Acceptance and concerns regarding COVID-19 vaccine in Kerala, India

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ABSTRACT

INTRODUCTION The current global pandemic of COVID-19 is an international threat. A safe and effective vaccine for COVID-19 infection has been on the wish list of healthcare agencies across the globe since the onset of the pandemic. As the process of development of vaccine demands clinical trials across various phases for multiple checks concerning its safety, potency, and efficacy, there is an inherent delay in its launch. Considering the immediate need for global vaccination, the currently administered vaccines have been developed with a short period of testing and hence is a matter of concern among the population. Thus, this study was conducted to assess the acceptance and concerns regarding the vaccinations in the Indian state of Kerala.

METHODS The study was a cross-sectional questionnaire-based survey conducted online. The target population was individuals aged ≥18 years. The questionnaire was divided into two parts. The first part consisted of questions on personal data such as age, gender, education level, and occupation. The second part consisted of 10 questions to assess the willingness and concerns regarding vaccination for COVID-19 infection.

RESULTS The final sample size comprised 314 participants. Over 92% indicated that they were aware of the vaccination guidelines. About 42% reported to have received knowledge about vaccination through printed media and 55% through social media. Among the 84% who were willing to take vaccination or already vaccinated, 39% expressed their willingness to get vaccinated due to their trust in the government's awareness campaigns. Among 16% unwilling to take the vaccine, 86% were anxious about the side effects/adverse reactions of the vaccine, and 56% were anxious regarding the effectiveness of the vaccine.

CONCLUSIONS The study reveals a good level of acceptance regarding vaccination acceptance among the population studied. The predominant concerns regarding the vaccine included adverse reactions and efficacy. The study population demonstrated a positive attitude towards vaccination.

INTRODUCTION

The current global pandemic of COVID-19 is an international threat[1]. As of 28 April 2021, the COVID-19 has rapidly spread across the globe with high morbidity and mortality, currently affecting over 149 million people and claiming over 3 million lives[2]. India is currently the second most affected country in the world after the United States[3]. Apart from effective treatments, vaccination is a key preventive strategy in mitigating the pandemic[1].

A vaccine that is safe and effective for COVID-19 infection has been on the wish list of healthcare agencies across the globe, since the onset of the pandemic. As the process of development of vaccine demands clinical trials across various phases for multiple checks about its safety, potency, and efficacy, there is an inherent delay in its launch. The vaccine needs to be tested among all groups of individuals, particularly in high-risk individuals such as the elderly, pregnant women, and people with co-morbidities, and immunodeficiencies[4].

India started the administration of vaccines for COVID-19, on 16 January with a focus on India's healthcare workers and frontline workers. Later, in a phased manner, the vaccination

drive extended to senior citizens and those ≥45 years with co-morbidities. From 1 May 2021 onwards, those aged >18 years were to be eligible. India is currently administering two vaccines – one developed by AstraZeneca with Oxford University (Covishield) and one by the Indian firm Bharat Biotech (Covaxin) – both of which were approved in January 2021, ahead of the vaccine rollout. In April 2021, a third vaccine – Russia's Sputnik V – was approved for use[5].

Normally, it takes years for the development of a safe and effective vaccine. Considering the immediate need for vaccination, the currently administered vaccines have been developed with a short period of testing and hence is a matter of concern among the population[6-8]. This concern over the safety and efficacy, resulting in vaccine hesitancy, is a potential barrier to effective implementation of vaccination programs[6]. Thus, this study was conducted to assess the acceptance and concerns regarding vaccinations in the Indian state of Kerala.

METHODS

Study design, target population and questionnaire

This study was an observational questionnaire-based study. The study was conducted among individuals aged ≥18 years. A questionnaire was developed in English, translated into the local language Malayalam and was validated for face validity by distributing the questionnaire to subject experts with proficiency in Malayalam. It was divided into two parts. Part A consisted of sociodemographic information and Part B contained 10 questions on assessment willingness and concerns regarding vaccination for COVID-19 infection.

Data collection

The data collection was done for one week in April 2021. The data were collected by the principal investigator through the distribution of questionnaires, as well as through online mode using Google forms. A convenient sampling technique was used. The study protocol was approved by the Ethics Committee of the Indira Gandhi Institute of Dental Sciences, Kerala. All participants provided informed consent before data collection.

Statistical analysis

The obtained data were coded and tabulated and analyzed using Statistical Package for Social Sciences (SPSS) Version 16.0 for Windows. Descriptive statistics were expressed as frequencies and percentages. Inferential analysis was done using the chi-squared test for the independent variables. A p-value less than 0.05 was considered statistically significant.

