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Sociology of Vaccine Hesitancy in India: A Study of Public Perception during COVID-19 Pandemic with special reference to Batikuriha village of Barpeta District of Assam

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ABSTRACT

The outbreak of the COVID-19 brought unprecedented challenges to public health systems across the world, with India being one of the most affected due to its vast and diverse population. This study explores the issue of vaccine hesitancy in a rural setting, focusing on Batikuriha village in Barpeta district. Despite the large-scale vaccination campaign undertaken by the Government of India, a section of the population remained hesitant to receive the vaccine.
The research is based on a qualitative approach and includes data collected from 200 respondents belonging to different sections of the community, including villagers, healthcare workers, and local stakeholders. Data were collected through interviews, questionnaires, and case studies, and analysed using thematic methods. The findings indicate that while a majority of respondents were vaccinated, a significant proportion remained either partially vaccinated or unvaccinated due to fear, misinformation, and lack of trust.
The study highlights that vaccine hesitancy is not merely a medical issue but a social and cultural phenomenon influenced by beliefs, communication gaps, and institutional trust. It emphasizes the importance of community-based awareness, transparent communication, and stronger engagement between health workers and the public. The findings provide valuable insights for improving public health strategies in rural areas and addressing similar challenges in future health crises.

Keywords: *COVID-19; Vaccine Hesitancy; Rural Health; Public Perception; Vaccination Drive; Misinformation.*

INTRODUCTION

The outbreak of the COVID-19 pandemic in late 2019 marked a turning point in global public health history. Caused by the novel coronavirus SARS-CoV-2, the pandemic began in Wuhan, China, and rapidly spread across the globe, resulting in unprecedented socio-economic and health challenges. India, with its vast and diverse population, was severely affected. By March 2020, when the virus had begun to spread within the country, large public events such as the Namaste Trump rally and the Kumbh Mela had already taken place, contributing to the spread of the virus. The nationwide lockdown that followed brought public life and the economy to a standstill, signalling the seriousness of the crisis
.

Over the next two years, India witnessed multiple waves of the virus. The second wave, in particular, overwhelmed hospitals, strained oxygen supplies, and exposed the vulnerabilities of the healthcare infrastructure. According to national health data, India recorded over 50 million confirmed cases, with more than a million reported deaths, although the actual figures may be higher due to underreporting and limitations in testing during peak periods.

In response, the Government of India launched an ambitious vaccination campaign in January 2021, introducing two vaccines: COVAXIN, developed by Bharat Biotech in collaboration with ICMR, and COVISHIELD, produced by the Serum Institute of India under license from AstraZeneca. The vaccination drive

was carried out in phases, prioritizing healthcare workers, frontline personnel, the elderly, and eventually all adults. Vaccines were made available free of cost in government facilities, with capped prices in private hospitals to ensure affordability and access across socio-economic groups.

Despite the comprehensive rollout and the government's efforts to ensure vaccine equity, vaccine hesitancy emerged as a significant barrier to achieving universal immunization coverage. As of September 2022, although over two billion doses had been administered and 900 million people had completed the two-dose regimen, approximately one-fourth of the population remained unvaccinated. This lag was not solely due to logistical challenges, but also reflected deep-rooted mistrust, misinformation, fear, and scepticism toward the vaccine and the institutions promoting it.

OBJECTIVES OF THE STUDY

The objectives of this study are designed to provide a clear direction for the research and to outline the specific areas of investigation. This study aims to explore the sociological dimensions of vaccine hesitancy during the COVID-19 pandemic, with a special focus on the public perception and behaviour in the rural context of Batikuriha village, Barpeta District, Assam. The key objectives are:

- To understand the overall impact of the COVID-19 pandemic and the vaccination drive in India, including how the crisis evolved and how the government responded at national and state levels.
- To examine the public behaviour and response during the administration of COVID-19 vaccines in the study area, especially focusing on interactions between community members and health workers during vaccination.
- To assess the initiatives taken by the Government of India and the Government of Assam in implementing and promoting the mass COVID-19 vaccination campaign, particularly in rural regions like Batikuriha village.

These objectives will help in identifying the factors influencing vaccine acceptance or resistance and contribute to a broader understanding of public health behaviour in rural Indian communities during a global health crisis.

