

## **A Study to Evaluate the Awareness and Perceptions Regarding Covid-19 Prevention and Management Amongst Undergraduate Medical Students at a Tertiary Care Hospital of North India**

**Sangeeta Bhanwra, Rajiv Kumar, Sonia Shinde Mahajan**

**Department of Pharmacology, Government Medical College and Hospital, Chandigarh, India-160030**

---

**Received: 05-01-2022 / Revised: 15-01-2022 / Accepted: 20-02-2022**

**Corresponding author: Dr. Sonia Shinde Mahajan**

**Conflict of interest: Nil**

---

### **Abstract**

**Introduction:** The coronavirus pandemic had overwhelmed the healthcare sector and a need was felt to utilize the services of medical undergraduate students. For this, it was imperative that they have the right knowledge and perceptions about it. Therefore, a study was planned to assess the level of awareness and perception regarding the prevention and management of Covid-19 infection among medical undergraduates.

**Methods:** A cross-sectional, questionnaire-based study was conducted over a period of two months in a tertiary care hospital of North India. A written and informed consent was taken. The google form- based questionnaire was distributed to MBBS students via online modes like email and WhatsApp for recording the responses. The categorical data were expressed as frequency, percentages, mean and standard deviation. Batchwise comparison was done using ANOVA. A p-value of <0.05 was considered statistically significant.

**Results:** A total of 381 (76.2%) medical undergraduates participated in the study. They had an average knowledge score of 69.8%. The participants had a favorable attitude and majority of the students (96.2%) agreed that health education and campaigns have a pivotal role in preventing Covid -19. Two-third of students felt that the general public is not practicing Covid appropriate behavior adequately. On inter batch comparison, M.B.B.S second professional (2019 batch) students had significantly higher knowledge (p <0.001) and attitude (p <0.001) scores in comparison to the other batches.

**Conclusion:** The undergraduate medical students were considerably aware of various aspects of Covid-19 infection and had a positive attitude towards the state of affairs as regards to the control and management of the pandemic in the country, with some scope for improvement.

**Keywords:** Covid-19, MBBS students, knowledge, awareness, attitude, perception.

---

This is an Open Access article that uses a fund-ing model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

---

## Introduction

The novel coronavirus (Covid-19) disease is a newly discovered highly infectious disease caused by severe acute respiratory syndrome, coronavirus 2 (SARS-CoV-2). It has been a grave threat to public health globally. It was declared as a Public Health Emergency of International Concern by the World Health Organization (WHO) on 30<sup>th</sup> January 2020[1].

The first case of coronavirus was presented in Kerala, India on 27<sup>th</sup> January 2020[2]. The total toll of confirmed cases was 3,47,33,194 and that of deaths was 4,77,158 as of 18<sup>th</sup> December 2021[3]. At a point of time during this pandemic, the healthcare sector became overwhelmed, and there developed tremendous physical and mental pressure on the healthcare workers, especially the doctors. To cope up with the rising number of cases, the government recruited some retired senior doctors and requested junior doctors to volunteer as much as possible.

During that time, a need was felt to utilize the services of medical undergraduate students. Medical students of the entire country can be considered as the reserve force of healthcare workers, if the need arises. They can be of help, not only for the patient care but also for disseminating the right medical information to the public, addressing their grievances, and allaying their anxiety. Moreover, by having adequate knowledge and the right attitude they can prevent themselves from getting infected. For this, it is imperative that they have the right knowledge and perceptions about the covid-19 infection. To get an insight into what type of further sensitization and training needs to be imparted to them before their services can be utilized the present study was conceived.

The objective of the study was to assess the level of awareness and perception regarding the prevention and management of Covid-19 infection among medical undergraduates.

## Materials and Methods:

A cross-sectional, questionnaire-based study was conducted in the undergraduate medical students of a tertiary care hospital in North India. Ethical approval was taken from the Institutional Ethics Committee. The study was conducted over two months period, from November to December 2021. Written informed consent was taken from the students willing to participate.

