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A cross sectional study on knowledge, attitude and practice regarding Covid vaccination among health beneficiaries

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ABSTRACT

Background: In 2020, the whole world was taken aback by the emergence of a new viral disease – novel Corona Virus Disease (nCoViD-19), and soon the WHO declared it a pandemic. In India, two vaccines were developed and almost immediately approved for use, namely the Covishield and the Covaxin. These new vaccines and their fastened approval stirred a mixture of reactions both among the health care providers and the general public.
Objective: This pioneer study was conducted to assess the Knowledge, Attitude and Practice regarding CoViD vaccination among various beneficiaries.
Study Design: A cross-sectional questionnaire based study was conducted among various beneficiaries from January 25^{th} to April 12^{th} 2021.
Materials and Methods: Employing the stratified random sampling technique, 1000 study subjects were selected. After obtaining written informed consent, one to one interview was conducted. Knowledge, attitude and practice of CoViD vaccination was assessed using a grading system.
Results: 99.95% of Doctors and 49.0% of paramedical health care workers in contrast to 72.8% of general citizens had a good practise regarding vaccination and the pandemic in general. 64% of male study subjects had enrolled for vaccination on their self interest, in contrast with 75% of the 365 female study subjects. There was no statistically significant association between Gender and scores >60% in Knowledge, Attitude and Practice regarding CoViD vaccination among the subjects. There was a statistically very high significance between Knowledge regarding vaccination and the independent decision to get vaccinated.
Conclusions: Majority of the study population was willing to be vaccinated and the main reason attributed to this willingness was the belief that the vaccine is safe.

1. Introduction

Coronavirus disease (n-CoViD 19) is an ongoing pandemic caused by corona virus. Due to its rapid spread and high rate of mortality and morbidity worldwide it has turned out to be a global calamity.

During December 2019, an outbreak of a viral pneumonia was reported from the city of Wuhan, in Hubei province, China. Soon the disease spread to other parts of China and several countries to become a pandemic. By 9 January 2020, it was established that the disease was caused by a novel coronavirus, 2019-nCoV or SARS-CoV-2 and was named COVID-19.[1] Later, during the first half of January 2020, the Chinese researchers shared the genome sequence of the virus, followed by an international response triggered to develop a prophylactic vaccine to provide acquired immunity against COID-19. By April 2020, over hundred institutes and companies in 19 countries

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were working on the vaccine for COVID-19.[1]

In India, various vaccines were under development to combat the COVID-19 and have been modelled on the original strain. On 3 January 2020, India's top drug regulator issued emergency approval for two vaccines for restricted use against covid-19, even though phase III clinical trials for Covishield and Covaxin were still ongoing in India. In a nation with the-then second highest number of infections worldwide and more than 150 000 covid-19 deaths, the panic driven by news of new virus variants fuelled approval.[2,3]

Of the two vaccines approved, Covishield is the better known. It's a version of the Oxford University-AstraZeneca vaccine, made by the world's largest vaccines manufacturer-the Serum Institute of India, and was found to have an average efficacy of 70.4% in a peer reviewed study. Covaxin is India's first home produced vaccine developed by Bharat Biotech in collaboration with the Indian Council of Medical Research and the National Institute of Virology. On 21 January, *The Lancet* published Covaxin's phase I trial data, giving it a green light for safety and stating that it generates adequate immune response, but said further efficacy trials were warranted.[3] It was thought that a target to vaccinate 75 percent population was likely to attain localised herd immunity.[4]

The vaccine was initially offered to people at high risk for the disease and healthcare workers, followed by stratified population based on their risk. At a later stage it was made available to the entire population aged 18 years and more through the nation's largest known vaccination campaign. However, the hope of benefiting from the vaccine, to the extent that the vaccine may be the only way to tide over and control the COVID-19 pandemic, was accompanied by considerable opposition among the public against COVID-19 vaccination, including the vaccine hesitancy.

As evident from other surveys conducted by the print and electronic media nationwide, some people were understandably concerned that the speed of both development and vaccine approval could have compromised safety, despite the manufacturers' assurances. This triggered our interest in conducting this study with an objective to assess the level of knowledge, attitude and practice regarding the vaccination among selected beneficiaries in central Kerala and also to identify the various factors attributed.

