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Research Paper

Knowledge, Perception and Preparedness Towards Corona Virus Vaccine Amongst Indian Residents: A Cross-Sectional Survey

Perception towards corona vaccine: A cross sectional survey

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ABSTRACT

Background

Coronavirus disease (COVID-19) which has become a pandemic makes the people more vulnerable to get affected due to insufficient knowledge and unhygienic practices. In this scenario, medical and paramedical personnel can act as reliable information providers. This study aimed to aware and assess the knowledge and perception of COVID-19 vaccine along with providing the knowledge on precautionary home remedies amongst common people in India.

Method

A web-based awareness online survey was conducted from 25th January to 7th February 2021. A 50-awareness fact survey was developed and randomly distributed among the study population. Evaluation of the survey was done electronically using an interface provided by Google forms (paired with a Google spreadsheet) and Microsoft Excel, which uses 'Countif' formula to count the responses of Google form and represent it in the form of bar graph and pie chart.

Results

Total 1003 people participated in the online awareness survey. A high proportion of people belonged to the age category 18-30 (57.5 %) and undergraduates (65.7 %), majority of participants lacked adequate knowledge about vaccines but had enough knowledge about the precautionary home remedies for COVID-19 disease.

Conclusion

As the COVID-19 cases are still prevalent in India, it is critical to improve the awareness and preparedness about vaccines and precautionary home remedies amongst the community members. Experts with their educational background and a basic understanding of vaccine's effectiveness can play a significant role in making common people aware of the prevention of this pandemic situation.

***KEYWORDS**: COVID-19 vaccine, precautionary, home remedies, prevention, awareness.*

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I. INTRODUCTION

Coronavirus disease (COVID-19) is a communicable disease caused by a newly discovered coronavirus (SARS COV-2), it is recognized as a global pandemic affecting more than 10 million cases worldwide for about a year[1]. India has a very large population and it got severely affected by Covid 19 and has affected the mental health and the economy of the country. Ayurveda a natural system of medicine has originated and practiced in India for more than 3,000 years. Ministry of AYUSH, Ayurveda regulatory committee of India has laid down certain guidelines for precautionary measures to be used to boost immunity during this pandemic[2]. India launched its indigenous COVID-19 vaccine Covaxin (Bharat Biotech unitedly with ICMR) and Covishield (Serum Institute of India together with Oxford- Astra Zeneca) approved by DCGI[3]. The efforts of the scientific community in searching for a vaccine for COVID-19 may be hampered by diffused vaccine hesitancy. Because there is a high gap of knowledge between researchers and common people which has made people skeptical

about new upcoming vaccines hence a cross-sectional online awareness survey was conducted to make people aware of vaccine's safety, efficaçy, working, side effects, and precautionary home remedies.

II. METHODOLOGY

A web-based online awareness survey study was conducted using a "Google form" to obtain responses from people of all age categories, gender, qualification and occupation from 25th January to 1st February 2021.

2.1. Ethical Consideration Firstly, the willingness to participate in this survey was confirmed. Before participation, the purpose of the study, the voluntary nature of the survey and the estimated time it will take to complete the questionnaire were explained to participants. Participants were also informed that by choosing to access the survey link, are providing their consent to participate. The questions were based on yes and no asking them if they were aware of the provided facts on corona vaccines and precautionary home remedies. None of the respondents was asked to give their personal details so that the confidentiality of their identity is maintained.

2.2. Development and distribution of the survey questionnaire

An online awareness survey with 50 questions was formulated using reference material, fact sheets and information leaflets on the vaccine by the Ministry of Health and Family Welfare and precautionary home remedies developed by the Ministry of AYUSH. The survey covered the domains of demographics, general awareness, knowledge and perceptions related to COVID-19 vaccine and precautionary home remedies.

The survey link was distributed among the general public representative of the Indian population of various age, gender and qualification in the form of "Google form" via various social media and platforms door to door survey.

2.3. Sampling method

A total of 1003 participants completed the survey.

2.4. Content of survey questionnaire

The questionnaire was made of four sections;

The first section elicited information regarding the socio-demographic background of the participants (gender, age, qualification, marital status, occupation type)

In the second section, the questions were asked about measures taken by them for this pandemic situation (symptoms of the corona, covid history, post covid side effects, frequency of being in a crowd, proper usage of masks)

In the third section, 27 questions were used to collect information regarding their knowledge about COVID vaccine. Questions regarding whether they know the provided details or not were asked followed by perception on the effectiveness of the vaccine and their likeliness to get vaccinated if given a chance.