A self-designed, semi-structured, online questionnaire was prepared on the Google Forms platform after referring the related studies, CDC and WHO[4,5,6,7]. The questionnaire was validated by two experts involved in the management of Covid 19. It comprised of three sections: the first section included all the demographic details of the students. The second section is comprised of thirteen knowledge questions about the transmission, treatment, covid appropriate behavior and prevention of the Covid-19 infection. The last section is comprised of ten questions assessing the attitude and perceptions of the students regarding vaccination, psychosocial support and health education campaigns. The knowledge questions were multiple-choice ones in which one correct response had to be selected. Each correct response was awarded one point. The questions evaluating the attitude of the participants had to be answered on a five-point Likert scale: strongly agree, agree, can't say, disagree and strongly disagree. The responses were categorized and clubbed as follows: agree (agree and strongly agree), can't say, disagree (disagree and strongly disagree), as done in a previous study[8]. Each favorable response was allocated one point.

From a total of 500 students, all the participants who consented were divided into four groups according to their M.B.B.S. batches and the questionnaire was distributed to them via online modes like email and WhatsApp for recording the responses. The

responses of M.B.B.S. students who submitted a completed questionnaire were included in the study.

The categorical data were expressed as frequency, percentages, mean and standard deviation. Batchwise comparison was done using ANOVA. A p-value of <0.05 was considered statistically significant.

### Results:

A total of 381 (76.2%) medical undergraduates participated in the study. Out of these, 86 were from the first professional (batch 2020), 125 were from the second professional (batch 2019), 79 were from the third professional (batch 2018) and 91 were from the final professional (batch 2017). The age of the study participants was from 18-25 years. The students belonged to Chandigarh, Punjab and Haryana predominantly. 36 percent of the students had at least one family member who was a healthcare worker.

The majority of students were aware of Covid appropriate behaviors like social distancing, wearing face covers, hand hygiene, avoiding unnecessary travel and maintaining respiratory hygiene. However, 32% of students did not find it important to not discriminate against Covid-19 patients. Some of the students were not sure about the necessity for seeking psychosocial support for anxiety or stress by the patients.

The study participants had an average knowledge score of 69.8%. Almost all the students were knowledgeable of the fact that Covid patients can transmit the virus even in the absence of fever (94.7%). The majority of students were aware that most of the patients can be treated at home with minimal medicines (88.5%) and that the recovered patients too need to be vaccinated (89.6%). The students also had good knowledge about various medicines that can be used to treat Covid-19 patients (83.4%) however, only 44.7% percent of students knew about the approval of Remdesivir in hospitalized patients with

Covid-19 infection. 68.9% of the students were aware of the fact that the Covid-19 vaccine is an inactivated vaccine, while only 50% knew that the protective antibodies develop only after two weeks of the second dose of vaccine. Additionally, 52.6% of students didn't know that the rapid antigen test is not a highly sensitive test for the diagnosis of Covid-19 infection and also, about the recommended time for using alcohol-based hand rub (53.3%). The awareness of the study participants regarding Covid-19 prevention and management has been stated in Table 1.

The results of the study depicted that majority of the students (96.2%) agreed that health education and campaigns have a pivotal role in preventing Covid -19. They also comprehended that healthcare workers should provide psychosocial support to the affected patients and their families (95.2%). Also, most of them perceived it is important to notify the positive cases to the authorities (93.6%). 92.9% of the students were in agreement with the fact that there should not be any discrimination against the frontline workers. 83.2% of students recognized that, in the present scenario, vaccination is an effective means to prevent Covid-19 infection. Further, 82.4% of students acknowledged that social gathering has no role in promoting herd immunity and should be avoided. Also, 79.3 % of students perceived that there is no requirement for starting intensive therapy from the very beginning. Two-third of students felt that the current Covid-19 scenario is undoubtedly serious and that the general public is not practicing Covid appropriate behavior adequately. Most of the students strongly believed that the Covid-19 pandemic had affected their academic activities markedly (Table 2).

The common sources of information about Covid-19 have been depicted in Figure 1.

The study participants were asked about their willingness to volunteer for Covid-19 duties, wherein the junior-most batch (2020) i.e.,

70.6% of the first prof students were in agreement for the same and it was the maximum of all the batches (Figure 2).

