Knowledge, Attitude and Acceptance of a COVID-19 Vaccine in Indian Population : a Cross Sectional Study

Aditya Soni (draditya soni1@gmail.com)
Mahatma Gandhi Medical College & Hospital
Dr. Devanshi Tripathi
Mahatma Gandhi Medical College & Hospital
Dr. Manju Bhaskar
Mahatma Gandhi Medical College & Hospital
Dr. Rujul Modi
Mahatma Gandhi Medical College & Hospital

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Abstract

INTRODUCTION: The COVID-19 pandemic keeping on to devastate the world. A vaccine provides the best hope to control the pandemic. Understanding vaccine acceptance is important, because there is relatively high vaccine hesitancy for existing vaccines and relatively low vaccination coverage.

MATERIALS AND METHODS: Participants included are adults between the age group of 18-29 years (n=100). This is a cross-sectional, web based observational study conducted over a period of 1 month. An online survey is carried out through distribution of questionnaire via social network with snow ball effect.

RESULTS: A total 100 participants were included in the study. Almost more than half (55%) of the young adults aged between 18 and 29 years were oblivious about the COVID-19 vaccine availability, followed by 22% person aged between 30-39 years and 22% of the persons aged between 40- 59 years and around 1% of more than 60 years were oblivious about the vaccine availability. Among the study participants, nearly 40% were willing to take COVID-19 vaccine when it is available for use and only 30% did not want the vaccination.

CONCLUSION: The most dominant factor for vaccine hesitancy is because of adverse effects following immunization. Vaccine acceptability may be increased once additional information about vaccine safety and efficacy is available in the public domain, preferably from a trusted, centralized source of information.

Introduction

The COVID-19 pandemic keep on to devastate the world. A vaccine provide the best hope to control the pandemic. Understanding vaccine acceptance is important, because there is relatively high vaccine hesitancy for existing vaccines and relatively low vaccination coverage.[1] A safe and effective vaccine for the Coronavirus disease 2019 (COVID-19), caused by severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), has been on the wish list of healthcare agencies across the globe.[2]

The launch of the COVID-19 vaccine has been hastened program, with the vaccine coming to the market in only nine months after discovery of the virus. While, there is some early data to suggest safety and efficacy of the approved vaccines, long term efficacy and any long term side effects are largely unknown.

Understandably, the acceptance of the new vaccine remains uncertain by both, healthcare experts and the public at large. In addition, a strong anti-vaccine movement, with multiple pseudo-scientific conspiracy theories have flooded the media reports. It is for these reasons that vaccine hesitancy may become an important challenge in the immunization campaign against COVID-19.[3]

The knowledge and outlook regarding COVID-19 vaccine has not been studied and it is anticipated that there will be great variation in vaccine related outlook and attitudes across countries, and within countries as well, depending on demographic factors, education levels and overall knowledge regarding COVID-19 and the vaccines available.

During the COVID-19 pandemic, people used multiple information resources to gain knowledge and health information about the disease, including television, radio, newspapers, social media, friends, coworkers, healthcare providers, scientists, governments, etc.[4] Since such information sources can shape peoples' acceptance or refusal of COVID-19 vaccines, it is crucial to disseminate transparent and accurate information about vaccines' safety and efficacy to gain the trust of the population especially the hesitant and skeptical ones.[5]

The numerous surveys, focus groups, in-depth qualitative research, and large scale digital media analytics [6,7,8,9], as well as convened expert roundtables and workshops to understand context specific attitudes to vaccines among the general public, health-care professionals and providers [10], and pregnant women.[11]

Kreps et al reported that increased efficacy and duration of protection, with decreased incidence of major adverse effects and full FDA approval, appear to increase willingness of Americans to receive the vaccine against COVID-19 [12]. Other published surveys suggest recipient factors that decrease willingness to accept a vaccine include younger age, minority ethnic groups, not being a healthcare worker and lower individual perceived risk [13].

Another global phenomenon that negatively contributed to such a low level is the numerous campaigns launched by anti vaccinationists by various campaigns. Such campaigns on social media with fabricated, false, and sometimes misleading translations feeded the conspiracy beliefs of some people.

In this study, we analyse the various sociodemographic and economic variables, as well as the beliefs and barriers that may prove to be obstacle during the immunisation program.

