Section: Community Medicine

Original Research Article

A CROSS-SECTIONAL STUDY ON KNOWLEDGE AND PERCEPTION OF THE HESITANT POPULATION RESIDING IN AN URBAN AREA OF BALLARI CITY, KARNATAKA, TOWARDS THE COVID-19 VACCINES

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Received : 14/04/2023
Received in revised form : 21/05/2023
Accepted : 03/06/2023

Keywords:
Covid-19 vaccines, vaccine hesitancy, knowledge and perception.

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DOI: 10.47009/jamp.2023.5.3.334

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2023; 5(3); 1663-1668

Abstract

Background: Coronavirus disease 2019 (COVID-19) is believed to have emerged from Wuhan City, Hubei Province, China and declared as a pandemic. This emergent disease had infected more than 170 million people around the world and caused more than 3 million deaths. The most effective way of controlling infectious diseases is often vaccination, while success is challenged by individuals and groups who choose to delay or refuse vaccines. As safe and effective vaccines are being made available, the next challenge will be dealing with vaccine hesitancy. Thus, the study aimed to assess the knowledge and perception of the hesitant residents residing in an urban area of Ballari, Karnataka, towards the COVID-19 vaccines. **Materials and Methods:** A cross-sectional study was done among the covid-19 vaccine hesitant population in an area of Devinagar, PHC. **Result:** Shows that majority of them had good knowledge and poor perception. Though they had good knowledge, there were several reasons for not going for vaccination, among them 66.15% had fear of adverse events or side effect, 23.84% had fear of death, 13.84% had other health issues, and 8.46% of study participants were not sure about safety. **Conclusion:** Present study shows majority of hesitant population had good knowledge regarding covid-19 vaccine. Whereas they had a poor perception towards covid-19 vaccine. Most common reason for not taking vaccine was fear of adverse events and fear of death.

INTRODUCTION

Coronavirus disease 2019 or COVID-19 is caused by a newly discovered coronavirus, SARS-CoV-2. This new infection was believed to have emerged from Wuhan City, Hubei Province, China in December 2019. On March 11, 2020, the World Health Organization (WHO) declared COVID-19 as a pandemic (1). During this study, this emergent disease had infected more than 170 million people around the world and caused more than 3 million deaths.[1]

The outbreak of SARS-CoV-2 has also caused huge negative impacts to the public health system as well as the economic status of many countries.[2]

The rate of infection had not seemed to slow down in the majority of the affected countries and varying degrees of lockdowns have been issued in the effort to contain the spread of the virus.[1] Knowing that social distancing and quarantine may slow the spread of the virus and flatten the epidemic curve; it may not be sufficient to completely halt the spread of COVID-19, herd immunity gained by infection or vaccination will need to be well established within the population.[3] The most effective way of controlling infectious diseases is often vaccination,

while success is challenged by individuals and groups who choose to delay or refuse vaccines.[3]

Vaccination is among the most important advances in public health. Vaccines are life-saving technologies that have been responsible for the elimination of smallpox and the containment or control of infectious diseases in many parts of the world (e.g. rubella, diphtheria, polio).[4]

As the COVID-19 pandemic evolved worldwide, leading everyone to pursue solutions, including effective and safe vaccines to control the virus and minimize its impact.[5]

The success of any immunization drive depends on its coverage and acceptance rate.[6] 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 has flooded the media reports. It is for these reasons that vaccine hesitancy may become an important challenge in the immunization campaign against COVID-19.[7]

As safe and effective vaccines are being made available, the next challenge will be dealing with vaccine hesitancy. Vaccine hesitancy, identified as one of the ten most important current health threats, is defined as the reluctance or refusal to vaccinate despite the availability of vaccines.[1]

Misinformation, spreading through multiple channels, could have considerable effects on the acceptance of a COVID-19 vaccine. Thus, the study aimed to assess the knowledge and perception of the hesitant residents residing in an urban area of Ballari, Karnataka, towards the COVID-19 vaccines.

Objectives of the study

To know the knowledge and perception towards the covid-19 vaccine among the hesitant population.