REVIEW OF LITERATURE

The introduction to a literature review is a crucial component of any research study. Its primary purpose is to establish the context and significance of the review within the broader research field by offering an overview of existing scholarly works and publications related to the research topic or question. In this section, the researcher outlines the specific area of study and identifies key themes, concepts, and trends that will be explored. Additionally, the introduction highlights any gaps, controversies, or unresolved debates in the existing body of knowledge, underscoring the need for further investigation. This section also serves as a roadmap, guiding readers through the structure and organization of the literature review, and providing a clear understanding of what will be covered in the subsequent sections.

Gupta et al. (2023) Gupta and colleagues explore vaccine hesitancy in Puducherry via a cross-sectional survey, identifying key psychological and structural barriers . They found fear of vaccine side effects and distrust in healthcare systems as primary deterrents. Constraints included accessibility issues and limited health infrastructure, particularly among rural participants. Religious and cultural beliefs significantly contributed to reluctance, underscoring "peripheral concerns" beyond mere health fears. These findings emphasize the importance of context-specific communication and infrastructure improvements to enhance vaccine uptake in India's rural zones. The comprehensive approach offers practical insights for future campaigns in areas similar to Batikuriha village.

Kumar et al. (2021) Kumar et al. conducted a nationwide online survey in December 2020 to gauge initial COVID-19 vaccine perceptions in India. With 1,638 respondents, they found over 20 % were unaware or undecided, and 10 % outright refused vaccination. Notably, 70 % harboured safety concerns. Awareness and acceptance varied significantly by age, education, and employment status. The study cautions that even minor vaccine hesitancy rates could lead to millions unvaccinated in the Indian population. The authors advocate strategic policy measures to boost awareness and inclusion—lessons highly relevant for targeted interventions in Assam's rural context.

Dey et al. (2022) Dey et al. performed a systematic review and meta-analysis (46 studies, 65,551 participants) in September 2022, estimating India's pooled vaccine hesitancy at 31 %, declining from 37 % in December 2020 to 12 % by late 2021. Major barriers included fear of side effects, doubts about efficacy, and safety concerns. The review highlights marked improvement in acceptance over time, yet underscores the ongoing need to address persistent mistrust through evidence-based communication and community engagement. Their findings reflect regional and temporal variations, emphasizing the necessity for continued monitoring of public sentiment, especially in vulnerable rural populations.

Sangeetha et al. (2024) Sangeetha and colleagues reviewed 26 studies conducted up to May 2024, focusing on vaccine hesitancy among healthcare workers and the general Indian public. Their meta-analysis revealed approximately 33 % hesitancy in the general population and 24 % among healthcare workers. Intriguingly, acceptance ranged widely—from ~66 % in the general public to over 92 % among certain health staff. The authors note

substantial heterogeneity in study methods and timeframes, indicating that public acceptance fluctuated according to demographics, location, and temporal dynamics. This evidence underscores the importance of tailored communication, especially in rural locales where healthcare worker attitudes may profoundly influence local communities.

Al-Olabi et al. (2023) Al-Olabi and colleagues surveyed public perceptions toward COVID-19 vaccines in Jordan, revealing widespread fear of side effects and long-term impacts. Among non-vaccinated respondents, over 67% feared common adverse reactions, 71% cited long-term effects, and nearly 60% believed vaccines might harm fertility. Even some vaccinated participants expressed similar concerns (e.g., \~49% fearful of long-term side effects). These anxieties often stemmed from observing others' experiences. The study underscores the critical role of transparent safety data and targeted health communication to address misinformation and alleviate public fears internationally.

Terrell et al. (2023) Terrell and Alami's systematic review identified six intervention studies on non-financial strategies to combat COVID-19 vaccine hesitancy ([ncbi.nlm.nih.gov][1], [mdpi.com][2]). Most reports—except one RCT—showed positive impacts, including community outreach, personalized messaging, and healthcare provider engagement. However, non-randomized designs introduced confounding biases. The authors concluded that while behavioural nudges and educational campaigns boosted vaccine uptake, evidence remains limited. They stressed the need for rigorous trials to guide policy. Their findings support community-level initiatives, reminiscent of the challenges in Batikuriha village, emphasizing evidence-based interventions for hesitant populations.

