

Offline Social Listening: A Study to Understand Myths and Misconceptions around the COVID-19 Vaccination among Communities

Summary Report (January – December 2022)

Background: COVID-19 was declared a global pandemic by the World Health Organization on March 12, 2020 after first being reported as a pneumonia outbreak of unknown origin in Wuhan city, China, in December 2019¹. Soon, this virus spread globally, disrupting the lives of people along with major economic upheavals to nations across the world. Severe negative impacts of the pandemic were witnessed in India in terms of lives lost, overburdening of the healthcare system, and a disproportionate negative impact on the psychosocial wellbeing and economic conditions of individuals².

The COVID-19 pandemic also brought with itself prolonged periods of lockdown which was necessary for nations to stop further spread of the virus and to pause and plan the next step for safety and well-being of its citizens³. With the second largest population in the world and a diverse blend of geographies and socioeconomic disparities among communities, India was faced with a unique set of challenges during the lockdown, which included adverse effects on child immunization, loss of income, loss of education due to disruption of regular schooling schedules, etc⁴. During this time, several countries including India invested millions into developing a vaccine to counteract COVID-19 and overcome the global disruption caused by the pandemic⁵. The stage following introduction of the vaccine saw the drive for mass vaccination which required vaccine trust and readiness in the population⁶. The goal of immunization was to achieve safety through universal immunity⁷.

In this context, a mass of literature was published to discuss the negative impacts of vaccine hesitancy among the global population in discouraging populations from taking the vaccine and completing vaccine schedules^{8,9,10}. Vaccine hesitancy, often referred to as one of the key barriers to vaccine uptake, is understood as the delay in acceptance or refusal to get vaccinated even when vaccination services are available¹¹. Globally, vaccine hesitancy has been associated with several factors like mistrust in government and healthcare systems, doubts about the effectiveness and efficacy of the vaccine, or concerns regarding potential harmful side effects of the

¹ Marco Ciotti, Massimo Ciccozzi, Alessandro Terrinoni, Wen-Can Jiang, Cheng-Bin Wang & Sergio Bernardini (2020) The COVID-19 pandemic, *Critical Reviews in Clinical Laboratory Sciences*, 57:6, 365-388, DOI: 10.1080/10408363.2020.1783198

² Singh, K., Kondal, D., Mohan, S., Jaganathan, S., Deepa, M., Venkateshmurthy, N. S., ... & Eggleston, K. (2021). Health, psychosocial, and economic impacts of the COVID-19 pandemic on people with chronic conditions in India: a mixed methods study. *BMC public health*, 21(1), 1-15.

³ Onyeaka, H., Anumudu, C. K., Al-Sharif, Z. T., Egele-Godswill, E., & Mbaegbu, P. (2021). COVID-19 pandemic: A review of the global lockdown and its far-reaching effects. *Science progress*, 104(2), 00368504211019854.

⁴ UNICEF and IHD (2021). Assessing Impact of the COVID-19 Pandemic on the Socio-economic Situation of Vulnerable Populations through Community-based Monitoring. UNICEF and IHD, New Delhi.

⁵ National Academies of Sciences, Engineering, and Medicine. 2020. Framework for Equitable Allocation of COVID-19 Vaccine. Washington, DC: The National Academies Press. <https://doi.org/10.17226/25917>.

⁶ Adhikari, B., Cheah, P. Y., & von Seidlein, L. (2022). Trust is the common denominator for COVID-19 vaccine acceptance: a literature review. *Vaccine: X*, 100213.

⁷ Sara Cooper, Heidi van Rooyen & Charles Shey Wiysonge (2021) COVID-19 vaccine hesitancy in South Africa: how can we maximize uptake of COVID-19 vaccines?, *Expert Review of Vaccines*, 20:8, 921-933, DOI: 10.1080/14760584.2021.1949291

⁸ Bergen, N., Kirkby, K., Fuertes, C. V., Schlottheuber, A., Menning, L., Mac Feely, S., ... & Hosseinpoor, A. R. (2022). Global state of education-related inequality in COVID-19 vaccine coverage, structural barriers, vaccine hesitancy, and vaccine refusal: findings from the Global COVID-19 Trends and Impact Survey. *The Lancet Global Health*.

⁹ De Figueiredo, A., Simas, C., Karafillakis, E., Paterson, P., & Larson, H. J. (2020). Mapping global trends in vaccine confidence and investigating barriers to vaccine uptake: a large-scale retrospective temporal modelling study. *The Lancet*, 396(10255), 898-908.

¹⁰ Dror, A. A., Eisenbach, N., Taiber, S., Morozov, N. G., Mizrahi, M., Zigran, A., ... & Sela, E. (2020). Vaccine hesitancy: the next challenge in the fight against COVID-19. *European journal of epidemiology*, 35(8), 775-779.

¹¹ MacDonald, N. E. (2015). Vaccine hesitancy: Definition, scope and determinants. *Vaccine*, 33(34), 4161-4164.

vaccine^{12,13}. Other major factors associated with vaccine hesitancy are misinformation and myths surrounding the COVID-19 vaccine, and they seem to spread through various channels like social media and news outlets¹⁴.

Vaccine hesitancy, fuelled by myths and misconceptions surrounding vaccination, has detrimental effects on the population's health since it prevents universal coverage leading to outbreaks of diseases that can be prevented. Dispelling fears and misconceptions regarding vaccines and advocating for factual information is critical to battle vaccine hesitancy.

In the above context, India has made huge strides in its vaccine coverage during the year 2021-22 and 2.19 billion doses have been administered as of 23rd December 2022. However, there remained gaps which contributed to low uptake of the vaccine in certain parts of the country. Barriers related to vaccine distribution and delivery have persisted and contributed to the inequitable access to vaccines. Concerns around adverse effects of the vaccine, reduced disease susceptibility, myths, misconceptions as well religious superstitions have also contributed to vaccine hesitancy across geographies and communities in India. These factors also impacted uptake for the children's and precautionary dose, especially in several rural and tribal-majority districts. Along with this, accessibility to healthcare facilities is important to ensure continued distribution and post-vaccination care. Further, ensuring access and quality of essential services such as maternal and child health services, anganwadi centres (AWCs), and schools, is important for a quicker transition to normalcy.

UNICEF's contribution: The COVID-19 crisis compelled nations globally to rethink and reorient their public health messaging strategy. This was essential to enhance risk communication and empower communities to make informed decisions and taking preventive and protective measures to mitigate the risk of the virus. UNICEF's Risk Communication and Community Engagement (RCCE) is focussed on enhancing vaccine uptake, COVID-19 appropriate behaviour (CAB), reducing vaccine hesitancy, and effective public health messaging as a key pillar of its COVID-19 response strategy. A key element of UNICEF's RCCE strategy is to track and debunk vaccine related myths and misconceptions to reduce vaccine hesitancy and its negative impact on vaccine uptake globally¹⁵. Further, vaccine hesitancy not only decreases vaccine uptake but also increases the overall risk of vaccine preventable disease outbreak. In this regard, UNICEF is contributing to actively debunking, documenting, and disseminating information about COVID-19 myths and misconceptions across the varied marginalized contexts of low- and middle-income countries (LMICs)^{16,17}.

Rationale and key objectives of this study: In this context, the present study was conceptualized to identify myths and misconceptions around COVID-19 vaccine as well as the motivators of vaccine acceptance through 'Offline Social Listening' among diverse marginalized communities in India and contribute to UNICEF RCCE strategy for COVID-19. The objectives of the study were to:

1. Identify and classify the key **myths and misconceptions** around the COVID-19 Vaccination spreading through various **communication channels**
2. Develop an understanding of the various factors of **barriers**, attitudes, perceptions, and concerns that drive hesitancy or refusals among the most marginalized communities.
3. Identify effective levers and **motivators** of behaviour change regarding the COVID-19 vaccination and renewed demand for **essential services** (health, nutrition, and education).

To better inform care in a post pandemic ecosystem, in the last round (Round 6), the study focussed on the third objective to better understand access and experience of individuals with the resumption of essential services (maternal health, AWCs, and schools) since the COVID-19 pandemic.

¹² Lu, J. G. (2022). Two large-scale global studies on COVID-19 vaccine hesitancy over time: Culture, uncertainty avoidance, and vaccine side-effect concerns. *Journal of Personality and Social Psychology*.

¹³ Sallam, M. (2021). COVID-19 vaccine hesitancy worldwide: a concise systematic review of vaccine acceptance rates. *Vaccines*, 9(2), 160.

¹⁴ Piltch-Loeb, R., Savoia, E., Goldberg, B., Hughes, B., Verhey, T., Kayyem, J., ... & Testa, M. (2021). Examining the effect of information channel on COVID-19 vaccine acceptance. *Plos one*, 16(5), e0251095.

¹⁵ Khan, S., Mishra, J., Ahmed, N., Onyige, C. D., Lin, K. E., Siew, R., & Lim, B. H. (2022). Risk communication and community engagement during COVID-19. *International Journal of Disaster Risk Reduction*, 74, 102903.

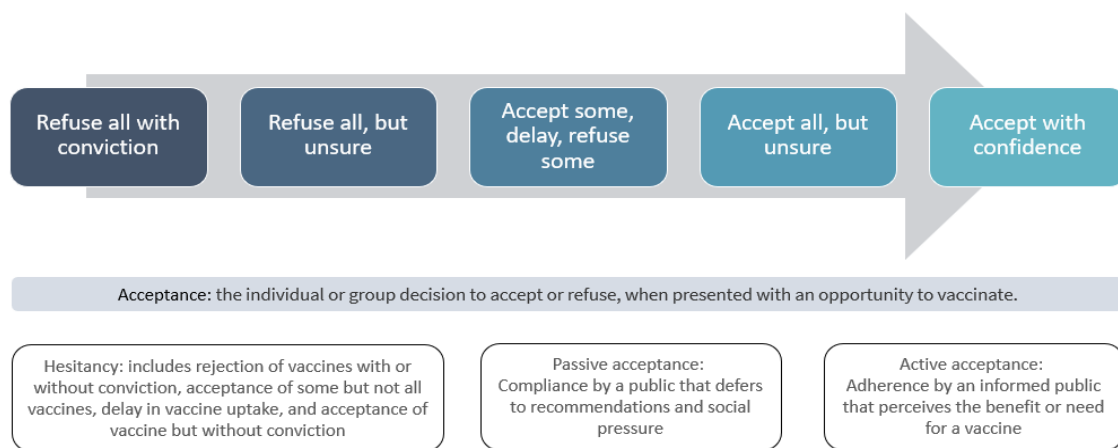
¹⁶<https://www.unicef.org/sudan/stories/combating-myths-and-misinformation-sudans-covid-19-hotline-call-centre>

¹⁷ <https://www.unicef.org/ghana/stories/debunking-covid-19-myths-ghanas-influencers>

Methodology: Conducted over six rounds of cross-sectional data collection, the study has contributed towards UNICEF’s RCCE strategy¹⁸ to improve uptake of COVID-19 vaccine and mitigate myths and misconceptions at the community level in India. The study was conducted between the months **January – December 2022** across fifteen states, namely - Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Maharashtra, Meghalaya, Mizoram, Nagaland, Rajasthan, Tamil Nadu, Tripura, Uttar Pradesh, and West Bengal.

Areas of inquiry for the study have been guided by the WHO-SAGE **Vaccine Hesitancy Matrix**¹⁹ and data has been analysed along the **Vaccine Hesitancy continuum** (which includes complete and partial vaccine refusal, passive and active vaccine acceptance, and vaccine confidence/eagerness). Vaccine hesitancy here is understood on a continuum which includes rejection of vaccine with or without conviction, acceptance of some but not all vaccines, delay in vaccine uptake, acceptance of vaccine but without conviction, and acceptance with confidence. Acceptance itself is understood here as either being active or passive. An illustration of the vaccine hesitancy continuum is given below²⁰:

Figure 1: Illustration of the vaccine hesitancy continuum



The study used the *offline social listening* methodology as an adaptation of the *social listening* approach. Social listening is an active process of attending to, observing, interpreting, and responding to a variety of stimuli through mediated, electronic, and social channels²¹. The methodological practice of using social media platforms to gain insights into social conversations and thoughts shared on specific topics can be deemed as social listening. The offline social listening methodology used in this study has adapted social listening to gather social data through telephonic interviews, to gain real-time insights into conversations, and circulating myths and misconceptions that drive vaccine hesitancy among populations. In extant literature, the online social listening approach has been used to understand patient perspectives on navigation of disease diagnosis and interactions with healthcare professionals^{22,23}. Moreover, in a recent study conducted by UNICEF, the online social listening

¹⁸ <https://www.unicef.org/india/zero2hero-campaign-peoples-campaign-fight-covid-19>

¹⁹ MacDonald, N. E. (2015). Vaccine hesitancy: Definition, scope and determinants. *Vaccine*, 33(34), 4161-4164.