MATERIALS AND METHODS

A cross-sectional study was conducted among people residing in the urban areas of Devinagar primary health center (PHC), Ballari district, Karnataka, India and was carried out for a period of two months from 01.10.2021 to 30.11.2021.

Purposive Sampling is done; all the individuals who were residing in the area of Devinagar PHC and who were hesitant to covid-19 vaccine are included in the study. Devinagar PHC was divided into four wards geographically, researcher approached medical officer in charge of Devinagar PHC and line listed the total Covid-19 vaccine hesitant population in each ward and prepared a roadmap for each ward separately to facilitate the home visits. According to the line list prepared researcher went door-to-door and collected data. Once all the participants in the selected ward were interviewed, researcher moved to the next ward. And the similar procedure was followed.

Inclusion criteria were participants should be a resident of Devinagar PHC, they should be hesitant to take covid-19 vaccines and residents of whose age was more than 18 years were included in this study. Exclusion criteria were people who were not willing to participate in the study, people who were not available at the time of data collection and migrant population. The study tool was developed by the investigator to assess the knowledge and perception of the hesitant population towards the covid-19 vaccine. The tool consisted of three sections. Section-A was concerned with demographic variables of the study population. The demographic data consisted of baseline information of study population regarding their age, gender, address, education, occupation and socio-economic status. Section-B was related to knowledge questions regarding covid-19 vaccine and consisted of 19 questions, with responses being either yes or no. Section-C related to perception questions and consisted of 3 questions with responses being either yes or no and one sub question with multiple responses. One expert from the department of community medicine evaluated the tool for content validity, based on their suggestion and recommendations, modification was done and after establishing the validity of expert, the tool was established. The pilot study was conducted in Kuvempu Nagar community area (under jurisdiction of Cowl Bazar PHC), before doing the actual work to check for any lacunas and to screen for potential problems in the questionnaire and to standardize the proforma. It was carried out the same way as the final study in order to test feasibility and practicability. 20 participants who met the inclusion criteria were selected. The interpersonal (one-to-one) interview was conducted. The result was analyzed based on the score obtained by the participants, by using descriptive statistics. The tool was found to be effective. The study conformed to be feasible. Later the corrected and standardized questionnaire was developed and started with the data collection.

Data Collection Procedure

Eligible participants were briefed about the purpose and nature of study and an oral consent was taken from them. Investigator done house-to-house survey to visit Covid-19 vaccine hesitant population and done one-to-one interview in a friendly atmosphere with the help of predesigned questionnaire. A predesigned, pretested questionnaire was used to collect the data related to the variables of study. Questionnaire was in English. The participants were given health education regarding the importance of covid-19 vaccination immediately after collecting the data.

Statistical Analysis

All the collected data was entered into an MS-excel sheet and after appropriate data filtrations; the data was transferred to SPSS-22 software for analysis. The data analysis was planned according to objective of the study. Appropriate descriptive

ISSN(O): 2687-5365; ISSN(P): 2753-6556

statistics like frequency, percentage were used to describe the study variables.

RESULTS

[Table 1], shows distribution of study subjects according to socio-demographic details. There were 131study participants included in the study whose age ranged between 18 years to 97 years with mean age of 41.90 ± 16.54 years, majority 38 (29%) were in the age group of 28-37 years, followed by 26 (19.8%) were in 18-27years. Females 73 (55.7%) outnumbered males 58 (44.3%). More than two third of study subjects 86 (65.6%) resided in slums whereas 45 (34.4%) participants resided in non-slum areas. 124 out of 131participants were married whereas only 7 were unmarried. Almost half of study subjects 64 (48.9%) were illiterate followed by 24 (18.3%) high school level, 17 (13%) primary school level education. 19 out of 131(14.50%) subjects perceived higher level education like intermediate, graduation, post-graduation. Half of the participant 70 (53.4%) were semi-skilled workers followed by 33 (25.2%) were involved in skilled work. Whereas only 4 subjects were professionals. 61 (46.6%) subjects belonged to nuclear family whereas 70 (53.4%) belonged to joint family. More than one third of participants 52 (39.7%) belonged to lower middle class according to modified B. J. Prasad classification followed by 35 (26.7%) were belonged to middle class socioeconomic status. Only 8 participants belonged to upper class of socioeconomic status.

