Original research article

A CROSS-SECTIONAL STUDY ON KNOWLEDGE, ATTITUDE, PRACTICE OF COVID-19 VACCINES AMONG GENERAL POPULATION IN CENTRAL TAMILNADU

Thangaraj P[1], Jeffin S[2], Rajasekar S[3]

[1]*Associate Professor, Department of Community Medicine, Trichy SRM Medical College Hospital & Research Institute,*
[2]*Assistant Professor, Department of Community Medicine, Trichy SRM Medical College Hospital & Research Institute,*
[3]*MBBS student, Trichy SRM Medical College Hospital & Research Institute*

Corresponding Author
Dr. J.E.Jeffin Shanu
Assistant Professor,
Department of Community Medicine,
Trichy SRM Medical College Hospital & Research Institute,
Trichy.

Article info
Received on 9th November 2023
Accepted on 22nd November 2023
Published on 16th December 2023

https://doi.org/10.61986/ijpem.v1.i1.2023.7

Abstract

Introduction: *COVID-19 vaccine was intended for active immunization of people to prevent the spread of infection. The goal of vaccines was to contribute to the equitable protection and promotion of human well-being among people globally. The objective of the study was to assess the knowledge, attitude and practice of COVID-19 vaccine among general population in the field practice area attached to a teaching hospital.* ***Methods and material:*** *A cross-sectional study was conducted in a semi-urban area in Central Tamilnadu over a period of 3 months from May to July 2021 among 217 general populations using a pre-validated questionnaire sent through Google forms by Whatsapp.* ***Results:*** *The mean age of the study population was 25.62 ± 8.5 years. Only 41.9% knew that taking COVID-19 vaccine was not legally mandatory. Almost all the participants (98.2%) correctly mentioned adults aged more than 18 years were eligible for the vaccine. Majority (67.7%) were strongly willing to take the COVID-19 vaccine with 35.5% strongly agreeing to even pay for the vaccine. About 53.5% of participants had taken both doses of vaccine. The rapidity in which COVID-19 vaccine was developed is the major concern in taking vaccine.* ***Conclusion:*** *Major concerns regarding the vaccine has been identified which will assist the policymakers in effective implementation of vaccine drive in our setting.*

Key words: *COVID-19 vaccine, acceptance, hesitancy, KAP*

Introduction

The corona virus disease 2019 (COVID-19) is an infectious disease caused by the Severe Acute Respiratory Syndrome Corona virus 2 (SARS-CoV-2). In March 2020, the World Health Organization (WHO) declared the outbreak of this disease as a pandemic.[1] Since the first case of COVID-19 in India was detected on January 27, 2020 there have been 4,50,01,290 cases of which 5,33,293 deaths was documented as of October 2023.[2]

Apart from the basic preventive measures of hand hygiene, wearing mask and social distancing, there was absolute need for vaccine to prevent the disease. The goal of COVID-19 vaccines was to contribute to the equitable protection and promotion of human well-being among people globally. Equitable access to a vaccine is the only way to mitigate the public health and economic impact of the pandemic. In long term, the vaccine is intended to be used for active immunization of people to prevent COVID-19. While countries, including India, have taken strong measures to contain the spread of COVID-19 through better diagnostics and treatment, vaccines will provides an option by enhancing immunity. National Expert Group on Vaccine Administration for COVID-19 (NEGVAC) was constituted under chairpersonship of Member (Health) NITI Aayog and Co-chairpersonship of the Secretary (Ministry of Health and Family Welfare). It aims to regulate guidance on vaccine trials, selection of vaccine, its equitable distribution, procurements, financing, delivery mechanisms, and prioritization of

population groups, vaccine safety surveillance, regional cooperation and assisting neighbouring countries, communication and media response.[3]

Low- and middle-income countries are at risk of vaccination delays due to several reasons such as lack of public trust, shortage of resources, and scarcity of vaccination supply as many high-income countries secure a large amount of the new vaccines, without prioritizing other countries. Consequently, this inequality can leave low and middle-income countries at a disadvantage, given their low ability to fight COVID-19 with their current status of healthcare system, leading to humanitarian crises. To achieve the necessary herd immunity to control viral transmission and stop the pandemic, vaccinating more than 82% of the population is crucial which requires strong acceptance and low hesitation levels.[4]

The WHO Strategic Advisory Group of Experts (SAGE) defined vaccine hesitancy as a "delay in accepting or refusing vaccination despite the availability of vaccination services".[5] Therefore identifying vaccine acceptance and hesitancy of general population is required. The objective of this study is to assess the knowledge, attitude and practice of COVID-19 vaccine among general population in the field practice area attached to a teaching hospital.