Padamsee et al. (2022)Padamsee and coauthors analyzed seven waves of U.S. panel data from December 2020–June 2021, focusing on racial shifts in vaccine hesitancy ([jamanetwork.com][3]). They found that Black and White individuals began with similar reluctance, but Black participants converted more rapidly, as they increasingly recognized vaccine necessity for self and community. This highlights how changing perceptions of collective protection can drive willingness to vaccinate. The study emphasizes the need for tailored messaging that appeals to communal values—a finding pertinent to rural Indian settings where collective norms play a pivotal role.

Padma & Shiferie (2024)Shiferie et al. assessed vaccine hesitancy among Ethiopian healthcare providers, concluding that major factors included fear of side effects, insufficient institutional trust, and logistical constraints . Vaccine acceptance was notably lower among those with limited training, and professionals expressed concern over emergency authorization processes. Interestingly, peer influence and professional obligation improved confidence. The study suggests targeted interventions among health workers can have downstream effects on broader public uptake, aligning with sociological insights about Batikuriha, where provider attitudes influenced community behaviour.

Mărcău et al. (2022)Mărcău and colleagues explored hesitancy in Romania, identifying high public skepticism: urban willingness dropped from 29% in September 2020 to 51% by February 2021. Common beliefs included vaccine experimentation fears (12.6%), immediate side effects (8%), and conspiracies (e.g., microchips). Rural and less educated populations exhibited the strongest

hesitancy, with distrust (74%) and doctor skepticism (34.7%). Nearly half believed in global conspiracies controlling populations. The study highlights how misinformation, low medical literacy, and distrust fuel vaccine resistance, especially in regions with weak institutional trust—a phenomenon mirrored in rural Assam.

Maleki et al. (2023) Maleki et al. interviewed ten Iranian adults to explore COVID-19 vaccine hesitancy . Predominant barriers included fear of side effects—short- and long-term—stemming from both misinformation and perceived insufficient data. Distrust in government and conspiracy beliefs also emerged, though less emphasized. Unlike broader ant vaccine sentiment, their concerns cantered on vaccine novelty and safety. The study suggests targeted, empathetic dialogue addressing side-effect fears and expanding transparent safety information to reduce hesitancy—an approach relevant to similar rural Indian contexts.

The reviewed literature highlights that vaccine hesitancy is a widespread and complex issue influenced by fear, misinformation, cultural beliefs, and trust in institutions. Studies from India and other countries such as Jordan, Ethiopia, Romania, and the United States reveal similar concerns—ranging from side effects to conspiracy theories—that hinder vaccine acceptance. Behavioural models like the Health Belief Model and the Theory of Planned Behaviour help explain these attitudes. Importantly, the literature underscores the need for targeted, culturally sensitive communication and stronger community engagement. These findings provide a solid foundation for understanding vaccine hesitancy in rural contexts like Batikuriha village.

METHODOLOGY

Research Design

This study adopts a qualitative research design to gain an in-depth understanding of vaccine hesitancy during the COVID-19 pandemic in Assam, with a special focus on Batikuriha village in Barpeta District. The qualitative approach is best suited for exploring complex social behaviours, beliefs, and perceptions, particularly in rural and culturally diverse settings. The study seeks to examine the experiences and attitudes of various groups involved in or affected by the vaccination process—such as local residents, healthcare workers, and community leaders across different stages of the vaccination campaign. This design enables the collection of rich, detailed, and context- sensitive data, aligning closely with the research objectives and questions. Through interviews, focus group discussions, and field observations, the study aims to uncover the underlying socio-cultural and psychological factors that contribute to vaccine hesitancy in the study area.

Data Collection

Primary Data: Primary data for this research were collected from various stakeholders across different stages of the COVID-19 vaccination process within the study area, Batikuriha village in Barpeta District.