Methods

This is a cross-sectional, web based observational study conducted in a period of 1 month. The study did an online survey and samples were collected from 100 individuals aged 18 years and above. Online and telephone survey methodologies were done using a social media platform by snowball effect. In addition to probing individuals knowledge, attitude and acceptances on vaccine confidence across the country, the study was also surveyed individuals on a range of factors including sources of trust, and information-seeking behaviours. The questionnaire used in this study was developed based on literature of review and discussion within the research team. The questionnaire was reviewed by experts in survey research for face validity. Participants were asked to indicate if they were infected with COVID-19 or knew anyone who was infected with confirmation of diagnosis using standard laboratory testing protocols. Participants were asked to indicate their most trusted sources when seeking knowledge of COVID-19 vaccines. Besides, participants were asked about their concerns during the COVID-19 pandemic. Participants were asked whether they accept to receive COVID-19 vaccines when they are approved and available. The attitudes towards COVID- 19 vaccines' section consists of 10 statements with a 5-point Likert scale (5=strongly agree, 4=agree, 3=neutral, 2=disagree, 1=strongly disagree), with

questions about hesitancy and concerns regarding COVID-19 vaccines. A p-value of less than 0.05 was considered statistically significant. The analysis was carried out using the Statistical Package for Social Sciences (SPSS).

Results

TABLE-01:SOCIO-DEMOGRAPHIC CHARACTERISTICS OF PARTICIPANTS (N= 100)		
AGE	18-29 YEARS	55 (55%)
	30-39 YEARS	22 (22%)
	40-59 YEARS	22 (22%)
	>60 YEARS	01 (1%)
GENDER	MALE	58 (58%)
	FEMALE	42 (42%)
AREA OF RESIDENCE	URBAN	90 (90%)
	RURAL	10 (10%)
MAXIMUM EDUCATION	ILLITERATE	00 (00%)
	PRIMARY	00 (00%)
	HIGH SCHOOL	03 (03%)
	BACHELOR'S DEGREE	35 (35%)
	MASTER'S DEGREE	60 (60%)
	PREFER TO SAY NOT	02 (02%)
OCCUPATION	UNEMPLOYED	05 (05%)
	STUDENT	16 (16%)
	BUSINESS	05 (05%)
	GOVERNMENT EMPLOYEE	04 (04%)
	Private Job	38 (38%)
	Health worker care	23 (23%)
	Other	09 (09%)
RELIGION	HINDU	93 (93%)
	MUSLIM	02 (02%)
	CHRISTIAN	05 (05%)
MARITAL STATUS	MARRIED	47 (47%)
	UNMARRIED	49 (49%)
	WIDOWED	00 (00%)
	DIVORCED	02 (02%)
	SEPARATED	01 (01%)
	PREFER TO SAY NOT	01 (01%)
CURRENT EMPLOYMENT STATUS	FULL TIME/ PART TIME	92 (92%)
	RETIRED	04 (04%)
	LOST JOB IN COVID	04 (04%)
CURRENTLY LIVING WITH	FAMILY	74 (74%)
	AWAY FAMILY FROM	19 (19%)
	ALONE	07 (07%)

Information was collected on participants, age group, gender, ethnicity, highest level of education, and region of residence as shown in Table1 a total of 100 participants were recruited. Table 1 shows that more than half of the participants (55%) were between the age group of 18-29 years, 58% were males and 60% were obtaining a master's degree.

