ্গ _____ 4. শিক্ষাগত যোগ্যতা _____ 5. জাতি _____ 6. ধর্ম _____ 7. পেশা _____ 8. পরিবারের আয় _____ 9. আবাসনের সময়কাল _____ 10. পরিবারের সদস্যদের সংখ্যা _____ 11. সন্তানের তথ্য: i. প্রথম সন্তান? (হ্যাঁ/না) ii. সন্তানের বয়স (মাসে) _____ iii. শিশুর সাথে সম্পর্ক _____ iv. শিশু কি একচেটিয়াভাবে বুকের দুধ খাওয়ানো হয়েছে? (হ্যাঁ/না) v. শিশুটি কি সম্পূর্ণ টিকা (বয়স পর্যন্ত) পেয়েছে কিনা? (হ্যাঁ/না) 12. আবাসনের ধরণ: i. মেঝে ii. দেয়াল iii. ছাদ iv. সিলিং v. কুলিং ডিভাইস (সিলিং/টেবিল ফ্যান, অন্যান্য?) vi. বাতাস চলাচল (জানালা/অন্যান্য?) vii. ছাদের উপরে গাছের ছায়া/অন্যান্য viii. রান্নার জায়গার দূরত্ব (ধোঁয়া ঘরের ভেতরে আসে/না?)	

	ix. একই ঘরে শিশুসহ বসবাসকারী সদস্যের সংখ্যা যোগাযোগের তথ্য _____ (আলোচনা সম্পন্ন করার পরে জিজ্ঞাসা করুন)	
B. দৈনন্দিন জীবন, পরিচর্যা এবং অতিরিক্ত গরম (প্রেক্ষাপট স্থাপন)	আমরা শুরু করি এই সম্প্রদায়ে আপনার দৈনন্দিন জীবন সম্পর্কে কথা বলতে। ছোট শিশুদের যত্ন নেওয়া সাধারণত কমন থাকে, এবং খুব গরম দিনের মধ্যে এটি কীভাবে বদলে যায়? পূর্ববর্তী বছরগুলোর তুলনায়, আপনি কীভাবে মনে করেন অতিরিক্ত গরম এখন আপনার দৈনন্দিন রুটিনে প্রভাব ফেলেছে?	কাজের চাপ, শিশুর যত্ন নেওয়ার দায়িত্ব, ঘরের কাজ গরম দিন ও ঠান্ডা দিনের মধ্যে পার্থক্য পানি ব্যবহার, বিদ্যুৎ ব্যবহার, ঘুম এবং বিশ্রাম শারীরিক চাপ, জীবিকা বা কাজের প্রভাব একজনের অভিজ্ঞতা শেয়ার করতে বলুন
C. গরম এবং শিশু অসুস্থতা সম্পর্কে সম্প্রদায়ের ধারণা	এই সম্প্রদায়ে "অতিরিক্ত গরম" শব্দটি বিশেষ করে ছোট শিশুদের জন্য কীভাবে বোঝানো হয়?	অতিরিক্ত গরমে, আপনি সাধারণত শিশুদের মধ্যে কোন ধরনের স্বাস্থ্য সমস্যা দেখতে পান? (যেমন: জ্বর, ডায়রিয়া, বমি, চামড়ায় ফাশ, দুর্বলতা, খাওয়া নিয়ে সমস্যা)

		গরমে অসুস্থতা বনাম "সাধারণ অসুস্থতা" – তাদের মধ্যে পার্থক্য কীভাবে দেখা যায়? গরমের কারণে অসুস্থতা হওয়া বা খারাপ হওয়া নিয়ে লোকদের মধ্যে কী ধরনের স্থানীয় বা সাংস্কৃতিক ব্যাখ্যা রয়েছে?
D. ঘরে বসে যত্ন, মোকাবেলা এবং দেশীয় প্রথা	অতিরিক্ত গরমের সময় যখন শিশু অসুস্থ হয়ে পড়ে, তখন পরিবারগুলো সাধারণত বাইরে সাহায্য নেওয়ার আগে কী কী ব্যবস্থা গ্রহণ করে?	তরল, ORS, খাওয়ানো বা বুকের দুধ দেওয়ার পরিবর্তন ঠান্ডা করার প্রথা (গোসল, পাখা, ছায়া) দেশীয় বা ঐতিহ্যবাহী চিকিৎসা বয়স্ক সদস্য, প্রতিবেশী বা অন্যদের কাছ থেকে পরামর্শ কোন পদ্ধতিগুলো সবচেয়ে বেশি বিশ্বাসযোগ্য এবং কেন বিশেষ কোনো গোষ্ঠী বা

