Original Research Article

Knowledge, Attitude, Practice, and Concerns of the general population in age group 18-45years towards COVID-19 vaccination – A community-based survey in Chandigarh, India.

ABSTRACT:

This study aimed to investigate community knowledge, attitudes, practice, and concerns of adults 18-45yrs towards COVID 19 vaccinations in Chandigarh, India. A rapid online survey was done, and forms from 731 people were collected from 24.08.21 to 5.10.21. The primary outcome variable was the general public's willingness, knowledge, and attitude towards COVID-19 vaccination. The associated factors were identified using regression analysis. A sample of 73% of people participated and completed the study questionnaires. Only 70.3% of the people received the vaccination, and 70.9% of participants gave no history of previous COVID-19 infection. Just above half of the participants, 50.2%, believed to know the vaccine's effectiveness, whereas 88.1 % (644) participants understood the importance of vaccination against this disease. Despite limitations, surveys are a suitable method to evaluate and assess attitudes and concerns of the general population about COVID-19 vaccination.

Keywords: COVID-19,Vaccination, Community Knowledge, Acceptance.

1. Introduction :

Coronavirus disease (COVID-19) is a deadly disease that continues to affect many countries worldwide. This is caused by the new coronavirus strain SARS-CoV-2, a severe public health concern worldwide. The World Health Organization (WHO) declared the COVID-19 outbreak as a pandemic on 12 March 2020.[1]

The first COVID-19 case was reported on 27 January 2020 in Kerala, India. Since then, the number of new cases has been rising rapidly. As of 23 May 2021, the country has recorded 26,738,220 positive cases of COVID-19 and 303,355 deaths domestically. The ground strategy followed by most countries around the world was to reduce the transmissibility of the disease, often by non-pharmaceutical interventions (NPIs), including enforcing masks policy, hand sanitization, social distancing, travel restrictions, schools closures, and partial or complete lockdowns. So far, NPIs have been able to slow down the progression of the disease. Still, the most promising strategy to confine the pandemic and provide hope to reduce the mortality and morbidity rates remains within the capacity of medical technology. Medical technology includes effective, safe, and affordable antiviral agents and vaccines. Vaccines are the most critical public health measure and most effective strategy to protect the population from COVID-19 since SARS CoV2 is highly contagious and affects people widely and globally.

One major obstacle facing the achievement of such a goal is believed to be vaccine hesitancy and skepticism among the population worldwide. Vaccine hesitancy was defined by the WHO Strategic Advisory Group of Experts (SAGE) as "delay in acceptance or refusal of vaccination despite the availability of vaccination services."[2,3] Vaccine acceptability is determined by convenience and complacency. Confidence is defined as trust in the safety and effectiveness of the vaccine, trust in the delivery system as the healthcare system, and trust in the policymakers. Many people have

doubts about vaccine safety. This will be a significant challenge to be resolved by health care providers, policymakers, community leaders, and governments to increase the widespread acceptance of vaccines. Moreover, vaccination convenience refers to the relative ease of access to the vaccine, including physical availability, affordability, and accessibility.[4] Vaccine complacency is associated with a low realized risk of the vaccine-preventable disease and hence more negative attitudes towards the vaccines

Several vaccines have been approved against coronavirus disease (COVID-19) and distributed globally in different regions. Most widely used are covaxin and covishield in India.[5] With the distribution of vaccines underway, it is imperative to examine community acceptance of COVID-19 vaccinations. A global survey needs to be done for potential COVID-19 vaccine acceptance by the study population. However, 18-45yrs of the adult population is educated and motivated but confused about the COVID-19 vaccinations and remained unsure whether they would have the vaccination. Henceforth, general community knowledge, attitudes, practice, and concerns (KAPC) towards COVID-19 vaccinations are poorly understood.[4-6] Thus, the study aimed to investigate community knowledge, attitudes, practice, and concerns of adults 18-45yrs towards COVID 19 vaccinations in Chandigarh, India.