Semi-structured interviews were conducted with key individuals directly or indirectly involved in the vaccination drive. These included doctors, nurses, NRHM (National Rural Health Mission) officials, government

administrators, police and security personnel, and representatives from non-governmental organizations (NGOs). A structured questionnaire was used to guide the interviews, while maintaining the flexibility to adapt questions based on participants' responses. This approach ensured both depth and convenience, allowing participants to share their experiences openly. Additionally, select case studies of vaccination drives were collected and documented to capture real-life scenarios and challenges faced during the implementation of the vaccination campaign. These case studies helped provide deeper insights and supported the analysis with contextual and practical evidence.

Secondary Data: Secondary data for this study were collected from a wide range of credible sources to support and strengthen the primary research findings. Academic journals, research papers, and publications related to COVID-19 and vaccine hesitancy were thoroughly reviewed to gain in-depth knowledge of the subject. Relevant literature was sourced from platforms such as Shodhganga, JSTOR, and the International Journal of Scientific Research (IJSR). In addition, news articles, government reports, magazines, and other media coverage on vaccination campaigns were studied to understand public narratives and policy responses. Supplementary insights were also gathered from digital platforms such as YouTube, Quora, and Insights, which provided diverse public opinions and first hand experiences related to the vaccination drive

Data Analysis

The study employs thematic analysis to interpret the qualitative data collected through interviews, focus group discussions, and case studies. All data were transcribed, organized, and systematically coded to identify recurring themes and meaningful patterns. The analysis followed an iterative process involving deep engagement with the data (immersion), initial coding, grouping similar codes into categories, and developing overarching themes. These emerging themes were then closely examined in light of the study's research objectives and questions. This approach enabled a nuanced and context-rich understanding of vaccine hesitancy during the COVID-19 pandemic, with a particular focus on the lived experiences of people in Batikuriha village, Assam.

Sample of the Study

The study was conducted among a sample of 200 respondents from Batikuriha village in Barpeta District, Assam. The sample was carefully selected to capture diverse perspectives from different groups directly or indirectly involved in the COVID-19 vaccination drive. This helped ensure a comprehensive understanding of the issue of vaccine hesitancy within the rural context.

Out of the total sample, 100 respondents were from the general population of the village. These participants were selected to represent common citizens of various age groups, genders, and socio-economic backgrounds, in order to explore their perceptions, experiences, and hesitations related to COVID-19 vaccination.

Additionally, 50 respondents comprised healthcare professionals, including doctors, nurses, and officials from the National Rural Health Mission (NRHM), who were directly responsible for managing and administering the vaccination drive during the pandemic. Their insights offered a ground-level view of the challenges faced in promoting vaccine uptake and addressing public concerns. The remaining 50 respondents were key community stakeholders, such as schoolteachers, NGO workers, local leaders, and other volunteers who supported the vaccination efforts in different capacities. Their role in mobilizing the community and assisting healthcare workers provided important context for understanding both barriers and enablers of the vaccination process.

This diverse and inclusive sample enabled the study to examine the issue of vaccine hesitancy from multiple angles and contributed to a well-rounded analysis of public perception in Batikuriha village.

The Study Area

Batikuriha is a rural village located in the Barpeta subdivision of Barpeta district, Assam, situated approximately 12 kilometers from the district and sub-district headquarters, Barpeta town. The village falls under the jurisdiction of the Nagaon Gram Panchayat and has a total geographical area of 200.74 hectares. As per the 2011 Census, its village code is 283113.

Batikuriha is part of the vibrant socio-cultural landscape of Barpeta and is connected to nearby towns for major economic activities. It has access to various levels of government educational institutions, including pre-primary, primary, middle, and secondary schools. For higher education and specialized

institutions such as engineering, medical, and polytechnic colleges, residents usually rely on nearby cities like Barpeta, Bhella, Nagaon, and Guwahati.

The village plays an important role in the local governance system and contributes to the rural economy of the region. Its social composition, literacy, and educational infrastructure make it a valuable location for studying public health behaviour, such as vaccine hesitancy during the COVID-19 pandemic.

Findings of the Study

To study vaccine hesitancy during the COVID-19 pandemic in Batikuriha village of Barpeta district, a total of 200 responses were collected. These responses were gathered through structured questionnaires and represent a cross-section of the village population. The details of the respondents and the nature of their responses have been systematically To study vaccine hesitancy during the COVID-19 pandemic in Batikuriha village of Barpeta district, a total of 200 responses were collected. These responses were gathered through structured questionnaires and represent a cross-section of the village population. The details of the respondents and the nature of their responses have been systematically described and analyzed in the following sections.

