Perception of beneficiaries on motivating factors and challenges of COVID-19 vaccination: An institute-based study

Tanushree Karmakar, Sonali Sain, Surya Prakash Dey, Aditya P. Sarkar, Atanu Biswas

Department of Community Medicine, Bankura Sammilani Medical College, Bankura, West Bengal, India

Abstract

Background: The novel coronavirus disease 2019 (COVID-19) caused by a newly discovered SARS-CoV-2, led to COVID-19 pandemic across the world. Vaccination played an important role in reduction in morbidity and mortality concerning the current pandemic, but there was a lack of awareness and motivation to get vaccinated during the pandemic. **Objective:** This study was aimed at assessing the motivating factors and finding out the challenges perceived among the beneficiaries receiving the vaccine at the COVID-19 immunization center of Bankura Sammilani Medical College and Hospital (BSMCH). **Materials and Methods:** This institution-based descriptive cross-sectional study was conducted from June 2021 to October 2021 at the COVID-19 Vaccination Centre of Bankura Sammilani Medical College, West Bengal, among 158 beneficiaries. The study population was selected through a systematic random sampling method, and data were collected by interview with a predesigned, pretested structured questionnaire. To identify the predictor (s), variables that were found statistically significant in binary logistic regression analysis were considered for multiple logistic regression. **Results:** Motivation for vaccination was significantly ($P < 0.05$) higher among participants who were educated up to the secondary level. Challenges perceived were significantly ($P < 0.05$) higher among participants aged less than 60 years and the participants who were coming from a distance of more than or equal to three kilometers. **Conclusion:** Awareness generation program, frequent Information, education and communication (IEC) activities, etc., may alleviate these challenges and can improve vaccination coverage in the future.

Keywords: Covid-19, Covid-19 vaccination, motivating factors, vaccine hesitancy

Introduction

Novel coronavirus disease 2019 (COVID-19) caused by a newly discovered severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) spread rapidly across the world from Wuhan, China, and was declared as a pandemic by the World Health Organization on March 11, 2020. In India, up to November 21, 2022, there were 634,522,052 confirmed cases and 6,5999,100 deaths.[1] The COVID-19 pandemic has also caused psychological and physical burnout of healthcare personnel. Significant changes have also been made in the healthcare facilities to attend to the substantial number of infected patients.[2,3]

Vaccination is thought to play an important role in concerning the current pandemic. Initially, there was a lack of adequate evidence regarding the efficacy of the vaccines in people who are at high risk of COVID-19, including older individuals, people with obesity, and those with diabetes. Secondly, it is not clear how well some of the vaccines protect against severe COVID-19. It is also

Address for correspondence: Dr. Atanu Biswas,
Department of Community Medicine, Bankura Sammilani
Medical College, Bankura - 722 102, West Bengal, India.
E-mail: atanunbmc@gmail.com

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not clear to what extent the vaccines prevent and protect against severe COVID-19. It is also not clear to what extent the vaccines prevent those who have been vaccinated from passing the virus on to others. The initial pace of vaccination was slow might be due to hesitancy, which was noted among the beneficiaries.[4]

India has been gravely struck by the onset of the "second wave" of COVID-19 pandemic.[5] Being a nation of 1.39 billion population, it was challenging for the Government of India to implement a mass vaccination drive for the mitigation of subsequent COVID-19 waves.

The COVID-19 vaccine drive in India was launched on January 16, 2021. India had three vaccines (Covishield (ChAdOx1 nCoV-19; Oxford–AstraZeneca; manufactured by Serum Institute of India), Covaxin (BBV152; Bharat Biotech), and Sputnik V (Gam-COVID-Vac; Gamaleya Research Institute of Epidemiology and Microbiology)) approved for emergency use. Around 70 million Covishield doses and 10 million Covaxin doses per month have been manufactured in India up to May 2021.[5] From May 1, 2021, all people older than 18 years are eligible for phase 4 of the vaccination drive. By November 22, 2022, total vaccination is 219 crore and death is fifty-three thousand in India.[6] India implemented a centralized vaccination policy and administered more than 8·6 million COVID-19 vaccine doses on day 1 (June 21, 2021).[6] Such a vaccination strategy might be helpful in achieving mass vaccination against COVID-19. However, ensuring a consistent vaccine supply was a substantial challenge to maintain such a high speed and achieve nationwide coverage.

