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Contributing factors of willingness and hesitancy regarding acceptance of COVID-19 vaccine in primary care settings: A qualitative study in an eastern state of India

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Abstract:

BACKGROUND: For any effective vaccination strategy, the willingness of the beneficiaries and its contributing factors are important. This study was conducted among the health-care workers (HCWs) and community members to find the perceptions regarding the COVID-19 vaccine and understand the influencers and the barriers of vaccine acceptance.

MATERIALS AND METHODS: A qualitative study was conducted from October 2020 to December 2020 in two primary care settings in an urban area. Eighteen in-depth interviews (IDIs) after taking consent were conducted with the help of IDI guide developed and validated beforehand by the experts. IDIs were done among the ten community members and eight HCWs selected conveniently. Data collection were continued till data saturation when no new information yielded from the interviews. Thematic analysis was performed.

RESULTS: All the participants were hopeful about availability of the vaccine. The key influencers identified for promoting willingness to accept the vaccine among both the groups were opinion of the health-care providers, colleagues' and other people's acceptance of the vaccine, effectiveness of vaccine on other people, and perceived risk of the disease. Fear of adverse reactions was the most important barrier among all the respondents. The prevalent perception was that other preventive practices and vaccine together can only be the best solution to prevent COVID-19 illness. The HCWs perceived that acceptance of vaccine among the community members would be good overall but apprehended some initial difficulties. Mass campaign to promote COVID-19 vaccination and sensitization events are the need of the hour.

CONCLUSIONS: Since opinion of health-care personnel emerged as an important influencer of vaccine acceptance, mass campaign and sensitization programs spearheaded by the health-care providers can bring about change by increasing the vaccine acceptance among the beneficiaries at large. Re-enforcement regarding practice of preventive measures should be made among the population irrespective of the vaccination status.

Keywords:

Community, COVID-19, health-care workers, qualitative research, social factors, vaccine, vaccine refusal

Introduction

The World Health Organization declared COVID-19 as a pandemic on March,

2020.^[1] Since its emergence, it has spread to various countries and territories around the globe due to the highly infectious nature of this virus.^[2] Severe impact on morbidity

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and mortality of the people, health system, economic and social progress occurred due to this pandemic.^[3] While countries have taken various strategies to contain the spread of COVID-19 through preventive measures, better diagnostics, and treatment, vaccines can provide an enduring solution by enhancing immunity and preventing the disease spread. Researchers have also developed several prediction models in forecasting the pandemic and the effects of several containment and preventive strategies but with limited success.^[4] With the beginning of the pandemic and its growing menace, COVID vaccine has been a much anticipated issue, with several vaccines now being tested for suitability and mass administration.^[3,5]

At present, in India, COVID-19 vaccine has been rolled out on January 16, 2021, under the guidance of National Expert Group on Vaccine Administration for COVID-19.^[3,6] The proposition is to offer the vaccine first to health-care and frontline workers and population above 50 years of age, followed by population below 50 years of age with associated comorbidities, and finally to the remaining population.^[3] A global survey conducted in different countries reported relatively high tendency toward acceptance of vaccine in countries such as Brazil, India, and South Africa.^[7] People's perception about the vaccine, threat perception of the disease, and health-care workers' (HCWs') opinion were the key influencers in willingness-hesitancy spectrum of acceptance of COVID-19 vaccine.^[8] The HCWs reported considerably higher proportion of willingness to accept the vaccine.^[9]

To exert effective control of COVID-19 in low-and middle-income countries like India, a high and uniform coverage among the beneficiaries is essential, for which it is necessary to understand the factors affecting willingness to accept vaccine and develop appropriate vaccination strategy.^[10] HCWs being the key informants can provide proper information regarding the vaccine and can also influence the community. Willingness of the beneficiaries (i.e., HCWs and the community at large) for uptake of the vaccine is of essence to ensure successful implementation of this vaccination drive in India. The influencers and the barriers in the willingness-hesitancy spectrum warrant an in-depth exploration which require qualitative approaches and can be done efficiently from a primary care delivery setup. Regarding this much-awaited COVID vaccine, the study was conducted to find the perceptions regarding the vaccine and understand the influencers and the barriers of vaccine acceptance. The findings carry great relevance, especially in the current context of now, launched COVID-19 vaccination drive in India, for understanding and devising ways to address probable hindrances.