TABLE-2 ASSOCIATION BETWEEN SOCIO-DEMOGRAPHIC CHARACTERISTICS AND KNOWLEDGE OF COVID VACCINE AVAILABILITY

VARIABLES	CATEGORIES	TRUE	FALSE	DON'T KNOW	CHI- SQUARE VALUE	P- VALUE
AGE	18-29	9	8	7	3.07	0.8
	30-39	9	15	9		
	40-59	8	12	4		
	>60	7	7	5		
GENDER	MALE	25	12	10	1.02	0.6
	FEMALE	23	16	14		
AREA OF RESIDENCE	URBAN	27	10	12	3.21	**0.2***
	RURAL	22	18	11		
MAXIMUM EDUCATION	ILLITERATE	0	4	6	24.23	**0.007***
	PRIMARY	2	8	6		
	HIGH SCHOOL	10	5	5		
	BACHELOR'S DEGREE	7	8	3		
	MASTER'S DEGREE	12	3	8		
	PREFER NOT TO SAY	4	8	1		
OCCUPATION	UNEMPLOYED	2	0	9	39.13	**0.0001***
	STUDENT	0	3	2		
	BUSINESS	9	7	4		
	GOVERNMENT EMPLOYEE	7	8	6		
	PRIVATE JOB	8	7	5		
	HEALTH CARE WORKER	9	0	0		
	OTHER	2	2	10		
RELIGION	HINDU	27	15	18	9.21	**0.01***
	MUSLIM	20	17	3		
MARITAL STATUS	MARRIED	8	4	1	25.81	**0.004***
	UNMARRIED	13	2	8		
	WIDOWED	8	3	7		
	DIVORCED	12	3	5		
	SEPARATED	2	8	6		
	PREFER NOT TO SAY	0	4	6		
CURRENT EMPLOYMENT STATUS	FULL TIME/ PART TIME	15	12	3	10.71	**0.03***
	RETIRED	10	8	10		
	LOST JOB IN COVID	18	20	4		
CURRENTLY LIVING WITH	FAMILY	13	17	4	6.26	0.18
	AWAY FROM FAMILY	9	7	5		
	ALONE	20	23	2		

Respondents were asked to a series of true–false questions to assess their more general knowledge of COVID-19. Questions were also asked relating to most common symptoms . The responses like true, false, and don't know responses can be seen in Table . We have found that around 8 young adults aged between 18 and 29 years were oblivious about the COVID vaccine availability, followed by majority that is 15 persons aged between 30 and 39 years, 12 persons between the age of 40 and 59 years and 7 persons aged more than 60 years were oblivious about the vaccine availability. Our study also found that around 9 persons aged between 30 and 39 years and majority that is around 14 of the females don't know about the COVID vaccine availability. Around 9 people who are unemployed, 2 student, 4 businessman, 6 Government employee, 5 people with private job maximum around 10 in other category don't know about the vaccine availability. In our study we also found that there were significant results seen in categories like educational status (0.007), occupation (0.0001) and employment status (0.03) as it plays a major role in knowledge. The significant results were also seen in area of residence (0.2), religion (0.01) and marital status (0.004).

TABLE-03: PARTICIPANT'S ATTITUDE TOWARDS COVID-19 VACCINATION		
Do you think that Greater public awareness needed about COVID-19 Vaccine?	Yes	93(93%)
	No	2(2%)
	Not sure	5(5%)
Do you think that COVID 19 Vaccination would be effective?	Yes	54(54%)
	No	05(05%)
	Not Sure	41(41%)
Do you think that COVID 19 Vaccination would be safe ?	Yes	56(56%)
	No	8(8%)
	Not Sure	36(36%)
Do you think that best way to avoid the complications of COVID 19 is by getting the vaccine ?	Yes	48(48%)
	No	20(20%)
	Not Sure	32(32%)
Do you think that greater public awareness is needed about COVID-19 vaccine?	Yes	93(93%)
	No	2(2%)
	Not Sure	5(5%)
If the COVID 19 vaccine is available will you get it?	Yes	40 (40%)
	No	30 (30%)
	Not Sure	30 (30%)

Table 3 illustrates the safety (56%) and effectiveness (54%) of COVID-19 vaccination. However, the majority agreed that getting the vaccine is the best means of avoiding the complications of COVID-19 (48%).

TABLE-04 : BARRIERS IN ACCEPTING COVID-19 VACCINATION (N=100)					
	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Receiving a COVID-19 vaccine at the same time as	26 (26%)	14(14%)	31(31%)	22(22%)	07(7%)

regularly scheduled vaccines would make me more likely to accept it.					
I am worried that the vaccine itself will give me COVID-19.	29(29%)	35(35%)	19(19%)	12(12%)	05(5%)
I would rather build immunity by exposure to an infected individual than receive the vaccine.	25(25%)	28(28%)	18(18%)	23(23%)	06(6%)
I would be more likely to get the vaccine if it was required to travel internationally.	21(21%)	18(18%)	19(19%)	38(38%)	04(4%)
I am worried about the cost of a COVID-19 vaccine.	24(24%)	27(27%)	17(17%)	27(27%)	05(5%)
I am worried about side effects of the vaccine for myself	15(15%)	14(14%)	12(12%)	42(42%)	17(17%)
I am worried about side effects of the vaccine for children.	07(7%)	05(5%)	08(8%)	23(23%)	09(9%)
The side effects in future of the vaccine are likely to be worse than COVID-19 itself.	23(23%)	14(14%)	41(41%)	18(18%)	04(4%)
Knowing a COVID-19 vaccine was developed in India would make me feel more comfortable receiving it.	13(13%)	12(12%)	26(26%)	40(40%)	09(9%)

Table-4 shows the barriers associated with acceptance of COVID-19 vaccination. The majority of vaccine refusers were concerned about the side effects (42%). Around (38%) of participants will agree to vaccination if it is needed to travel internationally.