RESULTS

A total of 318 participants responded, of whom 4 were not willing to participate in the survey. The final sample size comprised 314 participants, a response rate of 98.74%. Table 1 shows the profile of the respondents. About 44.6% were males and 55.4% were females, and about 72% were graduates and postgraduates.

Table 2 shows the response to the concerns and willingness regarding vaccination for COVID-19. Over 92% indicated that they were aware of the vaccination guidelines. About 42% obtained information about vaccination through printed media, 55% through social media, and 27% through healthcare professionals. Over 52% reported having taken the first or second dose of the vaccine, and 16% were not willing to take the vaccine. Among the 84% who were willing to take vaccination or

Table 1. Profile of the respondents

Characteristic	n (%)
Gender	
Male	140 (44.58)
Female	174 (55.42)
Education level	
Middle school	9 (2.87)
High school	21 (6.69)
Pre-degree/diploma	57 (18.15)
Graduate	170 (54.14)
Postgraduate	57 (18.15)

Table 2. Response to questions assessing the willingness and concerns regarding COVID-19 vaccine

Questions	Options	Responses n (%)	χ^2
Are you aware of COVID-19 vaccine?	Yes	289 (92.03)	0.414 (gender)
	No	25 (7.97)	0.130 (education)
What was your source of information regarding the vaccine?	Print media	133 (42.35)	0.839 (gender)
	Social media	174 (55.41)	0.120 (education)
	Radio/visual media	113 (35.98)	
	Healthcare professionals	86 (27.38)	
	Peers	56 (17.83)	

Table 2. Continued

Questions	Options	Responses n (%)	χ²
Are you willing to take the vaccine at the earliest available date?	Yes	220 (70.06)	0.130 (gender) 0.312 (education)
	No	53 (24.76)	
	Already vaccinated	41 (13.06)	
If yes, what is the reason for taking vaccine	Advise from relatives and friends	23 (8.81)	0.150 (gender) 0.682 (education)
	Advice from healthcare professionals	73 (27.96)	
	Government's awareness campaigns	103 (39.46)	
	Fear of contracting the disease	76 (29.11)	
	Job related exposure	59 (22.60)	
	Mandatory instructions from employers	31 (11.87)	
	Travel related reasons	12 (4.59)	
	Ease of getting vaccines	2 (0.7)	
If no, what is the reason?	Not eligible for vaccinations	11 (20.75)	0.459 (gender) 0.408 (education)
	Low risk of disease	10 (18.86)	
	Let the infection naturally come and go	5 (9.43)	
	Lack of trust in the present vaccines	14 (26.41)	
	Fear of injection	11 (20.75)	
	Media influence	4 (7.54)	
	Anxious about adverse reaction	46 (86.79)	
	Anxious about the efficacy of vaccines	30 (56.60)	
	Fear of long-term complications	8 (15.09)	
	Active/recovered from the disease	7 (13.80)	
	Logistic difficulties	2 (3.77)	
	Expense pertaining to vaccine	13 (24.52)	
Will you motivate others for vaccination?	Yes	278 (88.53)	0.159 (gender) 0.282 (education)
	No	34 (11.46)	
After vaccination, are you ready to follow necessary preventive measures?	Yes	309 (98.41)	0.214 (gender) 0.653 (education)
	No	5 (1.59)	
Are you willing to participate in awareness programs on COVID-19 infection?	Yes	222 (70.70)	0.531 (gender) 0.447 (education)
	No	92 (29.30)	

who were already vaccinated, over 39% expressed that their willingness in getting vaccination was due to their trust in the government's awareness campaigns, 29% due to fear of contracting the disease, and 27% due to instructions from healthcare professionals. Among 16% unwilling to take the vaccine, over 86% were anxious about the side effects/ adverse reactions of the vaccine, and over 56% were anxious regarding the effectiveness of the vaccine. More than 88% of the respondents were willing to recommend vaccination to others, and more than 98% were ready to follow COVID-19 prevention protocols even after vaccination. About 30% were not willing to participate in COVID-19 awareness programs.

There was no significant difference in any response in relation to gender and education level.

DISCUSSION

Vaccination is considered the most significant achievement in public health[9]. Vaccination is regarded as one of the game-changing health sector interventions of the 21st century. Despite its benefits, this fundamental health-protecting tool is facing many obstacles globally[6].

Several COVID-19 vaccines have now been authorized or approved for human use, and many more are currently in the late stages of development and research. However, having licensed vaccines is not enough to achieve global control of COVID-19; they also need to be produced on an immense scale, priced affordably, and allocated globally so that they are available where and when required. These four dimensions of the global vaccination challenge are closely interrelated[10]. Nonetheless, yet another major challenge is public confidence and acceptance.

Many factors like geography, time, social class, contextual human behavior, and ethnicity are affecting public confidence and acceptance of vaccination[11]. Studies report that public perception of the benefits and relative risks of vaccination is a major obstacle for vaccine acceptance[6].