Materials and Methods

Study design and settings

This qualitative study was conducted from October 2020 to December 2020. Two settings were involved in this study, first, the immunization clinic of a medical college and hospital, and second, the Urban Primary Health Center (UPHC) of a public health institute. Both were located in Kolkata Municipal Corporation area, West Bengal, India.

Study participants

In the study, conveniently selected 18 participants were considered. Eight were HCWs who were currently working in either of the two settings, and remaining ten were community members who were not working for health-care delivery system and visited the settings for receiving the required services. Those who were 18 years and above and who gave informed written consent to participate in the study were included in the study. The HCWs acted as key informants. Among the HCWs, four were male and four females. Among the ten community members, six were females and the remaining male. Table 1 depicts the background characteristics of the participants. Three of the HCWs were MBBS doctors, undergoing their internship training under the Department of Community Medicine in the immunization clinic. Among the two Public Health Nurses, one was posted in the immunization clinic and the other was attached to the UPHC.

Study tool

The issues incorporated in the interview protocol were based on literature review^[11] and brainstorming sessions with three subject experts. Interview protocol included an in-depth interview (IDI) guide, which was validated by five experts from the disciplines of Community Medicine, Epidemiology, and Health Promotion and Education. IDI guide for community members elicited responses regarding three key issues, first, opinion of availability of vaccine, second, perception on effectiveness of vaccine, and last, willingness to accept the vaccine. For HCWs, the IDI guide was developed to explore their perception on community members' acceptance of the vaccine, along with the above-mentioned three issues. The issues explored in the IDI guides are depicted in Table 2.

Study technique

IDIs with the community members and with the key informants, i.e., the HCWs, were conducted. Total 18 IDIs were done maintaining the COVID protocol, keeping in mind the current pandemic situation. Validated IDI guide generated beforehand was applied in the study. Audio recording of each interview was done. Important field notes were also taken. Informed written consent

Table 1: Background characteristics of the study participants

Participants	Serial number	Gender	Age (years)	Occupation
Health-care workers	1	Male	23	MBBS internee of Community Medicine
	2	Female	22	MBBS internee of Community Medicine
	3	Female	22	MBBS internee of Community Medicine
	4	Male	37	Medical officer of UPHC
	5	Female	36	Public health nurse
	6	Female	52	Public health nurse
	7	Male	30	Pharmacist of UPHC
	8	Male	45	Field health-care worker of UPHC
Community members	9	Female	58	Clerk
	10	Male	30	Garment worker
	11	Female	30	Homemaker
	12	Female	33	Homemaker
	13	Male	43	Shop keeper
	14	Male	32	Driver
	15	Female	46	Teacher
	16	Female	33	Engineer
	17	Female	25	Engineer
	18	Male	63	Retired

UPHC=Urban primary health centre

Table 2: Issues in the in-depth interview guides for community members and health-care workers

Participants	Issues explored/Interview questions
Both community members and health-care workers	1. What do you think about COVID vaccine availability?
	2. What are your perceptions regarding effectiveness of the vaccine in preventing the disease?
	3. Will you accept the vaccine when it becomes available for you?
Health-care workers	4. What do you perceive about the acceptability of this newer vaccine among the community members?

was taken both for participation in the study and for the audio recording of the interview. The interviews were done for 30–40 min after explaining the purpose of study. Participants were assured regarding confidentiality, and rapport was built before initiating the interview. Data collection were continued till data saturation when no new information yielded from the interviews. Data collection duration was of 6 weeks and done by the three researchers. The researchers who collected data for the study had prior training and experience on qualitative data collection methods.

