

## Assessment of Knowledge, Attitude & Behavior towards COVID-19 Vaccination: A Cross-Sectional Survey among Medical Students from Central India.

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### Abstract

**Background:** Vaccination for COVID-19 is the most effective measure for controlling the pandemic. Knowledge, attitude & behaviour study among medical students towards COVID-19 vaccination presented a unique opportunity to study and to address barriers to vaccination and their associations.

**Objective:** To study knowledge, attitude and behaviour of MBBS 2<sup>nd</sup> & 3<sup>rd</sup> year students towards COVID-19 vaccination.

**Methods:** This was a cross sectional study involving MBBS students from the 2<sup>nd</sup> and 3<sup>rd</sup> professional years. A semi-structured questionnaire was designed and disseminated among the students. The questionnaire consisted of items related to knowledge, attitude, and behaviour towards COVID-19 vaccination. Responses obtained were analysed.

**Results:** It was found that 100% of the participants were vaccinated and majority of the participants were well informed regarding COVID-19 vaccine and its schedule, ADRs. Majority were of the opinion that taking COVID-19 vaccine was a social responsibility and they were motivated to take booster dose if offered. Most of the participants admitted to motivating their family and friends to get vaccinated and follow social distancing protocols.

**Conclusion:** We found that the knowledge, attitude and behaviour of medical students towards COVID-19 vaccination was favourable. The positive result of this study highlighted the measures taken by the government and health care workers towards educating people about COVID-19 and its vaccination.

**Keywords:** Knowledge; attitude; behaviour; COVID-19; vaccine.

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## Introduction

With the discovery of a novel coronavirus disease 2019 (COVID-19) in Wuhan, China in December 2019, the virus quickly became a pandemic of epic proportions. In January 2020, the World Health Organization (WHO) declared the COVID-19 outbreak a public health emergency of International Concern and calling for all countries to take urgent and aggressive action against the spread of the virus [1]. The pandemic is still causing the death of people worldwide, and there are aggressive public and social health strategies in place to slow or prevent its spread. COVID-19 was declared a pandemic by the WHO in March 2020 and later advocated mass vaccination as a near term solution against the pandemic. [2]. Vaccines are one of the most important public health measures that can protect the population from COVID-19. The acceptability of this newly launched vaccine was another concern since the vaccine coverage among the population is essential for a successful and effective immunization program. A safe and effective vaccine for COVID-19 has been in rigorous development and in demand by the public and healthcare workers alike [3]. Several vaccines have been approved against COVID-19 and distributed globally in different regions. The COVID-19 vaccine invention and development race is still ongoing [4-5]. India is also undertaking a massive vaccination campaign with Covishield and Covaxin. Since its launch, this COVID-19 vaccination program by the Government of India has been a prioritized and accelerated program, with the vaccine going to market merely within a year after the discovery of the virus. However, vaccine hesitancy appeared as an important challenge in the immunization campaign against COVID-19 due to many demographic factors, and personal beliefs. [6]. One of the most effective measures of halting the spread of the virus is to protect individuals from exposure to COVID-19,

but it is also necessary to vaccinate the vulnerable group of people as soon as possible [7]. However, general community knowledge, attitudes, and behaviours towards COVID-19 vaccinations are poorly understood areas. To understand the impact of the COVID-19 vaccination, we need to know the attitudes and behaviour of our population about COVID-19 vaccinations. In such a scenario, perceptions toward COVID-19 vaccination are crucial for Government and policymakers to address all barriers to vaccination. However, the current generation of medical students witnessed this pandemic closely and it will mould them for the future on how to tackle these outbreaks. So it becomes essential to gather data about what they know, believe, and practice about COVID-19 vaccination. Thus, this study aims to present the formal analysis and results of an institutional survey regarding knowledge, attitude, and behaviour regarding COVID-19 vaccination among medical students.

## Materials & Methods:

### Study design and participants:

It was a cross-sectional survey carried out at Government Medical College Ratlam between February 2022 and April 2022. The study involved MBBS students from the 2<sup>nd</sup> and 3<sup>rd</sup> professional years. The study was approved by the institutional ethics committee.

### Sample Size:

To determine the study sample size, we considered 95% CI. A sample size of 107 was calculated. However, our study population exceeded the sample size. Informed consent was taken from all the participants before the commencement of the study.

### Questionnaire and data collection:

A semi-structured questionnaire was designed and incorporated into an online

survey tool and a shareable link was generated and disseminated among the students. The questionnaire contained 26 questions divided into four separate sections for socio-demographic details, knowledge, attitude, and behaviour.