2. Materials and Methods

This was a descriptive KAP study conducted among beneficiaries registered for CoViD vaccination at a tertiary health care setting at Pathanamthitta, Central Kerala in the first 6 months of 2020. From the total of 1960 beneficiaries registered, 1000 randomly selected beneficiaries belonging to various strata of the population – Health Care Workers and Front Line Workers, Citizens aged > 60 years, Citizens aged 45-60 years, and Citizens aged 18-45 years were studied following Stratified Random Sampling method. The data was collected using a pre tested and validated questionnaire consisting of 26 questions (12 questions on knowledge, 08 questions on attitude and 06 questions on practise). Scoring 60% and above in any category was considered as a "good" score and 40% or less was considered as a "poor" score. Informed written consent from the participants and approval from the Institution Ethics Committee was obtained before the start of the study. The data collected was analysed using SPSS version 20.1 and appropriate tests of significance were employed.

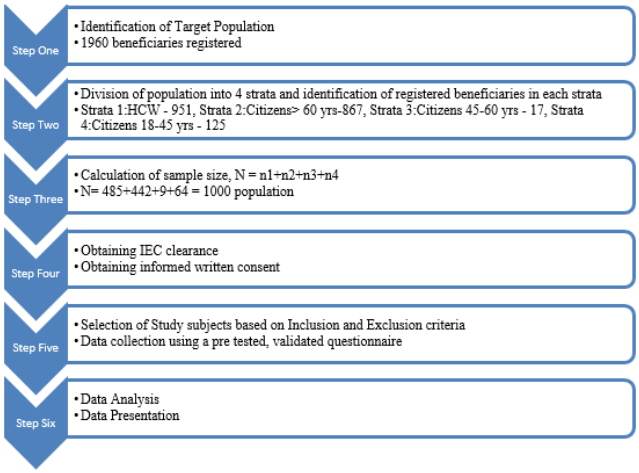

Fig. 1: Flowchart of the methodology used

3. Results

A total of 515 general citizens and 485 health care workers were studied. Majority (61%) of study subjects belonged to the age group 18-45 years including 64 citizens and 260 Health care workers. 26.5 % of study subjects belonged to the age group 45-60 years which included 209 health care workers and 9 citizens. 12.5% of the study population included 442 citizens and 16 health care workers.

Among the 485 health care workers analysed, 68.6% had a satisfactory knowledge about the dose, site, type, contraindications and possible adverse effects of the vaccination. However, among the 442 citizens aged > 60, only 12.7% had satisfactory knowledge about the vaccination. Among the 64 citizens aged 18-45 years, 66% had satisfactory knowledge and among the 9 citizens aged between 45-60 years, 55.6% had satisfactory knowledge on the vaccination.

Among the 485 health care workers analysed, 86% had a good attitude about being vaccinated and considered vaccination as one of the strongest pillars in the fight against the pandemic. They did not believe in any alternate methods to control the epidemic including the Hand Wash

– Face mask – Social Distancing norms. However, among the 442 citizens aged > 60, only 12.7% had a good attitude regarding the vaccination. Among the 64 citizens aged 18-45 years, 28.2% had a good attitude whereas among the 9 citizens aged between 45-60 years, 88.9% had a good attitude regarding the vaccination.

92% of the total study subjects registered for vaccination had done it on their own decision and hence had a good practice score regarding CoViD vaccination. However, 8% had registered for vaccination owing to parental/ peer pressure and hence scored low on the Attitude Likert Scale.

Among the 1000 beneficiaries registered for vaccination, 140 (14%) reported that they were pressurized by media and family to get vaccinated despite them not being completely interested. Among these 140 beneficiaries, 108 (77.14%) were health care workers. This appeared to the investigators as a matter of serious concern as health care workers are considered to be the backbone of the health care system and alleviating their concerns are to be addressed primarily.

78% (780) of the study subjects believed in other methods for control of the pandemic – various methods included Social Distancing norms, Use of soap, masks and sanitisers, lockdown measures by the Government etc.

Among the 515 general citizens, 88% (453 in no.) had come up for vaccination on their own accord and not influenced by media or peer and family pressure. This was a strikingly interesting observation as 21.5% of health care workers were influenced by peer and family pressure or media on their positive attitude towards vaccination in contrast to 12% of the general population.