2. Methods

The primary objective of this study was to evaluate the knowledge, the attitude of adults between 18-45 towards getting themselves vaccinated, their behavior about adult immunization, and beliefs about vaccination in general. Secondary objectives

were to evaluate the experiences, concerns, and associated side effects, if any, among youngsters post-vaccination.

2.1. Study Design: This survey is a cross-sectional study conducted among the general public (18 – 45yrs) in Chandigarh using a convenient sampling technique. Google form was used to design online self-administered questionnaires. It was disseminated through WhatsApp to the adults of the age group 18-45yrs. A snowball sampling technique was used to reach out to the general public by using a snowball sampling technique encouraging respondents to forward or share the online survey link with others. This approach was adopted because of the existing nature of the pandemic as it offers social distancing, and the movement of researchers or participants is also restricted. Participation in the study was voluntary. The data was collected from 24.08.21 to 5.10.21.

2.2. Variables: in this study, acceptance was defined as the knowledge and attitude of the general population (18 – 45years) and their intention and willingness to take the COVID-19 vaccine. This was the dependent variable, and the question assessed it, "I will take the COVID – 19 vaccinations without any hesitation if it is available in Chandigarh." The responses are "agree, disagree, and undecided."

The questionnaire covered developed three sections: Sociodemographic, knowledge about vaccination, attitude, and willingness to vaccinate.

The Socio-demographic section includes age, sex, marital status, educational qualification, residence, family income, occupation, etc. In addition, the questionnaire included questions about their COVID-19 experience, including their previous contact with the virus, their symptoms, and allergic reactions, if any. Questions were included about their concerns and apprehensions regarding

the COVID -19 vaccination. However, some of the questions were modified to reflect our local content.

2.3: Statistical Analysis: The data were analyzed in the statistical package for social science (SPSS) software v24. Univariable analysis was done. The univariable analysis included frequency, percentage, and standard deviations. The Chi-square test was used to know the association between the covariates and the outcome, whereas odds ratios were calculated to determine the association's strength. Results were considered statistically significant if the two-tailed p-value was <0.05.

3. Results :

3.1 Socio-demographic profile of study participants: The study found that most participants belonged to the age group 26-35 years (48.6%), and around two-thirds of them were married (66.5%). More than half (53.8%) of them had completed their school education but were undergraduates. More than two-thirds (77.6%) of the participants were from urban areas, and about 62% were from nuclear families. The study found that around 90% of participants were non-smokers, 70% had received the necessary vaccination, and approximately 79% of them had previous COVID-19 infection, as presented in table 1.

3.2 Knowledge about COVID-19 vaccination among study participants: Just above half of the participants (50.2%) believed to know the vaccine's effectiveness. Roughly half of the participants (46%) said that Covid 19 vaccine is not associated with an allergic reaction. 52.3% of participants refused to have information about the association between allergic reactions and Covid 19

vaccination. 87.6% percent of participants didn't know whether vaccines increased the incidence of autoimmune diseases. 10.5% of participants replied no to the question mentioned above, whereas 1.9% of participants gave their reply in the form of yes to the same question. 88.1% (n=644) of participants understood the importance of vaccination against this disease and believed that the Covid-19 vaccine is essential for all of us. Out of a total, 652 (n=89.2%) participants have no hesitancy about Covid-19 vaccination. 88.8% (n=649) participants said they encourage family, friends, and relatives to take the vaccination. 23.1% percent believed that Covid-19 could not be reduced without vaccination, whereas 3.3% disbelieved the above statement. 73.6% of people were not sure whether the incidence of infection could be reduced without vaccination. When they were asked whether vaccination affects fertility or not, 53.8% of participants replied no to this question, and 44.8% responded in the form of "maybe." 81.7% of participants replied yes to taking the vaccine if they want to conceive. Almost all, that is, 96.2%, participants agreed that vaccines are being distributed fairly, as presented in Table 2.

3.3 Factors related to encouragement for vaccination: Factors that were associated with encouragement to get family/ friends/ relatives vaccinated were looked for. Various factors which had significant p-value were marital status (p=0.01), higher education (p=<0.01), source of information being newspaper/ television/ internet

(p=<0.01), belonging to an urban area (p= <0.01), being from upper or middle socioeconomic class (p=<0.01), and previously received of necessary vaccination (p=<0.01). Age and gender are two factors that were not associated with encouragement to get family/friends / relatives vaccinated, as presented in Table 3.