²⁰ Dubé, È., Ward, J. K., Verger, P., & MacDonald, N. E. (2021). Vaccine hesitancy, acceptance, and anti-vaccination: trends and future prospects for public health. *Annu Rev Public Health*, 42(1), 175-91.

²¹ Stewart, M. C., & Arnold, C. L. (2018). Defining social listening: Recognizing an emerging dimension of listening. *International Journal of Listening*, 32(2), 85-100.

²² Strobel, M., Alves, D., Roufousse, F., Antoun, Z., Baylis, L., & Wechsler, M. (2022). PATIENT-REPORTED EXPERIENCE OF EOSINOPHIL-DRIVEN DISEASES ON ONLINE PLATFORMS: SOCIAL LISTENING ANALYSIS INSIGHTS. *Annals of Allergy, Asthma & Immunology*, 129(5), S52.

²³ Kim, E., Glassner, H., Klepper, J., & Cirillo, J. (2022). Perspectives From Members of an Online Community on Their Communications With Health Care Professionals About Migraine Treatment: A Social Listening Analysis (P17-2.003).

approach was used in a study to combat rumours and false information about COVID-19 and motivate individuals to increase their vaccination rates ^{24,25}.

In this study, offline social listening, as a novel methodology, has helped capture the most prominent community conversations and individual level perceptions regarding COVID-19 and its vaccine across varied geographies. The social listening approach was specifically useful in this study as it is adaptive in tracking community and household conversations regarding vaccine hesitancy, the associated myths and misconceptions stemming from these conversations, and the subsequent effects of these conversations on the uptake of COVID-19 vaccine.

The initial proposed methodology of the study included a two-stage telephonic interview. Herein, the first call focussed on a semi-structured interview guide which captured individual level perceptions of the respondents. Following this, the respondents were asked to pay closer attention to talks among their family, friends, and other community members about COVID-19 disease and the COVID-19 vaccine and participate in a second interview 5-8 days after the first call, to provide real-time insight into community level conversations about COVID-19 disease and its vaccine. During the pilot testing of the two-stage telephonic model, the first call was conducted with 12 respondents. However, the response rate for the second call stood at 25%, that is, only 3 respondents who participated in the first interview, agreed to complete the second interview. The reasons for non-response by 75% of the respondents from the first call was majorly due to – (i) the phone being unreachable or no response upon multiple attempts to reach the respondent, and (ii) the same respondent being unavailable to talk a second time or another family member picking up the phone. The reasons for refusal to participate included – (i) lack of time or being busy at work, (ii) no longer being interested to participate, (iii) not getting the time in the preceding week to listen to community conversations, (iv) not being able to meet anyone in the preceding week due to sickness or increase in the number of COVID-19 cases. Further, it was observed that among the repeat respondents who participated in the second interview, most gave curt responses as they had not encountered any new information around COVID-19 from the community or did not get time to deeply engage with the community for the second call. It was realized that new respondents (3 three additional respondents randomly chosen after the low response rate from the first call), were able to provide interesting insights into the key thematic areas of the study. Further, a repetition of narratives was noted with the repeat respondents (those who were available for both the first and second call). Hence, even without asking people to actively participate in conversations in their community, people were passively listening to these conversations and when asked, were able to talk about the same, and asking the same set of respondents to listen to community conversations did not yield much additional in-depth information. With this insight, it was decided that the two-stage telephonic model of the social listening methodology will be converted into a single telephonic interview model. Hence, both individual and community level perceptions were captured through one tool and one telephonic model, which covered all the key thematic areas of the study.

Methodological challenges:

- 1) Targeting specific respondent groups:** Gathering data from a very specific target group is challenging using the offline social listening methodology. For instance, in Round 6, the data collection tool was revised to include resumption of essential services (maternal health, child nutrition, and reopening of anganwadi centres and schools) as one of the key areas of inquiry. In this context, targeting only pregnant women to gather data on resumption of essential maternal health services in Round 6 was discussed as a potential challenge during the process of revising the tool. It was observed that although the methodology was conducive to reaching respondents to ask about issues that concern all communities (like COVID-19), it was difficult to target specific groups like pregnant women.
- 2) Female representation:** In Round 3 of the study, there were significant challenges in securing 50:50 quota for gender representation with only 37% female respondents secured in total. Specifically, this challenge emerged from the states of Bihar and Rajasthan where only 31% and 33% female respondents

²⁴ Sommariva, Silvia, Jenna Mote, Helena Ballester Bon, Herisoa Razafindraibe, Domoina Ratovoanany, Vanou Rasoamanana, Surangani Abeysekera. "Social Listening in Eastern and Southern Africa, a UNICEF Risk Communication and Community Engagement Strategy to Address the COVID-19 Infodemic." *Health security* 19, no. 1 (2021): 57-64.4

²⁵ From social listening to countering misinformation. UNICEF Jordan. (2022, January 9). Retrieved January 1, 2023, from <https://www.unicef.org/jordan/stories/social-listening-countering-misinformation>

were secured, respectively. The phone number, even when listed with a female's name, was often picked up by a male member of the family who then refused to give the phone to a female family member. In some cases, even when a woman picked up the phone, she handed it over to a male family member due to domestic chores and unwillingness to talk about the COVID-19 vaccine. The study team strategized on how to address this challenge, and two steps were taken to mitigate this issue – (i) phone numbers with the gender listed as females were oversampled from Round 4 onwards, and (ii) the field team was asked to complete the quota for female respondents first. Both iterations helped to reach the 50:50 target sample in Round 4, as the percentage of female respondents increased from 37% to 50% from Round 3 to Round 4, respectively.

- 3) **Limited network connectivity and power-cuts:** Limited network connectivity, frequent power-cuts, and language barriers during the technical online software training for data collection was a recurring challenge in the North-Eastern states. However, additional effort was expended by the research and field team in communicating for data collection protocols in the challenging geographical and linguistic context of North-Eastern states to ensure data quality. These efforts included additional time devoted to explaining the tool and data collection protocol, conducting additional number of role-plays and mock sessions during field team training, maintenance of call sheets, and scheduling a greater number of debrief and feedback sessions with investigators from the North-Eastern states.
- 4) **COVID-19 fatigue:** The study spanned a year from January to December 2022 in a context of reducing COVID-19 cases and risk perception, as well as increased acceptance and availability of the vaccine. This led to a waning interest of the respondents in discussing the study topic. This was gleaned from the diversity and depth of narratives gathered from respondents in each round. This can be considered as part of the changing context of the pandemic, and the best course of action to ensure quality data throughout the study duration was to encourage, probe more and use conversational skills to elicit detailed reflective responses.

Thoughts for future use:

- 1) Firstly, the offline social listening methodology can be used to for quick data collection about community conversations, and in continuously tracking change in context of a changing environment. It helps to delineate perceptions surrounding public health and social development issues which concern *all* communities, are non-intimate, and where everyone has something to say, including but not limited to – communicable disease outbreaks, WASH infrastructure, natural calamities, feedback on health services, etc.
- 2) Secondly, the methodology finds relevance in tapping into community conversations in areas where access to social media platforms or online forums are limited due to lesser mobile device or connectivity issues. Along with this, the methodology is useful in continuously tracking the changing perceptions and conversations around COVID-19 and its vaccine among varied geographic, sociocultural, and linguistic contexts.
- 3) Thirdly, the methodology is both time and resource efficient and can be used in contexts where there is opportunity to tweak the program rapidly over multiple rounds of the study. The methodology is especially amenable to adaptations and revisions in various contexts of research, including innovative approaches to answer the most pressing public health issues which are subject to daily attitudinal and behavioural shifts based on community conversations and perceptions.

Open questions for exploration:

- 1) **Phone ownership:** The issue of securing 50:50 female to male respondents' ratio and oversampling for female respondents from Round 3 onwards, led the study team to ponder over the issue of tracing phone ownership among the respondents. While call sheets where gender of the original respondent and respondents who completed the interviews was recorded, there were limited mechanisms to track who really owned the phone number or sim cards, and who actively used the phone numbers. In most instances, even if the phone number was originally recorded to belong to a female, it was usually male members of the household who were using these phone numbers actively. This led to limitations posed in reaching female respondents even if the original intended respondents to be targeted were females.

Perhaps, an open question for exploration could be how phone ownership can be tracked to maximize on the intended respondent group as per study requirements using an offline social listening methodology.

- 2) **Targeted interviews:** Iterations made to the tool in the last round of the study to gain insights into experiences of people regarding the resumption of essential services post COVID-19 lockdown led the study team to ponder over the issue of reaching targeted populations (in this case, pregnant women). Narrowing down the respondent category using skip patterns (for instance, using skip patterns to ask certain questions on maternal health from only women respondents) can be one usual way of making questions targeted to a specific respondent group. However, gathering information from specific groups is an open question for exploration and requires iterative thinking.
- 3) **Data collection on sensitive topics:** The challenge of collecting data on sensitive topics from targeted populations or sensitive respondent groups persists with the social listening approach. For instance, to collect data on issues such as intimate partner violence, abortions, etc, it is conventionally much more feasible to conduct in-person interviews which is an essential element in a) building rapport and trust with the respondent and, b) capturing social non-verbal cues of the respondent, c) complexities of trust, self-disclosure and associated psychological triggers which can be better navigated during in-person interactions. However, there is evidence to suggest that remote data collection (interviews) methods have similar output in terms of number of self-disclosures, formality, number of qualitative themes emerging from interview transcripts, or the depth of themes discussed, even with targeted populations like the adolescent age group²⁶. Hence, while online data collection methods may involve more rapport building and produce fewer words as compared to in-person interviews, the issue of targeting specific populations and collecting data on sensitive topics can be navigated through innovative tool development, which require rigorous tool piloting and refining, adaptive field team training, and mitigation of emerging methodological and field challenges.

Sampling strategy: The sampling strategy for this study was highly responsive to the dynamic nature of vaccination rates, emergence of new variants, COVID-19 cases, and vaccination policies. Initially, twenty-two states were proposed for the study based on a list of districts that the Government of India was focussing on in December 2021 based on lowest vaccine coverage. 16 states on this list were UNICEF program states.

In each round, state selection was based on the vaccine coverage of selected states being lower than the national average, based on Government of India data on at least one metric among first dose and second dose (along with children's dose and precautionary dose uptake also considered as metrics to select target states in the later rounds). Along with the current status of key vaccine indicators, geographical heterogeneity was a major factor in consideration while selecting states as part of each round to obtain representation from different parts of India, as well as representation of marginalized communities in India including the Scheduled Tribe and Scheduled Caste population.