Demography of Batikuriha Village

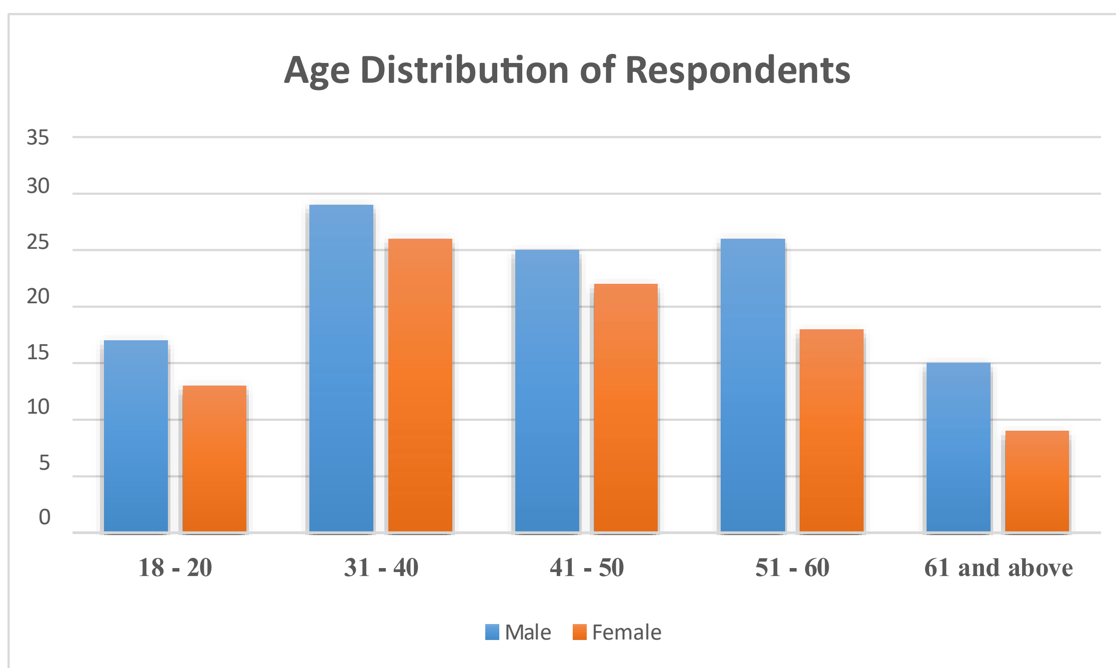
	Total	Male	Female
Total Population	**1,817**	**925**	**892**
Child Population (0–6 years)	**148**	**80**	**68**
Scheduled Castes (SC)	**N/A**	**N/A**	**N/A**
Scheduled Tribes (ST)	**N/A**	**N/A**	**N/A**
Literate Population	**1,489**	**793**	**696**
Illiterate Population	**328**	**132**	**196**

Age Distribution of the respondents

Respondents from various age groups participated in the study. The age-wise distribution of participants is illustrated below, highlighting representation across all age categories included in the survey.

Respondents age group	Male	Female	Total
18 -20	17	13	**30**
31 - 40	29	26	**75**
41 - 50	25	22	**47**
51 - 60	26	18	**49**
60 and above	15	9	**24**

Also we can present the data in chart as follows



The bar chart illustrates the number of male and female participants across different age groups in Batikuriha village. The highest representation is seen in the 31–40 age group, with males slightly outnumbering females. The 51–60 group also shows a high male dominance. Both genders have relatively fewer respondents in the youngest (18–20) and oldest (61 and above) categories. Overall, male respondents outnumber females in each age group, indicating a gender imbalance in participation, especially noticeable in the middle-aged and older age brackets.