### Statistical Analysis:

The responses were collected and entered into data entry software. Descriptive statistics i.e., frequencies, percentages, means, standard deviations, and first-order analysis like chi-square tests were performed.

### Results:

A total of 166 students from 2<sup>nd</sup> and 3<sup>rd</sup> MBBS professionals took part in the study and responded to the questionnaire. The mean age of the respondents was 21.98 years. Males accounted for 51.2% and females accounted for 48.8%. 68.1% of respondents were from MBBS 2<sup>nd</sup> professional whereas 32.9% were from MBBS 3<sup>rd</sup> professional. Among the respondents, 69.9% belonged to an urban area and 30.1% were from a rural area. The sociodemographic characteristics of respondents are shown in Table 1.

**Table 1: Sociodemographic characteristics of study participants (n=166)**

Gender	Male: <b>85(51.2%)</b>
	Female: <b>81(48.8%)</b>
Age (years)	Mean: <b>21.98</b> Standard Deviation: <b>1</b> Median: <b>22</b> Mode: <b>22</b>
MBBS Year	2 <sup>nd</sup> Year MBBS: <b>113 (68.1%)</b>
	3 <sup>rd</sup> Year MBBS: <b>53 (32.9%)</b>
Residence	Urban: <b>116 (69.9%)</b>
	Rural: <b>50 (30.1%)</b>

Knowledge section of the questionnaire contained 10 questions (Table 2). It showed that 100% of the respondents were aware of the COVID-19 vaccine and were also aware that vaccination can protect against COVID-19. 100% of the respondents were fully vaccinated, with 89.8% taking the COVISHIELD vaccine whereas 10.2 % were administered COVAXIN (figure 1). 61.4% were aware of the adverse effects of vaccination. The majority of participants believed it's not possible to reduce the incidence of the disease without vaccination. 52.4% of respondents believed that taking vaccination against COVID-19 was legally mandatory. 90.4% knew that a single dose of vaccination doesn't offer complete protection from COVID-19. Figure 2 shows the graphical representation of responses to the question about the source of information for COVID-19 and its

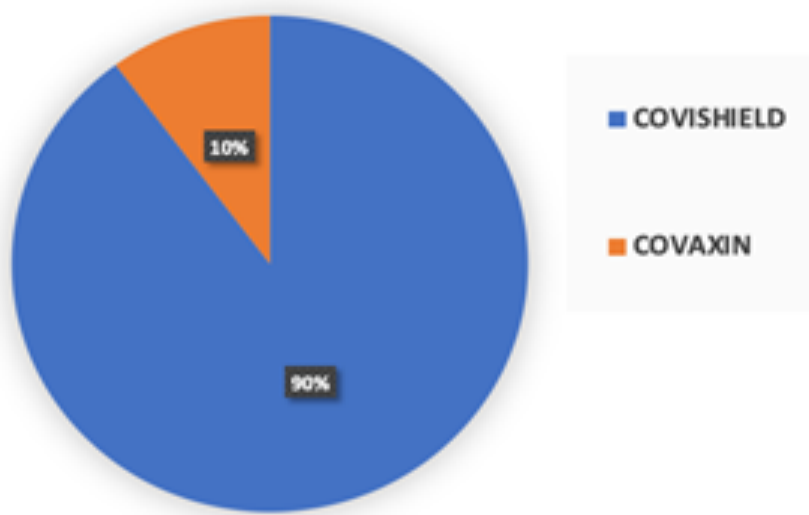
vaccine with 71.1% admitted to receiving it through doctors/health care providers and internet /social media being the second most common (63.9%). The attitude section of the questionnaire contained 6 questions (Table 3). It was the most prominent belief (53%) that the benefits of taking the vaccine outweigh the risk. 94% of the respondents agreed that they were willing to take the vaccine. 93.6% of respondents believed that it's a social responsibility to take the vaccine. Given a chance to take a vaccine at their own expense 66.9% of respondents agreed while 10.8% strongly disagreed with it. 91% of respondents agreed to take a booster dose of the vaccine if it was offered to them. The behaviour section of the questionnaire contained 4 questions (Table 4). 80.7% of respondents admitted motivating their family/community to get vaccinated. Following social distancing/

wearing masks/using sanitiser was always practised by 65.7% of respondents. 40.4% admitted to sharing & circulating information about vaccines on social media platforms while 10.8% admitted to never doing it. Figure 3 represents a