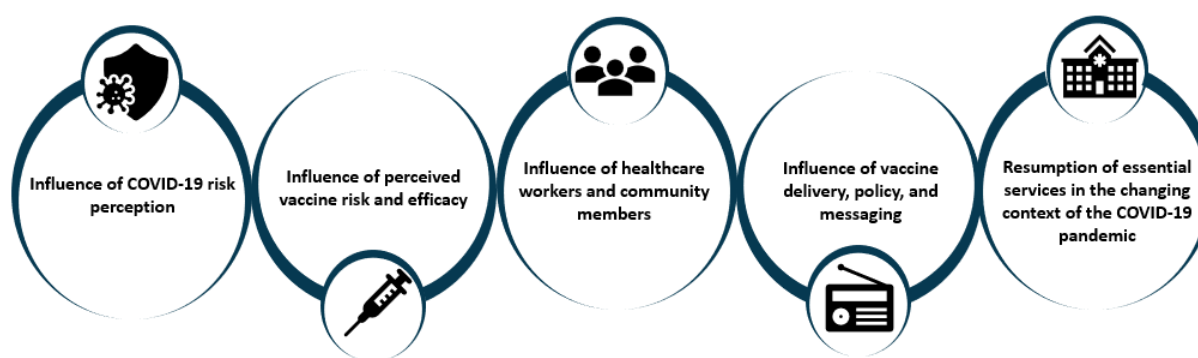
From each sampled states, two to four districts were selected factoring in the following key criteria – (i) 42 districts across 11 states with low vaccine coverage prioritized by the Government of India in December 2021, (ii) districts with vaccine rates being lower than state average based on CoWin data on first and second dose uptake (iii) UNICEF's inputs, (iv) Availability of empanelled district data, (v) Districts with high number of new COVID-19 infections and deaths, (vi) Geographical heterogeneity within each state. Purposive sampling was utilized to gather 70:30 ratio of rural-urban households and 50:50 ratio for male: female respondents. An overview of round-wise sample size, and selected states and districts is given below:

Table 1: Overview of round-wise sampling strategy:

Round number	Sample size	States	Districts
Round 1 (January – March 2022)	452 respondents	<ul style="list-style-type: none"> Jharkhand Maharashtra Tamil Nadu Nagaland 	<ul style="list-style-type: none"> Garwa, Deoghar Aurangabad, Mumbai Salem, Tirunelveli Peren, Mon
Round 2 (March – May 2022)	348 respondents	<ul style="list-style-type: none"> Uttar Pradesh Meghalaya Chattisgarh 	<ul style="list-style-type: none"> Agra, Moradabad South garo hills, Ri bhoi Dhantari, Kanker
Round 3 (May – July 2022)	398 respondents	<ul style="list-style-type: none"> Assam Bihar Rajasthan 	<ul style="list-style-type: none"> Cachar, Goalpara, Hailakandi, Kamrup Banka, Bhagalpur, Muzzafarpur, Siwan Dungarpur, Jaipur, Jodhpur, Udaipur
Round 4 (July – September 2022)	381 respondents	<ul style="list-style-type: none"> Jharkhand Maharashtra Mizoram 	<ul style="list-style-type: none"> Ranchi, Gumla, Lohardaga, Ramgarh Buldhana, Nashik, Pune, Thane Aizwal, Lunglei, Mamit, Saiha
Round 5 (September – October 2022)	388 respondents	<ul style="list-style-type: none"> Madhya Pradesh Tripura West Bengal 	<ul style="list-style-type: none"> Barwani, Betul, Mandla, Raisen Agartala, Gomati, Sepahijala, Unakoti Bankura, Kolkata, Jhargram, South 24 parganas
Round 6 (November – December 2022)	380 respondents	<ul style="list-style-type: none"> Arunachal Pradesh Bihar Rajasthan 	<ul style="list-style-type: none"> Itanagar, Kra Daadi, Longding, Lower Subansiri Bhojpur, Madhubani, Samastipur, Sitamarhi Dholpur, Jhunjunu, Pali, Sawai Madhaopur

Key thematic areas: Key areas of inquiry for this study were guided by the vaccine hesitancy matrix with the major themes from Round 1 to Round 5 being: a) Influence of COVID-19 risk perception, b) Influence of perceived vaccine risk and efficacy, c) Influence of healthcare workers and community members, and d) Influence of vaccine delivery, policy, and messaging. In Round 6, keeping with the context of current resumption of essential healthcare, maternal care, and schools in the aftermath of the COVID-19 pandemic, an additional area of inquiry, that is, resumption of essential services in the changing context of the COVID-19 pandemic was studied in detail. The key thematic areas of the study are illustrated below:

Figure 2: Overview of key thematic areas of the study:



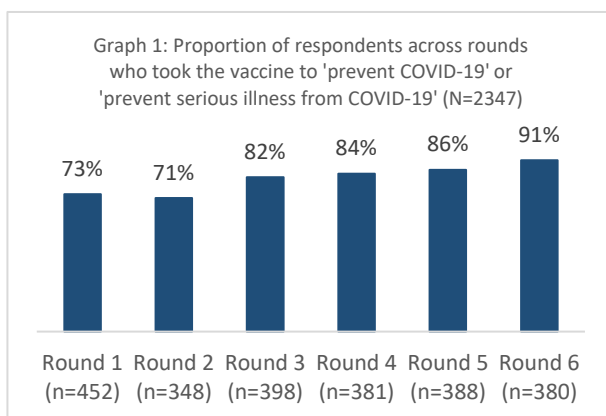
Relevance of this document: This report summarises the findings from across six rounds of the study and provides programmatic insights, which have served as actionable key points feeding UNICEF’s RCCE strategy. This document can serve to further develop public health messaging as part of UNICEF’s COVID-19 response, informed by the varying perceptions, community conversations, and myths and misconceptions regarding COVID-19 and its vaccine that has persisted among communities within the changing context of COVID-19 in India.

Key findings:

1. Influence of COVID-19 risk perception:

This theme captures the influence of COVID-19 risk perception on the notions that drive vaccine behaviour among communities. Across rounds of the study, the influence of COVID-19 risk perception was seen to be closely tied with: a) vaccine status of individuals and vaccine status of the community, b) Respondent's personal experience of COVID-19 and/or among family and community members, and c) conversations about COVID-19 in the community.

A trend of vaccine behaviour being increasingly influenced by disease susceptibility and severity has been noted in all rounds of this study. **From Round 1 to 6, respectively, the following percentage of respondents reported getting vaccinated either to 'prevent COVID-19 infection' or 'prevent serious illness from COVID-19':**



Hence, across rounds, the understanding of identifying risk with the virus and vaccination as a protective measure against it has increased among communities over time.

This may be attributed to the ramp up of vaccine distribution and repeated public health messaging regarding COVID-19 by the Government, after the launch of the world's largest vaccination drive in January 2021²⁶. Further, this can be partly contributed to increased risk perception of COVID-19 among people after the wake of the COVID-19 second wave in April-May 2021, which may have sustained within communities over time^{27,28}.

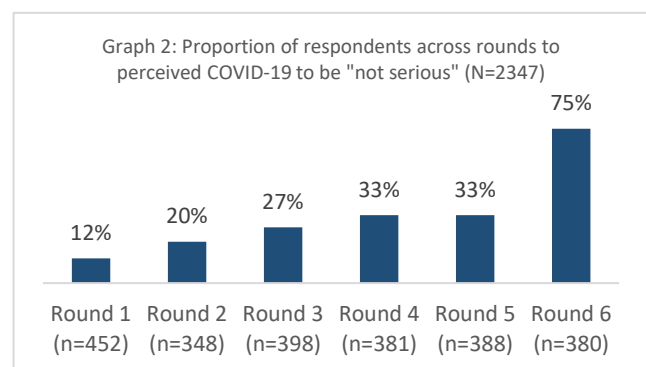
²⁶ <https://www.unicef.org/rosa/stories/braving-all-odds-superheroes-syringes>

²⁷ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8046599/>

"What we heard was that it's important to get vaccinated and that it helps us and prevent us from getting ill from COVID-19...that is why I took the vaccine" (Rural M, Mizoram, vaccinated with two doses, Round 4).

However, just as people's reliance on the vaccine as the primary preventative measure against COVID-19 has increased over time, risk perception of COVID-19 itself has consistently decreased.

From Round 1 to 6, respectively, the trend of respondents who considered COVID-19 to be "not at all serious" is depicted below:



Reduced risk perception of the virus overtime may dilute and weaken people's reliance on vaccination to prevent COVID-19, which has taken months of public health messaging by the Government to build and sustain among communities. This may negatively impact the completion of vaccination schedules, uptake of children's dose, the precautionary dose, and convincing individuals who are still unvaccinated about the importance of the vaccine.

In this study, people's risk perception vis-à-vis COVID-19 was found to be majorly associated with three factors:

²⁸ <https://www.newindianexpress.com/states/karnataka/2021/apr/27/fear-despair-more-in-covid-second-wave-expert-2295318.html>

(i) Vaccine status (individual) or vaccine prevalence in the community: A clear trend of more unvaccinated respondents or those vaccinated with only one dose considering COVID-19 to be 'not at all serious', and/or more respondents vaccinated with at least two doses considering COVID-19 to be 'very serious' has been noted across rounds 1,2,3,4 and 6. However, round 5 showed a contrary finding wherein more number of respondents vaccinated with at least two doses considered COVID-19 to be 'not at all serious' as compared to unvaccinated or respondents vaccinated with only one dose.

Table 2: Round-wise risk perception versus vaccine status of respondents

Round	Proportion of respondents who considered COVID-19 to be "not at all serious"	
	Vaccinated with one dose or unvaccinated	Vaccinated with at least two doses
Round 1 (n=452)	14%	12%
Round 2 (n=348)	31%	19%
Round 3 (n=398)	38%	26%
Round 4 (n=381)	45%	31%
Round 5 (n=388)	21%	33%
Round 6 (n=380)	72%	14%

This implies that just as risk perception of the virus may influence vaccine behaviour, the vaccine status of individuals or vaccine prevalence in the community can also impact perceived risk of the virus. That is, as most communities approach herd immunity and people get multiple shots of the vaccine, the risk they associate with the virus reduces.

"Corona is no longer a serious issue like it was before. Earlier we used to think that people might die from it. But after taking the 1st dose, and seeing how the world has fought towards it, currently it is just reduced to fever" (Rural M, Tripura, vaccinated with three doses, Round 5)

A programmatic implication of this finding is the need to study how vaccine status of individuals or

vaccine prevalence in the community relates to risk perception of the virus among different geographies and communities, to develop public health messaging tools that can reiterate the importance of both disease severity and vaccination, depending on the attitudes and perceptions of different communities with regards to vaccine status, prevalence, and risk of the virus.

(ii) Respondent's experience (self and family) with the disease: Across all rounds, it was noted that respondents who themselves had a negative experience with COVID-19 or had witnessed their families or neighbours suffer from COVID-19, were also more likely to report higher perceived susceptibility and severity of the virus. In line with this, many respondents who themselves recovered from milder infections and saw others around them recover similarly, tend to associate less risk with the virus.

"COVID-19 seems like a common cold now, there hasn't been any severe cases in our area recently...I don't think it is serious anymore" (Rural F, Meghalaya, vaccinated with two doses, Round 2).

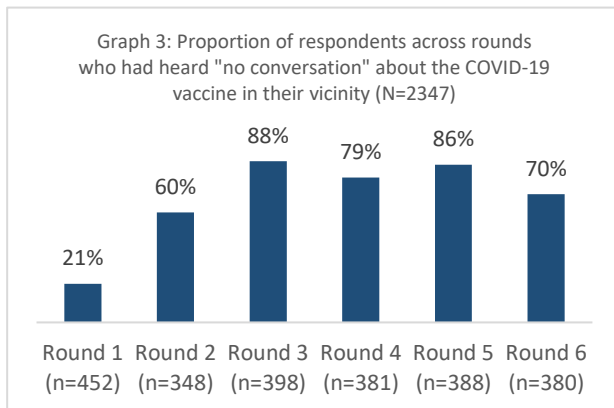
In line with this, a study conducted in the US and certain countries in Asia, including India, has found that individuals who have personally or in their family/friend's network or through media, experienced severe infection from COVID-19, tend to have an increased risk perception of the disease, as compared to those who have experienced milder or no COVID-19 infection²⁹.

(iii) Conversations about COVID-19 in the community: A trend of reduced conversations around COVID-19 have been noted in all the rounds of this study. **From Round 1 to Round 6, respectively, the following percentage of respondents said that they did not hear any**

²⁹ Akel, K. B., Noppert, G. A., Rajamoorthy, Y., Lu, Y., Singh, A., Harapan, H., ... & Wagner, A. L. (2022). A study

of COVID-19 vaccination in the US and Asia: The role of media, personal experiences, and risk perceptions. *PLOS Global Public Health*, 2(7), e0000734

conversations regarding COVID-19 in their vicinity:



This trend perhaps points to the changing context of COVID-19 in India, which saw initial shock and increased conversations about COVID-19 in the initial months of the pandemic in 2020, followed by devastation of the second wave of the pandemic in early to mid-2021, and milder infections witnessed during the third wave in early 2022, followed by no serious waves of infections leading up to the end of 2022.

