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Original Research Article

## Knowledge, attitude, and practices among clinically exposed medical students and interns towards COVID-19 vaccine in a tertiary care hospital, Kanyakumari district: a cross-sectional survey

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### ABSTRACT

**Background:** Several COVID-19 vaccines have been approved against coronavirus disease and its distribution to different countries. The study is mainly done to determine the knowledge, attitude, and practice among clinically exposed medical students and interns toward COVID-19 vaccine.

**Methods:** A cross-sectional study was conducted from June 2022 to August 2022 in a tertiary care hospital. Using questionnaires, the knowledge, attitude, and practice among medical students and interns were assessed, and they were then analysed and categorised accordingly. Then the students were given awareness regarding COVID-19 vaccine.

**Results:** The questionnaires were distributed among students and interns, and responses were collected. A total number of participants (n=300), out of which the majority of responders were second-year students 89 (29.6%). Overall, 39.75% had high-grade knowledge, 43.5% had a positive attitude and 37.5% had good practice regarding the COVID-19 vaccine. The results show that 81.2% of interns had high-grade knowledge, 76.6% possess a positive attitude and 71.9% of good practice and preventive measures towards COVID-19 vaccine.

**Conclusions:** Our study concludes that there were certain gaps in knowledge, attitude, and practice among second and third-year medical students when compared with final-year medical students and interns.

**Keywords:** COVID-19 vaccine, Medical students, Interns

### INTRODUCTION

Globally, World Health Organization (WHO) declared a pandemic on 11 March 2020, novel coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Due to the rapid spread of COVID-19 disease, an effective vaccine is urgently needed to protect humans from serious diseases.<sup>1</sup> COVID-19 diseases were more affected in patients with severe heart illness, airway disease, and uncontrolled diabetes. Diseases are transmitted through the nasal route that comes in close contact.<sup>2</sup> Several COVID-19 vaccine developments was enrolled in different countries; vaccines

manufactured are Pfizer/BioNTech, Moderna, Oxford-AstraZeneca, Johnson and Johnson, Inovio, Sputnik V, Epivac corona, Sinovac, and Covaxin. Most of the vaccines are approved by the Food and Drug Administration (FDA), emergency use authorization.<sup>3</sup> The Pfizer vaccine was developed by German company BioNTech and US pharmaceutical giant Pfizer. The two examples of mRNA are BNT162b1 and BNT162b2. The Astra Zeneca vaccine was designed by the university of Oxford in the UK and Astra Zeneca in Cambridge. The Gamaleya National Center of epidemiology and microbiology developed sputnix Russian vaccines. Moderna vaccines use mRNA to express the protein. This

was developed by the company US Moderna. Pfizer vaccine is stored at  $-80^{\circ}\text{C}$ , whereas modern vaccine can be stored in the refrigerator for short period, and for a long period it has to store at  $-20^{\circ}\text{C}$ .<sup>4</sup>

A major role of these vaccines is highly effective against the spread of deadly viruses. Though a lot of vaccines are available and have shown effectiveness towards COVID-19, still vaccine hesitancy, delay in acceptance, and vaccine refusal were much seen in the public, but limited achieving herd immunity against highly transmitted diseases.<sup>5</sup> WHO described vaccine hesitancy as one of the top ten global health threats. This can be improved by increasing the level of public education and social media. In addition, a vaccine awareness campaign is done against the turbulence of anti-vaccination sentiments who are not willing to get vaccinated.<sup>6</sup>

For any successful program, the most important criteria are vaccine acceptability. But many anti-vaccine movements and false beliefs among people are not getting vaccinated especially those with low socioeconomic status. COVID-19 vaccine acceptance depends on a socio-demographic character like clinically exposed medical students. Knowledge, attitude, and practices are important measures for health promotion to achieve the prevention of diseases.<sup>7</sup>

Although much research has been conducted on the intervention of various diseases only limited studies among medical students on COVID-19 vaccine surveys. Therefore, this study is aimed to assess knowledge, attitude, and practice toward COVID-19 vaccine among clinically exposed medical students and interns in a tertiary care hospital. Data were presented as frequency and percentage.

## METHODS

This was a cross-sectional study that was conducted by the department of pharmacology, Sree Mookambika Institute of Medical Sciences (SMIMS), Kulasekharam for the period of three months from 06 June to 04 August 2022. The questionnaire was designed to achieve good knowledge, positive attitude, and good practices among clinically exposed medical students toward a COVID-19 vaccine. The questionnaire consists of 15 questions that were divided into three sections, 7 to test knowledge, 4 to test attitude, and 4 to test practice about COVID-19 vaccine among medical students and interns. The open and closed-ended questions were asked on knowledge, agree and disagree questions on COVID-19 vaccine were included on attitude and yes or no questions on practice. Each correct answer was given as one point. The highest score indicates a greater level of knowledge and positive attitude.

