

VOLUME 8 ISSUE 2 2022

ISSN 2454-3055



INTERNATIONAL JOURNAL OF ZOOLOGICAL INVESTIGATIONS

***Forum for Biological and
Environmental Sciences***

Published by Saran Publications, India



International Journal of Zoological Investigations

Contents available at Journals Home Page: www.ijzi.net

Editor-in-Chief: Prof. Ajai Kumar Srivastav

Published by: Saran Publications, Gorakhpur, India



ISSN: 2454-3055

Acceptance and Attitudes of North Indian Population Towards COVID-19 Vaccines

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Received: 20th August, 2022; **Accepted:** 22nd September, 2022; **Published online:** 4th October, 2022

<https://doi.org/10.33745/ijzi.2022.v08i02.054>

Abstract: Coronavirus disease 2019 (COVID-19) is a pandemic which had a severe impact on all aspects of life all over the world. Vaccines are the most significant and effective interventions which are capable enough to reduce the high burden of diseases around the globe. An effective vaccine is the most anticipated resolution. The hesitancy in general public towards vaccination is a major problem for Government and health authorities as well. In this study, evaluation of health issues faced after vaccination, preferred vaccines, role of health authorities in preventing the COVID 19 disease spread, and kind of hesitancy for vaccination are discussed. Primary random data is collected from 370 individuals from north India about the COVID vaccine. The descriptive and inferential statistical tools are implemented to analyze the data using SPSS software.

According to responses from the respondents' vaccine from other countries are more effective as compared to the Indian one. Covishield vaccine was the choice of maximum respondents as compared to others. The preferences for the vaccination and side effects did not have any relationship whether a particular respondent got the vaccine or not. Youngers are less likely to accept COVID vaccine.

Keywords: COVID vaccine, Covishield, Covaxin, Sputnik V, SARS-CoV-2

Citation: Kaur Kamaljit, Sharma Varruchi, Joshi Amit, Kumar Salil, Sharma Aanchal, Ramniwas Seema and Sharma Anil K.: Acceptance and attitudes of north Indian population towards COVID-19 vaccines. Intern. J. Zool. Invest. 8(2): 444-450, 2022.

<https://doi.org/10.33745/ijzi.2022.v08i02.054>



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Introduction

COVID-19 (Coronavirus disease) is an infectious disease which is caused by the SARS-CoV-2 virus. People afflicted with this disease have mild to moderate symptoms and the same recover without any special treatment. While on the other hand, some of the patients become seriously ill requiring medical attention (Sharma *et al.*, 2021). Most of the infected people experience mild to moderate respiratory problems or illnesses and also it has been seen that they recover without any special medication/treatment (Sharma *et al.*, 2022). Any patient who is already suffering from diseases like diabetes, cardiovascular disease, chronic respiratory disease, or cancer etc. are more likely to develop serious illness (Nicola *et al.*, 2020; Jha *et al.*, 2020a, b). Most of countries all over the world during the pandemic have followed some of the precautionary measures in order to reduce the transmissibility of COVID 19 disease, which includes partial or complete lockdowns, non-pharmaceutical interventions (NPIs), implementing forceful masks policy, social distancing, sanitization etc. (El-Elimat *et al.*, 2021).

In present scenario COVID-19 vaccines have reached approximately to billions of people worldwide, In India, specifically as of April 2022 (3rd April, 2022), over 1.8 billion doses have been administered, which includes first, second and booster dose as well. Major Vaccines that have been used over the population are: Covishield, Covaxin, Sputnik V, Johnson and Johnson, Moderna, Corbevax, Covovax, ZyCoV-D and Sputnik Light are the approved compounds that have been administered in Indian Population (MOH, 2022). The vaccines offer us life-saving protection against COVID 19 disease that has killed millions of people around the globe (MOH, 2022). In India, from January 2022 onwards government being proactive towards the upcoming wave of the virus, has started the booster dose. In the 1st phase, it had been planned for frontline workers and those over 60 years of age followed by the rest of population (Khadwal *et al.*, 2020).

Vaccines are one of the most reliable public health interventions ever which have effectively saved millions of lives since last 2 years. Since December, 2020, approximately about 85 vaccines are in preclinical developmental stage in animals and about 63 are in clinical developmental stage in humans (Rajasurya *et al.*, 2020), of which 43 are in phase I, 21 are in phase II, 18 are in phase III, and 6 have an approval for early use or for a limited use, and 2 have been fully approved for the full use, while one has been abandoned (Helmy *et al.*, 2020; El-Elimat *et al.*, 2021).

