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## Exploring midwives' challenges and strategies to provide care in maternity settings during harsh winter weather in northern areas, Pakistan: A qualitative study protocol

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Study Protocol

**Exploring Midwives' Challenges and Strategies to Provide Care in Maternity Settings during Harsh Winter Weather in Northern Areas, Pakistan: A Qualitative Study Protocol**

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**ABSTRACT**

**Background:** Midwives play a vital role in enhancing the quality of care and achieving substantial reductions in maternal and newborn mortality rates. However, in the context of Gilgit Baltistan, the harsh winter weather, and frequent heavy snowfall present distinct challenges for midwives providing essential maternal care. These challenges can lead to an increased risk of maternal infections and newborn hypothermia. Consequently, the limited accessibility to healthcare facilities due to frequent harsh winter weather, and resulting scarcity of resources like heating, electricity, and water further exacerbates the situation.

**Objective:** The objective of the study is to explore the challenges and barriers that midwives face in maternity settings and the strategies they use to overcome those challenges during winter weather in Northern Areas of Pakistan.

**Methodology:** The qualitative exploratory design will be used in this study. Where approximately 11 midwives will be recruited using purposive sampling technique. Interviews will be conducted by using a semi-structured interview guide. Data will be analyzed by using Creswell content analysis approach.

**Keywords:** Midwives' challenges, Harsh Winter Weather, Maternal health, Newborn Hypothermia

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### Introduction

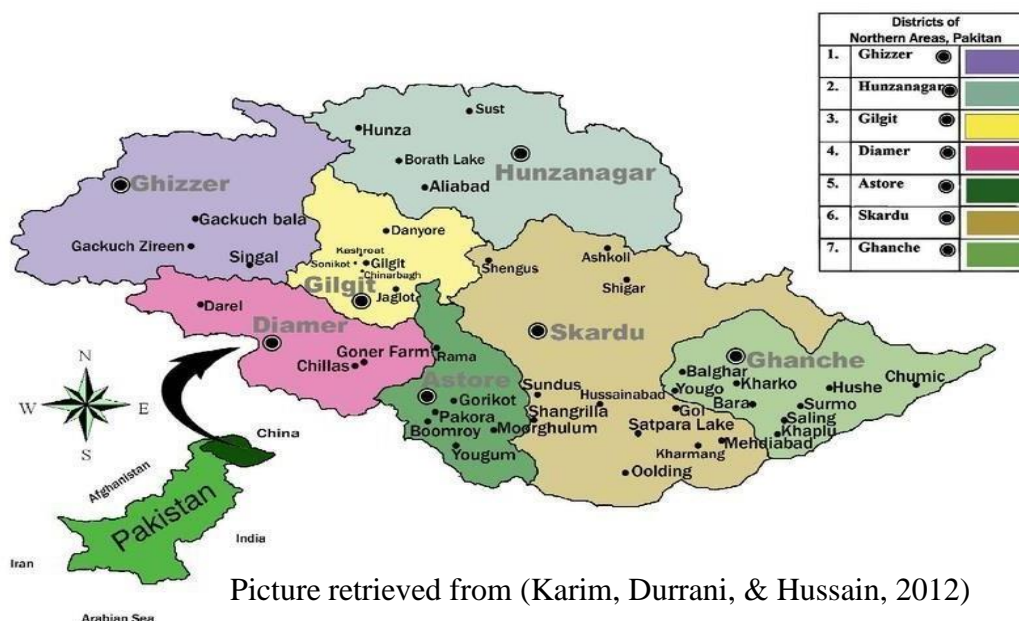
The Northern areas of Pakistan are known for their spectacular natural beauty, including the towering Karakoram, Hindukush, and Himalayan Mountain ranges. It is also frequently referred to as the "Third Pole" due to the abundance of its glaciers (1). In these areas, geography and climatic conditions such as rough roads, harsh weather, and the dispersion of a large population make healthcare delivery extremely difficult (2). Moreover, heavy snowfall in some places blocks the entire area for more than six months of the year, making access to health facilities and delivering services profoundly difficult (3). Therefore, in Northern areas of Pakistan where temperatures fall below freezing levels during winter months, midwives as primary caregivers during childbirth, face unique challenges during cold weather in providing care to mothers and newborns.