Sample size was calculated using the prevalence of 59.21% was willing to get vaccinated in this study done by Kumari et al.<sup>8</sup>

## Inclusion criteria

Clinical exposed medical student, interns of SMIMS, and interns who were willing to participate in the study were included in the study.

## Exclusion criteria

Interns not willing to give informed content, and first-year MBBS students were excluded.

The study was done after getting approval from institute ethics committee (SMIMS/IHEC No: 1/Protocol no: 26/2022). Participants were included as per inclusion and exclusion criteria.

A total of 300 clinically exposed medical students and interns participated in this study.

All data were collected using a standardised electronic questionnaire. Questions include demographic data, knowledge, attitude, and practices toward a COVID-19 vaccine. Then the data were analysed and categorised according.

## RESULTS

A total of 300 participants were included in the study. The majority of the respondents were females 185 (61.66%) and males 115 (38.33%). The active participants in the study second years 89 (29.66%), third years 76 (25.33%), final years 71 (23.66%), and interns 64 (21.33%) (Table 1).

**Table 1: Demographic details of clinically exposed medical students and interns.**

Variables	Number (n=300)	Percentage (%)
<b>Gender wise distribution</b>		
Male	115	38.33
Female	185	61.66
<b>Academic year wise distribution</b>		
2nd year MBBS	89	29.66
3rd year MBBS	76	25.33
Final year MBBS	71	23.66
Interns	64	21.33

High-grade knowledge regarding COVID-19 vaccination was found to be highest among the interns followed by average knowledge among second years and low-grade knowledge among third year medical undergraduates.

Positive attitude towards the COVID-19 vaccination tends to be higher among interns whereas the 2<sup>nd</sup> year medical undergraduates turned much towards the negative attitude.

Higher percentage of good practice is seen among interns comparing the 2<sup>nd</sup>, 3<sup>rd</sup> and final year medical students.

**Table 2: Knowledge, attitude and practice on COVID-19 vaccine.**

Variables	2nd years (n=89) %	3rd years (n=76) %	Final years (n=71) %	Interns (n=64) %
<b>Knowledge</b>				
High grade	32 (36)	31 (40.8)	44 (61.9)	52 (81.2)
Average	53 (59.6)	42 (55.3)	26 (36.6)	12 (18.7)
Low grade	4 (4.5)	3 (3.9)	1 (1.40)	-
<b>Attitude</b>				
Positive	38 (42.7)	41 (53.9)	46 (64.7)	49 (76.6)
Negative	51 (57.3)	35 (46.1)	25 (35.2)	15 (23.4)
<b>Practice</b>				
Good	28 (31.5)	31 (40.8)	45 (63.4)	46 (71.9)
Poor	61 (68.5)	45 (59.2)	26 (36.6)	18 (28.1)

## DISCUSSION

This study was conducted to determine the degree of knowledge on COVID-19 vaccination that had played an important role in creating awareness among the public. In the present study, interns had high-grade knowledge, positive attitude, and good practices on COVID-19 vaccine. This knowledge will help them in the future to encourage their patients to get vaccinated. Sengupta et al did a similar study and mainly highlighted the attitude on COVID-19 vaccine, which will indirectly impact knowledge and practice.<sup>6</sup> In this study females (61.66%) were involved a higher percentage which was similar to the study done by Bhartiya et al.<sup>9</sup> In the current study maximum involvement among students, second years MBBS 89 (29.6%) which is not similar to the study done by Vanathy et al showed third-year students 247 (61.8%).<sup>10</sup> The second-year students show high-grade knowledge 32 (36%) and they also had 42.7% of positive attitude and only 31.5% good practice. This student needs more awareness regarding COVID-19 vaccine. Adane et al performed a study in which good knowledge was found to be health care workers 62.5%, positive attitude about COVID-19 vaccine 52.3%, and good perception 60.5%.<sup>11</sup> In the current study, final-year MBBS students had 1.40% of low-grade knowledge, with this they can improve vaccine acceptance among friends and family numbers. In a study done by Mayan et al, medical students relatively had a high grade of knowledge in addition to a positive attitude, this will increase the willingness to receive the vaccine personally.<sup>12</sup> Most of the final-year students had a 64.7% positive attitude, which leads to good practice. Elhadi et al did a study and found an adequate level of knowledge, attitude, and acceptance towards COVID-19 vaccine.<sup>13</sup> The acceptance of vaccines among medical students was comparably high when compared with the other population groups whereas, the students of a study conducted by Jain et al moreover, three-fourths of medical students stated that the vaccination should be covered for every individual.<sup>14</sup>

The current scenario concerning knowledge has been updated by the majority of medical students. In addition, students with higher clinical exposure have been seen to follow good practices and had higher good practice

levels.<sup>15</sup> This finding was similar to our study finding as practices and clinical exposure plays an essential role in learning and gaining knowledge. Hence, it is essential to develop programs and modules which can be accessible to medical students for improving the overall knowledge and perception towards the COVID-19 vaccination.