		স্থানীয় জনগণের জন্য ব্যবহৃত পদ্ধতি (যদি প্রাসঙ্গিক হয়)
E. চিকিৎসা নেওয়ার পথ এবং প্রতিবন্ধকতা	যখন ঘরে যত্ন নেওয়া যথেষ্ট না হয়, তখন পরিবারগুলো সাধারণত প্রথম কোথায় যান এবং কেন?	ফার্মেসি, গ্রামের ডাক্তার, সরকারি/এনজিও/বেসরকারি স্বাস্থ্যকেন্দ্র যাতায়াতের দূরত্ব, পরিবহন, খরচ, অপেক্ষার সময়, ভিড় চলাচলের সময় গরমের মধ্যে থাকা কষ্ট স্বাস্থ্যকেন্দ্রে আগের অভিজ্ঞতা এবং তাদের প্রতি বিশ্বাস এই প্রতিবন্ধকতাগুলো কি চিকিৎসার জন্য যাওয়ার সময় বিলম্ব সৃষ্টি করে বা এড়িয়ে চলতে বাধ্য করে?
F. সিদ্ধান্ত নেওয়া, অসমতা এবং আড়ালে থাকা চ্যালেঞ্জ (প্রতিফলন)	শিশুর অসুস্থতার ক্ষেত্রে চিকিৎসা নেওয়ার সিদ্ধান্ত সাধারণত কে নেন, এবং জরুরি পরিস্থিতি বা অতিরিক্ত গরমের সময় এটি কীভাবে কাজ করে?	লিঙ্গভিত্তিক ভূমিকা, পরিচর্যার চাপ, অনুমতির প্রয়োজন বিচার বা দোষারোপ হওয়ার ভয়

		বৈষম্য বা অসম আচরণের অভিজ্ঞতা (দারিদ্র্য, জাতিগত পরিচয়, ভাষা) পরিবার বা কমিউনিটির মধ্যে স্বাস্থ্যসেবা পৌঁছানোর সম্মান সুযোগ না থাকা এমন কোন চ্যালেঞ্জ যা মানুষ সাধারণত প্রকাশ্যে আলোচনা করে না, কিন্তু অতিরিক্ত গরমের সময় শিশুর স্বাস্থ্যসেবা নিয়ে সমস্যা তৈরি হয়?
৬. উপসংহার	এই সম্প্রদায়ের পরিচর্যাকারীদের জন্য অতিরিক্ত গরমের সময় শিশুদের সুরক্ষা ও যত্ন নেওয়া সহজ করার জন্য কী ধরনের সহায়তা দরকার?	কমিউনিটি স্তরের কার্যক্রম স্বাস্থ্যকর্মী, ক্লিনিক, এনজিওগুলোর ভূমিকা বাইরের মানুষ (ডাক্তার, এনজিও, গবেষকরা) এখানে শিশুর যত্ন সম্পর্কে কী ভুল বুঝে থাকে এমন কিছু গুরুত্বপূর্ণ বিষয় যা আমরা এখনও আলোচনা করি নি, কিন্তু

		আপনি মনে করেন তা গুরুত্বপূর্ণ?
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A4: Semi-Structured Guideline for Focus Group Discussion (FGD) in English

FGD Guideline:

Study Title: Extreme Heat and Child Health Care Practices in Rural Bangladesh: A Mixed-Methods Study

Date:

Interviewer name:

Notetaker name:

Interview starting time:

Interview ending time:

Interview settings: (Place, who were present)

Domain	Questions	Possible probes
A. Demography (This section will be printed separately for each participants)	1. Participant ID _____ 2. Age of the participant _____ 3. Sex of the participant _____ 4. Educational level _____ 5. Ethnicity _____ 6. Religion _____ 7. Occupation _____ 8. Household Income _____ 9. Duration of residence _____ 10. Number of family members _____ 11. Child Info: i. First child ? (Yes/No) ii. Age of the child (in months) _____ iii. Relation with the child _____ iv. Did the child received exclusive breastfeeding? (Yes/No) v. Did the child got full EPI till age? (Yes/No)	

	12. Housing Type : i. Floor ii. Wall iii. Roof iv. Ceiling v. Cooling devices (Ceiling/Table Fan, Others?) vi. Ventilation (Window/Other?) vii. Shadow of tree/other over the roof viii. Distance of cooking space (Smoke comes inside the room/not?) ix. No of members live with the same room with child 13. Contact info _____ (Ask after completing FGD)	
B. Daily Life, Caregiving, and Extreme Heat (Context Setting)	1. Let's start by talking about daily life in this community. How does caring for young children usually look, and how does it change during very hot days? 2. Compared to previous years, how do you feel extreme heat affects daily routines now?	Workload, childcare responsibilities, household chores Differences between hot and cooler days Water use, electricity, sleeping and rest Physical strain, livelihood impacts Ask for a specific example from anyone
C. Community Understanding of Heat and Child Illness	1. What does "extreme heat" mean to people in this community, especially for young children? 2. During extreme heat, what kinds of health problems do you commonly see among young children?	Fever, diarrhea, vomiting, rashes, weakness, feeding difficulty Heat-related vs "normal" illness