[Table 2], shows the responses of study subjects to questions to know their knowledge regarding the covid-19 vaccine, the responses were either yes or no. as seen from the table majority of the participants had good knowledge about the covid 19 vaccine. 83.2% heard about the vaccine, 67.9% knew that about mode of administration of vaccine, 74.0% knew that covid appropriate behaviour to be followed after covid vaccination. 58.8% knew about the schedule of covid-19 vaccine, 68.7% knew who all beneficiaries for covid-19 vaccine are. Half of them i.e. 52.7% knew that people taking alcohol can take the vaccine, 58.8% knew that people consuming tobacco can take the vaccine and 62.6% knew that people consuming non vegetarian food can take the vaccine. Majority of them i.e. 71.0% knew that the best way to avoid the complication of covid-19 is by getting vaccinated. Majority of them i.e. 72.5% knew that covid-19 vaccine is effective. 58.8% knew that they cannot contract covid-19 infection, even after taking covid-19 vaccine. Half of them i.e. 50.38% knew that when protective immunity against covid-19 infection will be achieved. Majority of them i.e. 90.1% knew about covid-19 vaccine associated adverse events. And only few people i.e. 26.7% knew about available types of vaccine (covishield/covaxin) during the time of study. Very few knew that i.e. 24.4% Covid-19 vaccine cannot be given while suffering from covid-19. Very few knew that i.e. 20.6% that covid-19 vaccine can be given if there is history of allergic reactions.

[Table 3], shows the responses of study subjects to questions to know their perception regarding the covid-19 vaccine, the responses were either yes or no. As seen from the table majority of the participants had poor perception about the covid 19 vaccine. Few of them i.e. 24.4% perceived that one cannot contract covid-19 infection due to covid19 vaccination. Nearly half of them i.e. 56.5% perceived that one can get the covid-19 infection after vaccination also. Majority of the study participants 99.2%, had concerns about receiving the covid-19 vaccine.

[Table 4], shows the study participants concern towards the covid-19 vaccine, among them 66.15% had fear of adverse events or side effect, followed by 23.84% had fear of death, 13.84% had other health issues and were in a dilemma whether to take the covid-19 vaccine or not. 08.46% of study participants were not sure about safety of the covid-19 vaccine. Around 7.69% had Religious reasons for not vaccinating. There were several other reasons which can be seen from the table.

Table 1: Distribution of Study Population as per Sociodemographic Details

Variables	Frequency	Percent
Age (In years)		
18-27	26	19.8
28-37	38	29.0
38-47	23	17.6
48-57	18	13.7
58-67	12	9.2
68-77	11	8.4
78-87	2	1.5
88-97	1	0.8
Gender		
Female	73	55.7
Male	58	44.3
Slum		
Slum dwellers	86	65.6
Non- Slum dwellers	45	34.4
Marital status		
Married	124	94.7
Unmarried	7	5.3

ISSN(O): 2687-5365; ISSN(P): 2753-6556

Education		
Illiterate	64	48.9
Primary school	17	13.0
Middle school	7	5.3
High school	24	18.3
Intermediate	7	5.3
Graduate	9	6.9
Profession	3	2.3
Occupation		
Unemployed	11	8.4
Unskilled	13	9.9
Semi-skilled	70	53.4
Skilled	33	25.2
Profession	4	3.1
Type of family		
Nuclear	61	46.6
Joint	70	53.4
Socioeconomic status		
Upper class	8	6.1
Upper middle class	15	11.5
Middle class	35	26.7
Lower middle class	52	39.7
Lower class	21	16.0