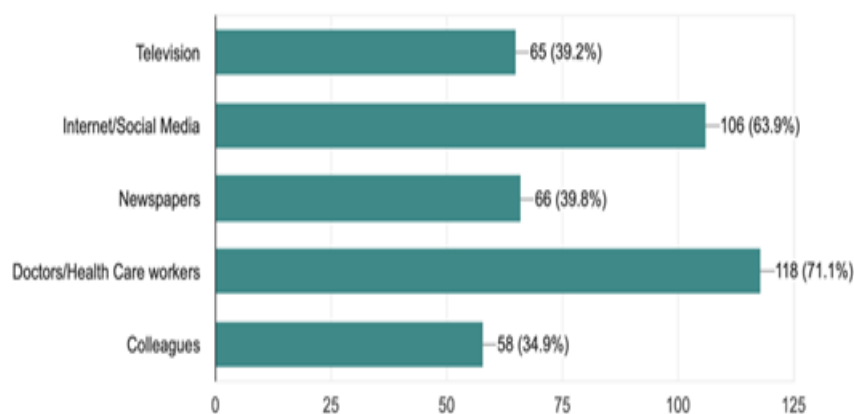
graphical representation of responses to the question of whether respondents will report any adverse drug reaction (ADR) arising due to vaccine administration, with 64.5% admitting willingness to report the ADR and 10.2% showing unwillingness.

**Table 2: Responses for questions related to Knowledge of study participants (n=166)**

Questions	Yes	No	Don't Know
Do you know about the COVID-19 vaccine?	166 (100%)	-	-
Do you know vaccination can protect against COVID-19 infection?	166 (100%)	-	-
Are you vaccinated?	166 (100%)	-	-
Do you think the COVID-19 vaccine can have side effects?	102(61.4%)	36(21.7%)	28(16.9%)
It is possible to reduce the incidence of COVID-19 without vaccination?	36(21.7%)	110(66.3%)	20(12%)
Do you know about the dosage schedule of COVID-19 Vaccine?	162(97.6%)	3(1.8%)	1(0.6%)
Is it LEGALLY MANDATORY to take COVID-19 vaccine?	87(52.4%)	53(31.9%)	26(15.7%)
Does single dose of vaccine give 100% protection against COVID-19?	2(1.2%)	150(90.4%)	14(8.4%)



**Figure 1: Responses to question – Which vaccine have you taken? (n=166)**



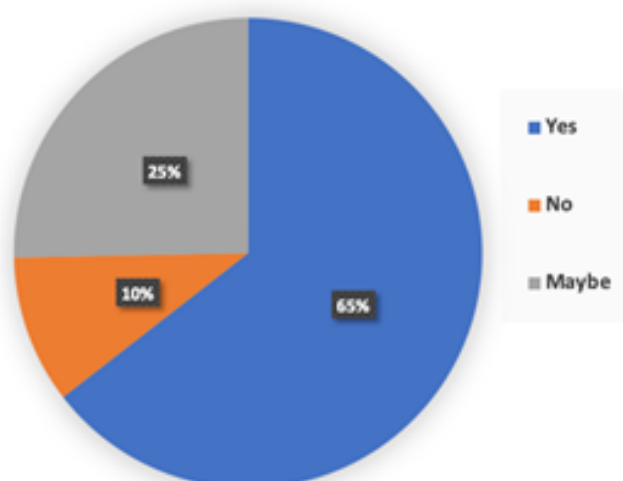
**Figure 2 : Responses to question - What is your source of information for COVID-19 & it's the vaccine? (n=166)**

**Table 3: Responses for questions related to the Attitude of study participants (n=166)**

Questions	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I believe the benefits of taking the vaccine outweigh the risks.	3(1.8%)	3(1.8%)	19(11.4%)	88(53%)	53(31.9%)
When my turn comes, I'm willing to take the vaccination as there is no harm in taking the vaccine.	4(2.4%)	1(0.6%)	5(3%)	78(47%)	78(47%)
I'll take the vaccine because I believe it's a societal responsibility to take it.	3(1.8%)	-	8(4.8%)	78(47%)	77(46.4%)
If you received special advice from the administration for vaccination against COVID-19 would you follow them?	3(1.8%)	1(0.6%)	17(10.2%)	89(53.6%)	56(33.7%)
Would you have taken the vaccine at your own expense if it was not provided free of cost by the government?	11(6.6%)	18(10.8%)	26(15.7%)	74(44%)	38(22.9%)
Will you take a booster dose if it's offered to you?	4(2.4%)	1(0.6%)	10(6%)	86(51.8%)	65(39.2%)