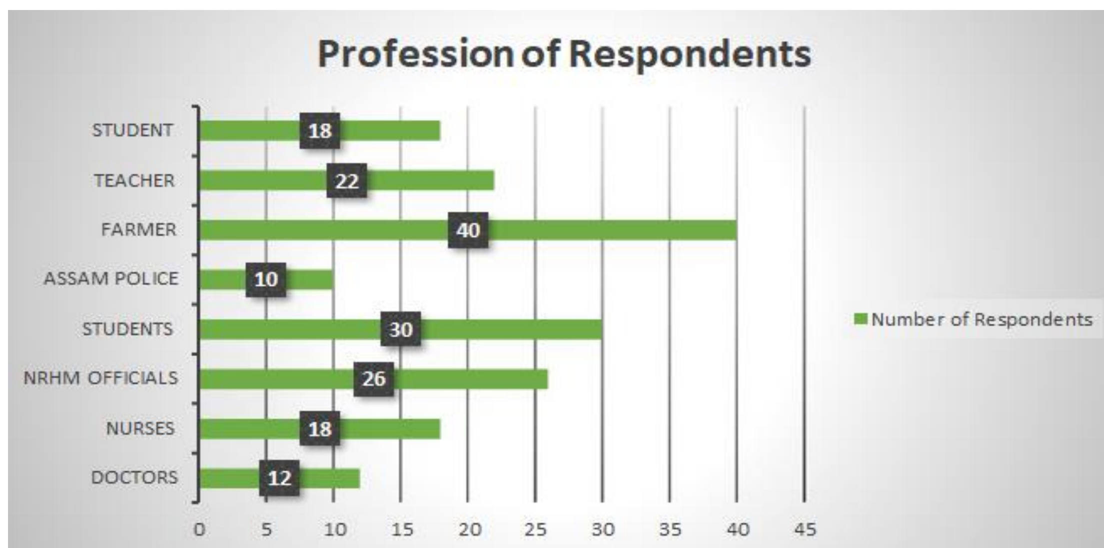
Profession of Respondents

The respondents represented diverse professional backgrounds. Special emphasis was placed on health workers, particularly doctors and nurses, NRHM Officials, as they formed a key focus group in the study. In addition to healthcare professionals, common villagers and members of non-governmental organizations (NGOs) were also included to ensure a comprehensive understanding of vaccine hesitancy. This diverse representation helped capture

a broad range of perspectives and contributed to more accurate and meaningful findings. The list of professional activity shown as below table:

Profession	Respondents	Percentage
Doctors	**4**	**2%**
Nurses	**10**	**5%**
NRHM Officials	**12**	**6%**
Students	**18**	**9%**
Assam Police	**26**	**13%**
Farmer	**30**	**15%**
Teacher	**10**	**5%**
Student	**40**	**20%**
NGO Worker	**22**	**11%**
Others	**28**	**14%**
Total	**200**	**100%**

Also we can present data as below chart



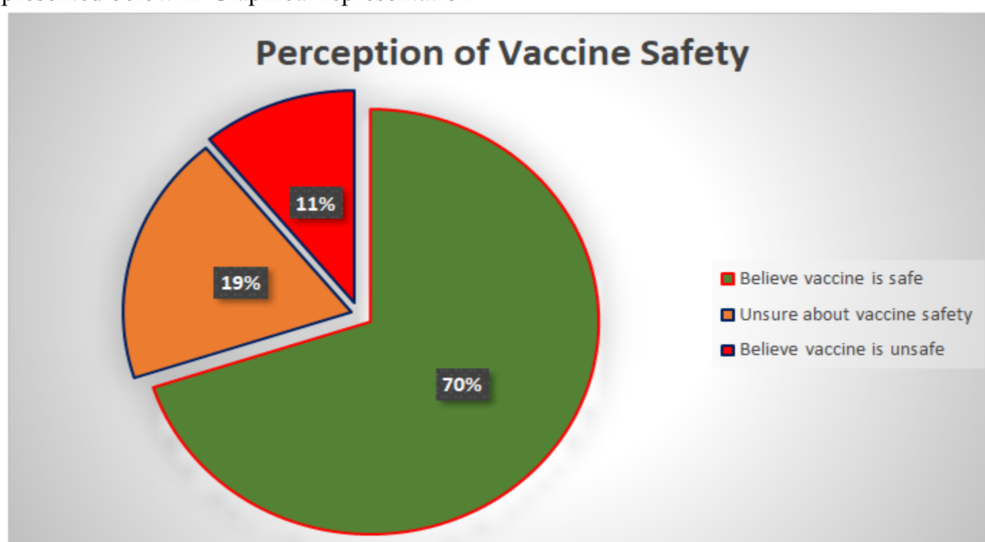
The profession-wise distribution of respondents from Batikuriha village shows a diverse and balanced sample. Students formed the largest group at 20%, followed by farmers (15%) and individuals in the "others" category (14%). Significant representation also came from Assam Police (13%) and NGO workers (11%), reflecting active involvement of frontline and community service providers. Healthcare professionals, including doctors and nurses, together made up 7%, while teachers accounted for 5%. This diverse representation ensured that the study captured varied perspectives on COVID-19 vaccine hesitancy, making the findings more comprehensive and reflective of the community's overall attitude and awareness.