Data analysis

Data were transcribed from local language to English within a day of the interview. Data collection and coding to find the critical segments were done simultaneously. Hand code technique was applied to code the transcript; done independently by two coders and subsequently, themes were brought out. Transcripts were read multiple times initially to have general understanding regarding the content. Coding was done and codes were merged and summarized to form themes, and themes prepared were further put into appropriate domains.

Ethical considerations

Clearance was taken from the Institutional Ethics Committee, All India Institute of Hygiene and Public Health, Kolkata. Informed written consent was taken from the participants.

Results

Perception on availability of COVID vaccine and effectiveness of the vaccine

Community members were hopeful about the launch of the vaccine and its availability, with sources of information being the news channel, local people, and social media.

In contrast to others, one male participant aged 32 years was not at all hopeful about its availability and effectiveness. He in this context stated:

“I believe that vaccine will never be available for this disease and it will be completely ineffective in preventing the disease...”

HCWs were certain about the availability of vaccine with sources of information being the news channel, doctors, social media, governmental, and nongovernmental websites. For the nursing staffs, training program on COVID vaccination was the major source of information.

Most of the community members had perceptions that vaccine will be very effective with few expressed confusions regarding this issue. Vaccine and other preventive practices combined can be the best effective measure in combating the disease.

A 25-year-old engineer reported: *"I am not sure rather I am very confused regarding how much the vaccine will be effective in preventing COVID-19..."*

However, in the opinion of a 30-year-old garment worker, vaccine is a curative measure against COVID-19: *"Vaccine is curative and not preventive...vaccine should be taken only after contracting the disease and not before that..."*

Wide variation of opinions evolved among HCWs regarding the effectiveness of the vaccine. Majority perceived both preventive measures and vaccine together to be most effective, while few perceived preventive practices to be more effective than vaccine.

A male interneer opined: *"I am confused about effectiveness of vaccine right now as trials are going on in different countries... socio-demographic factors differ in Indian population...so how much it will be effective in Indian population is totally uncertain..."*

Influencers promoting vaccine acceptance

The major themes that emerged regarding influencers among community members and HCWs for vaccine acceptance are depicted in Figure 1a. According to community members, consultation with the health-care provider before taking vaccine was important. HCWs observed to be important normative influencers among the people.

Similarly, among the HCWs, consulting with the doctor before taking vaccine, colleagues' acceptance of the vaccine, and effectiveness of the vaccine on others were important themes that emerged under this domain.

A 30-year-old pharmacist stated: *"I will consult doctor of my hospital before taking vaccine and if government circular made compulsory for us to take vaccine, then will surely accept..."*

A 36-year-old nursing staff revealed that: *"If I see my other colleagues are taking then I will take the vaccine and not before that... I won't be the first one to accept the vaccine..."*

Members of community perceived the disease to be severe among elderly and persons with comorbidity. These two groups were also perceived to be more vulnerable than others. Along with these opinions, the medical officer also opined that among pediatric age group and school-going age group, risk is less which may be due to the routine immunization.

A 63-year-old retired male stated: *"I believe people in my age group are more at risk of the disease and also vulnerable...I think this particular age group will be eager to take vaccine..."*

It was observed that community members were keen

toward knowing whether other people whom they know will accept the vaccine or not. Provision of vaccine in the manner of door-to-door service or house-to-house service emerged as an important influencer in increasing the willingness of acceptance of the vaccine.

A 43-year-old shop keeper expressed his opinion saying: *"If vaccine will be provided free of cost and every house to house, I will surely accept the vaccine, and I believe majority of the people will accept the vaccine if such provisions from government is made..."*

Barriers related to hesitancy to accept the vaccine

Figure 1b shows the themes regarding barriers of vaccine acceptance among community members and HCWs. Unknown postvaccine-related mild illness was an issue of concern. Fear of any adverse reactions due to the vaccine was reported by both the HCWs and community members. Community members expressed their fear of adverse reactions by stating that they will wait to see if any adverse reactions are occurring among the others, after which they would decide on vaccine uptake.