Table 1: Distribution of study participants

	Characteristics	N (%)
	Age category	
	18-25	137 (18.7)
	26-35	355 (48.6)
	36-45	239 (32.7)
	Gender	
	Male	359 (49.1)
	Female	372 (50.9)
	Marital status	
	Married	486 (66.5)
	Unmarried	245 (33.5)
	Education	
	School Education	221 (30.2)
	Under graduation	393 (53.8)
	Post-graduation	117 (16)
	Occupation	
	Professional	161 (22)
	Homemaker/student/unemployed	152 (20.8)
	Businessman	46 (6.3)
	Private job	58 (7.9)
	Semiskilled skilled	86 (11.8)
	Unskilled	112 (15.3)
	Self-employed	116 (15.9)

	Family type	
	Joint	278 (38)
	Nuclear	453 (62)
	Income	
	Lower	354 (48.4)
	Middle	287 (39.3)
	Upper	89 (12.2)
	Residence	
	Rural	164 (22.4)
	Urban	567 (77.6)
	Chronic disease	
	Yes	32 (4.4)
	No	698 (95.5)
	Smoking	
	Active smokers	55 (7.5)
	Non-Smoker	659 (90.2)
	Reformed smoker	17 (2.2)
	Received necessary vaccination	
	Yes	514 (70.3)
	No	217 (29.7)
	Previous COVID-19 infection	
	Yes	153 (20.9)
	No	578 (79.1)
	Source of Information	

	Internet	65 (8.9)
	Television/ radio	199 (27.2)
	Newspaper	301 (41.2)
	Family/friend	94 (12.9)
	Health care facility	72 (9.8)

Table 2: Knowledge about COVID-19 vaccination among study participants

	Knowledge about the effectiveness of the COVID 19 vaccine	
	Yes	367 (50.2)
	No	154 (21.1)
	Don't know	210 (28.7)
	Does vaccine increase allergic reaction	
	Yes	12 (1.6)
	No	336 (46)
	Don't know	382 (52.3)
	Does vaccination increase autoimmune diseases	
	Yes	14 (1.9)

	No	77 (10.5)
	Don’t know	640 (87.6)
	Is COVID 19 vaccine essential for us	
	Yes	644 (88.1)
	No	6 (8)
	Not sure	81 (11.1)
	Vaccine hesitancy	
	Yes	9 (1.2)
	No	652 (89.2)
	Don’t know	70 (9.6)
	Encourage family/ friends/relatives to get the vaccine	
	Agree	649 (88.8)
	Disagree	66 (9)
	Not decided	16 (2.2)
	COVID 19 incidence cannot be reduced without vaccination	
	Agree	169 (23.1)
	Disagree	24 (3.3)
	Not sure	538 (73.6)
	COVID 19 vaccination is fairly distributed	
	Agree	703 (96.2)
	Disagree	1 (0.1)
	Doesn't matter	27 (3.7)
	Do you feel vaccination affects fertility	
	Yes	10 (1.4)

	No	393 (53.8)
	Maybe	328 (44.8)
	Will you take a vaccine if you want to conceive	
	Yes	597 (81.7)
	No	134 (18.3)

Table 3: Factors associated with encouragement to get family/ friends/ relatives vaccinated

	Age category	Agree	Disagree	P value
	18-25	119 (88.8)	15 (11.2)	0.12
	26-35	312 (89.4)	37 (10.6)	
	36-45	218 (94)	14 (6)	
	Gender			
	Male	328 (91.1)	32 (8.9)	0.85
	Female	321 (90.4)	34 (9.6)	
	Marital status			
	Married	420 (88.8)	53 (11.2)	0.01
	Unmarried	229 (94.6)	13 (5.4)	