In the fourth section, 10 questions containing information on precautionary home remedies were stated and respondents were asked if they knew about this or not.

2.5. Data analysis

All the collected data were entered into Microsoft Excel and cross-checked for the presence of any error to maintain its accuracy. Evaluation of the survey was done electronically using an interface provided by Google forms paired with a spreadsheet, which uses "Countif" formula to count the responses of Google form and represent it in the form of bar graph and pie chart. Descriptive statistics were applied to represent participant characteristics and Chi-square test was used to evaluate the level of association among variables with a significance level of $p < 1$.

III. RESULT

A total of 1003 participants filled the online awareness survey. Participants have given their consent to voluntary participation and completed the questionnaire. The study participants were of all age groups, gender, various occupation types, and educational background. The questions along with the given options and the responses received for part 1 (general information) and part 2 (pandemic measures taken) are represented in Table 1 and Table 2 respectively and for part 3 (information on vaccines) and part 4 (precautionary home remedies), the results are tabulated in Table 3.

IV. DISCUSSION

A large proportion of participants (82.1 %) were aware of the vaccines that are approved by DCGI in India and used i.e. (a) Covaxin developed by Bharat Biotech and (b) Covishield by Oxford-AstraZeneca shot manufactured by Serum Institute of India[3]. Very few of the participants (37.1%) had sufficient knowledge of

Covishield and Covaxin (Table 4). Around 68.8% were not aware of the CoWin app for COVID-19 vaccine registration. During this survey, about 13.9 % have downloaded other apps like CoWin from the Google play store/App store. Unfortunately, the majority of the respondents (77 %) did not know the process of receiving vaccination[4]. About half of the participants (48.1 %) were aware that Union Ministry Health has selected government hospitals, private centres as a part of the vaccination drive[4]. The fact that two doses of the same vaccine need to be taken by the beneficiary, 21 or 28 days apart was not known by 62 % of the respondent[5]. Only 28.5 % of respondents in our survey were aware that at the centre, the vaccinee has to be observed for any untoward reaction and 28.6% knew that a team of health professionals are ready in the observation area to take care of the beneficiary if any untoward reaction takes place due to Covaxin[4]. Very few of the respondents (29.3%) know that every centre will only administer shots of either of two vaccines approved *i.e* one centre, one vaccine type. Less than half of the people (33.8 %) were aware that the common side effects of vaccines are dizziness, fever, myalgia, and flu-like symptoms[7]. Almost half the respondents (49.4%) knew that pregnant and lactating women should not be administered the shots of the vaccine. About 52.7% of respondents were aware that vaccination is indicated only for 18 years & above[6]. About 66.3 % of the respondents did not know that the primary dose of vaccine acts as an important immune response primer and the second dose is required to boost your body's immune response; hence taking both doses is necessary[5]. Almost half of the respondents (46.9 %) were aware that even after taking the vaccine, they need to follow other measures (social distancing, face coverings, lockdowns) to prevent the spread of coronavirus. Surprisingly, very few of the respondents (30.8 %) know that duration of protection of the COVID-19 vaccine is unknown and further doses may be necessary [8]. About 28.6% of respondents were aware that vaccines should be administered with caution in people with a history of bleeding, coagulation disorder, platelet disorder and 22% knew that each beneficiary will be given 0.5 ml of intramuscular injectable dose[6]. About half of the respondents (45.1%) know that drinking alcohol before or after vaccination can reduce their body's ability to build immunity[6]. Majority of the respondents (79.6%) were not aware that individuals having active symptoms of COVID infection, who have been given anti-SARS CoV-2 monoclonal antibodies or plasma therapy are to be deferred for vaccination for 4 to 8weeks after recovery[9] About 63.5% of the respondents did not feel any kind of social pressure to get vaccinated and almost half of the respondents (57.1%) referred to the internet when they heard a negative rumors related to vaccines. 65.2 % of respondents were not concerned about any risk with vaccines. On a scale of 1 to 5, where 1 being "not effective" and 5 being "absolutely effective", about 41.5 % of the respondents rated it 4 for the effectiveness of the vaccine (Figure 1). While on a scale of 1 to 5, where 1 is "absolutely not" and 5 is "absolutely", about 48.2 % of the respondents rated it 5 for willingness to get vaccinated if given a chance (Figure 2). Almost all the respondents (83.4 %) knew (Turmeric/Haldi) Golden milk is proven to be very excellent in reducing inflammation & an excellent immunity stimulant[10]. While 65.9 % of the respondents were aware that *Ginger ale* is the best home remedy to soothe a cough and sore throat reducing the risk of you being immunologically vulnerable[11]. About half of the respondents (59.5 %) know that Ashwagandha is one of the immunity boosters which also reduces anxiety[12] and the majority of the respondents (73%) were aware that Lemon is the easiest available source of vitamin C, which acts as an antioxidant for detoxification and boosting immunity[13]. About 66.4% of the respondents were aware that Black Pepper (Kaali Miri) which is used in our spices has an anti-inflammatory property and boosts immunity recovery [14] and 60.6% of the respondents were aware that Cinnamon (Dalcheeni) tea is the best herbal tea that is an immunostimulant, antioxidant, anti-inflammatory and even reduces blood sugar levels[15]. Only 60.5% of the respondents know that Garlic (Lahsun) significantly reduces cholesterol levels and must be taken by people who have the risk of heart disease (coronavirus vulnerable conditions)[16]. Almost half of the respondents 41.3% know that the AYUSH Ministry of Health has shared a recipe to treat minor immunity decreasing ailments (Fig 2) and half of the respondents (46.4 %) were aware that the AYUSH Ministry of Health has shared a recipe as AYUSH *kadha* which is the best and most effective immunity booster[2]. Almost all respondents (80.9 %) knew that Chavanprash is still considered the best and oldest known Ayurvedic formulation which increases immunity, and nowadays there are variants for diabetic patients[17] .