		Local or cultural explanations for illness Whether people believe heat causes or worsens illness
D. Home Management, Coping, and Indigenous Practices	1. When children become sick during extreme heat, what do families usually do at home before seeking outside help?	Fluids, ORS, feeding or breastfeeding changes Cooling practices (bathing, fans, shade) Traditional or indigenous remedies Advice from elders or neighbors Which practices are most trusted and why Practices specific to ethnic or local groups (if relevant)
E. Care-Seeking Pathways and Barriers	1. When home care is not enough, where do families usually go first for treatment, and why? 2. What makes it difficult to take a sick child to a formal health facility during extreme heat?	Pharmacy, village doctor, government/NGO/private facility Distance, transport, cost, waiting time, crowding Heat exposure while traveling

		Past experiences and trust in facilities Whether these challenges cause delays or avoidance
F. Decision-Making, Inequality, and Hidden Challenges (Reflection)	1. Who usually makes decisions about seeking healthcare for a sick child, and how does that work during emergencies or extreme heat? 2. Are there challenges related to child healthcare during extreme heat that people do not usually talk about openly?	Gender roles, caregiving burden, permission Fear of being judged or blamed Experiences of discrimination (poverty, ethnicity, language) Unequal access across households or communities
G. Conclusion	1. What kind of support would make it easier for caregivers in this community to protect children during extreme heat?	Community-level actions Role of health workers, clinics, NGOs What outsiders often misunderstand about caregiving here Anything important that has not yet been discussed

A5: Vignette (Bangla)

পরিস্থিতি ১: গরমের চাপ এবং বিদ্যুৎ সংযোগের অভাব

রনি ২৭ বছর বয়সী মা, যিনি বাংলাদেশে একটি গরম প্রবণ এলাকায় তাঁর ৩ বছর বয়সী ছেলের সঙ্গে বাস করেন। গ্রীষ্মকালে, তাপমাত্রা বেশ কয়েকদিন ধরে খুবই উচ্চ থাকে। রনিার এলাকার বিদ্যুৎ সরবরাহ অনুমান করা যায় না। অতিরিক্ত গরমের দিনে বিদ্যুৎ চলে যাওয়ার ঘটনা অনেকে বেশি ঘটে, বিশেষত বকিলে এবং রাত্রে। যখন বিদ্যুৎ চলে যায়, পাখাগুলো বন্ধ হয়ে যায় এবং ঘরের মধ্যে আলো থাকে না। ঘরগুলো অনেক গরম হয়ে যায় এবং রাত্রে ঘুমানো কঠিন হয়ে পড়ে। রনিার ছেলে এই সময়গুলিতে অস্থির ও উৎকণ্ঠিত হয়ে ওঠে এবং ঘুমোতে সমস্যা হয়। রনি নজিৎ অসুবিধা অনুভব করেন তবে বিদ্যুৎ না থাকলেও তাঁকে তার শিশুর যত্ন নিতে হয়।

অনুসরণমূলক প্রশ্ন:

- বিদ্যুৎ না থাকলে রনি কীভাবে তার শিশুর আরাম নিশ্চিত করবেন?
- দৈনন্দিন রুটিন বা ঘুমোনের ব্যবস্থা কীভাবে পরিবর্তন করতে পারেন?
- অতিরিক্ত গরমের মধ্যে বিদ্যুৎ চলে গেলে শিশুর যত্ন নিতে কি ধরনের সমস্যাগুলি তৈরি হতে পারে?

পরিস্থিতি ২: গরমের চাপ এবং পানির অভাব

সালমা ৩০ বছর বয়সী মা, যিনি বাংলাদেশে একটি খরা প্রবণ এলাকায় তার ২ বছরের মেয়েসহ বাস করেন। গ্রীষ্মকালে, অতিরিক্ত গরম সাধারণ ব্যাপার এবং বৃষ্টিপাত খুবই কম হয়। এ সময়ের মধ্যে নিকটস্থ পানির উৎসগুলো খুব কম পানি দিয়ে। সালমা প্রতিদিন কিছুটা পানি সংগ্রহ করতে পারেন এবং তা সাবধানে ব্যবহার করতে হয় পানীয়, রান্না এবং গৃহস্থালির কাজে। খুব গরমের দিনে, পানির অভাবে শীতল থাকার সমস্যা হয়। সালমা চিন্তিত হন কীভাবে তিনি তার ছোট শিশুকে অতিরিক্ত গরমে যত্ন নবিনে যখন পানি খুবই কম।

অনুসরণমূলক প্রশ্ন:

- গরমের দিনে সালমা কীভাবে তার শিশুর জন্য পানি ব্যবহারের অগ্রাধিকার দেবেন?
- সীমিত পানির কারণে খাওয়ানো, স্বাস্থ্যবিধি বা শীতলকরণে কী সমস্যা হতে পারে?