Batchwise comparison of knowledge and attitude scores was done. In the inter batch comparison, the difference in knowledge scores was statistically significant with the 2019 batch having the highest knowledge score ( $p < 0.001$ ) (Table 3). Similar to knowledge scores, the 2019 batch showed significantly favorable attitude scores in comparison to the other batches ( $p < 0.001$ ) (Table 3).

### Discussion:

In the present study, the majority of the undergraduate medical students voluntarily participated and they were assessed on their knowledge, awareness, attitude and perceptions about Covid 19. Our study participants had considerable knowledge and a favorable attitude regarding most aspects of covid 19 infection.

Their average knowledge score was about 70%, which was less in comparison to some studies and there was still scope for improvement in certain areas[9,10]. In the present study, the majority of the students were aware that the patients infected with the corona virus can be treated at home with minimal medicines and this was in line with a few other studies[9,10]. They were also knowledgeable about the medicines available for Covid-19 treatment in our study.

The students in our study were well informed about Covid-19 vaccines including the type of vaccine, the time taken to develop protective antibodies and the need for vaccination in a recovered patient. Most of the students believed that vaccination was an effective means to prevent Covid-19 infection and similar results were obtained in another study, where about 75% of students in medical schools in Jordan agreed with the same[11].

The most important source of information regarding Covid-19 for the undergraduate

students in our study was social media followed by websites and the internet. These findings were comparable to other studies[11,12]. We observed that there is a need to sensitize them about using scientific databases like PubMed for information seeking.

A majority (86.8%) of the students believed that their academic activities were affected due to the pandemic in our study while in another study only 45 percent of undergraduate students reported the same[14]. In this context, it is suggested that the availability of good e-learning platforms along with ample training of faculty and staff should be ensured in the medical institutions to alleviate the impact of the pandemic on academics.

In the present study, 71 percent of students were in favor of their engagement and utilization of their services in the management of Covid-19, if the need arises. A similar perspective of students was observed in other studies conducted across various medical colleges[15,16].

Students had adequate knowledge about the transmission of infection via respiratory droplets and by touching contaminated surfaces as reported by various studies[11,12,13,14]. Our results also corroborated with those of these studies.

In our study, the mean knowledge and attitude scores of the 2019 batch were significantly higher ( $p < 0.001$  for both scores) than those of other batches. This could be attributed to the fact that this batch was being taught the pandemic module as a part of their Competency Based Medical Education (CBME) curriculum. Besides, the number of study participants was highest from this batch. These findings differed from those of another study in which the interns and final year students had significantly higher scores[10]. The reasons cited by the authors for this disparity were a greater desire to acquire knowledge and also better clinical exposure of these students.

Our study had certain limitations despite our best efforts. Firstly, it lacked non-randomized sampling that could have led to self-selection bias. In addition, as the responses were self-reported, there was a possibility of recall bias. Moreover, the study was limited to one institute, so the findings cannot be applied to MBBS students of the entire country.

In the present study, the authors observed that though the undergraduate medical students of their medical college were considerably knowledgeable and aware of various aspects

related to the coronavirus infection, prevention and treatment, there was scope for improvement. They had a positive attitude about the state of affairs in the country regarding Covid-19. However, they felt that the pandemic had markedly affected their academic activities. Therefore, the authors felt that measures should be taken to keep the students updated about the disease utilizing seminars and workshops to make them better equipped in rendering their services during such crises.

**Table 1: Awareness of the study participants regarding Covid-19 prevention and management**

S. No.	Knowledge/ Awareness	Total responses (n)	Correct responses	Percentage of correct responses
1	Type of Covid vaccine	374	258	68.9
2	Rapid Antigen Test is highly sensitive	378	199	52.6
3	Time to develop protective antibodies	372	188	50.5
4	Modes of spread of Covid-19 virus	377	213	68.1
5	Recommended time for using alcohol-based hand rub	375	200	53.3
6	Recovery rate of Covid-19	376	299	79.5
7	Mask offering maximum protection	379	287	75.7
8	Transmission of virus	379	359	94.7
9	Can be treated with minimal medicines	375	332	88.5
10	Vaccination requirement in recovered patients	375	336	89.6
11	Recommended treatment for Covid-19	374	312	83.4
12	Approval status of Remdesivir	374	167	44.7
	Average	375.66	262.5	69.8