Material and methods

Study setting: A cross sectional study was conducted in a semi-urban area of Central Tamilnadu among general population residing in the field practice area of a tertiary care centre, using a pre-validated questionnaire with Cronbach's alpha of 0.86.[6] The questionnaire had of two parts of which part A comprises of socio-demographic details while part B consists of knowledge, attitude, practices and concerns regarding the COVID-19 vaccine.

Sample size: The sample size was calculated to be 204 using the formula $4pq/d^2$ where p= 50%, q=100-p, 15% relative precision (d) and 20% non-response rate.

Sampling method & Data collection: The study area was divided in four sectors; from each sector 60 individuals whose contact number was available in the family folder were selected randomly and Google forms were sent. The inclusion criteria were participants whose contact number was available in the family folder, aged more than 18 years and those with smart phones. Individual were contacted through mobile phone and asked for usage of WhatsApp. Only one individual per family using WhatsApp was selected to be in the study. Data collection was done between May to July 2021, using online Google forms links sent through WhatsApp. Institutional ethical clearance was obtained before the start of the study (TSRMMCH&RC/ME-1/2020-IEC No 50). Data collection and analysis was done in Microsoft excel sheet. Quantitative data was expressed in mean and standard deviation while qualitative data in frequency and percentage.

Results

A total of 217 responses were received and analysed. The mean age of study participants was 25.62 ± 8.5 years with minimum and maximum age 18 and 67 years respectively. The proportion of females was 50.2% and males 49.8%. More than half of the study participants (53.4%) were graduates. Majority (53.5%) of the participants had taken both doses of COVID-19 while 8.3% had not taken any. The socio-demographic details are given in table 1.

Table 1: Socio-demographic details of study participants (N=217)

Variable	n	%
Age (years)		
18-20	54	24.9
21-30	111	51.2
31-40	35	16.1
41-50	10	4.6
>50	7	3.1
Sex		
Male	109	50.2
Female	108	49.8
Residence		
Rural	47	21.7
Urban	170	78.3
Educational status		
Primary	8	3.7
Middle	25	11.5
High school	68	31.3
Graduate	116	53.4
Socio-economic class		
Lower class	5	2.3
Middle class	193	88.9
Upper class	19	8.8

Taken COVID-19 vaccine?		
Both doses	116	53.5
Single dose	83	38.2
Not taken	18	8.3

Table 2: Knowledge regarding COVID-19 Vaccine (N=217)

Questions	Participants response		
	Yes	No	Don't Know
It is legally mandatory to take covid-19 vaccine.	117 (53.9%)	91* (41.9%)	9 (4.1%)
Mention if the following groups are eligible for covid-19 vaccine			
Infants less than 1 year of age	8 (3.7%)	175* (80.6%)	34 (15.7%)
Children and adolescents less than 18 years of age	73 (33.6%)	120* (55.3%)	24 (11.1%)
Adults more than 18 years of age	213* (98.2%)	2 (0.9%)	2 (0.9%)
Pregnant ladies and lactating mothers	170 (78.3%)	32* (14.7%)	15 (6.9%)
Patients with chronic diseases like diabetes, hypertension, and heart diseases	167* (77%)	28 (12.9%)	22 (10.1%)
Persons having active covid-19 infection	17 (7.8%)	190* (87.6%)	10 (4.6%)
Persons recovered from covid-19 infection	171* (78.8%)	37 (17.1%)	9 (4.1%)
Persons allergic to food items/ drugs	90 (41.5%)	67* (30.9%)	60 (27.6%)
Immune-compromised patients	80 (36.9%)	76* (35%)	61 (28.1%)
Protective immunity is obtained			
1st dose	14 (6.5%)		
14 days after first dose vaccine	79 (36.4%)		
2nd dose	114* (52.5%)		
Don't know	10 (4.6%)		

*correct response

Only 41.9% knew that taking COVID-19 vaccine was not legally mandatory. Almost all the participants (98.2%) correctly mentioned adults aged more than 18 years were eligible for the vaccine, while 55.3% and 14.7% knew that children less than 18 years and pregnant & lactating mothers were not eligible for the vaccine respectively. Around 80.6% and 87.5% knew that infants less than 1 year and those with active COVID-19 infection were not eligible respectively, but only 30.9% and 35% knew that person with allergies and immune-compromised patients were not eligible respectively. Protective immunity develops after second dose of vaccine was known only by 52.5% of study participants (Table 2)