When asked about the reasons for their willingness to get vaccinated, the study subjects revealed numerous reasons, the most prominent being the belief that the vaccine is safe (74%) followed by the realisation that CoViD could be a fatal disease (41%). 15% of study subjects also quoted that they just agreed upon the views of the Government and other national institutions supporting vaccination.

When asked about the concept of herd immunity, 87.3% of the health care workers reported that they were familiar with it and also knew that developing herd immunity could be one of the few ways to tide over the pandemic. However, only 21.4% of the general citizens knew or understood the concept of herd immunity. This also could be viewed as a matter of concern, as understanding the concept of getting vaccinated to protect themselves as well as their community is important to enhance vaccine acceptability among the general public.

A striking observation regarding the nCoViD-19 disease was that 92. % of the 1000 study subjects covered believed that concerned organisations and researchers would develop a medicine more effective than the vaccination to combat the pandmeic like in the case of other viral diseases like Chicken Pox, Dengue etc. Among these 920 study subjects, 810 (88%) were general citizens and the remaining 12% were health care workers.

Out of the total, 635 male study subjects, 64% had enrolled for vaccination on their self interest, in contrast with 75% of the 365 female study subjects. This association between gender and willingness to get vaccinated was found to be statistically significant. It was also seen that there was a statistically very high significance between Knowledge regarding vaccination and the independent decision to get vaccinated (Chi square value: 71.7337, p value < 0.001) (Table 1)

It was observed that there was a statistically highly significant association between the Occupation of study subjects and safe practises with regards to both vaccination, and he pandemic. 99.95% of Doctors and 49.0% of paramedical health care workers in contrast to 72.8% of general citizens had a good practise regarding vaccination and the pandemic in general. (Table 1)

It was observed that there was no statistically significant association between Gender and scores >60% in Knowledge, Attitude and Practice regarding CoViD vaccination among the 1000 study subjects. However, there was a statistical association between age and scores >60% regarding knowledge and attitude regarding the vaccination among the study subjects. There was also a statistically significant association between scores >60% regarding Education and Knowledge, Attitude and Practice regarding CoViD 19 vaccination among the 1000 study subjects.(Table 2)

4. Discussion

The effectiveness of any vaccination campaign depends on the population coverage, since in the case of a low vaccination rate, herd immunity will not be developed, and the most vulnerable population groups will not be protected against the concerned disease. So, it is important that the public awareness and attitude towards vaccination is understood beforehand, so that public health officials have the time to design and implement targeted interventions to raise the awareness of general population about the importance of vaccination.

Our results revealed that out of the 1000 study subjects, 88% were willing to be vaccinated and 12% were not willing to be vaccinated. Among those who were willing, 74 believed that the vaccine is safe, 41 stated their reason as the covid 19 was dangerous to their health and 15 stated as other reasons. Among the people who were not willing to be vaccinated 11 stated the vaccine was not safe, 1 stated their reason as covid 19 was not dangerous and 8 stated other reasons. Comparing the willingness rate of our study(88%) with that of similar studies conducted in the UK(60%).[3] European countries(73.9%),[5] USA(53.6%)[6] and another global survey(71.5%),[7] it seems that our study population are less hesitant against CoViD 19 vaccination. A majority of our study population contain health workers which might

Table 1: Association between knowledge, practice and gender and willingness to get vaccinated (N= 1000)

Gender	**Willingness to vaccinate on self interest**		**Total**	**Chi Square**	**p value**
	No	Yes			
Male	229(36.1%)	406 (63.9%)	635(100.0%)		
Female	91 (24.9%)	274(75.1%)	365(100.0%)	0.00028	<0.05
Total	320(32.0%)	680(68.0%)	1000(100.0%)		
Knowledge regarding vaccination	Willingness to vaccinate on self interest		Total	Chi Square	P value
	No	Yes			
Poor	47(39.2%)	93(10.6%)	140(14.0%)		
Good	73(60.8%)	787(89.4%)	860(86.0%)	71.7337	<0.001
Total	120(100.0%)	880(100.0%)	1000(100.0%)		
Practice	Willingness to vaccinate on self interest			Chi Square	P value
	Doctors and Paramedics (N=485)	General Citizens (N=515)	Practice (N=593)		
Poor	187(38.6%)	140(27.2%)	327(32.7%)		
Good	298(61.4%)	375(72.8%)	673(67.3%)	105.8075	<0.001
Total	485(100.0%)	515 (100.0%)	1000(100.0%)		