In reference to the vaccination for its effects on human body, there were/are some of the myths which must be addressed among the population. The myth was about ingredients in COVID-19 vaccines which have aftereffects, but the truth is that nearly all the constituents of vaccines are also the main compositions of many foods – fats, sugars, and salts (Sahoo *et al.*, 2020; Noor, 2021). The ingredients of particular vaccine vary as per the manufacturer for example Pfizer-BioNTech and Moderna contain mRNA (messenger RNA) while on the other hand, the Johnson & Johnson/Janssen comprises of a harmless version of a virus unrelated to the virus that causes COVID-19 (Noor, 2021; Ullah *et al.*, 2021; ULPGC, 2021; Marcec and Likic, 2021).

In the upcoming scenario, new variants have evolved which are capable enough to affect children more. In forthcoming research, it has been shown that the vaccines can be more effective in children or they may be relatively low at risk of the same disease (Hirsch *et al.*, 2022).

We know that vaccines have successfully overcome the disease prevention for a long time. However, hesitancy and refusal for COVID 19 vaccine have significant concerns around the globe, pressurizing WHO to declare this uncertainty among major health threats in 2019. Vaccine hesitancy, has a number of reasons including religious, personal beliefs, also majorly some of safety concerns due to wide-spread myths etc. In this study we have tried to evaluate the

Table 1: Demographic details of study participants

Variable		n (%)
Age (in years)	10-30	260 (70.46%)
	30 – 50	87 (23.31%)
	> 50	23 (6.23%)
Gender	Male	175 (47.29%)
	Female	195 (52.70%)
Educational Qualification	10+2	116 (31.35%)
	Graduate	173 (46.75%)
	Post Graduate	81 (21.89%)