To be successful in reducing the prevalence and incidence of vaccine-preventable diseases (VPD), vaccination programs rely on a high uptake level. In addition to offering direct protection for vaccinated individuals, vaccination contributes indirectly to herd immunity by slowing the transmission[9]. Concerning COVID-19 disease, an effective vaccination against SARS-CoV-2 infection could mobilize the innate and adaptive immune responses and protect against severe forms of the disease. The SARS-CoV-2 virus can undergo mutations and can change antigenically over time. This may lead to only seasonal protection from the COVID-19 vaccine. The vaccination may thus not eradicate the disease. However, it can decrease the mortality and morbidity of the disease[12].

This study was conducted to assess the public's acceptance and concerns regarding vaccination against COVID-19 disease. The study was set during a period when large clinical trials have shown remarkable promise about efficacy without worrying about safety signals. However, due to the fast-tracking of research related to these vaccines, there is still concern regarding the scientific review, safety, and effectiveness, all of which have increased the hesitancy towards vaccination[13]. The causes of vaccine hesitancy, as reported in different studies, include religious reasons, personal beliefs, and safety concerns due to widespread myths, including the association of vaccines and autism, brain damage, and other conditions[14]. Unfortunately, in the Kerala state of India, insufficient studies have been conducted to assess the local population's attitudes toward vaccination.

It is noteworthy that over 92% of the respondents were aware of vaccine guidelines for COVID-19. The observation contrasts with the results of the study conducted among urban slum dwellers in Mumbai, where only 9% were aware. The probable reason could be the increased rate of illiteracy (>30%) and the time of conduct of the previous study (October 2020)[4].

More than 55% of the respondents noted that they received information regarding the COVID-19 vaccine through social media and over 42% through printed media. With the highest literacy levels in India, Kerala state enjoys the maximum reach in regard to social and print media[15,16].

Over 83% of the respondents were either already vaccinated (13%) or expressed their willingness to get vaccinated against COVID-19 at the earliest available date (70%). The observation is similar to studies conducted in the USA (80%)[17] and India (86.3%)[6]. The figure obtained in our study is higher compared to China (72.5%)[18], South Africa (64%), Russia (54%), France (59%), Poland (56%), and Hungary (56%)[19,20]. The results of this study also parallel the finding of the IPSOS survey, where the vaccine acceptance rate was 87% among the Indian population[19].

Among those willing to take the vaccine, the most common reasons cited for their willingness (in decreasing order of frequency) were: trust in government vaccination campaigns (39.46%), fear of contracting the disease (29.11%), advice from healthcare professionals (27.96%), occupation related risks (22.60%), mandatory instructions from employers (11.87%), advice from relatives and friends (8.81%), and travel-related reasons (4.59%). In a study conducted among students of a university in China, perceived severity of COVID-19 was positively associated with motivation to have COVID-19 vaccination. Receiving information concerning COVID-19 vaccination from medical personnel was associated with greater self-efficacy, response efficacy, and knowledge, whereas receiving information concerning COVID-19 vaccination from co-workers/colleagues was associated with less response efficacy and knowledge[21].

The major barriers/reasons for hesitancy reported by those unwilling to take the vaccine (in decreasing order of frequency) were: anxiety about adverse reactions, concern regarding the efficacy of vaccine, lack of trust in vaccines, cost of vaccines, and fear of injection. In another study conducted in India in 2020, the majority were concerned about COVID-19 vaccine side effects, and 20.2% of the respondents lacked confidence in the effectiveness of vaccination[6]. Anxiety about adverse reactions appears to be the most common reason for hesitancy in the majority of the studies[4,6,17,20,22].

Vaccine hesitancy is a major obstacle that needs to be overcome for controlling a pandemic such as COVID-19. The World Health Organization (WHO) has identified vaccine hesitancy as a leading global health threat[23]. Hesitancy towards vaccination has been reported previously and the main reasons for hesitancy include the compulsory nature of vaccines, their coincidental temporal relationships to adverse health outcomes, religious reasons, unfamiliarity

with vaccine-preventable diseases, and lack of trust in corporations and public health agencies[24]. The concerns regarding adverse reactions and efficacy can only be addressed with evidence-based research. Mass, credible awareness programs can help in increasing the acceptance of the vaccine.

CONCLUSIONS

The study reveals a good level of acceptance regarding vaccination acceptance among the population studied. The predominant concerns regarding the vaccine included adverse reactions and efficacy. The study population demonstrated a positive attitude towards vaccination. Further studies with larger representative sample sizes are needed to assess future uptake and potential changes in vaccination uptake/hesitancy in Kerala, India.

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