



INDIGENIOUS KNOWLEDGE (IK) OF FLOOD FORECASTING AND FLOOD RISK REDUCTION: AN ANTHROPOLOGICAL STUDY

Anthropology

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ABSTRACT

The district of Dhemaji, one of the best-known districts in Assam, is still dealing with major environmental problems, especially flooding. Every year during the monsoon, after a period of intense rainfall, the rivers overflow and become extremely unstable; the high waters cause floods in the plains, devastating the economy and resulting in a great deal of property and human casualties. For generations, the riverbank community has utilized a variety of indigenous knowledge (IK), strategies, approaches, and cultural practices to reduce flood damage and increase flood resilience. These indigenous knowledge (IK), practices, and approaches for reducing flood forecasting and flood risk reduction are often ignored. In light of this, present paper aims to investigate and document the various indigenous knowledge-based flood forecasting and control strategies that have been adopted by the local people of Dhemaji district, Assam.

KEYWORDS

flood control, indigenous knowledge, flood forecast, flood risk reduction, Dhemaji district.

INTRODUCTION

Flooding in Assam has been a recurring feature since early times. At different times, the Brahmaputra and Barak river systems have flooded the plains of Assam in varying ways. The people of Assam have a long history of experiencing floods, and naturally, they have learned the art of living with them to a considerable extent. However, in the recent past, due to a variety of newly revealed causes, in addition to the previously recognised ones, floods in both the Brahmaputra and Barak valleys sometimes reached such an extent that they seemed to be a serious risk to a major portion of the people living in the flood plain. The nature of floods in terms of frequency of occurrence during a year and the quantum of damage caused has been changing frequently. Now, in certain parts of the Brahmaputra and Barak valleys, floods of different order occur at least 3–4 times in a year (Nath, 2015).

Like the influence of natural hazards on man, they also have responses to adjust, mitigate, and cope with the threats. Human responses can be of two types: one is immediate or short-term in nature, and the other is long-term in nature. The immediate or short-term responses are seen mostly in emergency actions as well as in the monthly and seasonal measures adopted for man's adjustment to floods. The long-term responses are a reflection of how humans perceive floods and how they adjust to and combat them. For example, the most significant long-term responses to flood hazards are mitigation and control of floods. It is very difficult to generalize about or explain the human perception of floods, as the problems differ from place to place and from time to time (Gogoi, 2006).

The perception and responses to floods with regard to adjustment are directly related to the frequency of the flood events" state **Burton, Kates, and White (1968)**. They also point out that to examine the human responses towards natural disaster flood; one has to investigate keenly the relationship between flood variables and also the mode of adjustment.

According to **Hiwasaki et al., (2014)** and **Tran et al., (2009)** today, two systems for flood forecasting exist in the world namely; the Scientific Flood Forecasting System (SFFS) and Indigenous Flood Forecasting System (IFFS). In contrast, the IFFS relies heavily on personal observations made by local residents in a given location and is essentially qualitative (**Kalanda-Joshua et al. 2011**). It is largely empirical, unique to a given area, and based on millennia' worth of cumulative experiences and locals' interpretations of environmental changes. It is also a practicable, affordable, local, practical, workable, and simple technique to put into practice (**Turi et al., 2019**). Teachers do not teach or record community members' local customs or Indigenous Knowledge (IK) in the classroom.

One of Assam's most well-known districts, Dhemaji, is still experiencing significant environmental problems, especially flooding. Every year during the monsoon, after a period of intense rainfall, the rivers overflow and become extremely unstable. The high waters cause floods in the plains, which destroy the economy and cause a considerable number of property and human casualties. The riverbank

community has been reducing flood damage and increasing flood resilience for generations by utilizing diverse indigenous knowledge (IK), strategies, approaches, and cultural practices. Indigenous knowledge (IK) and approaches for reducing flood forecasting and flood risk are often ignored. In this backdrop, the goal of this paper is to investigate and document the several indigenous knowledge-based flood forecasting and management strategies used by the local people of Dhemaji district, Assam.

OBJECTIVES:

The basic objectives of the research paper are to examine and identify the indigenous knowledge (IK) of flood forecasting and its applications to reduce flood risk in Dhemaji district, especially in the Dhemaji development block, Assam.