**Table 2: Attitude of the study participants towards Covid-19 infection and management**

Q. No.	Attitude	Agree N* (%)	Disagree N* (%)	Can't Say N* (%)
1	Current situation of Covid-19 in India not serious	74 (20.2)	225 (61.4)	80 (21.8)
2	Covid appropriate behavior by general public	50 (13.2)	268 (71.8)	54 (14.4)
3	Vaccination as an effective means to prevent Covid-19	313 (83.2)	14 (3.7)	48 (12.7)
4	Notification of positive cases to health authorities	351 (93.6)	9 (2.4)	14 (3.7)
5	Importance of health education campaigns	361 (96.2)	5 (1.3)	8 (2.1)
6	Psychosocial support to affected patients	357 (95.2)	6 (1.6)	11 (2.9)
7	No discrimination against infected patients	345 (92.9)	8 (2.1)	17 (4.5)
8	Social gatherings promote herd immunity	40 (10.6)	309 (82.4)	36 (9.6)
9	Requirement of an intensive therapy from the very beginning	37 (9.9)	296 (79.3)	40 (10.7)
10	Affected academic activities	325 (86.8)	27 (7.2)	24 (6.4)

\* The total number of students who responded (n) varied question wise

**Table 3: Batchwise comparison of the knowledge and attitude scores**

	Batch	Mean	Std. Deviation	P Value*
Knowledge Score	2017	59.67	21.8	< 0.001
	2018	57.75	14.20	
	2019	87.5	19.67	
	2020	57.58	13.70	
Attitude Score	2017	77.3	9.14	< 0.001
	2018	65.3	8.34	
	2019	102.9	13.57	
	2020	69.5	12.99	