V. CONCLUSION

This survey sheds light on the current level of awareness regarding COVID vaccine including knowledge, acceptance of vaccine and preventive measures taken to prevent the spread of this deadly disease. The result of this survey indicated that most of the participants were not aware of knowledge about vaccines (Figure 1), most of the people were not completely sure about the efficacy of vaccines but when given a chance to get vaccinated they were ready to take it (Figure 2). Majority of the participants were aware of the precautionary home remedies which show that Indian citizens of all ages are well informed about the traditional practices. Knowledge and prevention do translate into improved practices against COVID-19 which was reflected in the present study. To achieve complete control over COVID-19 and attain efficient vaccination, it is worthwhile to invest in various COVID-19 prevention efforts, including health education and innovative

strategies of vaccination programs based on local evidence to raise the community's awareness and make people ready for vaccination.

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Declaration of competing interest
The authors declare that they have no conflict of interest.

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Tables and Figures

Table 1. Socio-demographic characteristics of participants for part 1 *i.e* General Information,

Questions	Variables	Count (n) n=1003	Percentage (%)
Age (in years)	Below 18	97	9.7%
	18 to 30	577	57.5%
	30 to 50	227	22.6%
	50 Above	102	10.2%
Gender	Male	433	43.2%

	Female	504	50.3%
	Other	12	1.2%
	Prefer not to say	54	5.3%
Qualification	10th or Below	128	12.8%
	Undergraduate	659	65.7%
	Postgraduate or above	216	21.5%
Marital Status	Married	288	28.7%
	Unmarried	715	71.3%
Occupation Type	Unemployed/homemaker	95	9.5%
	Student	336	33.5%
	Work from home	223	22.2%
	Front line worker	100	10%
	Working (not a front line)	219	21.8%
	Other	30	3%

n= no. of participants

Table 2. Socio-demographic representation of pandemic measures taken by individual

Questions	Variables	Count (n) n=1003	Percentage (%)
Have you noticed any of the symptoms of corona?	Yes	797	79.5%
	No	206	20.5%
If yes, what treatment did you go for?	Hospital	52	5.2 %
	Quarantine centre	173	17.2 %
	Home quarantine/ home remedies	229	22.8 %
	Nothing	549	54.8%
Have you ever been tested positive for corona?	Yes	936	93.3 %
	No	67	6.7 %
If yes, did you face any of post COVID recovery symptoms	Breathing problems	11	1.1 %
	Stroke/seizures	8	0.7 %
	Nothing	925	92.3 %
	Other	59	5.9 %
How frequently do you go out?	Everyday	337	33.6 %
	2 to 3 times a week	271	27 %
	Once a week	188	18.7 %
	Less frequently than stated options	119	11.9 %