"In 2020, people were fearful of the virus since it was new and there was a lot of fear about it in the media. In the second wave, people got clarity as to why this virus is spreading, and after the third wave, things went back to normal" (Rural M, Tamil Nadu, Round 1)

As most states reach vaccine saturation and COVID-19 prevalence and severity wanes in the population, conversations around COVID-19 are bound to go down. **A shift in public health messaging strategy regarding COVID-19 and its vaccine is needed at this point to remind communities about the threat of the virus, completing vaccine schedules, and increase as well as sustain vaccine uptake of the precautionary dose and children's dose, and following CAB³⁰.**

³⁰ Porat, T., Nyrup, R., Calvo, R. A., Paudyal, P., & Ford, E. (2020). Public health and risk communication during

Key takeaways:

- **Reliance on vaccination and risk perception:** Community reliance on vaccination as a key protective measure against COVID-19 increased across rounds. However, this was coupled with reduced risk perception of the virus itself. This can potentially have a negative implication on completion of vaccine schedules.
- **Risk perception of COVID-19 is reciprocally associated with vaccine status and vaccine prevalence in community:** Increased risk of the virus may influence communities to get vaccinated. However, over time, increased vaccine prevalence in the community may foster the perception of herd immunity and reduce risk perception.
- **Risk perception of COVID-19 associated with respondent's experience with the disease and community conversations about COVID-19:** Waning threat of the virus for self and family and reduced community conversations may impact risk perception. Public health messaging to focus on reminding communities to follow CAB and complete vaccine schedules to avoid future COVID-19 outbreaks.

2. Influence of perceived vaccine risk and efficacy:

This theme captures the influence of perceived vaccine risk and efficacy on the perception and behaviours regarding the COVID-19 vaccine. Across rounds, a) perceived adverse effects on the fertility and reproductive health (especially among women), b) personal experience and community narratives about vaccine related deaths following vaccination, and c) fear of unknown long-term effects/adverse effects of the vaccine have contributed to dominant narratives of vaccine hesitancy. Along with this, perceived risks of the vaccine for children and influence of the perceived mode of action of the vaccine and vaccine efficacy were also important sub-themes explored.

(i) Perceived adverse effects on fertility and reproductive health: Across all rounds of the study, there were **209 mentions** of sexual and reproductive health (SRH) issues for women, along with a few mentions of impotency and infertility as

COVID-19—enhancing psychological needs to promote sustainable behavior change. *Frontiers in public health*, 637.

potential SRH risks for men and children. **Some common myths like the vaccine being harmful for pregnant and lactating mothers and the fear of infertility for women and young girls were seen in almost all states and were noted to be recurring fears within and across states.** However, region-wise, these narratives emerged most frequently from Nagaland, Meghalaya, Rajasthan, Jharkhand, Maharashtra, Madhya Pradesh and Arunachal Pradesh.

“My wife took the vaccine...after that her monthly period stopped... We thought it stopped naturally. But it came last week... Maybe women won't be able to give birth. Similarly for men... might lead to infertility” (Rural M, Nagaland, Round 1)

To curb misconceptions and fears around SRH risks of the vaccine, it is essential to continue disseminating communication material on vaccine safety for SRH. Along with this, it is essential to update and disseminate the latest research on vaccine safety for sexual health. For instance, to curb the fear of the vaccine on the menstrual cycle of females (which has consistently emerged across states in all rounds of this study), there is ongoing research which has stated that effects of the vaccine on the menstrual cycle are minor and short-lived³¹.

(ii) Personal experience and community narratives about vaccine related deaths following vaccination:

Overall, across all the rounds of this study, there were **522 mentions** of people not taking the vaccine due to fear of death, or people hearing incidents or rumours of people in their community or elsewhere dying after taking the vaccine. Rumours, incidents, and speculations vaccine related deaths were also seen to be associated with comorbid conditions, that is, people speculating that some people have died after taking the vaccine because they were ‘too old’ or ‘had other illnesses’ like a cardiac disease or diabetes. This speculation also fed into the narrative of people not taking the vaccine because they were suffering from other illnesses.

Consistent reporting and dissemination of deaths following vaccination, with an emphasis on clarifying the reasons behind those deaths, is essential to curb vaccine hesitancy among communities.

³¹ <https://www.scientificamerican.com/article/covid-vaccines-can-temporarily-affect-menstruation-and-studying-that-matters/>

“I have heard of some cases where people died right after taking the vaccine. Everyone's body reacts to the vaccine differently - there could have been an allergic reaction too” (Urban F, Maharashtra, Round 4)

(iii) Fear of unknown long-term effects/adverse reactions:

Across all rounds of the study, on average, **30% respondents** said that others around them feared taking the vaccine due to vaccine side-effects like untimely death and infertility. However, as a clear distinction between *sustained severe side-effects and fear of unknown adverse reactions in the community* emerged, **more than 180 mentions** of people having witnessed, feared, or heard rumours of people in their community contracting unknown long-term illnesses were tracked. **These fears caused by rumours or actual incidents (cause unverified) included: becoming paralyzed, blind, getting a heart attack, contracting diabetes, sciatica, skin infections, mental health issues, and so on, after taking the vaccine.**

The recurring nature of these adverse events among communities' points to a gap in cogent reporting and effective information dissemination about adverse events following immunization (AEFIs) among communities. This not only feeds into vaccine hesitancy but causes previously vaccinated individuals to become sceptical of completing their vaccine schedule, taking the precautionary dose, or vaccinating their children.

“I am not hesitating, I think that I got thyroid, diabetes and migraine after taking both the vaccine doses so If I take the third dose...I don't know what will it will bring...also, my children are still young” (Urban F, Rajasthan, Round 3)

Corroborating this finding, a recent study found that the **willingness to receive vaccination among individuals is significantly influenced by exposure to others around them experiencing an uncommon or rare AEFI**³². An effective public health strategy would be to acknowledge the risk from recorded AEFIs, along with highlighting the fact that most AEFIs are only coincidentally associated with the

³²Christou-Ergos, M., Wiley, K. E., & Leask, J. (2022). Willingness to receive a vaccine is influenced by adverse events following immunisation experienced by others. *Vaccine*.

vaccine or show an inconsistent causal relationship³³.

Children's vaccination: Across all rounds of this study, on average, 11% respondents reported fearing risks of the vaccine for children. These fears ranged from the concern that children may experience mild to severe fever and cough, to fear of blood clot formation, heart attack, infertility, reduced growth, gastric issues, hormonal issues, and death. Further, fear of side-effects and the children being too weak to deal with even mild side-effects of the vaccine was noted as recurring reasons of why respondents perceived others around them to be scared of getting their children vaccinated.

"Vaccines produce very strong chemical reactions in the body which might affect children negatively. Children are weaker and such vaccines will have strong side effects on them, hence vaccines are not safe for children." (Urban M, Bihar, Round 6)

Influence of perceived mode of action of the vaccine and vaccine efficacy: As mentioned before, the perception of identifying risk with the virus and uptake of the vaccine as a preventative measure against it has increased among communities over time, with an upward trend of respondents reporting that they 'took the vaccine to prevent COVID-19' or 'prevent serious illness from COVID-19'. Along with this, on average, across all rounds of this study, **close to 85% respondents considered the vaccine to be "very effective" or "somewhat effective", while respondents who considered the vaccine to be "not at all effective" ranged between 2 – 5%.**

Further, qualitative narratives also revealed that people associate their perception of how the vaccine works with how effective it is. This was noted with many respondents saying that the vaccine is not effective because it is 'not enough' to ward off the threat of the virus, that 'too many doses' are being given to prevent COVID-19, or that 'people still get COVID-19 after taking the vaccine'.

"We took the first dose, and the second dose, and now the third dose is also here. Even then there's no assurance that nothing will happen to us. Maybe more doses will come. I feel that the vaccine is not very effective... that is why there are newer doses administered after a certain period. If the vaccine was very effective, then the work would have been done in just a single dose only." (Urban M, Tripura, Round 5)

Interestingly, across the six rounds, multiple narratives from unvaccinated respondents showed a lack of trust in the efficacy and effectiveness of the vaccine, along with concerns about the short timespan in which the vaccine was developed and rolled out. For instance, in Round 6, an unvaccinated female respondent said that she did not trust the vaccine as it had been 'rolled out only recently' and she would only agree to take it in case the pandemic resurfaces. While another unvaccinated male respondent from rural Nagaland from Round 3 mentioned that he did not trust the vaccine initially because it has 'come out so fast'.

"I have some hesitation... people say how come the COVID-19 vaccine was developed so fast when vaccines for diseases like HIV are still not developed properly?" (Urban, F, Arunachal Pradesh, Round 6)

Inaccurate perceptions about the mechanism of action of the vaccine may contribute to vaccine hesitancy and promote long-term distrust in the mode of action and effectiveness of the vaccine among communities. Hence, clarifying the nuance between 'complete prevention' and 'prevention of serious illness' is pivotal to furthering vaccine trust and conviction among communities to complete vaccine schedules and readily take up the third dose, children's dose, and any future immunizations.

³³<https://main.mohfw.gov.in/Organisation/Departments-of-Health-and-Family-Welfare/immunization/aefi-reports>

Key takeaways:

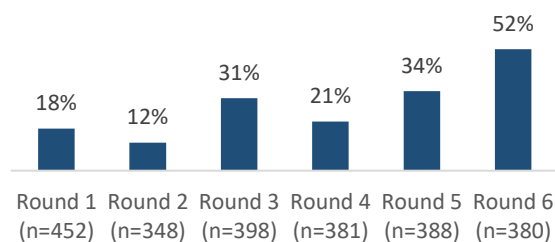
- **Perceived adverse effects of the vaccine on fertility and reproductive health** (especially for women) persisted across and within states.
- **Rumours, reported instances, and speculations of death** following vaccination were reported across all rounds and contributed to vaccine hesitancy.
- **Narratives of death and adverse effects following vaccination among the geriatric population, children, or individuals suffering from comorbid conditions** was also prevalent.
- **Fear of unknown long-term illnesses or adverse effects** following vaccination reported across rounds.
- More respondents across rounds believed that the vaccine **completely prevents COVID-19** as compared to it **preventing serious illness from COVID-19**.

3. Influence of healthcare workers and community members

This theme captures the influence of healthcare workers and community members on vaccine perceptions and uptake across rounds of the study. Positive or negative experiences with healthcare workers and community members can influence individuals and collective decisions regarding vaccination.

Influence of healthcare workers: Healthcare Workers (HCWs) have been one of the most trusted sources of vaccine information across all rounds of this study and seemed to increase over time. Apart from being the most trusted source, health care workers (HCWs) have been the most common source of information for people to reach out to when they have a query about COVID-19 vaccine. **From Round 1 to Round 6, respectively, the following percentage of respondents cited HCWs as the most trusted source of vaccine information:**

Graph 4: Proportion of respondents across rounds who cited healthcare workers as their most trusted source of COVID-19 information (N=2347)



Valid information from FLWs or HCWs help in countering rumours and superstitions regarding the vaccine in the communities. However, misinformation and false guidelines could cause further damage in people's knowledge. This has stood out in qualitative findings across different rounds of this study, especially in Round 3 and 4. For instance, in Round 3, a female respondent from rural Assam said - **"I was breast feeding at that time and the doctor said that I shouldn't take it then"** Another male respondent from urban, Jharkhand in Round 4 said- **"Pregnant women and nursing mothers are not given vaccine in the vaccination camps. These women are sent away."** These are instances of misinformation or lack of information on part of HCWs, that act as barriers to vaccine uptake among people, especially pregnant and lactating mothers. Such misinformation goes against the guidelines provided by Ministry of Health and Family Welfare³⁴ - which reaffirm the safety of COVID-19 vaccine use for pregnant and lactating women. For instance, operational guidelines for COVID-19 vaccination of pregnant women in India mentions that vaccination for pregnant women should be based on the women's informed decision that the risk of infection/morbidity for COVID-19 outweighs the undescribed potential risk of the vaccine³⁵.

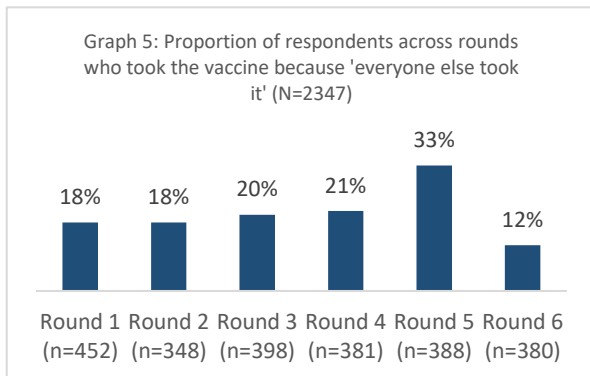
However, there were many narratives of HCWs advocating for COVID-19, reaffirming the positive role the HCWs have played in promoting vaccine uptake in India.