Gilgit-Baltistan is in the northern part of Pakistan. The region is characterized by its rugged and mountainous terrain, with temperatures in the valley bottoms ranging from the extreme heat of 40°C in the summer to sub-

zero temperatures of -10°C in the winter (4). Gilgit-Baltistan with a total area of 72,971 sq. km and an estimated population of nearly 1.5 to 2 million people. The region is divided administratively into three parts: Gilgit (including Gilgit, Ghizar, Hunza, and Nagar districts), Baltistan (with Skardu, Ghanche, Shigar, and Kharmang districts), and Diamer (covering Diamer and Astore districts). The landscape is marked by snowy mountains, glaciers, and highlands, giving rise to springs, waterfalls, lakes, and rivers. (5).

### Background

Extreme winter weather and climate events often result in disruptions to essential infrastructure, financial losses, and population displacement, which can then cause various health problems (6). These severe weather events can overwhelm or interfere with the availability and operation of critical infrastructure. This type of infrastructure includes public health facilities, transportation systems such as roads, energy networks, and water processing plants (6). Likewise, Gilgit-Baltistan encounters several difficulties during



Picture retrieved from (Karim, Durrani, & Hussain, 2012)

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harsh winter that can paralyze the day-to-day routine of its residents and health facilities. It is rare to witness the presence of electricity during winter in Gilgit-Baltistan. Further, the cold weather causes a reduction in water flow in the river, leading to a decrease in electricity generation (7). As about 75% of the population of Gilgit-Baltistan relies on unstable and inefficient power plants, leading to severe shortages of electricity which cause the demand to be high during winter (8). Due to the lack of electricity or gas, heating and cooking in rural regions must rely on firewood, especially in winter. As a result, there's a slight increase in the use of firewood during the colder months. They gather tree branches, shrubs, dried herbs, and even bark to burn for cooking (2), which contributes to indoor air pollution and a high prevalence of acute respiratory infections, lead to 2.5 million premature death every year (9). The absence of electricity is one of the frequently overlooked obstacles to providing adequate healthcare in many developing nations, particularly in maternity settings. Numerous accounts describe the challenges faced by midwives due to the absence of lighting during childbirth, coupled with inadequate refrigeration for blood and vaccines, and insufficient power to sterilize equipment, operate basic medical machinery, and offer emergency services during nighttime hours (10). Similarly, these challenges are further compounded by the scarcity of water that freezes during harsh winters, which can impact the availability of warm water needed during labor and delivery.

Due to extreme freezing temperatures, the region has been facing a significant challenge for successive administrations in ensuring the availability of potable water (11). Despite having one of the largest reserves of frozen water

after the North and South poles, water access is constrained during the winter season. (12). As a result, inadequate access to potable water creates myriad challenges for midwives, to maintain basic hygiene standards such as hand washing, and post-delivery bed baths, and sterilization procedures (13). In addition, lack of proper environmental conditions and inadequate hygiene practices during childbirth is associated with severe infections and mortality risks for both mothers and infants (5). Infections during pregnancy that lead to sepsis are ranked as the third highest cause of maternal deaths worldwide. However, this only includes infections directly related to pregnancy, like endometritis or infections from cesarean surgeries (14). The greatest impact is seen in low- and middle-income countries, where the toll is estimated at 10.7%, compared with high-income countries at 4.7% (15).

Given the substantial negative effects that cold weather has on both maternal and newborn health; cold-related health conditions are one of the leading causes of neonatal mortality in several developing nations (16). Neonatal mortality and morbidity in low-resource settings are often attributed to hypothermia as a significant factor, meaning that healthcare systems in these areas do not reach the baseline standards established by the World Health Organization (17). Moreover, in South Asia, most cases of hypothermia in newborns occur during the cold winter months. Hence, it is essential to prevent cold stress in newborns as they are more vulnerable to death, whether they are at home or in a medical facility in such situations proper strategies should be taken to prevent cold stress from birth, and if a newborn is exposed to cold (18).