\*ANOVA test

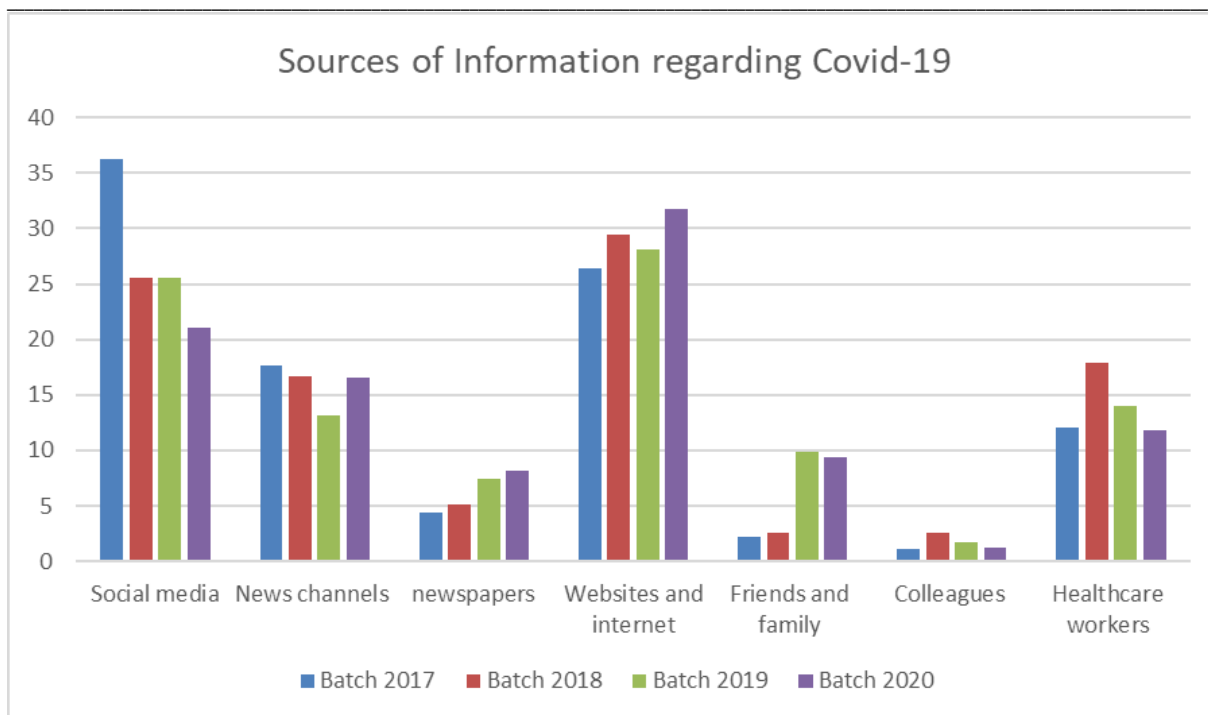


Figure 1: Sources of information regarding Covid-19 for the study participants

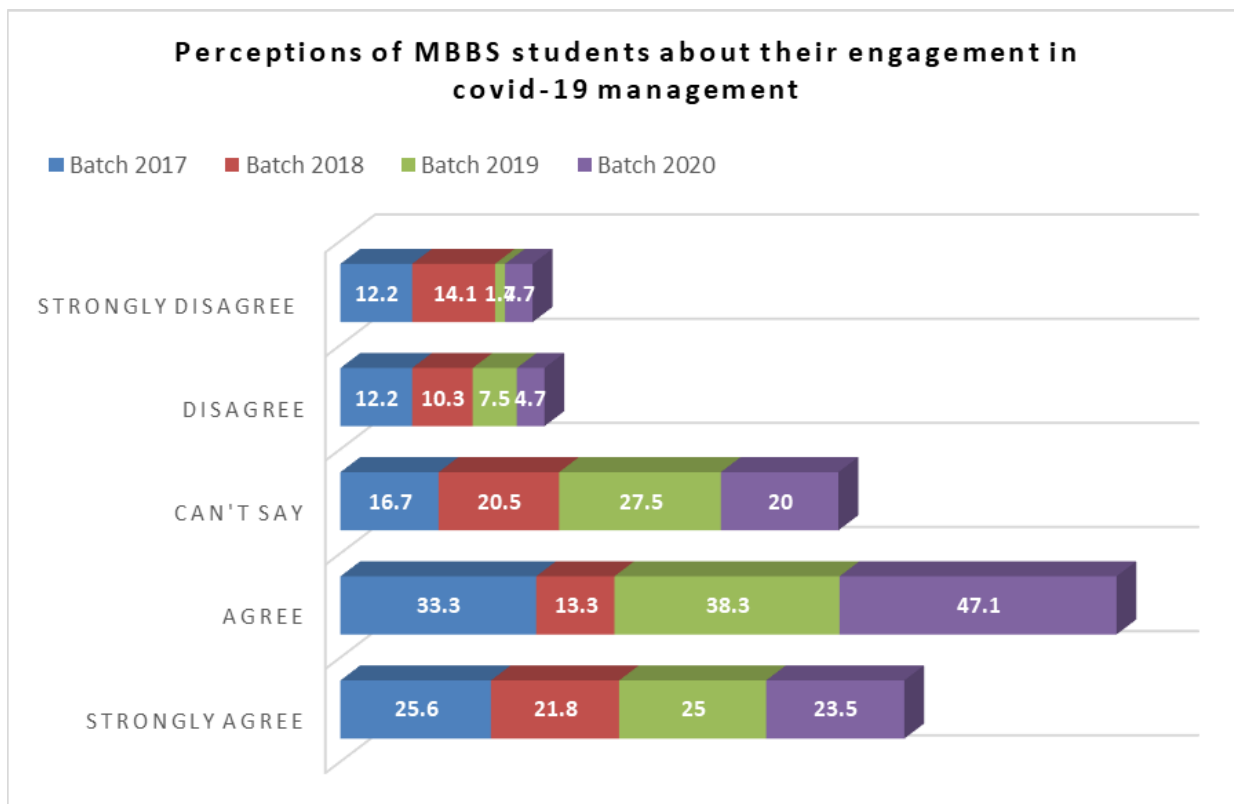


Figure 2: Perceptions of MBBS students about their engagement in Covid-19 management.