A 30-year-old garment worker stated: *"If I see other people suffering from adverse reactions or anybody suffering with fever and cough postvaccination, I will not even think of taking the vaccine..."*

Adverse reactions related to the vaccine were solely the important barrier emerged among the HCWs, for which they prefer to observe their colleagues to find any significant adverse reactions of the vaccine.

A field HCW stated in this context: *"I will observe my colleagues and other staffs to see any adverse reactions occurrence...according to that I will decide whether to take the vaccine or not..."*

A medical officer in a very hesitant manner revealed: *"If I observe and come to know that many people are getting adverse reactions postvaccination, then I will think twice before deciding to accept vaccine..."*

Community members acceptance is expected to be good but during initial phases, though some hesitations can persist. Mass campaigning and sensitization program would help. Free of cost delivery of vaccine with quality assurance, and perceived fear of COVID-19 may be the influencers. People would prefer to wait and observe the effect of vaccine on others.

"Free of cost vaccine and quality assurance of the vaccine by the government will be the facilitating factors of increasing the willingness of vaccine.any misinformation regarding vaccine can lead to decrease in acceptability of willingness of vaccine" as stated by Medical officer of UPHC.

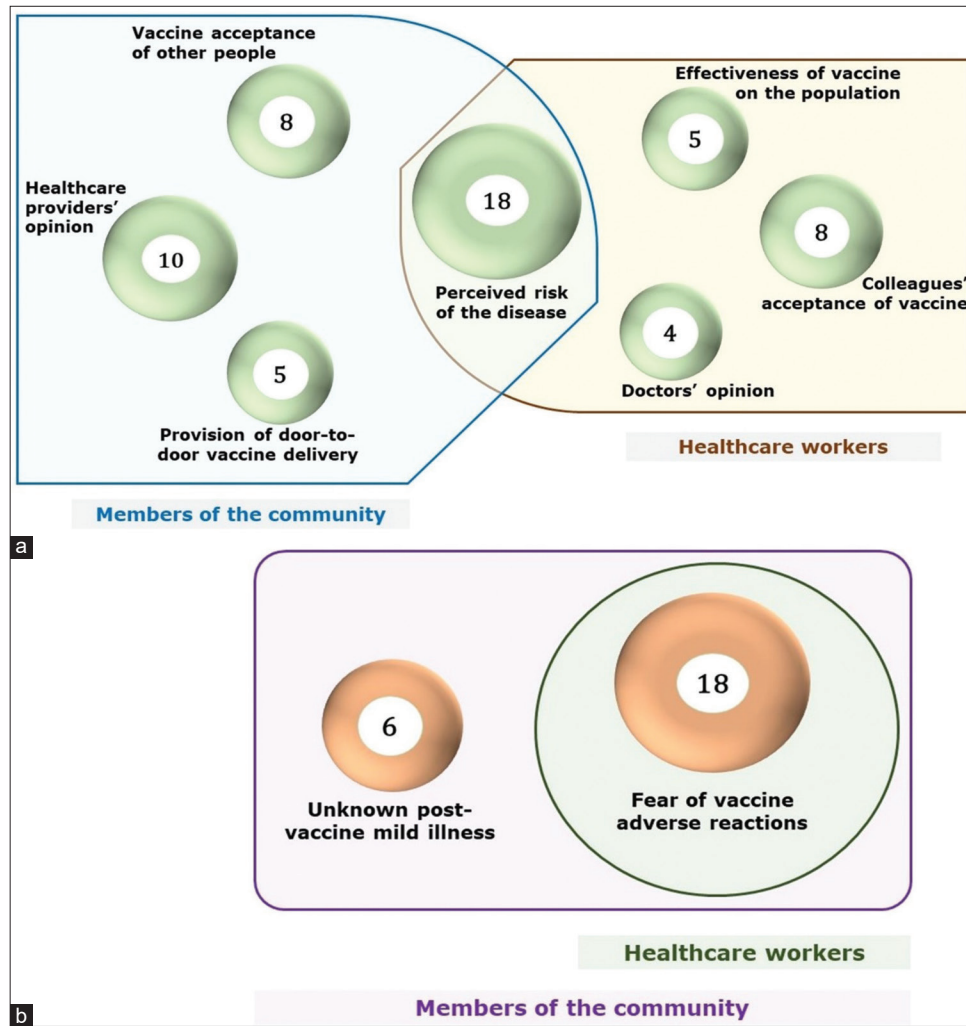


Figure 1: Themes regarding (a) influencers and (b) barriers, of vaccine acceptance among the members of the community and health-care workers. Numbers denote the frequency of the themes among the participants

Public health nurse reported

"People who are coming for the routine immunization are asking about the vaccine and they are willing to take COVID vaccine... people are getting so much information regarding disease risk and complications...fear among them is high... So high possibility is there that acceptability will be very good among community members..."

Discussion

Key findings from the study

The participants were in general hopeful about availability of the vaccine. They were keeping an eye on news media and social media for latest information. Among the beneficiaries, the key influencers promoting willingness to accept the vaccine were opinion of the health-care providers, colleagues' and other people's acceptance of the vaccine, effectiveness of vaccine on other people, and perceived risk of the disease. However, fear of adverse reactions was the chief barrier among