Table 2: Association between socio demographic variables and KAP scores > 60% regarding vaccination

Gender	**Score > 60%: Good score**		
	Knowledge (N=860)	**Attitude (N=920)**	**Practice (N=593)**
Male	593	634	409
Female	267	286	184
Chi square	0.0082	0.0009	0.0035
P value	0.927	0.975	0.953
Age	Score > 60% :Good score		
	Knowledge (N=860)	Attitude (N=920)	Practice (N=593)
18-45 years	278	298	192
45-60 years	188	200	130
>60 years	394	422	271
Chi square	21.6575	44.4359	4.8674
P value	<0.00001	<0.00001	0.0877
Education	Score > 60% :Good score		
	Knowledge (N=860)	Attitude (N=920)	Practice (N=593)
Professional	417	446	287
10th pass	201	215	139
<10th pass	242	259	167
Chi square	27.0876	55.0067	5.9264
P value	<0.0001	<0.0001	0.0416

be the reason behind lesser vaccine hesitancy.

Vaccine hesitancy is a multifaceted, complex issue rooted in multiple values: particularly liberty, risk perception, and distrust.[2] We found a statistically significant association between occupation and practises regarding n –CoViD-19 among our study population. 99.95% of Doctors and 49.0% of paramedical health care workers in contrast to 72.8% of general citizens had a good practise regarding vaccination and the pandemic in general. This was in striking contrast with observations made in a research titled "Acceptance and attitudes toward COVID-19 vaccines: A cross-sectional study from Jordan'[6] which observed that employed participants (OR = 0.542, 95CI% = 0.405–0.725, p < .001) were less likely to accept COVID-19 vaccines compared to unemployed participants. It is, hence, suggested that people in all kinds of occupation should be provided with enough knowledge about n-CoViD and CoViD vaccine. This will avoid many of the misconceptions about vaccine and its safety issues and can lift the confidence of the population which will in turn reduce vaccine hesitancy and increase herd immunity.

In our study, it was found that among the 442 citizens aged > 60, only 12.7% had satisfactory knowledge and willingness about the vaccination and among the 64 citizens aged 18-45 years, 66% had satisfactory knowledge and were willing to get vaccinated. Among the 9 citizens aged between 45-60 years, 55.6% had the will to get vaccinated. This was in league with the observations made in Jordan[7] where the results of a research indicated that the older age groups (>35 years old) were less likely to

accept for COVID-19 vaccines compared to younger age groups (OR = 0.376, 95CI% = 0.233–0.607, p < .001). However, this result was in contrast to a research conducted in Europe[7] where the study subjects who were unwilling to get vaccinated tended to be younger with the largest share of 12% among the 18–24 year olds.

In our study, Out of the total 635 male study subjects, 64% had enrolled for vaccination on their self interest, in contrast with 75% of the 365 female study subjects. This was strikingly dissimilar to the study conducted in Europe,[8] where a significantly higher proportion of men were willing to get vaccinated (77.94%, Chi-squared, p<0.001) than women and also to a study conducted in the US[4] where reporting being undecided or unwilling to vaccinate was more likely among those with lower levels of education and income, females, Black (African American) and younger adults.

Public awareness campaigns tailored to specific community needs have proven most effective in raising vaccination rates for other outbreaks.[9] Hence it is suggested that people in all kinds of occupation should be provided with enough knowledge about n CoViD -19 disease and its vaccine. This will avoid many of the misconceptions about vaccine and its safety issues and can lift the confidence of the population which will in turn reduce vaccine hesitancy and increase herd immunity. This study is expected to provide useful insights to government agencies, health care workers and other authorities to mitigate the impact of vaccine hesitancy. Considerable policy efforts may be required to make the transition from making a vaccine available to adequate vaccination rates.

5. Ethical Approval

Obtained from the Institutional Ethics Committee, Mount Zion Medical College

6. Author Contributions

Conceptualization- NSN, SJ.; Formal analysis-NSN, KSSV.; Methodology-NSN, KSSV.; Visualization-NSN, SJ.; Writing—original draft-NSN, SJ; Writing—NSN;Review and editing-KSSV, SJ

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None.

8. Conflict of Interest

The authors have no conflicts of interest associated with the material presented in this paper.

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