Majority (61.8%) felt the source of information to influence their knowledge was health care worker followed by government agencies (41.5%). Social media and discussion with friends and family was somewhat significant effect on their knowledge. (Table 3)

Table 3: Source of information that influenced the knowledge on COVID 19 vaccination of participants (N=217)

Source	Insignificant	Somewhat significant effect	Very significant effect
News from TV/ Radio	33 (15.2%)	100 (46.1%)	84 (38.7%)
Government agencies	39 (18%)	88 (40.6%)	90 (41.5%)
Social media	36 (16.6%)	94 (43.3%)	87 (40.1%)
Discussion amongst friends, family	26 (12%)	104 (47.9%)	87 (40.1%)
Healthcare provider	23 (10.6%)	60 (27.6%)	134 (61.8%)

In the present study 67.7% were strongly willing to take the COVID-19 vaccine with 35.5% strongly agreeing to even pay for the vaccine.

Most of the participant (72.4%) strongly agreed to recommend the vaccine to others. About 69.1% strongly agreed to the practice wearing mask, hand sanitization and social distancing despite vaccination. (Table 4)

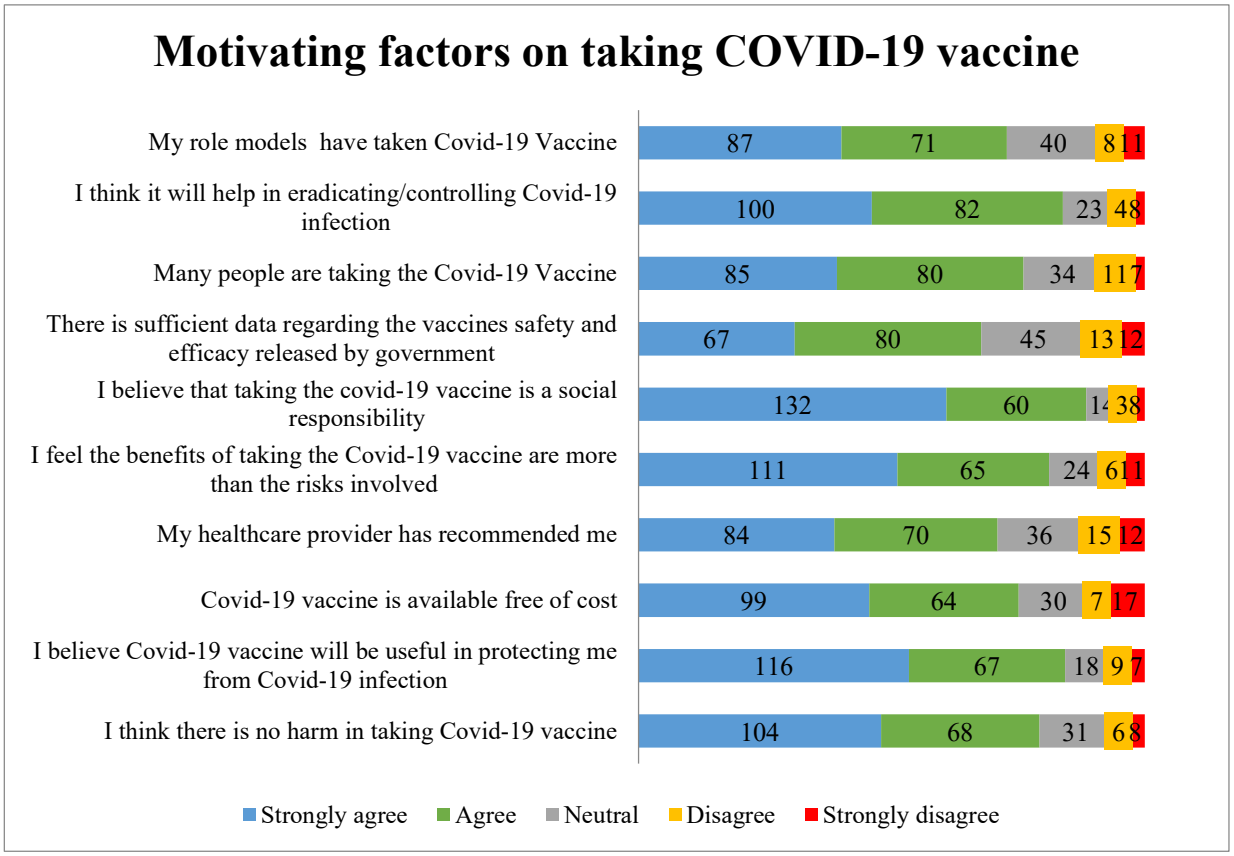
Table 4: Opinion towards COVID19 practices among study participants (N=217)

