

Title of the article: Knowledge, Attitude and Practices toward COVID vaccine among medical students in Belagavi- A cross-sectional study

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Abstract:

Context/Background: COVID-19 is an emerging and rapidly evolving situation. Though several vaccines have been developed and brought into general use, vaccine hesitancy still exists among the public. Assessing the awareness toward COVID vaccine among medical students is important since their perception and practice will have a significant impact on their family members, friends and relatives.

Aims/Objectives: This study aimed to assess the knowledge, attitude and practices toward COVID vaccine among medical students.

Methodology: A cross-sectional study was carried out among the undergraduate medical students of a medical college in Belagavi between May - June 2021. A total of 802 students participated in the study. A framed questionnaire assessing their knowledge, attitude and practice toward COVID vaccine was distributed to each participant.

Results: Most of the study participants were female (51%), and most of them were in the first year of their course at the time of the study (23.6%). Majority of them received COVID-19 related information from healthcare workers (72.7%). 92.8% and 92.6% of the participants responded that the vaccines control COVID-19 and it was by developing antibodies, respectively. 70.5% said that the vaccines should not be given to immunocompromised individuals. 82.2% of the participants have taken 2 doses of COVID-19 vaccination. Almost all participants (98.8%) felt that even after vaccination other measures like social distancing, wearing mask and avoiding social gathering are to be followed.

Conclusions: The findings in the present study show good knowledge, positive attitude and practice towards COVID-19. It is necessary to keep on with further education and training strategies to get a better understanding and positive attitude toward the pandemic for all medical students.

Key-words: COVID-19, vaccine, medical students, knowledge, attitude, practice

Introduction:

COVID-19 has caused a huge impact worldwide: as of May, 2022 there have been 521,920,560 confirmed cases of COVID-19, including 6,274,323 deaths, worldwide, as received by WHO from national authorities. India is among the most severely affected countries, with a total of 5,24,323 deaths recorded.¹ India started COVID-19 vaccination on 16 January 2021 for the country's healthcare and frontline workers; later, in a phased manner, the vaccination extended to senior citizens and those above 45 years with co-morbidities; from 1 May 2021 onwards, all adults (aged >18 years) were eligible for the vaccine.²

Vaccination is a major leap in the field of public health; with vaccines, eradication and control of many infectious diseases, like smallpox, polio and rubella, have become possible.³ As of December 2020, there were over 200 vaccine candidates for COVID-19 being developed; of which, at least 52 candidate vaccines were in human trials; several others were currently in phase I/II.⁴ As of 20 May 2022, 10 COVID vaccines have been approved for use in India, and 14 vaccines were in clinical trials.⁵ Globally, 11.76 billion doses have been administered and 65.7% of the world population has received at least one dose of a COVID-19 vaccine.⁶ However, in low-income countries, only 15.9% have received at least one dose. In India, there has been 139.8 vaccinations per 100 people.¹

A survey conducted globally of potential COVID-19 vaccine acceptance showed that 48% of their study population were confused about the COVID-19 vaccinations and they remained unsure about whether they would get the vaccine.⁷ Likewise, a Chinese study has reported that only 54% of the participants were intended to have the COVID-19 vaccine. Usually, it takes years for the development and approval of a safe and effective vaccine. Considering the pandemic situation and the urgent need for a cure or prevention, the currently administered vaccines have been developed with a short period of testing and this might be the reason for such low numbers of people ready to accept the vaccines.⁹⁻¹¹ The safety of the vaccine has been brought into question leading to vaccine hesitancy, which is a potential barrier to effective implementation of vaccination programs.⁹

Therefore, this study was carried out among the medical undergraduate students to assess their knowledge, attitude and practice toward COVID-19 vaccine. Assessing the awareness toward COVID vaccine among medical students is important since their perception and practice will have a significant impact on their family members, friends and relatives.

Methodology:

Study design, target population and questionnaire

A cross-sectional study was carried out among the undergraduate medical students of a medical college in Belagavi between May-June 2021. A total of 802 out of 1000 students participated in the study, with 200 students in each year. A framed questionnaire was developed. It contained four sections, assessing the: Demographic details (5 questions), Knowledge (9 questions), Attitude (11 questions) and Practices (8 questions), with a total of 33 questions.

Data collection

Data collection was done over a period of 2 months from May to June 2021. Google Forms containing the questionnaire was distributed to each participant.

Statistical analysis

The collected data was entered into MS Excel and analysed using IBM SPSS Statistics software 25.0 for Windows and tabulated and presented in the form of frequency and percentages.