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According to recent global statistics, approximately 800 women die every day from preventable causes related to pregnancy and childbirth. This means that one woman passes away every two minutes (19). In Pakistan, which is classified as a low-income country, the maternal mortality rate (MMR) was alarmingly high in 2019, with 186 deaths per 100,000 live births. This represents a significant increase from 2017 when the MMR was 140 per 100,000 live births. Rural areas have a higher MMR (199 per 100,000 live births) than urban areas 158 per 100,000 live births (20).

The World Health Organization appraises the midwives having a special ability to offer vital healthcare services to women and newborns in the most challenging and vulnerable settings, including those impacted by conflicts, humanitarian crises, and fragile conditions (21). Additionally, a worldwide study found that social, economic, and professional factors create barriers for midwives to provide quality care in low and middle-income countries. These barriers have been previously studied and are considered crucial for improving maternal and child health (22). International studies have determined that midwives have an essential role in delivering prenatal and childbirth services in countries with low to moderate levels of income (23). Previous research has demonstrated that having access to skilled birth attendants like midwives, who can provide appropriate and equitable maternity care, is considered to be a significant aspect in reducing maternal mortality and improving health outcomes during pregnancy (23). However, weather conditions are frequently identified as obstacles to accessing health services, particularly in rural and remote regions of northern Pakistan, experiencing harsh winter

weather that poses unique challenges for maternal and newborn health (24). Midwives in northern areas play a crucial role in providing maternity care to pregnant women, but, transportation difficulties due to weather, and limited resources can hinder their ability to provide timely and adequate care during winter weather. Heavy snowfall and resulting road closures complicate the transportation issue and force midwives to manage complicated cases instead of referring them (25).

A cross-sectional study was conducted in Chitral, Pakistan. The results revealed that one of the barriers to the development of the Midwifery-led Service Provider Model in Pakistan (MSPM), is harsh winter weather, which is a major hindrance to pregnant women in accessing healthcare services at health centers, as roads can become inaccessible due to heavy snowfall. Furthermore, the lack of proper heating at these healthcare facilities negatively impacts the health of patients, employees, and newborns (26).

Despite the harsh winter challenges and limited access to the basic necessities, midwives in Gilgit-Baltistan continue to provide essential maternity care during harsh winter weather. However, the evidence to support this is limited. Therefore, this research will give a comprehensive understanding of the challenges and strategies used by midwives to provide maternal and newborn care during harsh winters.

### **Purpose of the Study**

The purpose of this qualitative study is to explore the challenges and barriers that midwives face in maternity settings and the strategies they use to overcome those challenges during winter weather in Northern Areas of Pakistan.

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### Research Question

1. What challenges and barriers do midwives face in maternity settings during cold weather in Northern Areas, of Pakistan?
2. What strategies do midwives employ to overcome these challenges in maternity settings during winter weather in Northern Areas, of Pakistan?

### Significance of the Study

The study will contribute in existing knowledge by filling the gap in the current literature review, till date, no such studies have been conducted in Pakistan, to the researcher's best knowledge, focusing on midwives' challenges and strategies during harsh winter weather. Furthermore, the findings of the study will be valuable to learn about indigenous strategies utilized by midwives in maternity settings to provide quality maternal care despite the challenging weather conditions. These indigenous strategies will also help healthcare providers, policymakers, and communities, who are working to improve maternal health outcomes in northern areas of Pakistan. The study would provide meaningful insights into the challenges faced by midwives and other healthcare providers in delivering care in remote and harsh environments.

### Methodology

#### Study Design

A qualitative exploratory study design will be employed for this study. This design is considered appropriate to explore and collect in-depth data regarding the challenges and strategies face by midwives in maternity setting during winter weather. Furthermore, it will

support the researcher to understand the experience and knowledge of midwives associated with the phenomena under study. Since individual perception and experience vary from person to person. Therefore the proposed design will help to gain an in-depth understanding of individual experiences (27).