Statement relating to practice	SA	A	N	D	SD
When my turn of vaccination comes, I am willing to take the covid-19 vaccine	147 (67.7%)	49 (22.6%)	8 (3.7%)	3 (1.4%)	10 (4.6%)
I will prefer to acquire immunity against Covid-19 naturally rather than by vaccination	24 (11.1%)	11 (5.1%)	37 (17.1%)	53 (24.4%)	92 (42.4%)
I am willing to get the Covid-19 vaccines, even if I have to pay to get it	77 (35.5%)	67 (30.9%)	37 (17.1%)	14 (6.5%)	22 (10.1%)
I will recommend my family and friends to get vaccinated against Covid-19	157 (72.4%)	38 (17.5%)	11 (5.1%)	3 (1.4%)	8 (3.7%)
After COVID-19 vaccine I don't need to practice wearing mask, hand sanitization and social distancing	10 (4.6%)	10 (4.6%)	16 (7.45%)	31 (14.3%)	150 (69.1%)

SA-Strongly Agree, A-Agree, N-Neutral, D-Disagree, SD-Strongly Disagree

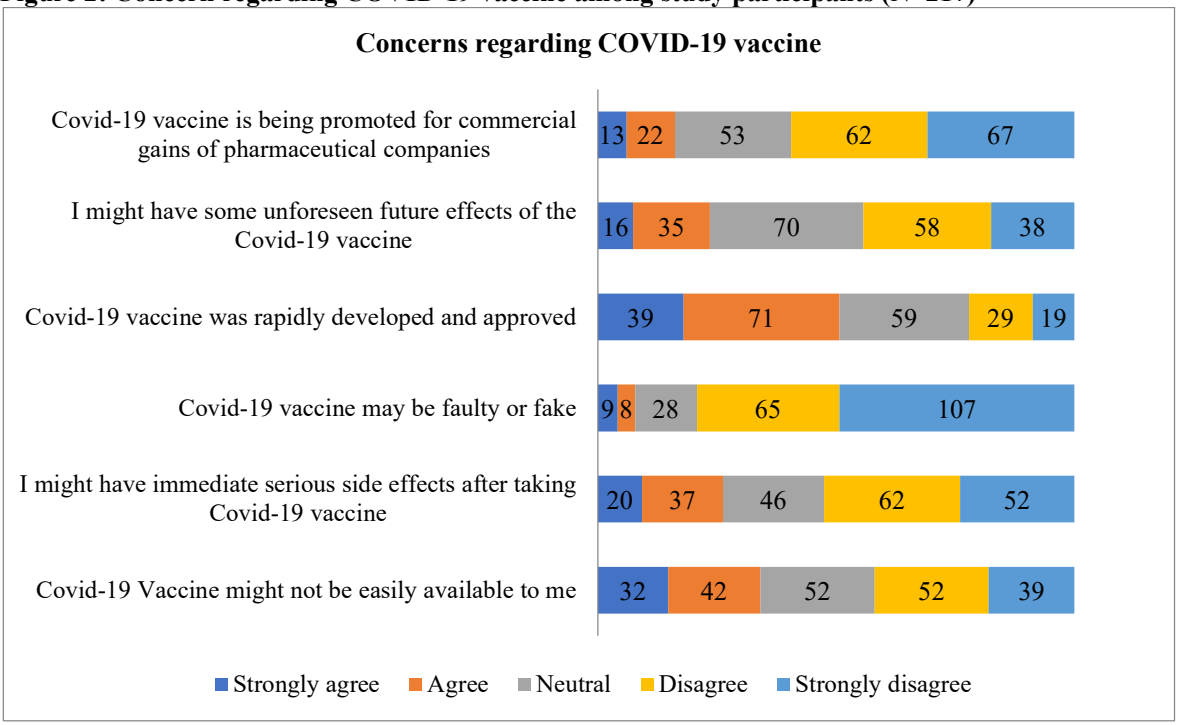
Common factors strongly motivating the study participants to take COVID-19 vaccine were social responsibility (60.8%), protection from COVID-19 infection (53.5%) and benefits of taking vaccine is more than the risk (51.2%). Other factors motivating them are given in Figure 1.