	More frequently than stated options	88	8.8 %
Do you wear a mask when you go out?	Yes No	971 32	96.8 % 3.2 %
While outside, do you remove masks to eat, talk to someone, take selfies, or for smoking and risk your life with the possible transmission of coronavirus?	Yes No	427 576	42.6 % 57.4 %
Do you know that the correct way to wear a mask is when it fully covers your mouth as well as nose?	Yes No	983 20	98 % 2 %

n=no. of participants

Table 3. The number of responses received on each option of all the questions of part 3 (Information on vaccines) and part 4 (Precautionary home remedies)

Question	Options	Responses out of 1003
Are you aware that 2 vaccines that are approved by DCGI in India and used are (a) Covishield by The Oxford-AstraZeneca shot manufactured by Serum Institute of India and (b) Covaxin developed by Bharat Biotech?	Yes No	823 180
Are you having sufficient knowledge of Covishield and Covaxin?	Yes No	372 631
Are you aware of the other vaccines which are approved in other countries?	Yes No	463 543
Are you aware of the CoWin app for COVID-19 vaccine registration which currently has data of health officials who are getting vaccinated first?	Yes No	313 690
Have you downloaded any other app like CoWin from the Google play store/app store; as this app is now in the pre-product stage and not available for the common public yet?	Yes No	139 864
Are you aware of the process of vaccination; which consists of a series of steps that need to be followed?	Yes No	231 772
Are you aware that Union Ministry Health has selected government hospitals, private centres as a part of the vaccination drive?	Yes No	482 521
Are you aware that you need to take two doses of the same vaccine 21 or 28 days apart depending upon the type of vaccine taken?	Yes No	381 622
Did you know that a consent form is given before the administration of Covaxin?	Yes No	286 717
Are you aware that you have to wait for 30 min after vaccination at the centre to be observed for any untoward reaction?	Yes No	278 725
Did you know a team of health professionals are ready in the observation area to take care of the beneficiary if any untoward reaction takes place due to Covaxin?	Yes No	287 716
Did you know each centre will only administer shots of either of 2 vaccines approved i.e One Centre, One Vaccine type?	Yes No	294 709
Are you aware that the common side effects of vaccines are dizziness, fever, myalgia, and flu-like symptoms?	Yes No	339 664
Did you know according to the Union Health Ministry; pregnant and lactating women should not be administered the shots of the vaccine?	Yes No	508 495

Are you aware that vaccination is indicated only for 18 years and above?	Yes No	529 474
Did you know the first dose of vaccine acts as an important immune response primer and the second dose is needed to boost your body's immune response; hence taking both doses is mandatory?	Yes No	338 665
Are you aware that even after taking the vaccine, you need to follow other measures (social distancing, face coverings, lockdowns) to prevent the spread of coronavirus?	Yes No	533 470
Did you know that duration of protection of the Covid- vaccine is unknown, further doses may be necessary?	Yes No	309 694
Are you aware that vaccines should be administered with caution in people with a history of bleeding, coagulation disorder, platelet disorder?	Yes No	287 716
Did you know each beneficiary will be given 0.5 ml of intramuscular injectable doses?	Yes No	221 782
Did you know drinking alcohol before or after vaccination can reduce your body's ability to build immunity?	Yes No	452 551
Are you aware that people having active symptoms of SARS COV-2 (COVID) infection, who have been given anti-SARS CoV-2 monoclonal antibodies or plasma therapy are to be deferred for vaccination for 4 to 8 weeks after recovery?	Yes No	205 798
Do you feel social pressure to get the vaccine?	Yes No	366 637
When you hear a negative rumors related to vaccine do you	Go to the internet Ask a health worker Others	573 300 130
Are you concerned about any risk with vaccines? If Yes What kind of risks?	Yes No Others	271 654 78
On a scale of 1 to 5, what do you think about vaccines?	1 2 3 4 5	10 34 236 416 307
On a scale of 1 to 5, how sure are you to get vaccinated, if given a chance?	1 2 3 4 5	19 49 206 246 483
Did you know (Turmeric/Haldi) Golden Milk is proven to be very excellent in reducing inflammation & an excellent immunity stimulant?	Yes No	837 166
Are you aware that Ginger ale is the best home remedy to soothe cough & sore throat reducing the risk of you being immunologically vulnerable?	Yes No	661 324
Did you know Ashwagandha churna/tablet is one of the immunity boosters which also reduces anxiety?	Yes No	597 406
Are you aware that Lemon is the easiest available source of vitamin C, which acts as an antioxidant for detoxification and boosting immunity?	Yes No	732 271
Are you aware that Black Pepper (Kaali Miri) which is used in our spices has an anti-inflammatory property & boosts immunity recovery?	Yes No	666 337
Are you aware that Cinnamon (Dalcheeni) tea is the best herbal tea that is an immunostimulant, antioxidant, anti-inflammatory & even reduces blood sugar levels?	Yes No	608 395