Table 2:Knowledge related to Covid-19 vaccine

Sl. no.	Variables	Yes %	No %
01.	Heard of covid 19 vaccine	83.2	16.8
02.	Knowledge about types of vaccine (covishield/covaxin)	26.7	73.3
03.	Knowledge about mode of administration	67.9	32.1
04.	Know that appropriate behaviour to be followed after covid vaccination	74.0	26.0
05.	Covid-19 vaccine cannot be given while suffering from covid-19	24.4	75.6
06.	Covid-19 vaccine can be given if you had suffered from covid-19 infection in the past	37.4	62.6
07.	Covid-19 vaccine can be given if you have taken other vaccines	31.3	68.7
08.	Knowledge about the schedule of covid-19 vaccine	58.8	41.2
09.	Knowledge regarding beneficiary group to take covid-19 vaccine	68.7	31.3
10.	Know who all can receive covid19 vaccine with co-morbidities	32.8	67.2
11.	Know that people taking alcohol can take the vaccine	52.7	47.3
12.	Know that people consuming tobacco can take the vaccine	58.8	41.2
13.	Know that people consuming non vegetarian food can take the vaccine	62.6	37.4
14.	Know that covid-19 vaccine can be given if there is history of allergic reactions	20.6	79.4
15.	Know that the best way to avoid the complication of covid-19 is by getting vaccinated	71.0	29.0
16.	Know that covid-19 vaccine is effective	72.5	27.5
17.	Know that you cannot contract covid-19 infection, even after taking covid-19 vaccine	58.8	41.2
18.	Know that when protective immunity against covid-19 infection will be achieved	50.38	49.61
19.	Knowledge about covid-19 vaccine associated adverse events	90.1	09.9

Table 3: Perception regarding the susceptibilities

Sl. no.	Variables	Yes %	No %
01.	One cannot contract covid-19 infection due to covid19 vaccination	24.4	75.6
02.	One can get the covid-19 infection after vaccination also	56.5	43.5
03.	Concerns about receiving the covid-19 vaccine	99.2	00.8

Table 4: Study Participants Concern towards the Covid-19 Vaccine

Sl. No.	Variables	Frequency	Total	Percent
01.	Vaccine is not effective	4	130	03.07%
02.	Fear of adverse events or side effect	86	130	66.15%
03.	Fear from injection	4	130	03.07%
04.	Not sure about safety	11	130	08.46%
05.	Covid-19 disease is not a serious disease	2	130	01.53%
06.	Covid-19 vaccine was rapidly developed and approved	2	130	01.53%
07.	Don't believe that vaccine will stop the infection covid-19	1	130	01.00%
08.	Religious reason	10	130	07.69%
09.	No time	5	130	03.84%
10.	Incentive expectation from government for getting vaccinated	3	130	02.30%
11.	Vaccination is a conspiracy	2	130	01.53%
12.	Covid-19 vaccine may be faulty or fake	3	130	02.30%
13.	As I'm following preventive measures, feel I don't need necessity of vaccine	3	130	02.30%
14.	Being young and healthy, don't feel the necessity	2	130	01.53%
15.	I will prefer to acquire immunity against covid-19 naturally by having the infection or disease	2	130	01.53%
16.	scared about misleading information circulating among the social media	2	130	01.53%
17.	Fear of death	31	130	23.84%
18.	Health issues	18	130	13.84%

ISSN(O): 2687-5365; ISSN(P): 2753-6556

DISCUSSION

In order to halt the ongoing pandemic, the covid-19 vaccine has been framed as the ideal solution. Substantial numbers of vaccine candidates are being developed and several clinical trials have recently been released with positive results, leading to a number of countries approving specific vaccines for implementation in vaccination programs.[8] Vaccine hesitancy is an old phenomenon that represents a serious threat to the global health, as shown by the resurgence of some infectious diseases (e.g., outbreaks of measles and pertussis).[9] Nevertheless, COVID-19 vaccine hesitancy can be the limiting step in the global efforts to control the current pandemic with its negative health and socio-economic effects.[9]

Findings in our study showed that majority of the study population had good knowledge and poor perception toward the covid-19 vaccine. This finding highlights the need for interventions like IEC and BCC. Health education and awareness regarding the effectiveness and importance of covid 19 vaccine.