Figure 1: Factors that motivate study participants on taking COVID 19 vaccination (N=217)



Major concerns towards COVID-19 vaccine, was the rapidity in which COVID-19 vaccine was developed. Other concerns pertaining to COVID-19 vaccine is given in Figure 2.

Figure 2: Concern regarding COVID-19 vaccine among study participants (N=217)



Discussion

The present study was done during the early phase of implementing COVID-19 vaccination in the semi-urban field practice area attached to a teaching hospital in central Tamilnadu. Understanding the knowledge, attitude, practice, motivating factors and concerns towards COVID-19 vaccine will enable policy makers to implement appropriate measures to improve the acceptance of vaccine. Less than half of the responders (41.9%) knew that it is not legally mandatory to take the vaccine, while a study by Kumari et. al.[6] reported a higher percentage of 57.8%. During mass vaccination campaign, several measures are taken by public health sector in promoting its acceptance, which makes general population to believe it's mandatory to get vaccinated. But whether this aspect promotes the acceptance or increases the hesitancy and fear for vaccine needs to be studied. Regarding the eligibility for COVID-19 vaccine, majority correctly responded that adults aged more than 18 years, those with chronic co-morbidities and post COVID-19 infection was also eligible, while infants and those with active COVID-19 infection were not eligible. Similar findings were reported by Kumari et. al.[6]

Participants of the present study perceived healthcare providers to be a significant source of information regarding the vaccine followed by government agencies, family and friends and social media. The preference for the later three sources was almost the same, with greater proportion stating government agencies (18%) and social media (16.6%) to be an insignificant source to influence them regarding the vaccine. Though this proportion is less, it reflects the lack of trust and confidence in the government actions and this percentage of population might show hesitancy towards getting vaccinated. A previous study done in India[6] also reported similar results except that a greater proportion (25%) of participants felt social media was insignificant source of information. Hence, the study suggest that all health care providers need the updated information regarding the vaccination status at the earliest so that, they can communicate the same to the general population.

Our study reported 90.3% of individuals were willing to get vaccine when available but only 66.4% were willing to pay for the same. In a West Bengal study[7] only 78% were willing to get vaccinated; while a pan India study[8] found 83.6% willingness and 75.43% were ready to pay for vaccine. In a study done in China,[9] 77.4% were willing to get vaccinated but 81.1% agreed to pay. Willingness to pay for the vaccine was much less in our setting which probably could be either due the lower socioeconomic status of the study group or the habituation of getting freebies from the public sector. Around 83% had a positive attitude to continue wearing mask, hand sanitization and practice social distancing even after getting vaccinated.

Several factors motivated the study participants to get vaccinated. More than 80% believed that COVID-19 vaccine will protect them from getting infected, the benefits are more than the risk of vaccine, it is their social responsibility and that it will help to eradicate or control the disease. These factors motivated around 70% in a previous study by Kumari et. al.[6] They also found increasing age, upper socioeconomic status and those residing in more developed area had better motivation than their counterpart. Our study had a greater percentage of participants from the urban area which can justify the higher percentage of motivation. The vaccine being developed quickly seemed to be the major barrier among our study population. A study done in Oman[10] found the safety of vaccine to be the major concern. It is very essential that before the introduction of any new vaccine, adequate information on the development of vaccines needs to be communicated to the population. Around 16% of study participants felt that COVID-19 vaccine is being promoted for commercial gains. These concerns can contribute to significant hesitancy in getting vaccinated.

The study had few limitations. Most of the study participants were high school and above with greater proportion of them already being vaccinated before start of the study which could have resulted in positive attitude towards the vaccine. There is a need to do the similar study among unvaccinated people to understand their attitude and concerns towards the same.

Conclusion

The present cross-sectional study assessed the knowledge, attitude, practice, motivating factors and barriers towards COVID-19 vaccine during the initial phase of implementation. This study reports adequate knowledge and positive attitude towards getting the vaccine. Motivating factors and concerns regarding the COVID-19 vaccine have been identified which will assist in the effective implementation of vaccine drive in our setting.

Acknowledgements - Nil

Funding-None

Conflict of interest-None declared

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How to cite the article:
Thangaraj P, Jeffin S, Rajasekar S. A Cross-sectional study on Knowledge, Attitude, Practice of COVID-19 vaccines among General Population in Central Tamilnadu. International Journal of Preventative and Evidence Bsed Medicine. 2023;1(1):31-7.