Vaccination planning was also been a challenge in India. Earlier in the year, individual Indian citizens had to register on the CoWIN or Aarogya Setu portal to receive a COVID-19 vaccination. The limited number of vaccination slots resulted in fewer administrations during the initial 5 months of the vaccination program (phases 1–4). Due to the high demand for vaccination, the Government of India later amended the vaccination policy by waiving the preregistration requirement and offering free vaccinations to accelerate the program. However, it resulted in mass gatherings in healthcare settings led to a further surge in daily cases.

Several studies found that different factors may influence the willingness to get vaccine among the population. Prior studies have revealed that socio-demographic characteristics, misperceptions, and/or rumors about vaccine efficacy, safety concerns, price, and sociocultural factors may influence individuals' desire to take vaccine (Al-mohaithef and Padhi, 2020; Alexandre de Figueiredo *et al.*, 2016; Trang Nguyen *et al.*, 2011; Shaungsheng Wu *et al.*, 2018).[7-10] Anxiety, misinformation, and mistrust about the vaccine may influence the person's decision to not take vaccine (Burki T, 2019; Jon Roozenbeek *et al.*, 2020, Md. Saiful Islam *et al.*, 2021, Jeanine P D Guidry *et al.* 2020).[11-14]

Hence, it was imperative to know the motivating factors behind this demand and the issues, which were posing challenges toward

the vaccination. Although many studies were conducted based on these issues worldwide, there is a scarcity of literature regarding such issues in the context of West Bengal. This study aimed at assessing the motivating factors and finding out the challenges perceived among the beneficiaries receiving the vaccine at the COVID-19 immunization center of Bankura Sammilani Medical College and Hospital (BSMCH).

Materials and Methods

An institution-based cross-sectional, observational study was conducted in the COVID-19 Immunization Centre of BSMCH, Bankura, for a period of 5 months, i.e. from June to October 2021. People aged 18 years and above who came to take the COVID-19 vaccine were included as study participant using the systematic random sampling method. Sample size, duration of data collection, and approximate number of people coming for vaccination daily were considered to estimate the sampling interval for the same. People who did not give informed written consent and those who did not feel well within the 30-minute observation period after vaccination were excluded from the study.

No data on the prevalence of motivation for COVID-19 vaccination were available during the study period in the context of West Bengal. The sample size was calculated assuming 50% prevalence of motivation for COVID-19 vaccination in Bankura. Using the formula, $n = (Z_\alpha^2 \times pq)/l^2$, where n = number of subjects needed, $Z\alpha$ =1.96 (considering 95% confidence level), $P = 0.5$ (prevalence estimate assuming 50%), q = (1 - p) =0.5, and l = absolute precision = 0.08. So, $n = (1.96)^2 \times 0.5 \times 0.5/0.08^2 = 150$. Considering 5% nonresponse rate, the final sample size was (150/0.95) ≈158. The COVID-19 Immunization Centre of BSMCH, Bankura, ran twice a week. Every day, approximately 150 participants attended the clinic. Every 5th participant was considered for the study till the desired sample size was attained.

Participants were interviewed using a predesigned, pretested validated questionnaire (Item-level content validity index (ICVI): 0.79 for nine public health experts) consisting of 11-item and 13-item questionnaire to assess motivation and challenges, respectively, where median value was used as a cutoff for both challenges and motivation perceived. The data were coded, entered in an Microsoft (MS) Excel spreadsheet, and checked for consistency. The categorical variables were expressed in frequencies and percentages. The cutoff value for both challenging and motivating factors was set at the 50th percentile. Age was categorized into early adulthood and early middle age (18–44 years), late middle age (45–60 years), and elderly (60 years and above). Continuous independent variables such as time spent to reach or distance traveled to reach the immunization center were categorized based on the median observation. The P value of <0.05 was considered significant with 95% confidence interval. Variables, which had P values <0.05 in binary logistic analysis, were considered for

multiple logistic regression analysis to find out the strength of association of different variables. A software package (IBM SPSS 22.0 trial version) was used for data analysis.