**Reference:**

1. Institute of Medicine (US) Forum on Microbial Threats. Ensuring an Infectious Disease Workforce: Education and Training Needs for the 21st Century: Workshop Summary. Knobler SL, Burroughs T, Mahmoud A, Lemon SM, editors. Washington (DC): National Academies Press (US); 2006. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/21850783>. Accessed 13th January 2022.
2. Andrews MA, Areekal B, Rajesh KR, Krishnan J, Suryakala R, Krishnan B, et al, Santhosh PV. First confirmed case of COVID-19 infection in India: A case report. *Indian J Med Res* 2020;151(5):490-492.
3. Available at <https://www.mygov.in/covid-19/>. Accessed 18th Dec 2021.
4. Bhagavathula AS, Aldhaleei WA, Rahmani J, Mahabadi MA, Bandari DK. Knowledge and Perceptions of COVID-19 Among Health Care Workers: Cross-Sectional Study. *JMIR Public Health Surveill.* 2020 Apr 30;6(2):e19160.
5. Zhong BL, Luo W, Li HM, Zhang Q-Q, Liu XG, Li WT, et al. Knowledge, attitudes, and practices towards COVID-19 among Chinese residents during the rapid rise period of the COVID-19 outbreak: a quick online cross-sectional survey. *Int J Biol Sci* 2020; 16(10):1745–1752.
6. World Health Organization. Infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected [Internet]. Available from: [https://www.who.int/publications-detail/infection-prevention-and-control-duringhealth-care-when-novel-coronavirus-\(ncov\)-infection-is-suspected-20200125](https://www.who.int/publications-detail/infection-prevention-and-control-duringhealth-care-when-novel-coronavirus-(ncov)-infection-is-suspected-20200125). Accessed 13th January 2022.
7. Centers for Disease Control and Prevention. Emergency Preparedness and Response. Update and Interim Guidance on Outbreak of 2019 Novel Coronavirus (2019-nCoV). Available from: <https://emergency.cdc.gov/han/han00427.asp>. Accessed 13th January 2022.
8. Ssebuufu R, Sikakulya FK, Mambo SB, Wasingya L, Nganza SK, Ibrahim B, et al. Knowledge, Attitude, and Self-Reported Practice Toward Measures for Prevention of the Spread of COVID-19 Among Ugandans: A Nationwide Online Cross-Sectional Survey. *Front Public Health* 2020; 8:618731.
9. Peng Y, Pei C, Zheng Y, Wang J, Zhang K, Zheng Z, et al. A cross-sectional survey of knowledge, attitude and practice associated with COVID-19 among undergraduate students in China. *BMC Public Health* 2020;20(1):1292.
10. Joshi R, Takhar R, Jain S. Knowledge, attitude and practices associated with COVID-19 among undergraduate medical students of Rajasthan. *Int J Community Med Public Health* 202;18(2):712-716.
11. 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.
12. Gahlot A, Singh SP, Verma V, Singh M. A study of knowledge, attitude and practices regarding SARS COV-2 infection and its control amongst medical students of Rama Medical College Kanpur (U.P). *Indian J Forensic Community Med* 2020;7(3):134-139.
13. Aynalem YA, Akalu TY, Gebresellassie Gebregiorgis B, Sharew NT, Assefa HK, Shiferaw WS. Assessment of undergraduate student knowledge, attitude, and practices towards COVID- 19 in Debre Berhan University, Ethiopia. *PLoS ONE* 2020; 16(5): e0250444.
14. Alrasheedy AA, Abdulsalim S, Farooqui M, Alsaali S, Godman B. Knowledge, Attitude and Practice About Coronavirus Disease (COVID-19) Pandemic and Its



- 
- Psychological Impact on Students and Their Studies: A Cross-Sectional Study Among Pharmacy Students in Saudi Arabia. *Risk Manag Healthc Policy* 2021;22(14):729-741.
15. Tempiski P, Arantes-Costa FM, Kobayasi R, Siqueira MAM, Torsani MB, Amaro BQRC, et al. Medical students' perceptions and motivations during the COVID-19 pandemic. *PLoS One* 2021;16(3):e0248627.
16. Basnet P, Joshi A. Medical Students Volunteering during COVID-19 Pandemic: Synopsis of Some Student-led Initiatives in Nepal. *JNMA J Nepal Med Assoc* 2021;59(240):821-822.