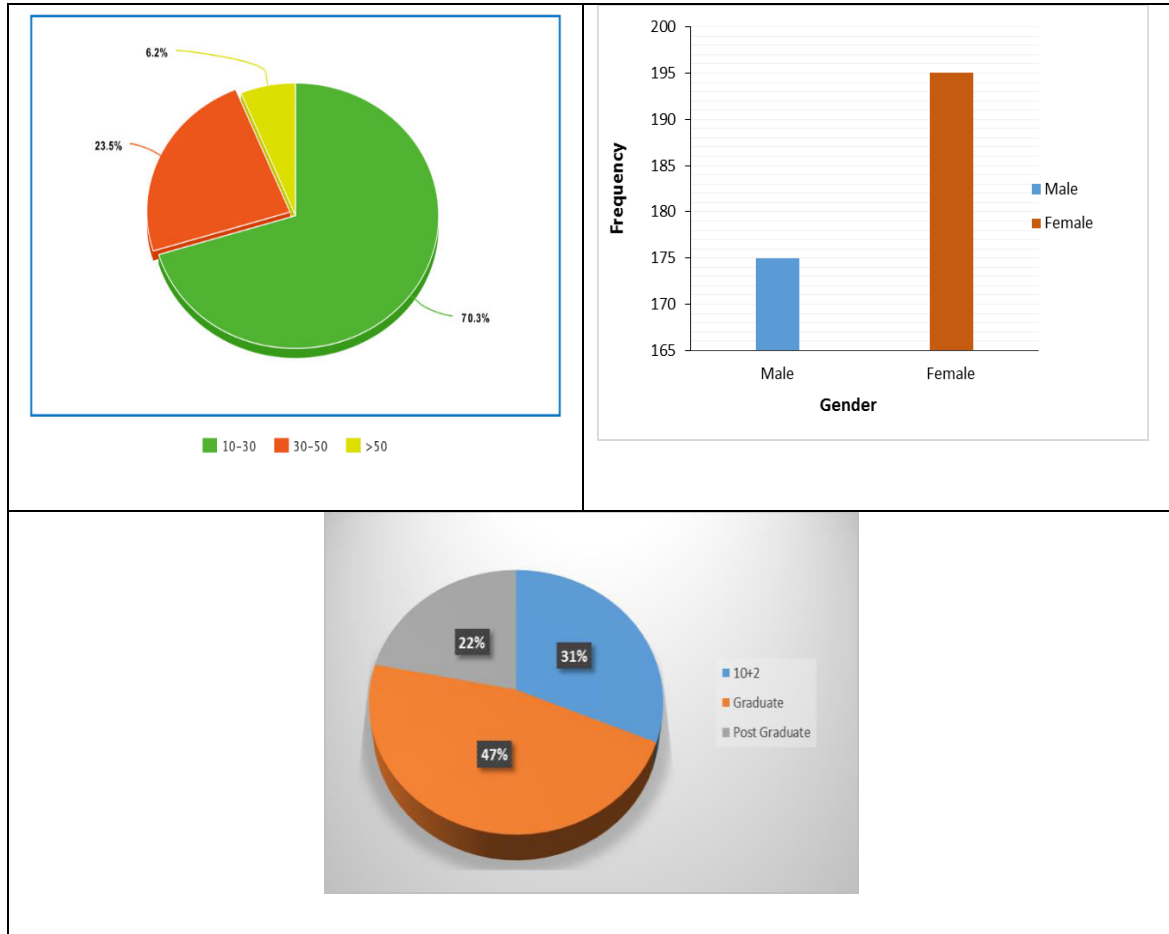


Fig. 1: Frequency distribution of Age, Gender and Educational Qualifications.

intent of people from north India to be vaccinated against COVID-19 and evaluate the different sample characteristics associated with vaccine refusal/hesitancy.

Materials and Methods

It is difficult to gather data from every individual, samples of 370 individuals from north India were taken to study the objectives. Sampling is a method for choosing individuals or a subset of a population to make statistical conclusions and

estimate the characteristics of the whole population. To collect the data a well-structured questionnaire was developed based on a literature review. The responses of the individuals were taken using Google forms by sharing link on social media websites. Descriptive statistics was used to describe the characteristics and picture of the random samples. Chi-square test was used to test the association and relationship between the variables.

Table 2: Preference of Vaccine by the participants

Vaccine	No. of Respondents	Per cent
COVAXIN	86	23.24
COVISHIELD	191	51.62
Any other	93	23.13

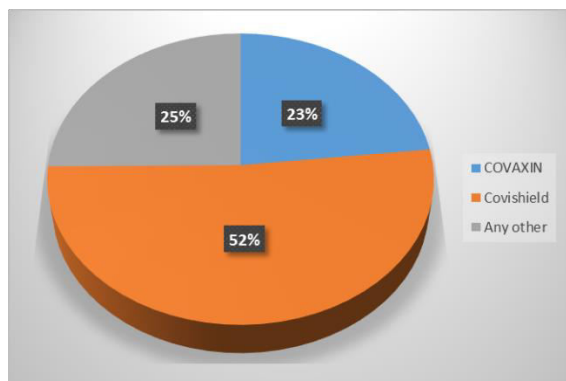


Fig. 2: Preference of Vaccine by the participants.

Table 3: Participants' practices towards COVID-19 and vaccination.

Questions	Strongly Agree/Agree	Neutral	Strongly Disagree/Agree
Do you think that one can spread COVID 19 if he/she get vaccinated?	230	85	55
Do you think that your country's Health Department is doing enough to prevent the outbreak from spreading?	150	101	119
Will the vaccine introduced in India be effective as the ones introduced in other countries?	170	117	83

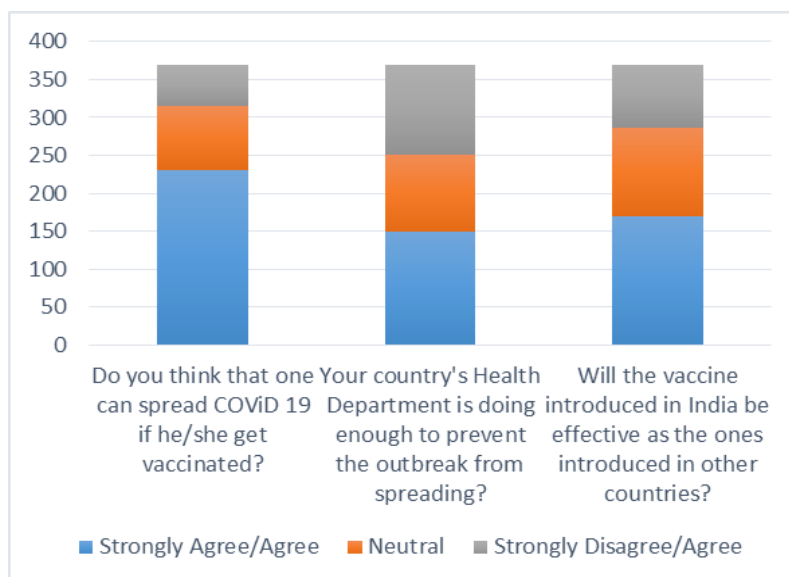


Fig. 3: Participants' practices towards COVID-19 and vaccination.

Table 4: Attitudes toward COVID-19 vaccines.