³⁴<https://www.mohfw.gov.in/pdf/OperationalGuidanceforCOVID19vaccinationofPregnantWoman.pdf>

³⁵<https://www.mohfw.gov.in/pdf/OperationalGuidanceforCOVID19vaccinationofPregnantWoman.pdf>

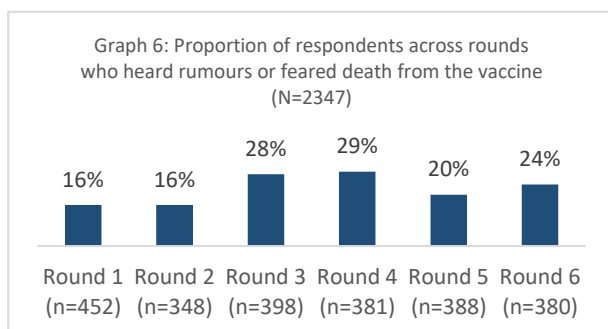
Conversations and rumours circulating in the community also influence vaccine behaviour:

Over the last six rounds 'community influence' was noted as one of the important factors of vaccine decision making. **From Round 1 to Round 6, respectively, the following percentage of respondents, respectively, said they took the vaccine because 'everyone else took it':**



While community influence was one of the factors in positive vaccine behaviour, rumours, and conversations about adverse effects of the vaccine (including deaths) amongst community members have also contributed to vaccine hesitancy.

From Round 1 to Round 6, respectively, the following percentage of respondents cited fear of the vaccine causing death or witnessing or hearing about incidents or rumours of individuals who died from taking the vaccine:



Among other common rumours, vaccine being devised for population control or surveillance were reported from the states of Jharkhand, Nagaland, Tamil Nadu, Meghalaya Bihar, Chhattisgarh, Mizoram, Madhya Pradesh, Tripura and Arunachal Pradesh. Population control and surveillance myths exist across all countries. In 2020, research on online rumours on COVID-19 vaccine was

conducted, in which out of 637 online items 91% were rumours while 9% were vaccine related conspiracy theories from 52 countries.³⁶

"I will no longer take any more doses, no matter what happens. The government will kill us like this" (Rural, F, Madhya Pradesh, Round 5)

Myths like vaccine causing the skin to become like crocodile skin, loss of eyesight, paralysis, rapid ageing, cancer, heart disease, sciatica, mental disturbance, and so on, were amongst some of the less common myths and misconceptions on vaccine that emerged across states. Vaccine causing infertility, impotency, and erectile dysfunction were also some of the sustained myths around sexual and reproductive health of women and men.

Videos on YouTube and messages on WhatsApp about side-effects of the vaccine were the most cited sources of such information and myths. Such sustained rumours and conspiracy theories around the vaccine creates lack of vaccine confidence, delays, and refusals in vaccine uptake.

Key takeaways:

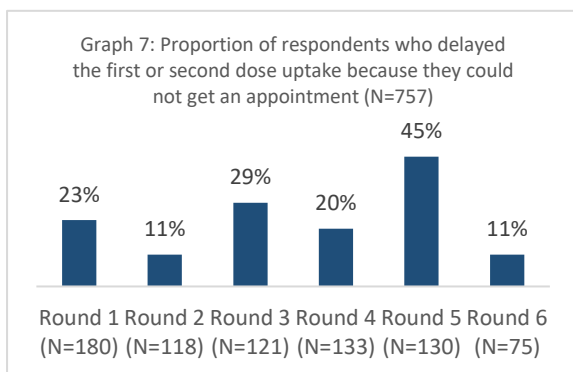
- Healthcare workers (HCWs) emerged as one of the most common and most trusted sources of COVID-19 information across all rounds. Just as valid COVID-19 vaccine information provided by HCWs countered vaccine hesitancy, misinformation and false guidelines can increase vaccine hesitancy.
- While community influence was one of the factors in positive vaccine behaviour, rumours, and conversations about adverse effects of the vaccine (including deaths) amongst community members have also contributed to vaccine hesitancy.
- Videos on YouTube and messages on WhatsApp about side-effects of the vaccine were one of the most cited sources of vaccine myths.

³⁶<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8115834/>

4. Influence of vaccine delivery, policy, and messaging:

This theme captures the influence of vaccine delivery, policy, and messaging on COVID-19 perceptions and vaccine behaviour. While vaccine policies and mandates have often been seen to contribute to passive vaccine acceptance; lack of access, availability, low awareness and decreased media exposure to COVID-19 vaccine information may lead to low uptake of the vaccine, incomplete vaccine schedules, and non-compliance to CAB measures.

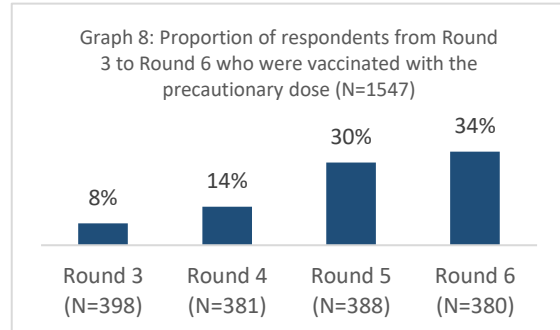
Experience of getting the vaccine influences vaccine behaviour: Understanding respondent's experience at vaccination centres has been an important aspect of the study. Across the six rounds of the study, on average, **more than 85% of the respondents stated that they did not face any difficulty when they went to get the vaccine.** However, various supply side barriers emerged across rounds which influenced people's vaccine behaviour. This was most prominently captured in people's reasons for delaying vaccination. **From Round 1 to 6, respectively, the following percentage of respondents delayed taking the first or second dose and they did so because 'they could not get an appointment':**



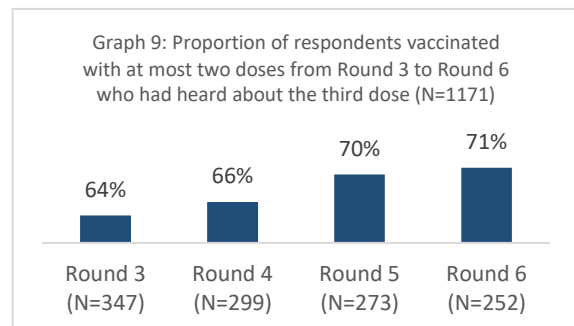
Other major logistical reasons for delaying for either delaying the first or second dose included: limited number of doses at the centre or unavailability of vaccine shots, the centre being too crowded or far away, and encountering long waiting time at the centre.

Precautionary dose vaccination: In line with government's decision to launch the precautionary dose in early April 2022³⁷, Round 3 to 6 of the study (conducted from the months of May to

December 2022) saw a steady increase in the number of respondents who had both heard about the third dose and had got vaccinated with all three doses. From Round 3 to 6; 8%, 14%, 30%, and 34% of the total respondents were vaccinated with the precautionary dose.



Further, among those vaccinated with one or two doses, the following percentage had heard about the precautionary dose:



However, state-wise, it was noted that respondents from Assam, Mizoram, Madhya Pradesh, and Arunachal Pradesh had a low uptake of the precautionary dose. In terms of awareness of the precautionary dose, from Round 2 to 6, Meghalaya, Assam, Mizoram, Madhya Pradesh, and Rajasthan lagged behind other states. Notably, low uptake and awareness of the precautionary dose in north-eastern states were primarily due to access issues.

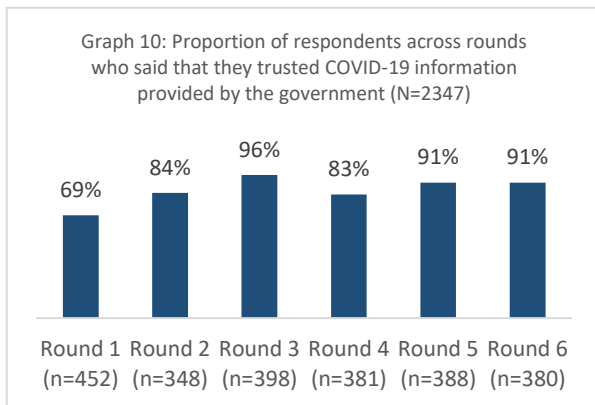
"People are not hesitant...it is just that people are not aware of it. It is also because the community camps are not being set up for this, it is for this reason people are not taking the third dose" (Rural F, Rajasthan, Round 3)

³⁷ <https://indianexpress.com/article/india/covid-19-vaccine-booster-doses-all-adults-sunday-7859923/>

Further, Round 3 onwards, the key barriers to the uptake of the precautionary dose included: (a) unavailability of the precautionary dose, (b) lack of information/awareness about the precautionary dose, (c) lack of time, (d) unwillingness to pay, and (e) considering the precautionary dose to be avoidable since compulsory certificates are not required for it to access public spaces. Lastly, a few respondents also associated risks with the precautionary dose, like the vaccine shots causing 'nerve related illnesses' or being 'given through the nose' or 'in the form of capsules.'

Trust in government influences active vaccine uptake:

From Round 1 to 6, the following percentage of respondents, respectively, reported that they trusted the information provided by the government on COVID-19 vaccine:



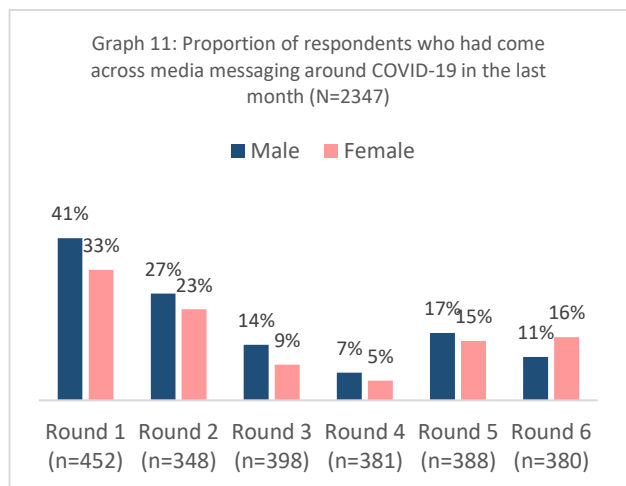
An incremental rise in people's satisfaction with the steps taken by the government with regards to COVID-19 vaccine policy and information was seen. In Round 1, 45% respondents, and in Round 2, 54% respondents reported being 'very satisfied' with the steps taken by the government for COVID-19 vaccination. This is in line with the vaccination rates across the time through which the first two rounds of the study were conducted (January to May) where the vaccination rates across India (vaccinated with two doses) were at 59% in March'22 and 63% in May'22. In the following Rounds the vaccine uptake had increased across India along with an increase in respondents stating they are 'very satisfied' with the steps taken by the government. From Round 3 to 6, 63%, 70%, 77% 78% respondents respectively

reported being 'very satisfied' with the government COVID-19 vaccine policy.

Interestingly, about 20% of unvaccinated respondents across six rounds (n=89) said that they did not trust information given by the government on the COVID-19 vaccine. Also, 13% said that they were not satisfied with steps taken by the government to provide vaccination. Reasons for distrust included the government forcing people to take the vaccine, the COVID-19 pandemic and vaccine being a 'scheme to loot people's money' or speculations about the government trying to 'kill people to reduce the population'.

Notably, many studies have stated that individuals who are against vaccination distrust mainstream institutions, particularly the government^{38,39}. Public trust in the information provided by government, healthcare providers, and the media is among the most crucial factors that influence vaccine uptake and may influence vaccine hesitancy.

Media and messaging: From Round 1 to 4, a consistent declining trend of respondents stating that they had come across advertisements, announcements, or door to door campaigns was noted. The last two rounds, however, saw a slight uptick in the number of respondents reporting that they had come across media messages around COVID-19 vaccination.



A dip in media messaging as the number of COVID-19 cases decrease can result in people

systematic review of public responses to health messages encouraging vaccination against infectious diseases in a pandemic or epidemic. *Vaccines*, 9(2), 72.

³⁸ Miyachi, T., Takita, M., Senoo, Y., & Yamamoto, K. (2020). Lower trust in national government links to no history of vaccination. *The Lancet*, 395(10217), 31-32.