- যখন পানি সহজলভ্য না থাকে, তখন গরম মোকাবিলায় সালমা কী কৌশল ব্যবহার করবেন?

পরিস্থিতি ৩: মৃদু থেকে মাঝারি গরমজনিত অসুস্থতা এবং প্রতিযোগিতামূলক যন্ত্রের চাহিদা

আইশা ৩২ বছর বয়সী মা, যিনি বাংলাদেশে গরম প্রবণ এলাকায় বাস করেন। তাঁর তিনটি সন্তান রয়েছে, যার মধ্যে ৪ বছর বয়সী ছেলে এবং দুইটি বড় সন্তান। অতিরিক্ত গরমের সময়, তাঁর সবচেয়ে ছোট সন্তান অসুস্থ হয়ে পড়তে শুরু করে।

খুব গরমের দিনে, শিশু অত্যন্ত ক্লান্ত হয়ে পড়ে, প্রচুর ঘাম হয় এবং খেলার বদলে শুয়ে থাকতে চায়। আইশা মনে করেন গরম তার সন্তানের স্বাস্থ্যে প্রভাব ফেলেছে, তবে উপসর্গগুলি এত গুরুতর মনে হয় না যে তার দৈনন্দিন দায়িত্বগুলি বন্ধ করতে হবে।

একই সময়ে, আইশা তার অন্য সন্তানদের যত্ন নতি এবং গৃহস্থালি কাজ করতে থাকেন। তাকে সিদ্ধান্ত নতি হয় কীভাবে সময় এবং মনোযোগ ভাগ করবেন, যখন একটি শিশু গরমের কারণে অসুস্থ।

অনুসরণমূলক প্রশ্ন:

- আইশা তার শিশুর মধ্যে এই উপসর্গগুলি লক্ষ্য করলে কী পদক্ষেপ নেবেন?
- একাধিক শিশুর যত্ন নেওয়া কীভাবে তার গরমজনিত অসুস্থতার প্রতিক্রিয়া প্রভাবিত করতে পারে?
- কী ধরনের বিষয়গুলি তাকে সিদ্ধান্ত নিতে সাহায্য করবে যে তিনি ঘরে যত্ন নেবেন, নাকি বাহ্যিক সাহায্য নিবেন?

A6: Vignette (English)

Scenario 1: Heat Stress and Loss of Electricity

Rina is a 27-year-old mother living in a heat-prone area of Bangladesh with her 3-year-old son. During the summer, temperatures remain very high for several days at a time.

Electricity in Rina's area is unreliable. On extremely hot days, power cuts occur frequently, especially in the afternoon and at night. When the electricity goes out, fans stop working and there is no light inside the house. The rooms become very hot, and sleeping at night becomes difficult.

Rina's son becomes irritable and restless during these periods and has trouble sleeping. Rina feels uncomfortable herself but must continue caring for her child in the heat when there is no electricity.

Optional follow-up prompts

- How might Rina manage her child's comfort when there is no electricity?
- What changes might she make to daily routines or sleeping arrangements?
- What difficulties could power outages create for childcare during extreme heat?

Scenario 2: Heat Stress and Scarcity of Water

Salma is a 30-year-old mother living in a drought-prone area of Bangladesh with her 2-year-old daughter. During the summer months, extreme heat is common and rainfall is very low.

Most nearby water sources provide very little water during this time. Salma must collect a limited amount of water each day and use it carefully for drinking, cooking, and household needs. On very hot days, the lack of water makes it difficult to keep cool.

Salma worries about how to care for her young child during periods of intense heat when water is scarce.

Optional follow-up prompts

- How might Salma prioritize water use for her child during hot weather?
- What challenges could limited water create for feeding, hygiene, or cooling?
- What strategies might she use to manage heat when water is not easily available?

Scenario 3: Mild-to-Moderate Heat Illness and Competing Care Demands

Ayesha is a 32-year-old mother living in a heat-prone area of Bangladesh. She has three children, including a 4-year-old son and two older children. During periods of intense heat, her youngest child begins to feel unwell.

On very hot days, the child becomes unusually tired, sweats heavily, and prefers to lie down instead of playing. Ayesha believes the heat may be affecting his health, but the symptoms do not seem severe enough to stop her daily responsibilities.

At the same time, Ayesha must care for her other children and manage household work. She has to decide how to divide her time and attention while one child is unwell due to the heat.

Optional follow-up prompts

- What actions might Ayesha take when she notices these symptoms in her child?