The Micro Field:

There are five blocks in the Dhemaji district, they were all more or less impacted by flooding to some extent. According to the data collected from each block circle office, it was found that Dhemaji Block is more highly affected by flooding than the other four blocks. Within the jurisdiction of the Dhemaji Block, there are 51 villages, of which the three most severely affected by flooding are Kekuri, Samarajan, and Goraimari. Therefore, the villages mentioned above were included in our micro-field.

METHODOLOGY:

The present study was conducted among the flood-affected inhabitants of Kekuri, Samarajan, and Goraimari villages in the Dhemaji development block, district Dhemaji Assam, using empirical fieldwork. Standard anthropological methods such as survey schedules, personal interviews, case studies, and observation methods were used to gather the essential primary data in order to fully comprehend the issue.

Data on their traditional knowledge on flood forecasting, beliefs, and practices were gathered in depth through interviews and in-depth group discussions with the elderly and knowledgeable people. However, the secondary data were collected from various relevant books, journal research papers, newspaper articles, and websites to enrich the paper. The data has been analyzed and compiled in an orderly fashion to suit the scientific requirements of the paper and is presented under the following appropriate headings and sub-headings.

FINDINGS AND DISCUSSION:

Over the years, indigenous people have predicted and controlled floods using their traditional knowledge. Elders in the area have accumulated a wealth of meteorological knowledge over the years, which they utilize to forecast floods (**Hooli, 2016, Yoshizumi et al., 2012**). Other commonly used indigenous knowledge in flood risk management includes tracking of the amount of rainfall in upper catchments, observing the moon, behavior of aquatic creatures and birds, observing the, observing the colour of water bodies, identifying cloud position, analyzing the magnitude of wind and thunderstorms, monitoring sounds from rivers and torrents, studying the mobilization of ants, etc

(Devkota et al., 2013, Fabiyi and Oloukoi, 2013, Mapedza et al., 2022, Mahoo et al., 2015).

The people of Dhemaji Development Block were aware of local methods for determining whether there would be flooding or not. They had enough evidence to believe that a huge flood would occur shortly when they noticed muddy water in the river, an increase in the river's flow velocity, leaves floating in the river water, etc. As soon as they saw that the river was about to flood, they immediately shifted their family, house belongings, clothes, books, documents, domesticated animals and birds, rice, vegetables, etc. to safer places (usually near embankments and railway lines).

A lot of mango blossoms indicates that this year will see heavy rainfall, which may cause flooding. This traditional indication is exemplified by the phrase *Aam fulile ban, kothale ane dhan* (mango trees flowering more, there will be flooding, and jackfruit flowering more, there will be rice).

Another widely accepted traditional belief is that if cows are observed standing and mooing in the very early morning on the day of *Goru Bihu*, which is the day of ceremonial bathing and worshipping cattle, observed on the first day of Assamese *Rongali Bihu* (Assamese *Bohag Mah*), it means that the current year will be a huge flood. Another traditional belief is that if there aren't many or any fish in the river before the monsoon season begins, people assume there will be a severe flood period ahead, etc.

According to Munsaka and Dube (2018) and Mavhura et al. (2013), indigenous communities are also known to use locally accessible materials and resources to erect structural barriers as flood interventions. These consist of earth drain construction, sandbag construction, channel excavation, levee construction, and embankment construction using locally available resources like mud (Kometa, 2019, Hooli, 2016).

In order to prepare for flooding, the majority of people in the studied villages try to arrange their essential household items in advance. A few examples of equipment mentioned may be a torchlight, boat, plastic bucket, bamboo, screen, plastic boat, wood, kerosene, candle, lamp, etc. On the other hand, families who are unable to prepare ahead of time tend to be more vulnerable during the flood period.

The study shows that, because of the annual floods that have occurred in Dhemaji Development Block since 2003, the people of the villages are now psychologically prepared to deal with the possible disaster of flooding. The economically sound families had already moved to other places, while others considered flooding a natural part of life, and the best way to survive in the area was to learn to live with the flood.

CONCLUSION:

Communities in flood-prone areas gain valuable knowledge that can be used to enhance flood forecasting systems and flood control techniques. Indigenous knowledge of the flood-affected people living by the river for centuries needs to be connected by the government, scientists, and policymakers for more successful and sustainable flood mitigation strategies. They can provide policymakers with more relevant information and successful techniques, which will further enable them to implement policies that could be really beneficial for controlling floods.

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