all the respondents. The participants felt that if there is any observed adverse effect among other people taking the vaccine, then acceptance will be hindered a great deal. The key perception was that other preventive practices and vaccine together can be the best solution to prevent the disease. The health-care personnel were confident of good acceptability of the vaccine among the community members overall but were cautious about initial hurdles. Overall, the HCWs perceived that mass campaign to promote COVID-19 vaccination and tailored sensitization events are the need of the hour.

What is already known and what this study adds

Although majority of the community members and all the respondent HCWs were hopeful regarding the vaccine availability, among community members, important normative influencers were the opinion of the HCWs. The respondents were keenly following the social media regarding the news and developments for COVID-19 vaccine. It was supported by the findings of

Wilson and Wiysonge, that willingness to accept vaccines is influenced by the social media contents.^[12] Researchers working on childhood immunization reported that vaccine hesitancy among the parents and the resultant vaccine refusal were a complex phenomenon, and it is difficult but surmountable with some tailored motivational interventions.^[13-15] Similarly, in COVID-19 vaccination, the acceptance among the people of the community was noted to be dependent of various factors which are expected to interact through a complex framework.

Consultation and advice from the doctor regarding uptake of the vaccine and whether HCWs will be accepting the vaccine or not was a concern among them. On a similar note, Reiter *et al.* in their study among adults of USA found out health-care provider's recommendation to be an important factor in decision-making to accept vaccine, and opinions of their family members and friends would matter in their vaccination decisions.^[8] It was also observed in the current study that the people were keen toward knowing whether other people whom they know will accept the vaccine or not. In consonance, Fu *et al.* stated that social contact decisions were important factors in choosing vaccine uptake.^[16] HCWs were found to be trusted and influential part of the society in recommendations of newer intervention e.g., vaccination against COVID-19.