- How could caring for multiple children affect her response to heat-related illness?
- What factors might influence her decision to continue home care or seek outside help?

Appendix B: Informed Consent Form

B1: Information Sheet and Consent Form (Bangla)

তথ্য বিবরণী

ভূমিকা

আসসালামু আলাইকুম/আদাব,

আমার নাম আতিয়া খাজা। আমি ব্র্যাক বিশ্ববিদ্যালয়ের জেমস পি গ্রান্ট স্কুল অব পাবলিক হেলথ (JPGSPH)-এর এমপিএইচ (MPH) (স্নাতকোত্তর, জনস্বাস্থ্য), প্রোগ্রামের একজন শিক্ষার্থী। আমার মাস্টার্স থিসিসের অংশ হিসেবে আমি একটি গবেষণা করছি, যার শিরোনাম, “তীব্র তাপদাহের সময় বাংলাদেশের গ্রামীণ এলাকায় শিশু স্বাস্থ্য সুরক্ষার প্রচলিত ধারা : একটি মিশ্র-পদ্ধতির গবেষণা”

এই গবেষণাটি ব্র্যাক হেলথ প্রোগ্রাম (BHP)-এর সঙ্গে যৌথভাবে পরিচালিত হচ্ছে এবং ব্র্যাক জেমস পি গ্রান্ট স্কুল অব পাবলিক হেলথ থেকে অর্থায়ন করা হয়েছে।

সিরিয়াল নম্বর: MPH-2025-002

গবেষণার উদ্দেশ্য

এই গবেষণার উদ্দেশ্য হলো, অতিরিক্ত গরমে পাঁচ বছরের কম বয়সী শিশুদের স্বাস্থ্যের উপর কী প্রভাব পড়ে, শিশুর গরমকালীন-অসুস্থতার সময় পরিচর্যাকারীরা কী ধরনের দশেজ বা স্থানীয় ঘরোয়া পদ্ধতিতে শিশুর যত্ন নেন, তীব্র গরমের সময় অসুস্থতার কোন পর্যায়ে প্রাতিষ্ঠানিক স্বাস্থ্যকেন্দ্রে যাওয়ার সিদ্ধান্ত নেওয়া হয় এবং স্বাস্থ্যকেন্দ্রে নেওয়ার প্রক্রিয়ার মধ্যে শিশুর পরিচর্যাকারী কী কী ধরনের সামাজিক, আচরণগত ও পরিবেশগত প্রতিবন্ধকতার মুখোমুখি হন, সেসব তুলে আনা।

এই গবেষণার ফলাফল একাডেমিক কাজে ব্যবহার করা হবে (থিসিস ডিফেন্সসহ) এবং গবেষণা প্রতিবেদন, জার্নাল বা অন্যান্য প্রকাশনায় উপস্থাপন করা হতে পারে। তবে কোনও অংশগ্রহণকারীর নাম বা পরিচয় বের করা যাবে এমন কোনও তথ্য কোথাও প্রকাশ করা হবে না।

অংশগ্রহণের কারণ

আপনাকে এই গবেষণায় অংশ নতিে অনুরোধ করা হচ্চে, কারণ আপনি একজন পাঁচ বছরের কম বয়সী শিশুর প্রধান পরিচর্যাকারী এবং এমন একটি এলাকায় বসবাস করেন যােটি খরা-প্রবণ এবং এখানে অতিরিক্ত গরম অনুভূত হয়। আপনার অভিজ্ঞতা, মতামত ও জ্ঞান আমাদেরকে বুঝতে সাহায্য করবে বাস্তবিক অর্থে তীব্র তাপদাহের সময় শিশুর যত্ন নতিে কী কী সমস্যা হয় এবং চিকিৎসা নেওয়ার সিদ্ধান্ত কীভাবে নেওয়া হয়। আপনার দেওয়া তথ্য ভবিষ্যতে এইরকম খরা-প্রবণ গ্রামাঞ্চলে পাঁচ বছরের কম বয়সী শিশু ও তাদের পরিচর্যাকারীদের জন্য ভালো স্বাস্থ্যসেবা ও কার্যক্রম তৈরিতে সহায়ক হবে।