Vaccination Status of Respondents

The vaccination status of the respondents was collected as part of the study. It was found that the majority of respondents had received the COVID-19 vaccine. The detailed distribution of their vaccination status is presented in the table below.

Fully Vaccinated	116	58%
Partially Vaccinated (1 Dose)	60	30%
Not Vaccinated	24	12%
Total	**200**	**100%**

The data also presented below in Graphical representation

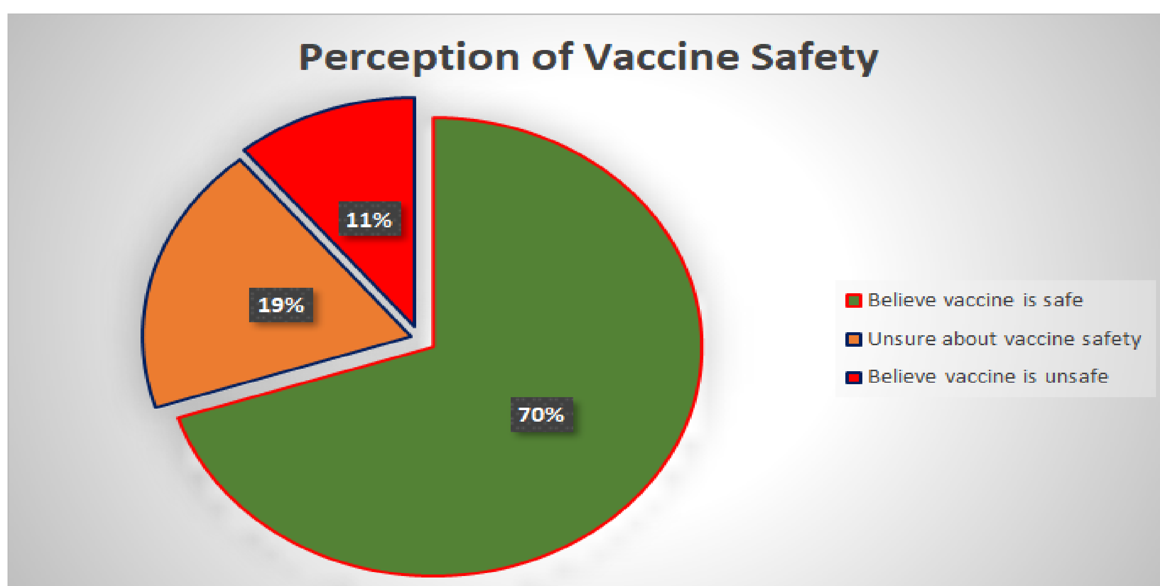


Out of 200 respondents, 116 (58%) were fully vaccinated, while 60 (30%) had received only one dose. However, 24 individuals (12%) remained unvaccinated. This indicates a relatively good vaccination coverage in the village, though a significant portion either delayed or avoided full vaccination, reflecting lingering hesitancy or access-related issues among certain groups.

Perception of Vaccine Safety

Many respondents in the study area expressed concerns about the safety of the COVID-19 vaccine. A noticeable sense of fear and hesitation was observed among several individuals during the vaccination process. This apprehension was often driven by uncertainty, misinformation, or past health experiences. The detailed perceptions regarding vaccine safety among the respondents are presented below.