### Limitations

The awareness of medical student who not exposed to COVID-19 was not taken.

## CONCLUSION

In this study, interns seem to be with high-grade knowledge, positive attitude, and good practice towards COVID-19 vaccination comparing the 2<sup>nd</sup> year, 3<sup>rd</sup> year and final year medicos. This conclusion strongly insists on effective need for tailored health education programs regarding COVID-19 vaccination, which can reduce the gap in knowledge, attitude, and practice towards COVID-19 vaccination among the medical undergraduates.

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## REFERENCES

1. Kamacooko O, Kitonsa J, Bahemuka UM, Kibengo FM, Wajja A, Basajja V, et al. Knowledge, Attitudes, and practices regarding COVID-19 among healthcare workers in Uganda: A cross-sectional survey. *Int J Environ Res Public Health.* 2021;30;18(13):7004.
2. Al-Zalfawi SM, Rabbani SI, Asdaq SM, Alamri AS, Alsanie WF, Alhomrani M, et al. Public knowledge, attitude, and perception towards COVID-19 vaccination in Saudi Arabia. *Int J Env Res Public Health.* 2021;18(19):10081.
3. Issanov A, Akhmetzhanova Z, Riethmacher D, Aljofan M. Knowledge, attitude, and practice toward COVID-19 vaccination in Kazakhstan: a cross-sectional study. *Hum Vaccin Immunother.* 2021;17(10):3394-400.

4. Prüb BM. Current state of the first COVID-19 vaccines. *Vaccines.* 2021;9(1):30.
5. Lee M, Kang BA, You M. Knowledge, attitudes, and practices (KAP) toward COVID-19: a cross-sectional study in South Korea. *BMC Public Health.* 2021;21(1):295.
6. Sengupta M, Dutta S, Roy A, Chakrabarti S, Mukhopadhyay I. Knowledge, attitude and practice survey towards COVID-19 vaccination: A mediation analysis. *Int J Health Planning Management.* 2022;37(4):2063-80.
7. Al-Marshoudi S, Al-Balushi H, Al-Wahaibi A, Al-Khalili S, Al-Maani A, Al-Farsi N, et al. Knowledge, Attitudes, and Practices (KAP) toward the COVID-19 vaccine in Oman: a pre-campaign cross-sectional study. *Vaccines.* 2021;9(6):602.
8. Kumari A, Ranjan P, Chopra S, Kaur D, Upadhyay AD, Kaur T, et al. Development and validation of a questionnaire to assess knowledge, attitude, practices, and concerns regarding COVID-19 vaccination among the general population. *Diabetes Metab Syndrome.* 2021;15(3):919-25.
9. Bhartiya S, Kumar N, Singh T, Murugan S, Rajavel S, Wadhvani M. Knowledge, attitude and practice towards COVID-19 vaccination acceptance in West India. *Int J Community Med Public Health.* 2021;8(3):1170-6.
10. Vanathy K, Priyada R, Shini R, Bhosale NK, Sreenivasan S, Easow JM. Knowledge, Attitude and Practice towards COVID-19 Vaccination among Medical Students in a Tertiary Care Hospital of Southern India. *J Clin Diagnost Res.* 2022;16(9).
11. Adane M, Ademas A, Kloos H. Knowledge, attitudes, and perceptions of COVID-19 vaccine and refusal to receive COVID-19 vaccine among healthcare workers in northeastern Ethiopia. *BMC Public Health.* 2022;22(1):1-4.
12. Mayan D, Nguyen K, Keisler B. National attitudes of medical students towards mandating the COVID-19 vaccine and its association with knowledge of the vaccine. *Plos One.* 2021;16(12):e0260898.
13. Elhadi M, Alsoufi A, Alhadi A, Hmeida A, Alshareea E, Dokali M, et al. Knowledge, attitude, and acceptance of healthcare workers and the public regarding the COVID-19 vaccine: a cross-sectional study. *BMC Public Health.* 2021;21(1):1-21.
14. Jain J, Saurabh S, Kumar P, Verma MK, Goel AD, Gupta MK, Bhardwaj P, Raghav PR. COVID-19 vaccine hesitancy among medical students in India. *Epidemiol Infect.* 2021;149:e132.
15. Khasawneh AI, Humeidan AA, Alsulaiman JW, Bloukh S, Ramadan M, Al-Shatanawi TN, et al. Medical Students and COVID-19: Knowledge, Attitudes, and Precautionary Measures. A Descriptive Study From Jordan. *Front Public Health.* 2020;8:253.

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