	Education			
	School Education	155 (71.4)	62 (28.6)	<0.01
	Undergraduate	379 (99)	4 (1)	
	Postgraduate	115(100)	0	
	Occupation			
	Professional	157 (98.1)	3 (1.9)	<0.01
	Homemaker/student/unemployed	146 (98)	3 (2)	
	Businessman	45 (100)	0	
	Private job	57 (100)	0	
	Semiskilled skilled	75 (92.6)	6 (7.4)	
	Unskilled	56 (51.4)	53 (48.6)	
	Self employed	113 (99.1)	1 (0.9)	
	Source of Information			
	Internet	61 (95.4)	3 (4.6)	<0.01
	Television/ radio	188 (97.4)	5 (2.6)	
	Newspaper	294 (99.3)	2 (0.7)	
	Family/friend	37 (41.1)	53 (58.9)	
	Health care facility	68 (95.8)	3 (4.2)	
	Residence			
	Rural	106 (66.3)	54 (33.8)	<0.01
	Urban	543 (97.8)	12 (2.2)	
	Received necessary vaccine			
	Yes	500 (98.8)	6 (1.2)	<0.01
	No	149 (71.3)	60 (28.7)	

	Income status			
	Lower	286 (82.2)	63 (17.8)	<0.01
	Middle	274 (98.6)	4 (1.4)	
	Upper	88 (100)	0	

4. Discussion :

The success of the vaccination drive depends on the general population's attitude to getting themselves vaccinated. It's a major task, and experts find it crucial to determine vaccine acceptance among the general public.[4,5] Henceforth, we developed a validated questionnaire to interpret vaccine acceptance and hesitancy by investigating community knowledge, attitudes, practice, and concerns (KAPC) of adults (18-45years) towards COVID-19 vaccination in Chandigarh, India.

There are several advantages of this questionnaire, as it is concise and easy to use and can be used in a resource-constrained setting with minimal participation burden. Secondly, vaccine acceptance or hesitancy was assessed quickly among the adult population group. The finding showed that 88 percent of participants understood the importance of vaccination against this disease and believed that the COVID-19 vaccine is essential for all.[7,8] 89% of participants were not hesitant to take the vaccine and were willing to encourage family and friends also to get themselves vaccinated. The acceptability of the COVID-19 vaccine in this study is higher compared to the study conducted by Lazaris et al. and Harapan et al.[2]

Similar to the study conducted by Alfageeh et al[9] our study showed higher acceptability of the COVID-19 vaccine and better encouragement to get their family and friends motivated to get vaccinated. 44% of the participants who wanted to conceive were not sure whether the vaccine would affect fertility or not. These

findings are almost similar to other studies. For instance, a study in Saudi Arabia found concerns about the safety of vaccines and concerns about side effects as the main reasons for unwillingness to accept COVID-19 vaccines.[10-13]

The general public's attitude and uptake of vaccination are also associated with the acceptance of vaccination by health professionals and compliance with vaccination schedules, thus reducing hesitation towards immunization.[14-16]

To enhance the acceptability and reduce the public's hesitancy regarding COVID-19 vaccination, policymakers in health care sectors should address the public's concerns about the safety and side effects of the COVID-19 vaccine as early as possible. Also, policy makers should use social media to strengthen public education on COVID-19 and the benefits of injecting COVID-19 vaccines since they are the mediums through which misinformation on COVID-19 may spread, especially on social media.[5,6]

5. **Limitations:** This study has some limitations. First, this study used convenient and snowball sampling techniques which are non-probability sampling techniques. Thus, limiting the extent to which results can be generalized. Second, as no identification verification tool was used, the participants could have made multiple submissions. Third, an online survey can lead to a low response rate also. Despite these limitations, this study highlights the attitude and concerns of adults regarding the uptake of the COVID-19 vaccine.
6. **Conclusion:** During rapidly evolving disease outbreaks, mainly when face-to-face research is restricted due to lockdowns, online surveys are a practical method to assess the knowledge, attitude, and concerns of the general public towards COVID-19 vaccination.

Ethical approval and consent :

Ethical approval was sought from the ethics committee of PGIMER.

All participants gave informed written consent.

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