Questions	Yes	No
Do you think that side effects of COVID are good sign?	208	162
Will Health Authorities succeed in vaccinating the entire nation within this year?	152	218
Will the vaccine introduced in India be effective as the ones introduced in other countries?	45	325

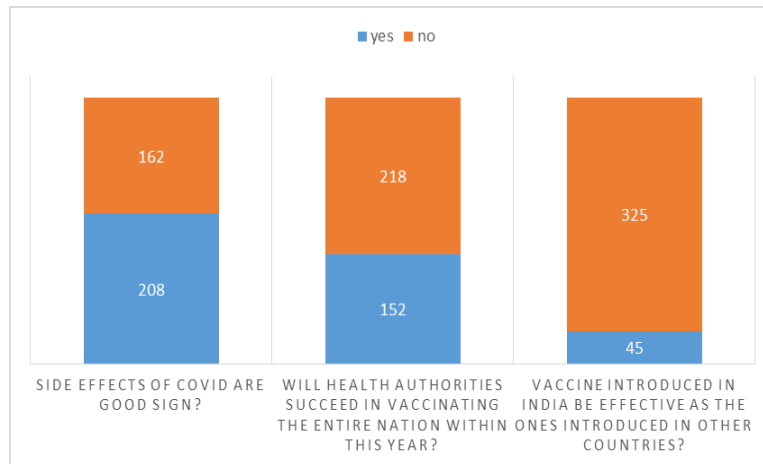


Fig. 4: Attitudes toward COVID-19 vaccines.

370 individuals were enrolled in the study including 175 females and 195 males. 70.46% of the participants were in age group of 10-30 and according to the qualification, maximum strength was of Graduate individuals. (Table 1; Fig. 1)

Statistical Analysis:

The main outcome of the study was the public acceptance of COVID-19 vaccines. Statistical analysis was done using both Descriptive and Inferential methods. Chi-square test was applied to check the significance of COVID-19 vaccine and the P value of less than 0.05 was considered

statistically significant. The analysis was carried out using the Statistical Package for Social Sciences (SPSS).

Graduate and Post Graduate participants were less likely to accept COVID-19 vaccines compared to secondary participants (Table 2; Fig. 2). On the other hand, males were less likely to have acceptance for COVID-19 vaccines compared to females. Participants' practices towards Covid-19 and vaccination have been shown in Table 3 and Figure 3 while attitude of individuals towards Covid-19 vaccination has been shown in Table 4

Table 5: Predictors of acceptance for COVID-19 vaccines

Educational Qualifications	Yes	No	Odds Ratio	CI
10+2	34	81		
Graduate	88	92	0.44	(0.27,0.72)
Post Graduate	34	41	0.51	(0.28,0.93)
Gender				
Male	71	106	0.84	(0.56,1.28)
Female	85	107		
Age (in years)				
10 – 30	92	171		
30 – 50	47	37	0.42	(0.26 , 0.7)
> 50	17	5	0.58	(0.2 , 1.66)

Table 6: Association of side effects of COVID vaccine and individuals who have taken vaccine

Question		Do you think that side effects of COVID are good sign?		
Did you get any COVID vaccine yet?	Yes	Yes	No	p-value
	No	94	65	0.9548
		114	97	

Table 7: Relationship between getting COVID vaccine and choice of best COVID vaccine

Question		According to you which vaccine is better?				
Did you get any COVID vaccine yet?		COVAXIN	Covishield	Any other	Total	p-value
	Yes	36	93	28	157	0.0627
	No	52	103	58	213	
Total		88	196	86	370	

and Figure 4. In addition, participants in the younger age group were more likely to accept COVID-19 vaccines (Table 5).

Chi Square Test:

Chi Square test was applied to find the relationship between status of getting vaccine and their side effects and preference of COVID vaccine. There was no concern of the respondents about the side effects of COVID vaccine, whether these vaccines are good, either they take vaccine or not as p-value is greater than 0.05 as shown in Table 6. According to Chi-square test presented in Table 7, the respondent choice of vaccine does not depend on either they are getting vaccine or not, as p-value is not significant.

Conclusion

Out of 370 individuals, maximum responses are from the young individuals with Graduate as a qualification. According to 50% of the respondents, Covishield is better as compared to other vaccines. The vaccine introduced in India will be less effective as the ones introduced in other countries, because 88% of the respondents does not agree with this. The preferences of vaccine and side effects have no relationship either a particular respondent getting vaccine or not.

Acknowledgements

Authors would like to acknowledge their respective institutes for providing the requisite facilities to carry out the present study.

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