**Table 4: Responses for questions related to the Behaviour of study participants. (n=166)**

Questions	Never	Sometimes	Often	Always
Do you motivate your family/community to get vaccinated?	1(0.6%)	12(7.2%)	19(11.4%)	134(80.7%)
Do you follow social distancing/wear masks/using sanitiser after getting vaccinated?	1(0.6%)	16(9.6%)	40(24.1%)	109(65.7%)
Do you often share and circulate information regarding vaccine and vaccination on social media platforms?	18(10.8%)	54(32.5%)	27(16.3%)	67(40.4%)



**Figure 3: Responses to question - Will you report Adverse Drug reactions (if any) after vaccination? (n=166)**

### Discussion:

India being the country which was one of the worst hit in the world [8] by the COVID-19 pandemic, vaccination is a major protective measure for its prevention. India has achieved single-shot vaccine coverage at 91% of the eligible population and 77% of the eligible population is fully vaccinated [9]. India has approved the Oxford–AstraZeneca vaccine under the trade name Covishield and Covaxin a vaccine developed locally by Bharat Biotech. In our study, 90% of the participants were vaccinated with Covishield (figure1). The rollout of a vaccine in the pandemic raised concerns about its acceptance in the general population. It is important to study the factors that affect people's behaviour towards vaccination to better understand the epidemiological dynamics and effectiveness of the vaccine. We carried out this novel web-based study to find out the knowledge, attitude and behavioural patterns of 2<sup>nd</sup> & 3<sup>rd</sup> year MBBS students regarding COVID-19 vaccination. These surveys are commonly used to identify knowledge gaps and behavioural patterns to implement suitable interventions. A sample of 166 students was selected to complete the questionnaire on knowledge,

attitude, and behaviours regarding the COVID-19 vaccine. Responses to the questionnaire were analysed using descriptive statistics.

In our study, we found that 100% of the participants were aware of the vaccination available for COVID-19 as well as its efficacy in protection against it. It was a welcome finding that 100% of the participants were vaccinated with at least one or second dose of the vaccine (Table 2). It also was encouraging to know that the majority of participants rely on doctors/healthcare workers for gaining information on COVID-19 just ahead of the internet and social media (figure 2). This was also reflected in their awareness of the dosing schedule, efficacy and side effects of the vaccine. 17% population was unaware of any adverse effects of vaccination. Though the government never made it mandatory for everyone to take vaccination still almost half of the participants thought that vaccination is legally mandatory. These observations were in stark contrast to widespread disbelief and anti-vaccination movements that flooded social media, making vaccine hesitancy an important hurdle [10]. In a study, it was reported that people getting their information about the COVID-19

vaccine from social media were unwilling to get vaccinated [11]. Here it is evident that being in the medical profession has helped participants to have a positive and scientific view of the benefits of vaccination.

The general attitude of study participants towards vaccination was positive (table 3). With majority agreed to take the vaccination as per the guidelines and schedule as well as consider it a social responsibility. Similar willingness rates have been reported in several other studies also [12,13]. The majority of participants believed that the benefits of taking the vaccine far outweigh the risk associated with it. This type of response and vaccine acceptance was also found in various cross-sectional studies conducted worldwide [14-16], but the responses were high in our study among medical students as compared to the general population in other studies. This can be attributed to teaching authentic, scientific knowledge and learning first-hand about the disease from health care professionals. The majority of participants agreed to take a booster dose of the vaccine if made available to them. Though the vaccine was provided free of cost by the government, it was found that most participants were willing to take the vaccine at their own cost even if they were to pay for it.

Participants' behaviour regarding vaccination was largely encouraging with the majority of them accepted to motivate their family members to take the vaccine without any hesitancy. 63% of participants (figure 3) showed a willingness to report any adverse drug reaction arising out of vaccination. There was a high degree of following social distancing norms among the participants after getting vaccinated. These positive findings can be the result of using scientific reasoning and accurate knowledge about the disease and its vaccination which can be the results of appropriate educational interventions in medical school.

Our study has the practical implication of gaining insight into the knowledge and behaviours of medical students towards COVID-19 vaccination as they are future physicians. The results were generally positive as participants were well aware and knowledgeable. This reflects the efforts of imparting correct knowledge to students so that they can disseminate this information to the general public and their own families. As this will lead to greater participation in vaccination drives by the public and will also lead to a reduction in vaccine hesitancy. On the other hand, there were some limitations in our study, as it was only done at a single institute and the sample wasn't representative of the larger population of medical students so the findings can't be generalised.

#### **Conclusion:**

This study was an attempt to find out COVID-19 vaccine-related knowledge and attitudes of medical students. The positive result of this study has proved the measures taken by the government and health care workers towards educating people about COVID-19 and its vaccination. Being a cross-sectional study it only assesses a particular point of time, many longitudinal studies will help gain meaningful insight into factors driving vaccine acceptance and their associations.

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