### Study Setting and Population

This study will be conducted in the Sehat Foundation (maternity setting) located in Danyore Gilgit-Baltistan (Northern Areas of Pakistan). Sehat Foundation is a registered NGO working in Gilgit-Baltistan since 2005. It focuses on general health, maternal and child health, nursing training, and health education. The study population comprises midwives who are working in the maternal department of the Sehat Foundation (maternity setting).

### Study Participants

Participants will be recruited using a purposive sampling technique. It is a method often utilized in qualitative research to effectively choose cases that are abundant in information, making the best use of available resources (Patton, 2014). The researcher will visit the study setting and will meet the head of the department and will explain the purpose of the study. Approximately 11-14 participants will be interviewed to share their experiences and adaptation strategies during winter weather in the maternity setting. The researcher will stop taking interviews when the level of saturation is achieved. It is expected that the saturation will be achieved at 14 participants.

### Participant Recruitment Process

The recruitment of participants will be done in the following steps:

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1. The recruitment of participants began after receiving approval from the Ethical Review Committee (ERC) of the Aga Khan University Pakistan (review # 8585) to conduct the study. In addition, the permission letter was also obtained from the Director of the Sehat Foundation(maternity setting).
2. The researcher will then visit Sehat Foundation (maternity setting) and arrange a meeting with the head of the designated area to brief them about the purpose of the study and to ensure the participation of the identified interview.
3. The researcher will interact with midwives and establish rapport to gain trust by explaining the interview process, confidentiality, and anonymity.
4. The researcher will schedule the interview time and venue.
5. The interview will be conducted in a private space and will be taken in a quiet, undistracted, and comfortable environment.
6. The interview will be conducted during the off-duty time of the participants to avoid compromising patient care.
7. Written informed consent will be taken prior to the data collection as well as for audio recording.
8. Since the study population are qualified midwives, they understand Urdu and English very well. Therefore, the informed consent and study guide will be provided in both languages to ensure understanding and facilitate effective communication.

## Study Duration

The study will be carried out within a 6-month time frame, starting from the time of approval from the ERC before the collection of data.

## Inclusion Criteria

- Midwives of all age groups are currently working in the Sehat Foundation (maternity setting).
- Midwives having at least one year of experience in providing care during winter weather in Gilgit Baltistan (northern areas of Pakistan).

## Exclusion Criteria:

- Healthcare workers other than midwives will be excluded.

## Data Collection Process

A semi-structured interview guide will be used to collect data with open-ended questions. The semi-structured interview approach is flexible and can accommodate the addition of new questions during the interview session (28). Therefore, a semi-structured interview guide along with a demographic tool will be created. Open-ended questions give informants the freedom to answer in their own words (29). The guide will be bilingual- (Urdu and English language). The interviewer will build a rapport with participants so that the interviewees get the confidence to speak.

The interviewer will then proceed to collect the data. The interviews will be conducted separately to maintain privacy and confidentiality. Each interview will take 30 to 40 minutes. However,

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Time depends on the participant's response. Written consent will be taken from each of the research participants before data collection. Once the interview has started, the researcher will facilitate the participant to share information by using nonverbal cues such as nodding their head or making sounds to show active listening and interest. All the interviews will be audio-recorded and translated from Urdu to English language without altering the meaning in any way. Audio will be recorded with the consent of participants. After each interview, field notes will be taken by the researcher to document verbal and nonverbal expressions and later compared to transcripts during analysis to enhance the validity of the data collected.

Moreover, in this study, probing techniques such as open-ended questions, clarifications, and reflection will be used to encourage participants to provide more detailed and in-depth information about the topic being studied. Pilot testing will be done on two to three participants to check for the validity and appropriateness of the interview guide so that amendments can be made accordingly. Pilot-tested participants would be included in the analysis.