³⁹ Lawes-Wickwar, S., Ghio, D., Tang, M. Y., Keyworth, C., Stanescu, S., Westbrook, J., ... & Epton, T. (2021). A rapid

becoming more complacent and disregarding COVID-19 protocols and delaying the completion of vaccination schedules or taking up the precautionary dose. Further, decreased media messaging as the number of COVID-19 cases wane may also contribute to **sustaining vaccine hesitancy among communities who were averse to getting vaccinated in the first place, but may have shown some behavioural change over time if media messaging around COVID-19 sustained. Furthermore, from Round 1 to 5, women being less exposed to media messaging on COVID-19 was noted**, with a slightly greater number of women being exposed to media messaging regarding COVID-19 reported in the last round. **Lesser media exposure of women to COVID-19 related news and advertisements may impact their health behaviour negatively⁴⁰. For instance, fewer women as compared to men may be exposed to the latest information about vaccine safety and COVID-19 appropriate protocols, and hence they may remain more fearful or unsure of complying with COVID-19 prevention measures as compared to men.**

Communication channels: Overall, HCWs and mainstream media were one of the most trusted sources of vaccine information across rounds of study. Respondents stated these sources to be 'verified sources of information' and that information in these sources were 'directly given by the government'. Further, overall, social media (Facebook, WhatsApp, Instagram) emerged as one of the least trusted sources of vaccine information across various rounds of the study. Overall, most respondents cited 'lack of credibility' of these source and circulation of rumours or fake news across social media platform (unverified data) as their key reasons for not trusting these platforms. For instance, a female respondent from rural Mizoram in Round 4 said - "I don't trust a lot of things that are posted on social media, especially in the family WhatsApp groups because I do not know the origin of the messages".

Key takeaways:

- Across rounds, **key barriers to the uptake of first and second dose included:** a) not getting appointment, b) limited number of doses at the centre or unavailability of vaccine shots, c) the centre being too crowded or far away, and d) encountering long waiting time at the centre.
- **Key barriers to the uptake of precautionary dose included:** (a) unavailability of the precautionary dose, (b) lack of information/awareness about the precautionary dose, (c) lack of time, (d) unwillingness to pay, and (e) considering the precautionary dose to be avoidable since compulsory certificates are not required for it to access public spaces.
- **States with low uptake of the precautionary doses included:** Assam, Mizoram, Madhya Pradesh, and Arunachal Pradesh. **States with low awareness of the precautionary dose included:** Meghalaya, Assam, Mizoram, Madhya Pradesh, and Rajasthan. **Notably, low uptake and awareness of the precautionary dose in north-eastern states were primarily due to access issues.**
- **One in five unvaccinated respondents cited not trusting the information provided by the Government on COVID-19**, although overall Government trust with regards to COVID-19 vaccine among all respondents increased across rounds.
- **A trend of less COVID-19 related media exposure of women was noted as compared to men.** Lesser media exposure of women to COVID-19 related news and advertisements may impact their health behaviour negatively.
- **Mainstream media and HCWs were one of the most trusted sources of vaccine information** across rounds of study, while **social media (Facebook, WhatsApp, Instagram) emerged as one of the least trusted sources of vaccine information.**

⁴⁰ Melki, J., Tamim, H., Hadid, D., Farhat, S., Makki, M., Ghandour, L., & Hitti, E. (2022). Media exposure and health behavior during pandemics: the mediating effect

of perceived knowledge and fear on compliance with COVID-19 prevention measures. *Health communication*, 37(5), 586-596.

5. **Resumption of essential services in the changing context of COVID-19 pandemic:**

This theme captures the resumption of essential services in the changing context of the COVID-19 pandemic. This includes general and maternal health services, access and use of AWCs, as well as the resumption of schools post COVID-19 lockdown.

Experience with resumption of general health services:

Close to 50% respondents in the first three rounds of the study reported that the quality of health services in their area have improved in the last one year after the onset of the COVID-19 pandemic. The most reported improvements included: Introduction and rigorous follow-up of CAB protocols, better healthcare infrastructure and staffing, improved hygiene, etc. In line with this, a deeper look at resumption of general health services in Round 6 revealed that, overall, more than 50% respondents felt that the 'quality of services had improved' and 'health facilities were better stocked with medicines' since the resumption of services after the COVID-19 pandemic.

"Compared to pre-covid times...100 percent upgradation in hospitals...Previously we had to go out of state, like Assam... right now, we can go to the hospitals here. Now ventilators are available in ICU in every district..."
(Urban M, Arunachal Pradesh, Round 6)

Along with this, 23% respondents also reported that 'healthcare facilities are better staffed now' and 'healthcare facilities maintain more hygiene'. Narratives of *how* the respondents believed services had improved post COVID-19 point to the enhanced awareness and experience of provisions made on basic healthcare amenities among rural and/or marginalized contexts which were not present before the pandemic.

However, a small percentage of respondents across all six rounds reported "no changes" (ranging from 14% in Round 1 to 21% in Round 6) or negative experiences while accessing general healthcare services post COVID-19 lockdown. These pointed to systemic supply side barriers in the system like transportation issues, hospitals being understaffed, and hospitals lacking equipment. **Notably, narratives of lack of**

attention given by doctors to non-COVID illnesses, refusal by doctors to attend to patients who were unvaccinated, and mismanagement of medicine prescriptions on part of doctors were more pronounced in Round 1 as compared to Round 6, possibly because the Omicron wave was ongoing during Round 1 and people recalled negative experiences with healthcare providers during the second wave of the pandemic better, as compared to the time of Round 6, when COVID-19 cases have declined in the preceding months.

"Doctors are hesitant of getting closer to patients in some places, for other than fever doctors prescribe treatments and medicines without proper check-ups; Primary health centres keep sending us away to a different hospital for treatment" (Rural F, Tamil Nadu, Round 1)

Access to AWCs for children:

Across all rounds of the study, most respondents said that people send their children to Anganwadi centers (AWCs). However, from Round 1 to 6, issues in access to AWCs most prominently emerged from Jharkhand and Maharashtra (in Round 1), Uttar Pradesh (in Round 2), Assam and Rajasthan (in Round 3), Jharkhand and Mizoram (in Round 4), Madhya Pradesh (in Round 5) and Arunachal Pradesh (in Round 6), respectively. The most noted issues in access and dissatisfaction with AWC services included: AWC centers being located far away, AWC being non-functional, not opening on time, and food distribution at AWCs being irregular or not being provided rations by Anganwadi workers (AWWs) at the center. However, there were also positive narratives of AWWs going door to door during the pandemic to provide rations at home, which may serve to increase community trust in AWWs, with regards to both vaccination and access to essential services.

Maternal health services:

In Round 1, some respondents (n=31) expressed that the community's access to ante-natal and pregnancy related services at AWCs were negatively impacted due to **unavailability or inadequacy of services, or mandates and fear of contracting COVID-19 among pregnant women and precautionary advice given by women's organizations and hospital staff for pregnant women to stay home and not go for institutional deliveries**. For instance, a male respondent from rural Nagaland said that "women's organization and village chief did not allow them to come out during the pandemic as they were

pregnant and there was a high risk of contracting COVID-19” while another female respondent from urban Jharkhand narrated that “hospitals are advising pregnant women to not go to hospitals for delivery” In Round 6, negative experiences with maternal health services (n=42) were more prominently reported in terms of the lack of availability of specialists at health centers, distance from health facilities, and referral to private clinics. **However, some instances of pregnant women refraining from getting vaccinated because they were advised by health care providers to not get vaccinated at some point in their pregnancy in the past few months, or only leaving their house to seek care during emergency situations has persisted until the last round of the study.**

“I don't trust anything regarding the covid vaccine. I was 7-8 months pregnant when the pandemic started and I was advised then not to take the vaccine because of my pregnancy so I didn't, I haven't taken the vaccine till now” (Rural F, Arunachal Pradesh, Round 6).

This points to a phase of initial severe restrictions placed on pregnant women during the start of the pandemic with regards to accessing healthcare facilities and taking the vaccine, which has later become a precautionary norm of ‘only stepping out when required’ and the sustained myth of ‘not getting vaccinated during pregnancy’ over time.

In Round 6, 84% women respondents (n=167) reported that pregnant women in their area were accessing AWCs after the resumption of services post COVID-19 pandemic (with the least saying so from Arunachal Pradesh). Of these, 67% women said that pregnant women in their area are availing regular health check-ups from AWCs, while 40% said that pregnant women also receive nutrition education at AWCs.

Resumption of schools: During Round 1, wherein most schools were closed during the peak of the third wave of the pandemic, **more than 60% respondents** felt that schools must re-open because of loss of learning. As a result, parents were eager to get their children vaccinated once the vaccine was rolled out, despite perceived risks, especially if the vaccine was made mandatory by schools. This is in line with findings from Round 2 through 6, wherein

in most states, schools have emerged as favoured sites of vaccination for children.

*‘Being a mother myself, we feel that it is loss of education because most of us mothers cannot read and write well ...it is good for the children to attend the school **as early as possible**...It will be good if they take vaccine and open the school but government has not released a dose for **3-15 years of age**, so if the situation gets better, schools should reopen.’ (Rural F, Nagaland, Round 1).*

As schools have resumed since the COVID-19 pandemic now, a deeper look at access to schools in Round 6 revealed that overall, more than 50% respondents were satisfied with steps taken by schools to compensate for missed classes during the pandemic. **However, there were state-wise instances of dissatisfaction with online classes and steps taken later to compensate for loss of learning during the pandemic.** These included problem of unstable network and children not being able to attend classes, time constraints and pressure on children, increased screen time and phone addiction among children, and lowered retention of knowledge lack of quality in monitoring exams in the online mode of learning.

*“A lot of students who passed exams during lockdown **do not remember anything they studied during those years.**” (Rural, F, Arunachal Pradesh, Round 6)*

Further, there were cases of school dropouts, the inability of parents to support their child’s education during the pandemic due to financial constraints or logistical limitations in terms of work commitments, and the burden of educating the child falling on the mother in the household.

Perhaps, there is a need to focus on school resumption for the most marginalized and address multiple factors which at once work to profoundly reduce access to schools for these children. For instance, the issue of low internet connectivity in north-eastern states like Arunachal Pradesh coupled with reduced access to schools may have contributed to reduced learning as compared to North India⁴¹.

In line with this, a framework for reopening schools published by UNICEF mentions ‘reaching the most marginalized’ as one of the key dimensions to assess

⁴¹ [https://www.thehindu.com/news/national/other-states/ground-zero-in-the-time-of-online-classes-](https://www.thehindu.com/news/national/other-states/ground-zero-in-the-time-of-online-classes-northeast-waits-for-a-faint-signal-from-a-distant-tower/article61669704.ece)

[northeast-waits-for-a-faint-signal-from-a-distant-tower/article61669704.ece](https://www.thehindu.com/news/national/other-states/ground-zero-in-the-time-of-online-classes-northeast-waits-for-a-faint-signal-from-a-distant-tower/article61669704.ece)

the readiness of schools re-opening post COVID-19 pandemic⁴². Along with this, the framework also reiterates that contextualization and adaption is critical to school resumption in contexts which face multiple deprivations, such as conflict and dense population.

Key takeaways:

- AWCs being located far away, being non-functional, not opening on time, and food distribution at AWCs being irregular limited children's access and use of AWCs.
- During Round 1, **more than 60% respondents** felt that schools must re-open because of loss of learning. In Round 6, **more than 50% respondents** were satisfied with steps taken by schools to compensate for missed classes during the pandemic.
- **State-wise instances of dissatisfaction with online mode of education in Round 6 included:**
a) unstable network and children not being able to attend classes, b) time constraints and pressure on children, c) increased screen time and phone addiction among children, and d) lowered retention of knowledge, and e) lack of quality in monitoring exams in the online mode of learning.
- Cases of **school dropouts**, the **inability of parents to support their child's education during the pandemic** due to **financial constraints or logistical limitations** in terms of work commitments, and the **burden of educating the child falling on the mother** in the household also emerged.

6. Vaccine hesitancy and vaccine delivery challenges in North-East India:

This theme captures specific barriers to vaccine information that emerged from the North-Eastern states covered in the study. The North-Eastern states of India need special attention given the overall deprivation of these states in terms of access to health facilities and vaccine information.