In a similar study done by Md. Saiful Islam et al in Bangladesh, a total of 1658 complete surveys were included in the final analysis. Of them, 56% were males and the participants' mean age was 23.17 years (SD = 6.05) ranging from 18 to 65 years. Most were unmarried (86%) and had university/ higher levels of education (83%). The majority was from nuclear families (80%), were in the upper SES group (40%) and came from urban areas (66%).[8]

Almost half of study subjects 64 (48.9%) were illiterate followed by 24 (18.3%) high school level, 17 (13%) primary school level education. 19 out of 131(14.50%) subjects perceived higher level education like intermediate, graduation, post-graduation. In a similar study done by ShibalBhartiya et al, showed that majority (64) of those who told that there is no COVID vaccine were educated less than 10th standard.[7]

We found that half of the participant 70 (53.4%) were semi-skilled workers followed by 33 (25.2%) were involved in skilled work. Whereas only 4 subjects were professionals. A done by ShibalBhartiya et al, showed that more than half (54.9%) who reported no awareness belong to no income group.[7]

In a similar study done by Sabria Al-Marshoudi et al, showed that, the majority of the participants (88%) had heard of COVID-19, and the most common source of information was social media (67%), followed by television (56%). Most participants (52%) thought that vaccines could protect them from contracting COVID-19, and 42% believed that patients could not contract COVID-19 after taking the vaccine. Regarding the technical issues related to the COVID-19 vaccine, 45% of participants knew that the vaccines would be given in two doses. Additionally, 29% of them thought that the vaccine could not be given to a person who had symptoms of the disease at the time of vaccination, and 44% believed that the vaccine could be given to a person with a previous history of contracting COVID-19. Almost one-quarter (26%) of them knew about the side effects of the vaccine, and 17% of the participants thought the vaccine would be safe but with some side effects.[5]

In a similar study done by NurulAzmawati Mohamed et al, showed that, about 55.9% perceived that they were able to spread the virus to other people and 30% of the respondents perceived that they were susceptible to get severe COVID-19 infection. About 75% did not agree that COVID-19 vaccine could cause infection. More than half were worried about the vaccine's adverse effects and almost one third of them agreed that scary information about COVID-19 vaccine was rampant on social media.[1]

In a similar study done by Rania M. Magadmi et al, showed that,the majority of vaccine refusers were concerned about side effects (80%). Approximately 25% lack confidence in the effectiveness of vaccination (23.4%).[11]

Limitation

When interpreting the results of this study, there are some limitations that need to be taken into consideration. We propose a broader study with participants from various racial, ethnic, socioeconomic, and geographic backgrounds.

CONCLUSION

The COVID-19 vaccine is a potential glimmer of hope for the future as the COVID-19 epidemic continues to wreak havoc on lives and livelihoods around the world. This study offers preliminary information about the study population's knowledge and perception of COVID-19 vaccines in Devinagar PHC.

Present study shows majority of hesitant population had good knowledge regarding covid-19 infection and vaccine. They had a poor perception towards covid-19 vaccine. The study also found that the main obstacle to vaccination hesitancy was people's worries about the potential adverse events and side effects of the shots. The quick development of the COVID-19 vaccination may have accelerated the emergence of public anxiety. To lessen the vaccine hesitancy enabled and encouraged by false information in the media, policymakers should take measures to provide proper knowledge regarding COVID-19 vaccines.

Furthermore, if further studies can support the efficacy and safety of the existing vaccine candidates, the level of vaccination acceptance within the public can rise. This will assist the decision-makers in developing effective plans that can successfully implement the COVID-19 immunization project in India.

ISSN(O): 2687-5365; ISSN(P): 2753-6556

Recommendations

So here by we recommend that activities like Information education communication (IEC), Behavioural change communication (BCC) has to be carried out to remove the hesitancy. Continuous education should be conducted to increase understanding and to clear up any misunderstandings or misinformation about the vaccine. Ideally, health education should be comprehensive and multilingual yet layman friendly. The important messages should reach out to all citizens from all walks of life, including those who are technology illiterates. In addition to web-based and application-based educational tools, printed materials and face-to-face public talks may benefit certain groups of the population.

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ISSN(O): 2687-5365; ISSN(P): 2753-6556