### **Data Analysis**

The analysis of qualitative data involves an ongoing and interactive process. Qualitative researchers often scrutinize their data with care and deliberation, frequently rereading the material to uncover meaning and a deeper understanding (30). The data analysis process will be carried out simultaneously with data collection. A content analysis will be applied to analyze the data. In addition, six steps of data analysis suggested by Creswell (2013) will be

used, which include data organization, reading and reflecting, data coding, categories and themes generation, interpretation, and representation of data.

**Data Organization.** On the completion of the data collection process, the audio-recorded interview will be transcribed verbatim in English by the first author onto a Microsoft Word document, using pseudonyms for the participants.

**Reading and Reflecting.** The researcher will listen to audio recordings of discussions two to three times and compare field notes with transcriptions to ensure accuracy and obtain full understanding. After transcription, the researcher will organize the responses from all participants for each question into separate files. Each file will have three columns, which include the narratives from the participants, the codes assigned, and the comments from the researcher.

**Data Coding.** The researcher will develop essential meaning by highlighting relevant words, phrases, and sentences for further analysis.

**Categories and Themes Generation.** The information will then be condensed into codes and grouped into categories, allowing the researcher to identify themes using an inductive approach.

**Interpretation** The researcher's supervisor and committee members will verify the authenticity of the data.

**Data representation.** Lastly, the data will be presented in tables and charts, in a hierarchical form, with a subsequent sequence, categories,



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major themes, and their extracted interpretation.

### **Study Rigor**

In qualitative research, Lincoln and Guba (1985) have presented a set of criteria known as trustworthiness, which includes four components: credibility, dependability, conformability, and transferability (31). The aim of maintaining rigor in qualitative research is to truthfully depict the experiences of the individuals being studied (32).

**Credibility.** Credibility is established when the participants acknowledge the reported research results as a reflection of their own experiences (32). The researcher will listen to participants' interviews carefully and provide an opportunity for participants to share their feelings and perspectives openly and honestly. Furthermore, the researcher will obtain field notes to document verbal and non-verbal observations during the data collection to cross-check and verify findings which will significantly strengthen the credibility.

**Conformability.** Conformability stands for impartiality or lack of bias (33). The conformability will be achieved by keeping field notes during fieldwork. Additionally, the process of data analysis will be reviewed and discussed with a supervisor and committee members to ensure the accuracy and integrity of the findings.

**Dependability.** To make sure the content was accurate and complete the transcript will be double-checked by comparing them with the audio recordings and notes (34). The supervisor and thesis committee of this study will review the data, results, interpretations, and suggestions to verify that they are supported by the evidence.

**Transferability.** It refers to the generalizability and applicability of the data findings in other similar studies in different contexts and at different times. This will be ensured by providing a thick description of the research methodology, and detailed contextual information such as the location of fieldwork, and characteristics of the informants will be provided. The comprehensive information and findings will make the study accessible and replicable for future research (35).

### **Ethical consideration**

A study will be commenced after taking permission from the director of the Sehet Foundation, and final approval from the ethical review committee ERC of Aga Khan university hospital Karachi, Pakistan, to ensure that it adheres to the ethical principles. Participants will be informed about the audio recorder and notes-taking during the data collection process. The nature and purpose of the study will be well communicated to the participants and volunteer consent will be taken before collecting data.

The participant's personal information and identity will be protected and remain anonymous throughout the study by using pseudonyms for the participants to ensure their privacy rights are upheld. All the computerized data will be secured with passwords. Moreover, audio recordings and notes will be kept in lock and key to maintain participants' confidentiality. Only authorized personnel can have access to the data, which includes the primary researcher, supervisor, and committee members.

Participants must have the right to disengage from the study at any time, and researchers will destroy the related participant data if they withdraw. The participant interview will be

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conducted individually in a separate room and will be taken in a quiet, undistracted, and comfortable environment with “Do not disturb” signs. In addition, the researcher will establish trust and rapport, which will allow participants to express feelings and thoughts comfortably.

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