Among the North-Eastern states of India, systemic issues such as difficult terrain, lack of transport facilities, lower education rates, and language barriers⁴³ contribute to an overall lower vaccine uptake, service delivery, and access to essential service.

These barriers not only add to poor vaccine uptake but also lower dissemination of scientific knowledge on the vaccine, encouraging sustained myths across north-eastern states. For instance, 'vaccine is used for population control' was a sustained myth across all states from North-east India covered in the study.

In this context, vaccine hesitancy and reduced vaccine uptake among the North-Eastern states covered in this study were tied to:

Religious and superstition-based vaccine misconceptions: Some of the most serious myths and misconceptions around vaccination were reported from North-eastern states. While all study states reported common vaccine fear⁴⁴; **religion-based vaccine hesitancy was noted the most strongly in the North-eastern states of Nagaland, Mizoram, Meghalaya, and Arunachal Pradesh.** Vaccine misconceptions propagated through religious leaders and church related superstitions seem to contribute to vaccine hesitancy in North-east India.

For instance, in Round 4, a female respondent from rural Mizoram reported that many people in her area were not taking the vaccine because they belong to a certain religious group or are affiliated with the church. The respondent narrated that a domestic help she had, did not have an Aadhar card due to 'personal religious beliefs' and hence she could not take the vaccine. Interestingly, in a

⁴² <https://www.unicef.org/sites/default/files/2020-06/Framework-for-reopening-schools-2020.pdf>

⁴³ <https://www.ucanews.com/news/christians-struggle-to-check-pandemics-spread-in-northeast-india/92777>

⁴⁴ <https://www.hopkinsmedicine.org/health/conditions-and-diseases/coronavirus/covid-19-vaccines-myth-versus-fact>

similar report by Scroll, Reverend from Khasi-Jaintia Presbyterian Church in Meghalaya mentioned that previously Aadhar card was being associated with the devil, as it was required as identity proof during vaccination⁴⁵

"They say that corona is sent by Jesus Christ and that is why we should not take the vaccine" (Rural, F, Arunachal Pradesh, Round 6)

Other commonly reported **myths about the vaccine being Satanic, containing devil's number (666) or vaccine being against God's will emerged from Nagaland, Meghalaya, Mizoram and Arunachal Pradesh.** A male respondent from rural Nagaland in Round 1, for instance, reported that he had heard news about the vaccine being 'Anti-Christ'. In Round 2, **many respondents (N=20) from Meghalaya shared narratives of the vaccine being associated with '666' or 'beast number'.** Likewise in Round 4, a female respondent from rural Mizoram talked about the probable 'association of the vaccine to the Illuminati or Satan'.

"They say it's related to the bible and it has Satan's number. The church also said something, but I don't know much." (Rural, M, Nagaland, Round 1)

Vaccines containing a microchip or biochip also emerged across multiple states. In Round 6, a female respondent from Arunachal Pradesh, for instance, said that **"Some people say that microchip is inserted into the body using the vaccine."** This is again a sustained myth reported across north-eastern states as well as in media and news reports from Nagaland, where Eastern Zion Healing Ministry released a prophecy on the vaccine containing a microchip.⁴⁶ Notably, Assam and Tripura did not report rumours about the vaccine being associated with 'the Satan' or 'the anti-Christ'.

Interestingly, no myth was confined to one state. The ones that were reported by mainstream media in one state emerged in another state through community members. This indicates the nature of myths and rumours that they are ever-present, travel through different channels, and persist in

⁴⁵ <https://scroll.in/article/995390/fringe-groups-and-right-wing-american-propaganda-are-fuelling-vaccine-hesitancy-in-north-east>

⁴⁶ <https://www.newindianexpress.com/nation/2021/jan/18/covid-vaccines-not-gods-will-says-nagaland-prayer-centre-gets-rebuke-from-church-body-2251753.html>

the psyche of communities, influencing their vaccine behaviour much after the myth was first encountered by them.

Difficult road connectivity and geographical terrain: Vaccine delivery as well as access to essential services has been a challenge encountered by multiple respondents especially in districts with difficult terrains and poor road connectivity. For instance, female health-worker from rural Mizoram in Round 4 reported that there were many parts in Mizoram which had difficult terrains and roads and that she had witnessed many of her colleagues struggle to go to those areas for vaccine distribution.

"I have seen my colleagues go to those areas for vaccine distribution... Access to healthcare is quite the problem here... Commuting is also difficult because of the condition of the roads. There is no proper supply of medicines". (Rural, F, Mizoram, Round 4)

Another male respondent from rural Mizoram, when asked whether he was satisfied by the steps taken by government during COVID-19 said that **"I am satisfied to an extent but not fully. The road to our village is bad and sometimes it is very hard to get the vaccine"**.

Such narratives strongly imply that vaccine delivery is challenging in the northeast region, specifically in the remote areas, adding to supply side delays.⁴⁷

"Because we had no vehicle of our own and there was no transportation, we had to walk on our own. We walked 8 kilometres to get this vaccine." (Rural, F, Meghalaya, Round 2)

In Round 6 respondents were asked to report their experience of resumption to essential services post COVID-19, where respondents from Arunachal Pradesh spoke about systemic challenges which might have impacted their overall experience post resumption of services. For instance, a female respondent from rural Arunachal Pradesh, said, "I think institutional deliveries have increased since COVID-19 but

⁴⁷ <https://www.eastmojo.com/northeast-news/2021/06/22/covid-19-officials-brave-hilly-terrain-vaccine-hesitancy-to-inoculate-remote-india/>

because the roads are not good or vehicles are not available, so some women opt for home-births”, when asked about whether pregnant women in her area were opting for institutional delivery over homebirth.

As per HMIS report from 2019-20 around **89.9% of the deliveries in Arunachal Pradesh took place in institutions**⁴⁸, out of which 85.8% took place in public health facilities. Although institutional deliveries have increased in Arunachal Pradesh over time, incidents of absence of roads have taken the lives of pregnant women in Longding district⁴⁹. Incidents of poor roads and landslides causing death of pregnant women have been reported from the state⁵⁰. Hence, not only does bad terrain and transportation issues create barriers for vaccine uptake in in north-eastern state, but also contribute to lower access and uptake of essential services.

Key takeaways:

- **Religion-based vaccine hesitancy** was noted the most strongly in the North-eastern states of Nagaland, Mizoram, Meghalaya, and Arunachal Pradesh. **Vaccine misconceptions propagated through religious leaders and church related superstitions seem to contribute to vaccine hesitancy in North-east India.**
- Vaccine delivery as well as access to essential services was a challenge reported by many respondents from North-eastern states, **especially in districts with difficult terrains and poor road connectivity.**

Key actionable insights: Findings from the study revealed crucial actionable insights across thematic areas to combat vaccine hesitancy and increase the uptake of vaccine. The key actionable insights across themes include:

Influence of COVID-19 risk perception:

- Shift in public health messaging strategy to emphasise the significance of completing the vaccination schedule and reinforcement of ongoing communications to boost the uptake

of precautionary dose, children's dose, and adherence to CAB.

- Develop public health messaging tools that target region specific attitudes and perceptions regarding vaccine status or vaccine prevalence, and risk of COVID-19

Influence of perceived vaccine risk and efficacy:

- Continuous tracking, research, and dissemination of communication material for vaccine safety for the sexual and reproductive health of women, men, and children.
- Recording, reporting, and effective dissemination of AEFIs and vaccine related deaths (with an emphasis of actual reason of adverse effects/death and degree of causal association to the vaccine).
- Focus on and address region specific myths and misconceptions and reported concern for side-effects and adverse effects. Continue to counsel parents about the safety of the vaccine for children.

Influence of healthcare workers and community members:

- Continued refresher training and utilization of HCWS to advocate for vaccine uptake, completion of vaccine schedules, and busting myths and misconceptions about the COVID-19 vaccine among communities.
- Tracking community conversations around COVID-19 and its vaccine to track myths and get real time insight the conversations that influence vaccine behaviour of individuals.

Delivery of vaccine delivery, policy, and messaging:

- State-wise disaggregation of supply side barriers to the uptake of vaccination, completion of vaccine schedules and uptake of the precautionary dose.
- Special attention increasing the uptake and awareness of the precautionary dose.
- Continuous communication regarding the vaccine through government channels and establishing and sustaining communities' trust in government's intentions with the roll out of the vaccine.

⁴⁸https://nhsrcindia.org/sites/default/files/practice_image/HealthDossier2021/Arunachal%20Pradesh.pdf

⁴⁹ <https://www.thehindu.com/news/national/other-states/no-road-to-access-healthcare-three-pregnant-women-die-in-arunachal-village/article33073138.ece>

⁵⁰ <https://www.thehindu.com/news/national/other-states/no-road-to-access-healthcare-three-pregnant-women-die-in-arunachal-village/article33073138.ece>

- Enhance media messaging around COVID-19 and account for any gender, region, and state-wise disparities in COVID-19 media exposure.
- Leverage HCWs and mainstream media as key channels of vaccine communication and optimize the use of social media while also focussing on increasing its credibility, utilization and credibility of social media.

Resumption of essential services in the changing context of the COVID-19 pandemic:

- State-wise disaggregation of reasons that impede access to general health services and addressing barriers to service delivery and quality.
- Special focus on access for maternal health and debunking myths and unnecessary restriction on the mobility of pregnant women to access services.
- Enhance access, regularity, and quality of food distribution at AWCs along with pre-school education and supplementary nutrition for pregnant women.
- State-wise disaggregation of reasons that impede school resumption. For instance, in Round 6, low internet connectivity emerged as a key reason that limited access to children to quality online teaching during the lockdown, specifically in in Arunachal Pradesh. This may result in them lagging in learning outcomes after the resumption of schools, as compared to children from other states.

Vaccine hesitancy and vaccine delivery challenges in North-East India:

- Ensure accessible roadways and public transport to access essential services with special emphasis on remote areas of Northeast region.
- Dissemination of public health information in regional languages.
- Counter religious vaccine hesitancy using religious organizations as a site for dissemination scientific information.

Vaccine hesitancy and misinformation among unvaccinated respondents:

- Explain that there is risk of serious illness and risk of premature delivery for pregnant women who contract COVID19 due to already stressed immune system.

- Reiterate safety of COVID-19 vaccination for pregnant and breastfeeding women in simple language, using evidence.
- Counter vaccine trust by leveraging scientific vaccine information and promotional camps.

Conclusion:

Across the course of six round of this study conducted over a year from January 2022 to November 2022, several crucial actionable insights to combat vaccine hesitancy and increase the uptake of vaccine among various geographies and communities were gathered.

With regards to vaccine hesitancy, it was foremost noted that risk perception of the vaccine, conversations in the community, trust in vaccine efficacy, and information provided by influential leaders and key media channels worked to influence the vaccine behaviour and decision making of individuals to uptake the vaccine and complete vaccination schedules. Further, several supply side barriers like lack of vaccine availability, inability to get appointments, difficult geographical terrains, lack of access to and dissemination of up-to-date vaccine information and guidelines operated to influence vaccine uptake in various geographies and contexts.

The nature of circulating myths, misconceptions and concern for side-effects and adverse effects of the vaccine not only continued to circulate within and across states but sustained among communities. This happened by way of channels like social media and mainstream media, community leaders, community members, and even healthcare and frontline workers. Healthcare workers and mainstream media, however, were also noted to be the most trusted sources of COVID-19 information in most contexts.

Further with regards to the resumption of essential services, it was noted that while most services like general healthcare, AWCs, maternal health services, and schools have resumed since the onset of the pandemic and lockdown, there remain gaps in access, uptake, and quality of services.

In order to increase vaccination uptake and combat vaccine hesitancy, it is important to continuously track and dispel vaccine related misinformation, especially in hard-to-reach geographies and marginalized contexts. This study brought forth many narratives to corroborate this insight. Further, as we move into an era of near vaccine saturation and low risk perception of COVID-19, it is pertinent that a continuous effort is made to advocate for the uptake of the vaccine, the completion of vaccine schedules, and the uptake of the children's dose and

precautionary dose. Lastly, the COVID-19 vaccination drive in India should now also focus on advocating for knowledge dissemination and sustainability of immunization, to impart long-term trust in for immunization among the population.