The study was conducted after obtaining approval from the Institutional Ethics Committee of BSMCH. Written informed consent was collected after explaining the purpose and methods of the study to the study participants. Data confidentiality and anonymity were maintained.

Results

Of a total of 158 participants, there were 85 (53.8%) males and 73 (46.2%) females, with a mean age of 41.4 (Standard deviation (SD) = 16.6) years. More than half of the participants (58.9%) belong to the age group of 18–44 years. About 41.2% of the participants had an education level of graduation and above. A larger amount of the participants (58.9%) received Covaxin. For vaccination, more than half (55.7%) of them were inspired by their family members. Around 69.6% of participants traveled more than 3 km, while 69% of participants had to travel for 15 minutes or more to reach the vaccination center.

Motivation for vaccination was found to be significantly higher among participants who had completed a secondary level of education (unadjusted OR = 2.603, 95% CI = 1.234–5.490). Those who traveled less than three kilometers (unadjusted OR = 0.465, 95% CI = 0.229–0.943) or for less than 15 minutes (unadjusted OR = 0.442, 95% CI = 0.218–0.896) were less motivated [Table 1]. Multiple logistic regression, in Table 2, shows that motivation was significantly higher

in the study participants who completed education up to the secondary level (unadjusted OR = 2.692, 95% CI = 1.253–5.783).

In Table 3, different challenging factors were explored. Challenge perceived was significantly higher among participants belonging to 18–44 years of age group (unadjusted OR = 3.352, 95% CI = 1.306–8.606) and 45–60 years of age group (unadjusted OR = 3.143, 95% CI = 1.075–9.185). Participants who had to travel less than 3 kilometers to reach the immunization center perceived less challenge (unadjusted OR = 0.408, 95% CI = 0.199–0.834). Multiple logistic regression, in Table 4, shows that challenge perceived was significantly higher in the age group of 18–44 years (unadjusted OR = 3.243, 95% CI = 1.246–8.444) and 45–60 years (unadjusted OR = 3.000, 95% CI = 1.009–8.915) as compared to the age group greater than sixty. Also, people who had to travel less than three kilometers to reach the immunization center perceived less challenge than those traveling three kilometers or more (unadjusted OR = 0.421, 95% CI = 0.203–0.873).

Discussion

Effective and equitable distribution of COVID-19 vaccines is a key policy priority, ensuring that acceptance is just as important. While that is a majority number, it is still low against the expectations of public health officials, and the World Health Organization (WHO) aspires to a much higher standard in terms of motivation among the population.[15] In this study, it was seen that the participants in lower age groups faced significantly more challenges than geriatric people. It can be concluded that perceived challenges decrease with increasing age. The result was similar to

Variable	Motivated		Unadjusted OR	95% CI		P
	Yes	No		Lower limit	Upper limit	
Age (in years)						
18–44	39	54	0.587	0.253	1.359	0.213
45–60	18	18	0.813	0.305	2.167	0.678
≥60	16	13	Ref			
Gender						
Male	38	47	0.878	0.469	1.644	0.684
Female	35	38	Ref	Ref	Ref	Ref
Education						
Illiterate	2	7	0.488	0.094	2.542	0.394
Up to class X	32	21	2.603	1.234	5.490	0.012
Up to class XII	15	16	1.602	0.674	3.807	0.286
Graduation and above	24	41	Ref			
Vaccine						
Covishield	29	36	0.897	0.475	1.695	0.738
Covaxin	44	49	Ref			
Time to reach vaccination center						
<15 min	16	33	0.442	0.218	0.896	0.023
≥15 min	57	52	Ref			
Distance traveled to reach vaccination center						
<3 Km.	16	32	0.465	0.229	0.943	0.034
≥3 Km.	57	53	Ref			

Table 1: Distribution of the study participants according to motivational factors with different socio-demographic, personal profiles (*n*=158)

CI=Confidence interval, OR=Odds ratio

the study of Kirandeep Kaur *et al.* Since the elderly population has many comorbidities putting them in the high-risk category, they would be more willing to get vaccinated, while the younger generation having less comorbidities might not feel the urge to

Table 2: Multiple logistic regression model of motivating factors for COVID-19 vaccination