Reiter *et al.* observed that participants were likely to be willing to take vaccine if they reported higher levels of perceived likelihood of getting a COVID-19 infection in the future and perceived severity of COVID-19 infection.^[8] In the present study, majority of the members of the community perceived disease to be severe among the elderly and persons with comorbidity. These two groups were also perceived to be more vulnerable than others and observed to be more eager to take vaccine. Appropriate risk-communication and high-risk group counseling have been documented to be of importance in improving adult acceptance of immunization in primary care settings.^[17] Similarly, in a web-based online survey conducted in Saudi Arabia, higher perceived risk of acquiring COVID-19 infection was an important determinant in acceptance of vaccine, emphasizing the perception of threat to be a major determinant of health behavior.^[18]

Adverse reactions related to the vaccine were an important concern being explored among the HCWs, for which they prefer to observe their colleagues to find any significant adverse reactions occurring. Gadoth *et al.* (2021) reported that among HCWs of Los Angeles, apprehension over serious adverse reactions was an important component.^[19] Probability of serious adverse reaction of vaccine was chief barrier in the community

also. In consonance with this finding, potential side effects of vaccine appeared to be important barrier in acceptance of vaccine in studies by Dodd *et al.* and by Reiter *et al.*^[8,20] Not only in case of this new vaccine, the fear of adverse effect has been reported to have contributed to vaccine hesitancy in case of childhood vaccination as well.^[21]

In this study, majority of the community members had perceptions that vaccine will be very effective. Wide variation of opinion evolved among HCWs regarding the effectiveness of the vaccine. Whether perceived effectiveness of the vaccine acts as an influencer or barrier could not be elicited in the study. Following complete roll out of the vaccine(s), researches may be undertaken to understand the role of such perception-related factors. In contrast to our findings, in a study conducted by Harapan *et al.*, HCWs were more willing to take vaccine as compared to the community members, even if the vaccine efficacy was perceived to be on a lower side.^[9] Hadaye *et al.* in the context of H1N1 vaccination campaign in India evidenced that such newer and adult vaccination drives are usually not well reciprocated from the HCWs perspective, often complicated by poor awareness among the beneficiaries and lack of proper focus from program implementer's end.^[22] In another article, Hadaye *et al.* found out that knowledge regarding adult vaccination was inadequate among a group of HCWs.^[23] In this light, the current study findings are of utmost importance as they present the discourse regarding vaccine acceptance among the beneficiaries. High degree of hesitancy among HCWs should be addressed, as they are the key influencers among the general population. The in-depth understanding from the current study will help understand the behavior of the beneficiaries following phasic roll out of the vaccination program in India. In addition to these uniquely interesting findings, the present study further boasts its novelty as this is a study done in Indian context which explored perceptions and the various influencers of vaccine uptake qualitatively in the primary care settings.

Limitation

At the time of this study, the concept of acceptance and hesitancy to COVID-19 vaccine was a rapidly evolving one, since the vaccine roll out was a highly anticipated event which was still due to take place. Thus, interviews conducted over a longer time period might have given a more evolved picture of the issues relating to vaccine acceptance.

Conclusions

The current study was novel in the Indian context. Qualitative design of the study leads the way to exploration of various factors related to willingness or

hesitance of this newer vaccine acceptance. Among the HCWs, consulting with the doctor before taking vaccine and colleagues' acceptance of the vaccine observed to be important factors in acceptance of vaccine. Provision of vaccine in the manner of door-to-door service or house-to-house service emerged as an important influencer among community members in increasing the willingness of acceptance of the vaccine. A unique issue explored in the current study was regarding the effectiveness of other preventive practices in comparison to vaccine in prevention of the disease. Majority among the community members perceived that preventive practices and vaccine together would be the ultimate solution in prevention of the disease. However, HCWs had mixed opinion regarding this issue. The HCWs perceived that in near future, acceptability of the vaccine among community members will be encouraging though during initial phases some hesitation can persist. Mass campaign and sensitization program can be the solution to increase the acceptance as suggested by the HCWs. Initiatives such as mass campaign and sensitization programs taken by the health-care providers can bring about change by increasing the vaccine acceptance among beneficiaries. On the other hand, re-enforcement regarding practice of preventive measures should be made among the population irrespective of the vaccination status.

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Conflicts of interest

There are no conflicts of interest.

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