Tracking and eradicating vaccine-related myths is crucial for boosting immunisation rates and reducing

vaccine hesitancy, particularly in difficult-to-reach areas and marginalised contexts. Furthermore, it is important to instil long-term confidence in immunisation among the populace, the COVID-19 vaccination effort in India should now also focus on lobbying for knowledge dissemination and sustainability of immunisation.

Annexure:

Snapshot of myths and misconceptions around COVID-19 Vaccine

1. Sexual and Reproductive Health

Myth	Reported source	States	Discussion
COVID-19 vaccine is unsafe for pregnant women/lactating mothers	FLW/Health care workers Community members	Assam, Bihar, Rajasthan, Tamil Nadu, Jharkhand, Maharashtra, Mizoram, Nagaland, Meghalaya Madhya Pradesh, Tripura, West Bengal Arunachal Pradesh	Some material on MoHFW website ⁵¹ addresses the importance of vaccinating pregnant women and how this will protect the child. This can be used after translation into regional languages. Material for counselling pregnant women on COVID-19 vaccination ⁵² is also available at the moment by MoHFW which too can be translated in regional languages for better accessibility. The most easily accessible FAQs on MoHFW website is dated 27.9.22 and has language such as "benefits outweigh risks", "may have a beneficial effect". ⁵³ This can be updated.
COVID-19 vaccine can cause infertility in women and young girls	Rumours/ Community members	All states	There is a question on 'female fertility' in the FAQs on MoHFW website ⁵⁴ – this can be expanded. There is a need to continuously disseminate latest research on safety of vaccine for pregnant and lactating women, and continuously track and dispel myths regarding infertility due to the vaccine.
COVID-19 can cause infertility/impotency in men/ low sperm count	Rumours/ Community members	Jharkhand, Meghalaya, Mizoram, Madhya Pradesh, Tripura, West Bengal, Arunachal Pradesh	No material on MoHFW addresses this concern.
COVID-19 vaccine can impact menstrual cycle	Actual incident/experience of respondents	Meghalaya, Chhattisgarh, Rajasthan, Jharkhand, Nagaland, Tamil Nadu, Maharashtra, Madhya Pradesh, Arunachal Pradesh	No existing material addressing this. There are some news reports and emerging research documenting anecdotal evidence on impact of COVID-19 and its vaccine on menstrual cycle, as well as reports linking menstrual health disorders as AEFIs of COVID-19 vaccine ^{55,56}

Recommendations:

- Reiterate safety of COVID-19 vaccination for pregnant and breastfeeding women in simple language, using evidence.
- Explain that there is risk of serious illness and risk of premature delivery for pregnant women who contract COVID-19 due to already stressed immune system.
- Strengthen and update IEC material and FAQs on MoHFW on vaccine safety for reproductive health of men and women, and children.
- Concerns around the impact of COVID-19 vaccine on menstrual health need to be addressed, both from a research and public health messaging perspective.

²<https://timesofindia.indiatimes.com/covid-september-30-2022/coronabytes/msid-94549819.cms>

⁵¹<https://www.mohfw.gov.in/pdf/PostersonvaccinationofpregnantwomenEnglish.pdf>,

⁵²<https://www.mohfw.gov.in/pdf/CounsellingbookletforFLWsEnglish.pdf>

⁵³<https://www.mohfw.gov.in/pdf/FAQsCOVID19vaccinesvaccinationprogramWebsiteupload.pdf>

⁵⁴https://www.mohfw.gov.in/covid_vaccination/vaccination/common-side-effects-aefi.html

⁵⁵ See for example: <https://www.nih.gov/news-events/nih-research-matters/covid-19-vaccines-linked-small-increase-menstrual-cycle-length>

⁵⁶ <https://aefi-reporting.sahpra.org.za/WEBSITE-Statement-COVID-19-Vaccines-Menstrual-disorders.pdf>

- Frontline workers, including ASHAs, AWWs, ANMs, and teachers can be reoriented to reinforce the above messages.

2. Adverse Events

Myth	Source	States	Discussion
COVID-19 vaccine causes death	Actual incidents (cause unverified)	All states	The COVID-19 vaccine communication strategy includes an annexure on media plan for AEFI communication, which stresses on prompt media releases on questions like who is affected, what happened and why. However, at the grassroot level, the implementation of this plan can be strengthened.
COVID-19 vaccine is unsafe for people with comorbidities	Community members with comorbidities have not taken vaccine, speculation of AEFI if comorbidities exist	All states	There is clear GOI guidance on the need to vaccinate people with comorbidities. WHO also recommends vaccination for people with comorbidities ⁵⁷ . Need to focus on investigating, reporting, and public health messaging on AEFIs including clarifying the difference between side effects and adverse effects.
Vaccine causes paralysis	Mainstream media	Maharashtra, Tripura, Arunachal Pradesh	No material countering these myths/concerns.
COVID-19 vaccine causes hair loss	Speculation	Assam	No material countering these myths/concerns.
COVID-19 vaccine causes swelling in the body	Actual incident (cause unverified)	Assam	No material countering these myths/concerns.
Fear among older citizens about adverse events	Community members, Speculation	Bihar, Rajasthan, Maharashtra, Mizoram, Jharkhand	No material countering these myths/concerns.
COVID-19 vaccine causes “crocodile like skin”	Social Media	Bihar	No material countering these myths/concerns.
COVID-19 vaccine causes COVID-19 infection	Actual incidents of COVID-19 infection after first dose	Uttar Pradesh, Meghalaya, Bihar	No material countering these myths/concerns.
COVID-19 vaccine causes sciatica	Community members	Mizoram	No material countering these myths/concerns.
Vaccine causes mental disturbance in people	Actual incident (cause unverified)	Arunachal Pradesh	No material countering these myths/concerns.
Vaccine causes blindness in people	Rumour	Mizoram, Maharashtra, Bihar	No material countering these myths/concerns.
People get gout after taking the vaccine	Actual incident (Cause unverified)	Tripura	No material countering these myths/concerns.

⁵⁷ Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8032917/>

Palpitations after taking the vaccine	Actual incident (Cause unverified)	Madhya Pradesh	No material countering these myths/concerns.
Inability to tolerate heat after taking the vaccine	Actual incident (Cause unverified)	Madhya Pradesh	No material countering these myths/concerns.
Vaccine increases tendency to catch cold	Speculation	Mizoram	No material countering these myths/concerns.
People get skin infection after taking the vaccine	Observation reported by FLW	Tripura	No material countering these myths/concerns.
Extreme Fatigue	Actual incident, rumour	West Bengal, Tripura	No material countering these myths/concerns.
Blisters all over the body	Actual incident	Tripura	No material countering these myths/concerns.
Precautionary dose causes nerve related issues	Speculation	Mizoram	No material countering these myths/concerns.
Vaccine causes rapid ageing in people	Community members Speculation	Arunachal Pradesh	No material countering these myths/concerns.
Vaccine causes heart attack	Community members; rumour; actual incident (cause unverified)	Jharkhand, Maharashtra, Tamil Nadu, Assam, Mizoram, Bihar, Rajasthan, Arunachal Pradesh	No material countering these myths/concerns.

Recommendations:

- Reorientation of ASHAs & ANMs about safety of vaccines. They should be asked about common myths in their areas and trained how to counter them.
- Myths, misconceptions, and beliefs by ASHAs and ANMs also need to be addressed.
- Messaging on COVID-19 vaccine safety for people with comorbidities/high risk populations needs to be amplified/re-iterated.
- Need to expand reporting of potential long COVID-19 symptoms and update IEC material in accordance with emergence of new evidence.
- Nuanced public health messaging surrounding AEFIs can prove to be an important public health communication strategy to dispel myths and misconceptions surrounding adverse reactions around the vaccine. Need to reiterate the following through IEC material on AEFIs: Temporary and non-serious nature of most AEFIs following vaccination, rarity of serious AEFIs, and severe risk of contracting COVID-19 as compared to minimal risk from AEFI

3. Vaccine distrust

Myth	Source	States	Discussion
Covid-19 vaccine introduces microchip in the body/ metal plates stick to body	Viral message/social media	Rajasthan, Meghalaya, Mizoram, Tripura, Arunachal Pradesh	No existing material addressing this
Vaccine is being used for population control	Community; social media; speculation	Jharkhand, Nagaland, Tamil Nadu, Meghalaya, Bihar, Chhattisgarh, Mizoram, Madhya Pradesh, Tripura, Arunachal Pradesh, Rajasthan	No material countering this myth/concerns.
Vaccine is compulsory to avail ration/government benefits	Community, mainstream media, panchayat leaders	Bihar, Rajasthan, Assam, Jharkhand, Maharashtra, Mizoram, Madhya Pradesh, West Bengal, Tripura, Arunachal Pradesh,	No existing material addressing this
COVID-19 vaccine introduces toxins or poison in body	Viral message/ social media	Uttar Pradesh, Meghalaya	No existing material addressing this
Vaccine developed in short period of time, leading to apprehensions	Community members	Maharashtra, Meghalaya	MoHFW material clarifies that vaccine was sufficiently tested and is safe. Messaging about safety of the vaccine can be amplified
Vaccine used to kill elderly citizens to save pension money	Rumour	Rajasthan	No existing material addressing this
Vaccine is now being given via nose	Community members. rumours	Bihar	No existing material addressing this

Recommendations:

- IEC material needs to include messages on how the vaccine works, how it was developed, and what it does to the body.
- Viral messages on social media need to be monitored and countered with correct messages/clarifications.
- Building trust in the vaccine, its mechanism, and its effectiveness especially amongst the unvaccinated population
- IEC material needs to address route of administration of vaccine and how the vaccine works
- Need to reiterate positive messaging behind government's intention to vaccinate populations.

4. Vaccine efficacy

Myth	Reported source	States	Discussion
COVID-19 vaccine will prevent COVID-19 infection altogether	FLW, community members, speculation	All states	The COVID-19 vaccine communication strategy developed by MoHFW and UNICEF ⁵⁸ in 2020 includes some material on vaccine efficacy but needs to be updated in view of emerging evidence.

⁵⁸ Covid19CommunicationStrategy2020.pdf (mohfw.gov.in)

Two doses are enough against COVID-19	FLW and community members	All states	There is a need to increase messaging around the need to take the precautionary dose, especially in view of the risk of new strains.
COVID-19 vaccine is no longer needed	Community members (decreased threat perception of COVID-19 in community)	All states	
Vaccine prevents other illnesses/improves overall health	Speculation	UP, Meghalaya, Chhattisgarh, Assam, Bihar, Maharashtra, Jharkhand, Arunachal Pradesh, Bihar, Rajasthan	No existing material addressing this.

Recommendations:

- Need to develop audio-visual material in simple terms for communities which explain vaccine efficacy and the mechanism of vaccine action.
- Existing COVID-19 vaccine communication strategy and training material for FLWs needs to be updated with a focus on the nature of COVID-19 vaccine i.e., it doesn't 'prevent' the disease, but prevents serious sickness/death and reduces the risk of COVID-19 infection, vaccine safety for at-risk groups, and the need for COVID-19 vaccine despite reducing cases, importance of completing the inoculation schedule, and the need for a precautionary dose.

5. Fear of adverse impact of vaccine on children

Myth	Source	Round	Discussion
Vaccine is too strong/heavy for children	Speculation	Meghalaya, Rajasthan, Bihar, Mizoram, Maharashtra, Madhya Pradesh, Tripura	MoHFW has updated material to address concerns on vaccine safety for children ⁵⁹ . WHO has an interim statement that talks about the COVID-19 vaccine safety for children. ⁶⁰
Vaccine will impact children's fertility in future	Speculation	Nagaland, Jharkhand, Bihar, Madhya Pradesh, Tripura, Arunachal Pradesh	
Vaccine reduces growth among children	Speculation	Tamil Nadu, Arunachal Pradesh	No existing material addressing this.
Vaccine may cause hormonal imbalance in children	Speculation	Arunachal Pradesh	No existing material addressing this.

Recommendations:

- Messaging on COVID-19 vaccine safety for children needs to be amplified/re-iterated.
- Update IEC material explaining children's vaccine, protocols for different age-groups and potential side-effects of the vaccine on children.

⁵⁹Link: <https://www.mohfw.gov.in/pdf/RevisedComprehensiveGuidelinesforManagementofCOVID19inChildrenandAdolescentsbelow18years.pdf>

⁶⁰ Link: <https://www.who.int/news/item/11-08-2022-interim-statement-on-covid-19-vaccination-for-children>