Results:

A cross-sectional study carried out among a total of 802 undergraduate medical students from a medical college in Belagavi between May-June 2021 gave the following results:

Of the 802 study participants, 51% were female and 49% male, and most were from urban residence (89.2%). The participants were included from first year of MBBS to post-MBBS internship; most

participants were from the first year MBBS at the time of the study (23.6%). 22.7% participants were infected with COVID-19 at least once (Table 1).

The information regarding the vaccines was from multiple sources; healthcare workers and TV/newspaper were the main sources of information. 92.8% of the participants thought that vaccines control COVID-19, and 92.6% said that it was through the development of antibodies. 85.8% were aware of at least one of the post-vaccination symptoms (fever, rash, body pains, etc.) 70.5% answered that the vaccines should not be given to immunocompromised persons (Table 2).

Myths and rumours were the main causes behind people not taking vaccines (83.7%). 97.8% said that they believe that pharmaceutical companies make a lot of money from COVID-19 vaccines. While 74.2% believe that vaccines have not been thoroughly tested, 91.5% believe that the vaccines are generally safe. 74.7% believe that vaccines are the most-effective measure in preventing COVID-19. While 66.3% said that they worry about the serious long-term effects of the vaccines, 92.8% said that vaccines should be compulsory (Table 3).

82.2% participants have taken 2 doses of the vaccines. For treatment of post-covid symptoms 58.2% said self-medication. Almost all of them followed other measures (like masks, social distancing) even after vaccination (98.8%). The participants said that they will create awareness by giving related information through social media (62.8%). While 63.8% said that they have not contributed toward COVID-19 relief, 78.2% said that if given a chance, they would participate in a study trial of COVID-19 vaccines (Table 4).

Discussion:

The COVID-19 pandemic has resulted in medical students being constantly updating themselves regarding various guidelines that get released almost every day. In this context, this study was conducted to highlight the level of knowledge, attitude, practice towards COVID-19, to suggest recommendations and to improve areas where lacking.

Majority of the participants received COVID-19 related information from healthcare workers (72.7%), which is closely followed by TV/ Newspaper (72.5%). Other studies have shown similar observation-around 80% of received information through TV and social media.¹² Since this study was done among medical students who are in contact with healthcare workers regularly, this might be the reason for this difference compared with general population who receive their information from mass media.

82.2% of the participants have taken 2 doses of COVID-19 vaccination. This is much higher than previous studies which reported positive attitude toward COVID-19 vaccines: India community-based survey (50%)¹³, Ethiopia among healthcare workers (50%)¹⁴, Wolaita Sodo, Ethiopia (24.2%)¹⁵, and France (25%)¹⁶, United states (68%)¹⁷, Pakistan (66.8%)¹⁸, and Jordan (61%)¹⁹. The wide ranges may be explained by the differences in study population and study time. The present study was among medical students while Wolayita Sodo and France were the general population of the country, study in Jordan had 3100 as sample size and more than half (53.8%) of the study participants were health professionals. This is in line with other study that concluded health professionals had good knowledge and better attitude towards COVID-19 vaccination compared to other populations.²⁰

Almost all of the participants (98.8%) followed other measures like social distancing, wearing mask and avoiding social gathering even after vaccination. This finding is in line with other studies.^{21,22} Most participants (83.7%) thought that rumors and myths related to the COVID-19 vaccines were the main reason behind people not taking the vaccines. Another study reports the same: misinformation evolved alongside facts about the disease, and this affected perceptions worldwide.²³

A limitation of this study is that it has been carried out among the undergraduates of only one medical college. A larger study including students of various medical colleges would produce results that are more generalizable. Also, of the 1000 students only 802 responded, as some students transferred-out, or completed their course elsewhere, and did not revert back.

Conclusion: The findings in the present study show good knowledge, positive attitude and practice towards COVID-19. Medical students are a vital link in the chain of healthcare workers in the fight against the pandemic. Therefore, it is a necessary to keep on with further education and training strategies to get a better understanding and positive attitude toward the pandemic for all medical students.