সাক্ষাৎকার গ্রহণের পদ্ধতি

আপনি যদি অংশগ্রহণে সম্মত হন, তাহলে আপনাকে একটি ব্যক্তিগত বসিতারতি সাক্ষাৎকার (IDI) অথবা একটি সমবতে দলীয় আলোচনায় (FGD) অংশ নতিে বলা হবে। সাক্ষাৎকার/আলোচনাটি শেষে হতে আনুমানিক প্রায় ৬০-৯০ মিনিটি (১ থেকে দেড় ঘণ্টা) সময় নতিে পারবে। সাক্ষাৎকারে আপনার নাম বা পরিচয় বের করা যাবে এমন কোনো তথ্য লেখা বা রেকর্ড করা হবে না; আপনার পরিচয় গোপন রাখতে সাক্ষাৎকারটিকে একটি কোড নম্বর দিয়ে চহ্নিত করা হবে। আপনাকে তীব্র তাপদাহের সময় ছোট শিশুর যত্ন নেওয়ার অভিজ্ঞতা, দশেজ বা স্থানীয় ঘরোয়া পদ্ধতিতে শিশুর গরমকালীন অসুস্থতা সামলানো এবং প্রাতিষ্ঠানিক স্বাস্থ্যকেন্দ্রে যাওয়ার সিদ্ধান্ত গ্রহণ, যাত্রা প্রকরিয়ায় সামাজিক ও অন্যান্য প্রতবিন্ধকতা ও চিকিৎসাগ্রহণে অভিজ্ঞতা সম্পর্কে প্রশ্ন করা হবে। যসেব অংশগ্রহণকারী দলগত আলোচনা (FGD)-তে নর্বিবাচতি হবেন, আলোচনা শেষে তারা প্রক্বোপটভিত্তিক, পরিস্থিতিনির্ভর, কল্পতি পরিচর্যা-সংক্রান্ত কিছু সহজ সিদ্ধান্তমূলক কাজেও অংশ নবেনো। এর মাধ্যমে অতিরিক্ত গরমের সময় পাঁচ বছরের কম বয়সী শিশুদের ক্ষেত্রে পরিচর্যাকারীরা কীভাবে অগ্রাধিকার নর্বিধারণ করেন এবং চিকিৎসা গ্রহণে সিদ্ধান্ত নেন, তা বোঝা যাবে। সঠিকভাবে তথ্য সংরক্ষণে জন্য সাক্ষাৎকারটি অডিও রেকর্ড করা হবে। শুধুমাত্র আপনার সম্মতি থাকলেই ছবি বা ভিডিও নেওয়া হবে। আপনি চাইলে, (১) আপনার চহোরা দেখা যাবে এমনভাবে ছবি তোলা বা ভিডিও করার অনুমতি দতিে পারেন, (২) আপনার চহোরা না দেখিয়ে অন্যপাশ থেকে ছবি তোলা বা ভিডিও করার অনুমতি দতিে পারেন (৩) একবোরই আপনার সাক্ষাৎকারগ্রহণে কোনো ছবি তোলা বা ভিডিও করার অনুমতি দেওয়া থেকে বরিত থাকতে পারনো। কোনো প্রশ্নে উত্তর দতিে অস্বস্তি লাগলে আপনি সেই প্রশ্ন এড়িয়ে যতে পারেন এবং সাক্ষাৎকার চলাকালীন সময়ের মধ্যে যেকোনো মুহুর্তে অংশগ্রহণ বন্ধ করতে পারনো।

অংশগ্রহণের উপকারিতা

এই গবেষণায় অংশ নেওয়ার ফলে তাৎক্ষণিকভাবে আপনার ব্যক্তিগতপর্যায়ে কোনো লাভ নহে। তবে আপনার দেওয়া তথ্য ভবিষ্যতে এই অঞ্চলে পরবর্তী প্রজন্মের জন্য ভালো স্বাস্থ্যসেবা, নীতিমালা ও কার্যক্রম তৈরিতে এবং তীব্র তাপদাহে শিশুদের স্বাস্থ্য সুরক্ষায় গুরুত্বপূর্ণ ভূমিকা রাখবে।

অংশগ্রহণের ঝুঁকি

এই গবেষণায় অংশগ্রহণের ফলে কোনো শারীরিক বা মানসিক ক্ষতির আশঙ্কা নেই। তবে কিছু প্রশ্ন ব্যক্তিগত মনে হতে পারে বা সামান্য অস্বস্তি তৈরি করতে পারে। এমন হলে কোনো কারণ দরশানো ব্যতীতই আপনি সেই প্রশ্নের উত্তর দিতে অসম্মতি জানাতে পারবেন এবং প্রশ্নকর্তা আপনার কাছে কোনো জবাবদায়িত্ব দাবী না করেই পরবর্তী প্রশ্নে চলে যাবেন। আপনার সিদ্ধান্তকে সম্পূর্ণভাবে সম্মান করা হবে।