Are you aware that Garlic (Lahsun) significantly reduces cholesterol levels & must be taken by people who have the risk of heart disease (coronavirus vulnerable conditions)?	Yes No	607 396
Did you know that the AYUSH Ministry of Health has shared a recipe to treat minor immunity decreasing ailments?	Yes No	414 589
Are you aware that the AYUSH Ministry of Health has shared a recipe as AYUSH *kadha* which is the best and most effective immunity booster?	Yes No	465 538
Did you know that Chavanprash is still considered the best and oldest known Ayurvedic formulation which increases immunity, and nowadays there are variants for diabetic patients?	Yes No	811 192

Table 4. Comparative details about vaccines Covishield and Covaxin

Parameters	Covishield	Covaxin
Working	Use of viral vector made using a weakened strain of the common cold virus has genetic material similar to that of SARS-CoV-2, upon administration body's immune system recognizes and produces antibodies	Inactivate version of virus i.e inactivates the virus's ability to replicate but sustain it's life , hence the immune system recognizes and produces antibodies
Storage	Refrigerated at 2-8 ℃	Refrigerated at 2-8 ℃
Efficacy	70% Average protection	Phase 3 results expected after March
Regulatory Status	Approved for emergency use in India on January 3, 2021	Approved for emergency use in India on January 3, 2021
Production	100 million doses SII (Serum Institute of India) will provide 100 million doses of vaccine in India and to other developing countries after India's requirements are met	100 million doses in 2021 with the potential to increase to 500 million doses.

Figure 1. Response received when asked about the perception of vaccine.

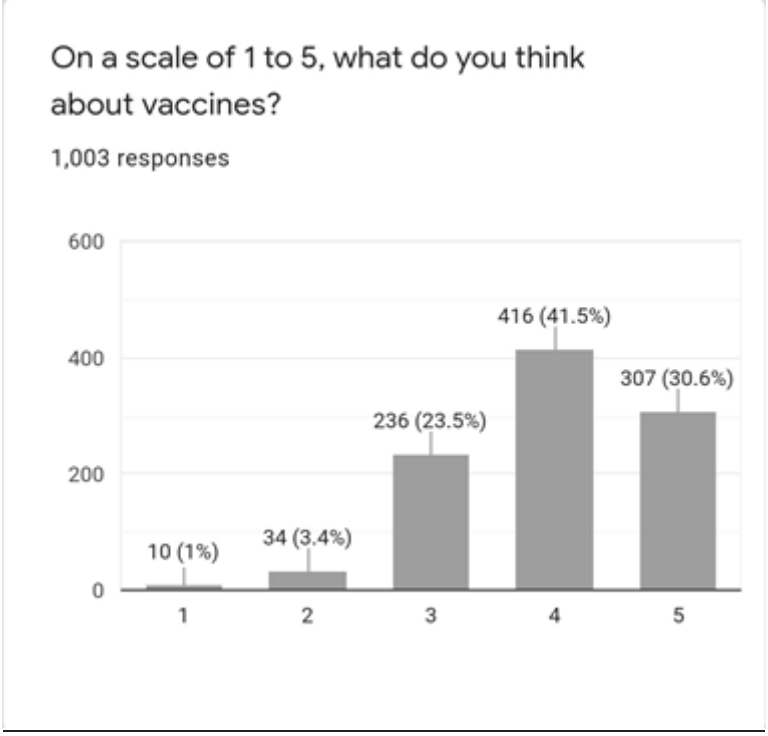

Figure 2. Response received when asked about willingness to get vaccinated.