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TABLES

Table 1: Demographic details of the participants (n=802)

S.No	Variables	Frequency	Percentage
1	Age (in years)		
	18	157	19.57
	19	179	22.32

	20	153	19.08
	21	143	17.83
	>22	170	21.2
2	Gender		
	Male	393	49.003
	Female	409	50.997
3	Education		
	First year	190	23.69
	Second year	183	22.81
	Third year	142	18.95
	Final year	148	18.82
	Internship	129	16.08
4	Place of residence		
	Urban	716	89.28
	Rural	86	10.72
5	Have you been infected with COVID-19?		
	Yes	182	22.7
	No	620	77.3

Table 2: Knowledge (n=802)

S.No	Variable	Frequency	Percentage
1	Source of information(multiple choices)		
	TV/ News	581	72.5
	Social media	548	68.3
	Friends and relatives	449	56
	Health care workers	583	72.7
	Others	2	0.2
2	Awareness of vaccines available (multiple choices)		
	Sputnik	519	64.7
	Pfizer	241	30.1
	Covishield	796	99.2
	Covaxin	767	95.6
	Not sure	3	0.4
	All	2	0.2
3	Can vaccine control COVID-19?		
	Yes	744	92.8
	No	58	7.2
4	How vaccines prevent COVID-19?		
	Developing antibodies	742	92.6
	Injecting/ spreading infection	19	2.4
	By preventing entry into body	10	1.2

	By killing the virus	10	1.2
	None of the above	21	3.2
5	Awareness about the post-vaccination symptoms		
	Yes	688	85.8
	No	114	14.2
6	To whom vaccine should not be given? (multiple choices)		
	Person with hypertension/ diabetes	114	14.3
	Immunocompromised persons	565	70.5
	Recent history of surgery	319	39.8
	Pregnant women	319	39.8
	Lactating mothers	204	25.5
	Others	2	0.2
7	Can people already infected with COVID-19 take the vaccine?		
	Yes	515	64.2
	No	287	35.8
8	Is COVID-19 vaccine available at free of cost?		
	Yes	756	94.2
	No	43	5.4
	Not sure	3	0.4
9	COVID-19 vaccine is available through which sources?		
	Only private	3	0.4
	Only government	571	71.2
	Both private and government	228	28.4

Table 3: Attitude (n=802)

S.No.	Variables	Frequency	Percentage
1	Reasons behind people not taking the vaccine? (multiple choices)		
	Fear of side effects	572	71.3
	Unsure of efficiency of vaccine	559	69.7
	Myths and rumors	671	83.7
	Medical issues/ problems	198	24.7
	Lack of access/ information	309	38.6
2	Do you agree there are other ways which are more effective in preventing COVID-19 than vaccination?		
	Strongly agree	2	0.2
	Agree	4	0.5
	Uncertain	51	6.3
	Disagree	150	18.3
	Strongly disagree	595	74.7
3	I believe that authorities promote COVID-19 vaccine for political and financial gain, not for people's health		
	Yes	71	8.8

	No	731	91.2
4	I believe that COVID-19 is not a real disease		
	Yes	15	1.9
	No	787	98.1
5	I believe that pharmaceutical companies make a lot of money from COVID-19 vaccines?		
	Yes	784	97.8
	No	18	2.2
6	I believe that COVID-19 is a new disease and vaccines have not been thoroughly tested		
	Yes	595	74.2
	No	207	25.8
7	I believe COVID-19 vaccines are safe		
	Yes	734	91.5
	No	68	8.5
8	I worry about serious unknown long-term effects of the COVID-19 vaccine in the future		
	Yes	532	66.3
	No	270	33.7
9	I believe natural immunity lasts longer than vaccination		
	Yes	145	18.1
	No	657	81.9
10	I believe natural exposure to germs and viruses gives safest protection		
	Yes	660	82.2
	No	142	17.8
11	Do you agree that vaccines should be compulsory?		
	Yes	744	92.8
	No	58	7.2

Table 4: Practice (n=802)

S. No.	Variables	Frequency	Percentage
1	Have you taken the vaccine?		
	2 doses	659	82.2
	1 dose	121	15.1
	None	22	2.7
2	How to deal with post-vaccination symptoms?		
	Self-medication	466	58.2
	Approach health care workers	303	37.8
	Approach friends and relatives	17	2.2
	Helpline number	16	2.2

3	Do you follow other measures (like masks, social distancing) even after vaccination?		
	Yes	792	98.8
	No	10	1.2
4	Would you pay to get the COVID-19 vaccine?		
	Yes	649	80.9
	No	153	19.1
5	If given a chance, would you agree to participate in a study trial of vaccination against COVID-19?		
	Yes	627	78.2
	No	175	21.8
6a	Have you taken measures to spread awareness about the vaccine?		
	Yes	578	72.1
	No	224	27.9
6b	If yes, what measures have you taken? (n=578)		
	Phone call	39	6.8
	Social media	363	62.8
	Video calls	13	2.2
	In person	163	28.2
7	Have you donated/ contributed towards COVID-19 relief?		
	Yes	290	36.2
	No	512	63.8