Variable	Adjusted OR	95% CI		P
		Lower limit	Upper limit	
Education				
Illiterate	0.503	0.094	2.696	0.422
Up to class X	2.692	1.253	5.783	0.011
Up to class XII	1.444	0.596	3.496	0.416
Graduation and above	Ref			
Time to reach vaccination center				
<15 min	0.585	0.241	1.422	0.237
≥15 min	Ref			
Distance traveled to reach vaccination center				
<3 Km.	0.606	0.249	1.474	0.269
≥3 Km.	Ref			

CI=Confidence interval, OR = Odds ratio

overcome the challenges to get vaccinated. Also, the awareness in the younger age group might be inadequate as, initially, more focus was given toward vaccination among the elderly population. If anyone realized the risk of disease is less severe, they may not want to be vaccinated as per the study of Nowel T Brewer, *et al.*[16] We had not found any disparity in the ground of perceived challenge and motivation between males and females, but in some studies, it was found that vaccine acceptance was higher among men than women.[4,17-20] So, from this study it was clear that both male and female participants were equally concerned regarding decision-making and health-seeking behavior as found by the present study conducted in Bankura District. Higher vaccination hesitancy was seen in different areas due to different factors. It was revealed from that study that the person who traveled three kilometers or more perceived more challenges. The distance was a challenging factor, but traveling less distance was not a motivating factor either. The probable explanation is people who lived near the immunization center might not have the urgency to get vaccinated, because of ease of accessibility to the service. Gender, literacy level, time, and vaccine type were not significant determinants of facing challenges. On the contrary preference of

Table 3: Distribution of the study participants according to challenging factors with different socio-demographic and vaccination related factors (*n*=158)

Variable	Challenges perceived		Unadjusted OR	95% CI		P
	Yes	No		Lower limit	Upper limit	
Age (in years)						
18–44	48	45	3.352	1.306	8.606	0.012
45–60	18	18	3.143	1.075	9.185	0.036
≥60	7	22	Ref			
Gender						
Male	40	45	1.077	0.575	2.018	0.816
Female	33	40	Ref			
Education						
Illiterate	4	5	0.825	0.203	3.352	0.788
Up to class X	23	30	0.791	0.381	1.639	0.528
Up to cla s XII	14	17	0.849	0.360	2.004	0.709
Graduation and above	32	33	Ref			
Vaccine						
Covishield	30	35	0.997	0.528	1.882	0.992
Covaxin	43	50	Ref			
Time to reach vaccination center						
<15 min	20	29	0.729	0.368	1.442	0.363
≥15 min	53	56	Ref			
Distance traveled to reach vaccination center						
<3 Km.	15	33	0.408	0.199	0.834	0.014
≥3 Km.	58	52	Ref			

CI=Confidence interval, OR=Odds ratio

Table 4: Multiple logistic regression model of challenging factors for COVID-19 vaccination

Variable	Adjusted OR	95% CI		P
		Lower limit	Upper limit	
Age (in years)				
18–44	3.243	1.246	8.444	0.016
45–60	3.000	1.009	8.915	0.048
≥60	Ref			
Distance traveled to reach vaccination center				
<3 Km.	0.421	0.203	0.873	0.020
≥3 Km.	Ref			

CI=Confidence interval, OR = Odds ratio

Covishield, 42% (AstraZeneca, Serum Institute of India, Pune, India) was seen by the K. Kirandeep Kaur *et al.* study.[21] Different types of vaccine preference may be due to the result of various influencing factors such as advocacy through media. Some people were unaware of the eligibility for the vaccine, and this was further complicated by the different types of vaccines. Education level may change awareness, behavior, and attitude to avail healthcare services and can act as a motivating factor for immunization.

Conclusion

The study revealed that younger age and distance of vaccination center from habitats are the challenging factor and higher education is the motivating factor. Hence, increasing the number of vaccination center will decrease the distance traveled and time spent to travel to the nearest immunization center. Conducting an awareness generation program, especially regarding the need for vaccination in all concerned age groups, may also alleviate the challenges.

Study limitations

The study had some limitations. First, being a tertiary-level healthcare institute, the challenges from a programmatic perspective, including logistics, were absent. Second, challenges perceived by those who did not come for vaccination could not be explored. Third, since the immunization center was in town and was accessed mostly by the urban population, the challenges perceived by the rural population could not be assessed.

Conflicts of interest

There are no conflicts of interest.

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