Discussion

The COVID-19 pandemic has seen healthcare system to adopt unequalled infection prevention and control measures, and fast track the vaccine approval to urgently control the spread of the virus. Many countries fast-tracked the use of COVID-19 vaccine to public through emergency use authorization (EUA) from their concerned health ministry or department.

The knowledge, attitudes and acceptance of the local Indian population towards the COVID- 19 vaccine is critical to understanding the epidemiological dynamics of disease control, and the effectiveness, compliance and success of the vaccination program. Vaccine hesitancy remains a significant barrier to full population inoculation even in hitherto established vaccination programs. Our study aims to highlight the knowledge regarding the COVID-19 vaccine, and also the predictors of vaccine hesitancy, in India population .

While vaccines are known to be successful public health measures, an increasing number of people believe vaccines are neither safe nor necessary [14]. This behavior is determined by issues of confidence or trust in the vaccine or provider, perceived lack of need or value for the vaccine and issues with access to the vaccine .[15] In our study 36% individuals were not sure about the vaccine safety and according to 8% individuals it is not safe.

We found that more than half of the study participants belong to the age group 18-29 years and nearly 60% have done master's degree. Our study found that maxium no. of unemployed people are unaware about COVID-19 vaccine.

Sharun et al reported that in a similar study, via a self-administer questionnaire online, nearly 85% of the 351 subjects were planning to get the COVID-19 vaccine once it is available for use in the market. Less than two thirds of their subjects, however, were ready to get the vaccine as soon as it was available, and the most important cause of vaccine hesitancy was the fear of side effects.[16] In our study we found that out around 40% people are planning to get the COVID-19 vaccine once it is available.

The results of our study are also similar to those reported in the IPSOS survey: the authors found a vaccine acceptance rate of 87% among the Indian population.[17]

Dror et al reported that employment within the healthcare sector did not influence the subjects' acceptance of a potential COVID-19 vaccine, being 75% in doctors, 66% in nurses and 71% in general population in Israel.[18]

Bhartiya S et al nearly half of the study participants belong to the age group 40-60 years and nearly two-thirds were educated less than 10 standards. Our study found that more than half of housewife, unemployed, white collar and blue collar workers were unaware about COVID- 19 vaccine.[19]

Conclusion

The rapid development of COVID-19 vaccine might have contributed to the emergence of concerns among the general population. Awareness about the COVID-19 vaccine, and its acceptance, varies depending on sociodemographic characteristics. The most dominant factor for vaccine hesitancy is because of adverse effects following immunization, and this may be the considerable challenge in the global response against the pandemic.

Vaccine acceptability may be increased once additional information about vaccine safety and efficacy is available in the public domain, preferably by a trusted, centralized source of information.. Additional studies to identify the barriers to vaccine acceptance, and the populations at a higher risk for vaccine hesitancy are also critical. They will help the public health policy makers to formulate more definitive, efficient strategies that can help to implement the COVID-19 vaccination program successfully in India.

Declarations

CONFLICT OF INTEREST: Nil

The University's Institutional Review Board provided approval for the study.

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Figures

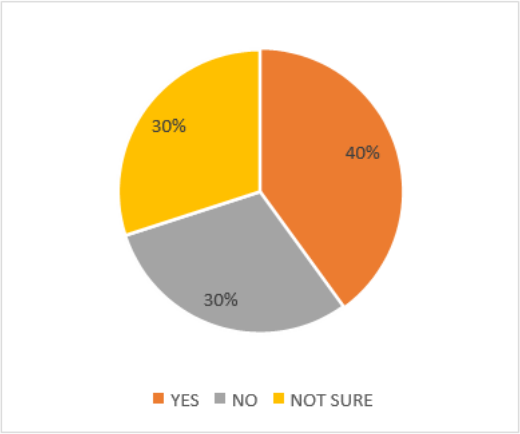

Figure 1

Responses for the question: If the COVID 19 vaccine is available will you get it?