Perception	**Number of Respondents**	**Percentage**
Believe vaccine is safe	140	70%
Unsure about vaccine safety	38	19%
Believe vaccine is unsafe	22	11%
Total	**200**	**100%**



DISCUSSION

The present study attempts to understand vaccine hesitancy during the COVID-19 in Batikuriha village of Barpeta district by linking field-level findings with broader national and global experiences. The results show that although vaccination coverage in the village was relatively high, hesitancy still persisted among a section of the population.

One of the most important observations is that vaccine acceptance was not uniform. While many respondents willingly took the vaccine, others delayed or avoided it. This reflects a pattern seen across India, where initial fear, confusion, and uncertainty influenced public behaviour. As also pointed out in earlier studies, even a small percentage of hesitant individuals can have a large impact in a country with such a large population.

Fear of side effects emerged as a major reason behind hesitancy. Many respondents expressed concern about possible health risks, often based on rumours or second-hand information. In particular, claims linking vaccines to serious health problems, such as heart attacks, created anxiety among villagers. Although such claims lack scientific evidence, their widespread circulation shows how strongly misinformation can influence public opinion, especially in rural areas where access to verified information may be limited.

Another important factor was the issue of trust. Some respondents showed hesitation due to a lack of confidence in government systems or healthcare services. In rural communities like Batikuriha, trust is often built through personal relationships rather than formal institutions. Therefore, the role of local health workers, teachers, and community leaders becomes extremely important. Their behaviour, communication, and level of engagement can either encourage or discourage people from getting vaccinated.

The study also highlights the influence of social and demographic factors. Differences in age, education, and occupation affected how people perceived the vaccine. The dominance of male respondents and middle-aged groups suggests that decision-making may be influenced by gender roles and social hierarchy within the community. At the same time, healthcare workers and educated individuals generally showed more confidence in vaccination, although hesitation was not completely absent even among them.

Cultural beliefs and community influence also played a significant role. In many cases, individuals relied on the opinions of family members, neighbours, or respected figures before making a decision. This collective decision-making process sometimes helped increase acceptance, but it also contributed to the rapid spread of fear and misinformation during the early stages of the vaccination campaign.

Government efforts, including free vaccination and awareness campaigns, played a crucial role in improving coverage. However, certain compulsory measures created mixed reactions. While they ensured wider participation, they also led to resistance among some individuals who felt pressured or suspicious. This suggests that persuasion and awareness may be more effective than compulsion in dealing with public health issues.

Overall, the study shows that vaccine hesitancy is a complex issue shaped by multiple factors—psychological, social, cultural, and institutional. The situation in Batikuriha reflects a larger global reality, where communities interpret health interventions through their own experiences and beliefs. Addressing such challenges requires not only medical solutions but also strong community engagement, trust-building, and culturally sensitive communication.

CONCLUSION

The study on vaccine hesitancy during the COVID-19 pandemic was conducted in Batikuriha village of Barpeta district, Assam. Responses were collected from various sections of the population and analysed in line with the objectives outlined in the first chapter. This concluding chapter presents an overall summary of the key findings and insights derived from the research. The study revealed that despite government efforts and vaccine availability, significant levels of hesitancy persisted due to factors such as misinformation, fear of side effects, cultural beliefs, and distrust in health systems. While these issues were evident in the study area, vaccine hesitancy is not unique to Assam. It has emerged as a global concern, affecting even highly developed countries like the United States, the Netherlands, and Ethiopia Etc. The challenges faced in Batikuriha reflect broader international patterns, emphasizing that vaccine hesitancy is a complex, multi-dimensional issue requiring context-specific understanding and interventions.

It has been observed that government institutions made significant efforts to maximize vaccination coverage and reduce the impact of COVID-19. To ensure broad inclusion, the government implemented compulsory measures for certain groups, including employed individuals, ration card holders, and election officials. However, these mandates unintentionally contributed to increased hesitation and suspicion among some sections of the population. Additionally,

rumors circulated widely claiming that vaccinated individuals were experiencing a rise in severe heart attacks. This misinformation further fuelled public fear and reluctance. It is important to note that, as of now, no scientific study has conclusively linked COVID-19 vaccines to an increase in heart attack cases.

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