গোপনীয়তা ও পরিচয় সুরক্ষা

আপনার দেওয়া সব তথ্য সম্পূর্ণ গোপনীয়ভাবে সংরক্ষণ করা হবে। আপনার নাম বা পরিচয় বের করা যাবে এমন কোনো তথ্য কোনো রিপোর্ট, প্রতবেদন বা প্রকাশনায় ব্যবহার করা হবে না। সাক্ষাৎকারের গ্রহণের সময় যদি কোনো যোগাযোগ বা অবস্থান সংক্রান্ত তথ্য উঠে আসে, তা আলাদা করে রাখা হবে এবং শুধু গবেষণার প্রধান গবেষক তা জানবেন। অডিও রেকর্ড ও লিখিত তথ্য পাসওয়ার্ড-সুরক্ষিত ফাইলে সংরক্ষণ করা হবে, যা শুধু গবেষণা দলের সদস্যরাই ব্যবহার করতে পারবেন। অনুবাদের কাজে কৃত্ত্বিমি-বুদ্ধিমত্তা (AI) ভিত্তিক সহায়ক কম্পিউটার/ইন্টারনেটে টুল ব্যবহার করা হতে পারে; তবে এসব টুলে কোনো অংশগ্রহণকারীর নাম, পরিচয় বা শনাক্ত করা যায় এমন কোনো তথ্য শেয়ার করা হবে না। সমস্ত তথ্য আগে পরিচয়মুক্ত করা হবে। গবেষণার ফলাফল থিসিস, প্রতবেদন বা বৈজ্ঞানিক জার্নালে প্রকাশ করা হতে পারে, তবে কোনো অংশগ্রহণকারীকে চেনা যাবে এমন কোনো তথ্য প্রকাশ করা হবে না।

অংশগ্রহণের প্রকৃতি

এই গবেষণায় অংশগ্রহণ করা সম্পূর্ণ আপনার ইচ্ছার উপর নির্ভর করে। আপনি চাইলে অংশ নতিলে পারেন বা নাও নতিলে পারেন। অংশ না নলিলে বা মাঝপথে সরে গেলে আপনার কোনো ক্ষতি হবে না এবং কোনো সর্বো উপর এর প্রভাব পড়বে না। সাক্ষাৎকার চলাকালীন যেকোনো সময় আপনি অংশগ্রহণ বন্ধ করতে পারেন, কোনো কারণ না জানিয়েই। তবে সাক্ষাৎকারগ্রহণ শেষ হয়ে গেলে এবং গবেষক সেই স্থান ত্যাগ করে চলে আসলে, তথ্য গোপন করে সংরক্ষণ ও বিশ্লেষণের জন্য প্রস্তুত করা হয়ে গিয়েছে ধরে নেওয়া হবে বধিয় তখন আর সাক্ষাৎকার প্রত্যাহার করার প্রস্তাব গ্রহণ করা সম্ভব হবেনা।

যোগাযোগের তথ্য

এই গবেষণা সম্পর্কে আপনার কোনো প্রশ্ন থাকলে যোগাযোগ করতে পারেন এই নাম্বারে— +8801859529980 (আতিয়া খাজা, প্রধান গবেষক)

নৈতিক বিষয়ক কোনো প্রশ্ন বা অভিযোগ থাকলে যোগাযোগ করুন—ইনস্টিটিউশনাল রিভিউ বোর্ড (IRB), জেমস পি গ্রান্ট স্কুল অব পাবলিক হেলথ, ব্র্যাক বিশ্ববিদ্যালয়

ফোন: +8801993379512

ইমেইল: irb-jpgsph@bracu.ac.bd

সম্মতিপত্র (Consent Form)

গবেষণার শিরোনাম:

“বাংলাদেশের গ্রামীণ এলাকায় অতিরিক্ত গরমের সময় শিশু স্বাস্থ্যের জন্য চিকিৎসা গ্রহণে প্রতিবন্ধকতা এবং মোকাবিলা কৌশল: খরা-প্রবণ বরেন্দ্র অঞ্চলে একটি মিশ্র-পদ্ধতির গবেষণা”

আপনি যদি এই গবেষণায় অংশগ্রহণ করতে সম্মত হন, তবে দয়া করে আপনার স্বাক্ষর/আঙুলির ছাপ দিয়ে সম্মতি জানান।

আপনার আন্তরিক সহযোগিতার জন্য ধন্যবাদ।

১. আপনি কি সাক্ষাৎকারটি অডিও রেকর্ড করার অনুমতি দেবেন? হ্যাঁ না

২. আপনি কি আপনার ফলাফল শেয়ার করার অনুমতি দেবেন? হ্যাঁ না

৩. আপনি কি ছবি তোলার অনুমতি দেবেন? হ্যাঁ না

৪. আপনি কি ছবিগুলি শেয়ার করার অনুমতি দেবেন? হ্যাঁ না

৫. আপনি কি ভবিষ্যতে আবার যোগাযোগ করার অনুমতি দেবেন? হ্যাঁ না

যদি হ্যাঁ, তাহলে যোগাযোগের নম্বর শেয়ার করুন:

৬. আপনার কি কোনো প্রশ্ন আছে? হ্যাঁ না

প্রশ্ন লিখুন:

সাক্ষাৎকারকারীর নাম:

অংশগ্রহণকারীর নাম:

সাক্ষাৎকারকারীর স্বাক্ষর:

অংশগ্রহণকারীর স্বাক্ষর/আঙুলেরছাপ:

তারিখ:

তারিখ:

B2 : Information Sheet and Consent Form (English)

Information Sheet

Introduction: Greetings. My name is Atiya Khwaja, and I am a Master of Public Health (MPH) student at BRAC University, James P Grant School of Public Health (JPGSPH). I am conducting a research study as part of my Master's thesis titled "Extreme Heat and Child Health Care Practices in Rural Bangladesh: A Mixed-Methods Study".

This study is being conducted in collaboration with the BRAC Health Program (BHP) and is funded by BRAC James P Grant School of Public Health.

Serial no.: MPH-2025-002

Aim: The purpose of this study is to understand how extreme heat affects the health of children under five years of age, how caregivers manage child health problems at home using local or indigenous practices, and what social, behavioral, and environmental challenges caregivers face when deciding whether and when to seek care from formal health facilities during periods of extreme heat. The findings from this study will be used for academic purposes, including thesis defense, and may be disseminated through journal publications and other research reports, without revealing any individual participant's identity.

Justification of participation: You are being invited to participate in this study because you are a primary caregiver of a child under five years of age and live in a drought-prone area where extreme heat is common. Your experiences, opinions, and knowledge are important to help us understand real-life caregiving

challenges and care-seeking decisions during extreme heat. The information you share will help improve future health programs and interventions for caregivers and children in similar settings.

Procedure: If you agree to participate, you will be invited to take part in an in-depth interview (IDI) or in a focus group discussion (FGD) which will take approximately 60 to 90 minutes (1hr-1.5hrs). We will not record your name or any direct personal identifier in the interview notes and will use a code number instead to protect your privacy. You will be asked questions about your experiences caring for young children during periods of extreme heat, how you manage illnesses at home, and your experiences with seeking formal facility care. The participants who will be selected for the FGDs will also take place in context-specific, scenario-based, hypothetical caregiving vignettes and simple decision tasks to explore how caregivers prioritize actions and make care-seeking decisions for under-five children during extreme heat after the discussion. The interview/discussion will be audio-recorded to ensure accurate data capture. We will take photographs or videos only if you provide consent. You may choose to (1) allow photos/videos that include your face, (2) allow photos/videos without showing your face, or (3) not allow any photos/videos at all. You may skip any question you do not want to answer and may stop participating at any time during the interview process going on.

Benefits of participation: Though there is no immediate personal benefit from participating in this study, the findings from this research may help design better health services, policies, and interventions for your community's upcoming generations to support caregivers and protect children's health during extreme heat in the future.

Risk: Participating in this study does not involve any expected physical or mental harm. However, some questions may feel personal or make you a little uncomfortable. If you do not wish to answer any such questions, you can tell us, and we will move to the next question. We will fully respect your decision.

Confidentiality and anonymity: All information you provide will be kept confidential. Your name or any identifying information will not appear in any report or publication. Your contact/location information (if collected for arranging interviews) will be kept separately and will be accessible only to the principal investigator. Audio recordings and transcripts will be stored securely in password-protected files accessible only to the research team. AI-assisted tools may have been used for translation of the data; however, no identification information will be shared with the AI. The data will be used for academic research purposes, including thesis work, and findings may be shared through presentations, reports, or scientific journal publications; however, no individual participant will be identifiable in any publication or presentation.

Nature of participation: Your participation in this study is completely voluntary. You are free to decide whether or not to participate. Refusing to participate or withdrawing from the study will not cause any harm or affect any services you receive. You may withdraw at any time during the interview without providing any justification. However, once the interview is completed and the investigator leaves the interview location, it may not be possible to withdraw your interview because the data will be anonymized, stored, and prepared for analysis.

Contact information: If you have any further queries about the research project, please contact +8801859529980 (Principal Investigator, Atiya Khwaja).

For ethical concerns, can contact the Institutional Review Board: + 801993379512. Email: irb-jpgsph@bracu.ac.bd

Consent Form

Title of the study: “Coping Strategies and Barriers to Care-Seeking for Child Health During Extreme Heat in Rural Bangladesh: A mixed-methods study in the Drought-Prone Barind Tract”.

If you agree to participate in this study, please confirm by putting your signature/thumbprint.

Thank you for your cordial cooperation.

Do you give permission for the interview to be audio recorded?	Yes	No
--	-----	----

Do you give permission to share your findings?	Yes	No
--	-----	----

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

Interviewer name:

Participant's name:

Interviewer signature:

Participant's signature/thumbprint:

Date:

Date: