

A Cross-Sectional Study of Compliance of Preventive Measures Adopted by Medical Students of a Rural Medical College Against Covid-19

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Abstract

Introduction: The entire world is under the threat of Coronavirus disease (Covid-19 Pandemic) which is still causing many morbidities and mortalities. India is amongst the world- leaders in number of Covid19 cases. The world is looking towards Indian strategies to contain the outbreak of this infection. India has been

successful to a great extent in giving a tough fight to this pandemic by using the WHO recommendations of Face mask, Hand Hygiene and Social distancing.

Objective: The aim of this study is to assess whether the guidelines and the knowledge which is repeatedly disseminated by the various authorities, has been understood and is being seriously practiced by the group of medical students studying in their Final year MBBS at a prestigious Deemed University Medical College in Maharashtra, India.

Material and Methods: A total of 78 respondents from medical students of 2018 batch studying in 3rd year of MBBS at JNMC, DIIMS, Sawangi-Meghe, Wardha, Maharashtra, India; completed a questionnaire based survey on knowledge and infection-control practices related to Covid-19 infection. The questionnaire was

presented as a Google Form. The questionnaire was based on the current interim guidelines and information made available by various health authorities from the Government of India. The collected data and distribution of responses was presented as frequencies and percentages.

Results: A large percentage (71.8%) of the medical students are concerned and cautious about Covid19. A high percentage (exceeding 90%) are having correct knowledge about the disease and correct practices to prevent the spread. More than 97% felt that it is their social responsibility to take safety measures in controlling the spread of Covid19. Most of the students (98.7%) have taken both doses of the vaccine.

Conclusion: From this study we can conclude that the medical students at JNMC, DMIMS have the correct knowledge about covid19 infection and are seriously following the correct preventive measures and are aware of their social responsibility. It also indirectly reflects on the effectiveness of awareness and

guidelines issued by authorities from the Government as well as by the University.

Key words: Covid 19 • Prevention • Guidelines • Knowledge • Attitude • Practice

Introduction

Coronavirus illness has been threatening the entire world for the past few years (COVID-19). The ongoing COVID-19 epidemic has caused a large number of morbidities and deaths. Coronavirus or new coronavirus, also known as SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus-2) and COVID-19 by the World Health Organization (WHO). The virus emerged from Wuhan, Hubei Province of China by the end of 2019 and has caused an unprecedented panic across the world. By the end of 2019, the virus has spread worldwide from Wuhan, China's Hubei Province, causing enormous terror. On March 11, 2020, the World Health Organization (WHO) declared this a public health emergency of international concern and dubbed it a global pandemic due to the virus's rapid spread from human to human [1]. As of 31st August 2021, globally 21.9 Cr cases have been reported and 45.4L deaths have been reported. Indian data shows 3.29 Cr infected cases and 4.4L deaths till the end of Aug 2021.

The Coronavirus is believed to be originated from bats. It is a positive single stranded RNA virus belonging to family 'coronaviridae'. The previous 2 outbreaks of coronavirus were SARS-Cov in 2002 and MERS-Cov in 2012.

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Coronaviruses are crown shaped pleomorphic forms of 80 to 160 nm size. Four different variants have been identified— Alpha, Beta, Gamma and Delta. The crown shape is because of presence of spike glycoproteins on the surface of virus. The virus enters the Type 2 pneumocytes of the lungs of the infected person. The virus undergoes a very rapid replication in the host cells. The exact pathogenesis is still not very clear and scientists relied on the information obtained by studies of SARS Cov and MERS Cov. The pathogenicity is most likely related to an increase in Angiotensin 2 synthesis via altering the Angiotensin Converting Enzyme 1. An increase in angiotensin 2 causes pulmonary vascular permeability, which results in lung damage [2]. Also, there is an increased release of pro-inflammatory cytokines like interleukins, TNF and chemokines. This is called 'cytokine storm'. These inflammatory mediators cause epithelial damage, reach the bloodstream and then are responsible for damage to other organs.

Males are more vulnerable than females and persons more than 60yrs are more affected than the younger population. Incubation period can be as short as 5-6 days to about 15 days. Fever (more than 80% of cases), cough (more than 60% of cases), exhaustion (more than 35% of cases), productive cough (more than 30% of cases), and breathlessness are all common symptoms (more than 15 percent cases). Smell and taste senses are frequently lost. Headache, muscle weakness, sore throat, and pleuritic pain are less common symptoms (10-15 percent). Other unusual symptoms include nausea, vomiting, and chest discomfort. Common causes of mortality are respiratory failure, multi-organ failure, cardiac failure, renal failure in that order. The Covid-19 infection causes more morbidity and mortality in elderly population and those with comorbidities like hypertension, heart diseases, COPD, Diabetes mellitus, malignancies, persons consuming steroids, immunosuppressants and cytotoxic drugs. The virus is highly infectious and its clinical manifestations are highly unpredictable [2].

The virus is spread by droplets and can be inhaled by a person in close proximity to a Covid-19 patient who may shed the virus by coughing or sneezing. A distance of more than one meter (3 feet) usually reduces the chances of spread to a great extent [3]. This proven fact has led to the recommendation of avoiding crowded areas, observing social distancing and universal use of face-masks. Corona viruses (preliminary information on the COVID-19 virus) have been found to survive on surfaces for a few hours to several days, according to studies. This may change depending on the circumstances (e.g. type of surface, temperature or humidity of the environment). Hence frequently washing hands with soap and warm water or disinfecting hands with alcohol containing sanitizers is usually recommended as a prophylactic measure to reduce chances of getting infected [4]. One should also avoid frequent touching of own face or eyes. There can also be asymptomatic carriers who pose a threat to their close contacts by shedding virus in droplets by sneezing or coughing. Even today there is no universally accepted definite drug treatment for this dreaded virus. Various drugs like Hydroxychloroquine, Remdesivir, Tocilizumab, Favipiravir have been tried along with steroids, immune modulators etc. In the absence of a definite effective sure-shot treatment, a high level of prevention carries a lot of importance.

On January 27, 2020, the first incidence of the COVID-19 pandemic in India was recorded in Kerala [5]. The Indian government and other civil organisations are working hard to stop the virus from spreading. India declared its nationwide lockdown on 24th March 2020 with an aim to curtail rapid spread of this virus which would have resulted in a very high mortality on account of the high population density which accelerates the spread of infection. This measure was very successful in preventing a large number of deaths. As the number of infected cases started showing a lesser rise and simultaneously vaccines against Covid became available, the Indian government started the unlock procedure in a phased manner. Though this is aimed to bring back normalcy to life, the citizens will now have to be much more careful to continue using the protective measures like social distancing, masks and hand-hygiene.

The current pandemic has drawn international attention to Indian attempts for controlling the spread of the disease. India has nearly one-fifth of the world's population and is the world's second-largest country in terms of population (1352 billion according to 2019 revision of World Population Prospects). It also is the second in the number of Covid cases. India is the worst hit Asian country by this pandemic. This means India is facing a huge challenge to fight this pandemic.

India contributes significantly to global GDP and is one of the world's most prominent emerging countries, with relatively high economic growth rates. So far, our country has shown the world that it has faced the challenge courageously.

Rationale

Personal hygiene (using face masks, washing hands with warm water and soap, using alcohol-based hand sanitizers, avoiding touching mouth, eyes, and nose, cleanliness), social distancing, and careful handling of purchased products are all recommended by the WHO as effective COVID-19 disease prevention measures [6]. Government of India and the State Governments have very effectively spread the information about the deadly virus and guidelines on effective methods to prevent spread of infection [7-13]. To defend public health, the spreading pandemic of COVID-19 disease necessitates social separation and personal cleanliness precautions. But it is unclear whether this message has been communicated efficiently to the community people. It is definitely very important for medical students to be well versed with this infection since they may get exposed to the infection during their clinical studies while attending the hospital and also because they are the future health workers [14,15]. Also in many states in India, final year medical students were employed as the part of the covid-19 task force. With the nation heading for almost complete unlock and normal life resuming very fast, the guidelines of mask, social distancing and hand hygiene carry importance in prevention of spread of Covid-19 infection.

Aim

The purpose of this study is to determine medical students' compliance with COVID-19 prevention and to correlate medical students' behaviour, especially

after the country has already experienced two waves of the pandemic and a third wave is expected to come in the coming months. Various studies have been conducted in different parts of the world regarding knowledge, attitude and practices regarding covid-19, amongst the medical students [14-22]. The present study is notable for being conducted at a Rural medical college from the state of Maharashtra which was severely hit by this pandemic.

Objectives

1. To assess the Compliance of Preventive measures adopted by Medical students against COVID 19 disease.
2. To study the Knowledge and attitude of the Medical students regarding use of these preventive measures.
3. To study various different types of Preventive measures adopted by medical students against Covid 19.

Materials and Methods

Study settings

An online Google form constituted the study setting for this proposed study. A questionnaire was created with thirty-two questions about medical students' knowledge, attitudes, and practices about the Covid 19 pandemic. The survey form was based on the current interim guidelines and information made available by various health authorities from the Government of India [1-8].

Research design

Present study is a Cross-Sectional Study.

Study participants

Medical students of 2018 batch of JNMC, DMIMS, Sawangi-Meghe, Wardha, Maharashtra, India

Study sample size

78 students.

Data and Analysis

Gender

46.2% participants were males and 53.8% were females.

Attitude of the students towards COVID 19

71.8% were concerned and cautious towards covid-19 infection (they possess the correct knowledge and attitude).

20.5% of the participants have brought in many changes to their day to day life for preventing Covid 19 infection (they use the appropriate Practices) (Figure 1).

Causative agent for COVID 19 disease?

93.6% of the respondents are aware that Covid 19 is caused by SARS-Cov2

But surprisingly, 6.4% of medical students surveyed are still ignorant about the etiology, even after repeated sensitization regarding the same by the authorities.

Mode of transmission of infection

98.7% of the respondents are aware that mode of transmission of Covid is by droplets (Figure 2).

Best way for preventing COVID is social distancing

56.4% respondents agree and 38.5% strongly agree that the best preventive measure is social distancing

78 responses

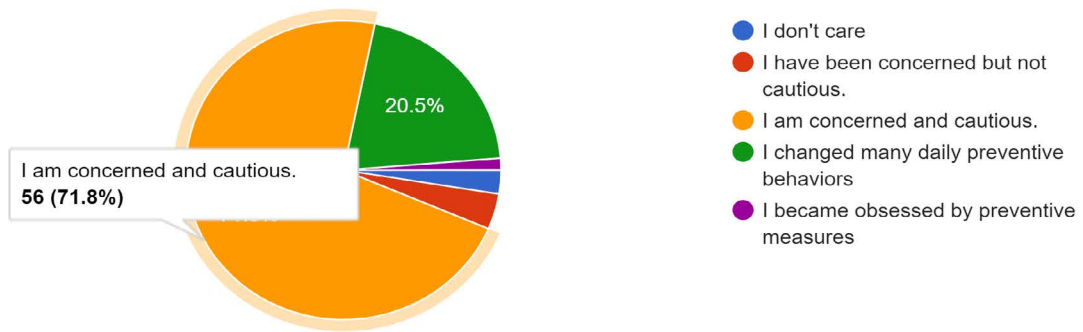


Figure 1. Attitude of the students towards COVID 19.

78 responses

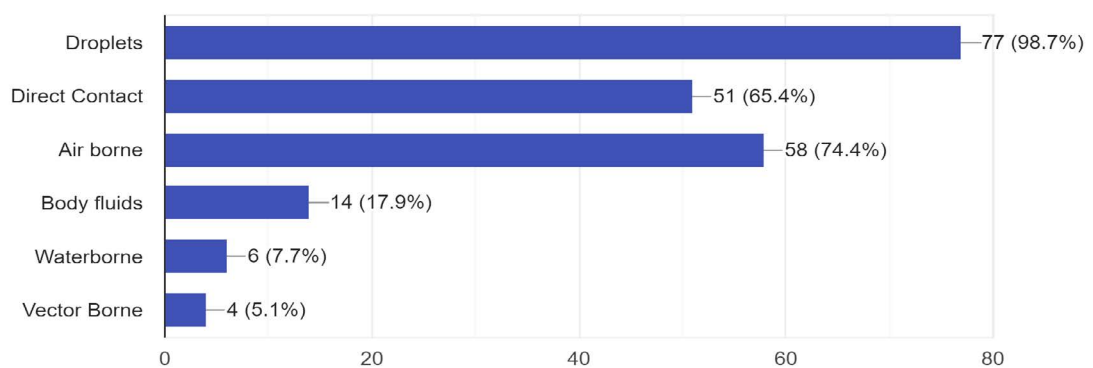


Figure 2. Mode of transmission of infection.

Virus is man-made and deliberately released in the community

32.1% respondents thought that the virus is man-made and deliberately released while 16.7% think it is a false theory.

Do you feel that closing teaching institutions and shopping malls are effective ways of social distancing?

38.5% students felt that closing teaching institutions and shopping malls are effective ways of social distancing and another 26.9% strongly agree to this (Figure 3).

What is the isolation period for infected people?

87.2% students correctly felt that the isolation period for infected persons should be 14 days.

It is surprising that the many medical students did not know the correct isolation period (Fourteen days from day of positive report, as advised by WHO) (Figure 4).

Will the pandemic end soon?

19.2% students believe that the pandemic will be overcome soon, 42.3% agree to this statement.

Is it the social responsibility of the students to take safety measures in controlling the spread of infections?

97.4% students agreed that it is their social responsibility to take safety measures to control spread of infection (correct Attitude)

Are you avoiding meeting friends and relatives?

64.9% students avoid meeting friends and relatives

Are you avoiding visiting crowded places?

88.5% students avoid visiting crowded places

Do you use mask correctly?

98.7% students answered that they wear masks correctly

In what situations do you wear masks?

All students (100%) wear masks at the workplace.

96.2% wear masks during public transport.

84.6% wear masks in mess/restaurant,

A minority (12.8%) use masks even when at home (Figure 5).

Have you received Covid vaccine?

98.7% students have been vaccinated.

Which vaccine have you received?

93.6% students have received Covishield vaccine.

How many doses of vaccine have you received?

96.1% students have received two doses of vaccine

If 2 doses were taken what was the time gap between the 2 doses?

The time gap between 2 doses of vaccines was mostly (89% of the time) – 4 weeks

it was 3 weeks in 4.6%,

It was 25 days in 3.1% cases.

Other stray and only instances of 15 days,45 days and 60 days were also seen.

How many times a day have you taken steam inhalations?

80.8% students never took steam inhalations.

78 responses

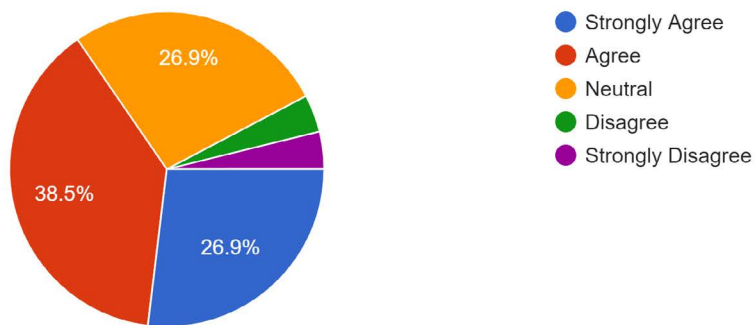


Figure 3. Do you feel that closing teaching institutions and shopping malls are effective ways of social distancing?

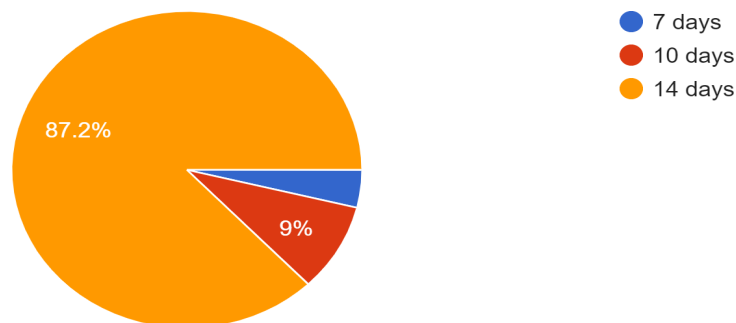


Figure 4. What is the isolation period for infected people?

78 responses

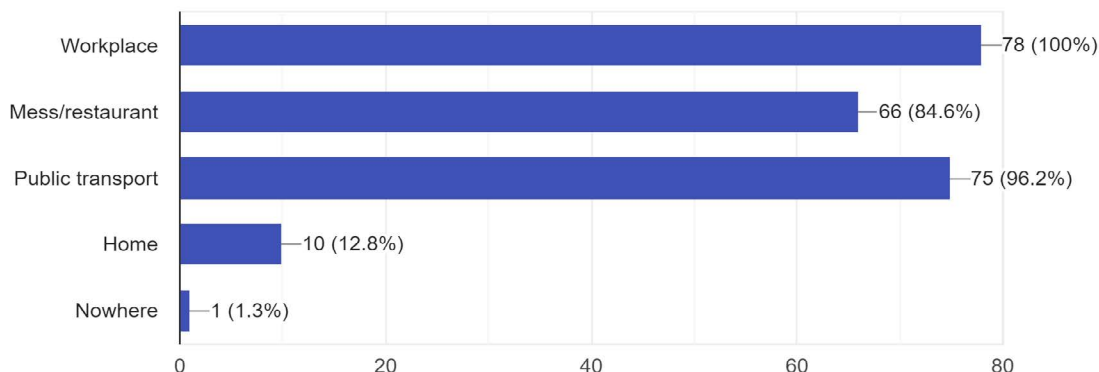


Figure 5. In what situations do you wear masks?

Self-medication (allopathic meds)

The most common self-medication used were Multivitamins (80.8%), followed by Vitamin C (74.4%) and Vitamin D (39.7%., Ivermectin and Hydroxychloroquine were also taken as pre-exposure prophylaxis by some.

Have you been prescribed any antibiotics against common cold and cough?

- Azithromycin - 52.6%
- Amoxicillin - 14.1%
- Erythromycin -6.4
- None - 43.7%

Ayurvedic immune boosters

41% of participants took ayurvedic immune boosters.

Repeated gargling with salt water/ povidone iodine gargles were used by 44.9%.

Practice of Yoga and Meditation

53.8% practised yoga and meditation.

What were your Sources of information regarding the prophylaxis?

91% took Health professionals advice. 59% took families advice. News and social media sites accounted for 50% and 51.3%. A concerning 48.7% students learnt the precautions from social media.

Have your family members also received the vaccine?

Family members of 96.2% students have received vaccines.

Has anyone in your family been infected with Covid 19?

57.7% students reported that someone in their family was infected with Covid19.

How many times a day have you taken steam inhalations?

80.8% students never took steam inhalations.

Have you been infected with Covid 19?

Only 32% of the students were affected with Covid.

Physical symptoms after complete recovery from Covid

Most common physical effect after recovery was Fatigue (81.3%). Loss of appetite was the 2nd most common. Loss of Appetite, Headache and hair loss also were seen among the consensus (Figure 6).

Mental symptoms after complete recovery from Covid.

Most common mental symptom after recovery was Anxiety (46.4%).

Depression was the 2nd most common.

Loss of Concentration and Insomnia were seen among the consensus.

6. Almost 95% respondents agree that the best way of preventing COVID is social distancing.
7. About 65% of respondents felt that closing teaching institutions and shopping malls are effective ways of social distancing, a sizable 26.9% were neutral about it.
8. 87.2% of students correctly felt that the isolation period for infected persons should be 14 days. It is surprising that many medical students did not know the correct isolation period (Fourteen days from day of positive report, as advised by WHO).
9. About 61% of students are optimistic that the pandemic will end soon.
10. 97.4% respondents feel it is their social responsibility to take safety measures in controlling the spread.
11. 88.5% respondents avoid visiting crowded places but 35% don't avoid meeting friends and relatives.
12. About 65% of respondents felt that closing teaching institutions and shopping malls are effective ways of social distancing, but a sizable 26.9% were neutral about it.
13. 98% respondents had appropriate knowledge about correct use of masks. All the students wear masks at the workplace and 96.2% wear masks during public transport.
14. 98.7% of the students have taken both the doses of the vaccine.
15. The most common self-medication used were Multivitamins (80.8%), followed by Vitamin C (74.4%) and Vitamin D (39.7%), Ivermectin and Hydroxychloroquine were also taken as pre-exposure prophylaxis by some.
16. Only 32% of the students were affected with Covid, out of which only 2 students were hospitalized. Out of the infected students, half the

Results

1. 53.3% of respondents were female and the rest of the respondents were males.
2. A significantly large population of 71.8% are concerned and cautious about Covid 19.
3. A very high percentage (exceeding 93%) have the correct knowledge about the pathogen.
4. 98% respondents were aware of the mode of transmission.
5. But the fact that 7% of medical students still do not know the correct mode of transmission of the infection, even after two waves of pandemic; is a concerning statistics.

Table 1: Knowledge amongst students.

Knowledge	Correct answer(1)	Incorrect response
Causative agent	73	5
Mode of transmission	77	1
Isolation period for infected person	68	10
Correct use of mask	77	1
Total	369	

Total score of 369 (out of 390) i.e. 94.62% correct knowledge amongst students was observed. Mean=73.8, Standard deviation=3.7.

Table 2: Attitude the standard deviation.

S No.	Attitude	Correct attitude (1)	Incorrect attitude(0)
1	Concern/caution about the pandemic or changed behaviour	72	6
2	Taking social responsibility to prevent spread.	75	2
3	Readiness for vaccination.	77	1
		225(96.15%)	

A total score of 225 was calculated (95.23%) correct answers. Mean score for each question was 75 with the Standard deviation being 2.65.

Table 3: Practices standard deviation.

S No.	Practices	Yes (score=1)	No (scored as 0)
1	Avoid crowded places	69	9
2	I am using soap frequently	71	7
3	Do you use masks correctly?	77	1
4	Use of Mask at workplace	77	1
5	Use of mask in public places	75	3
6	Have you received the covid 19 vaccine ?	74	4
7	Family members getting vaccinated.	75	3
8	Self-medications	74	4
9	Home remedies taken	73	5
Total score		669 (95.32%)	

A total score of 669 out of 702 was calculated (95.23%) correct answers. Mean score for each question was 74.33 with the Standard deviation being 2.75.

Table 4: Observations of overall correct knowledge.

Variables	Questions	Total score	Score(%)	Mean ± sd
Knowledge	4	369 (out of 390)	94.62	73.8 ± 3.7
Attitude	3	225 (out of 234)	96.15	75 ± 2.65
Practises	9	669 (out of 702)	95.23	74.33 ± 2.75

Observations: Overall Correct Knowledge of 94.62% was seen. Correct Attitude was seen in 96.15%. The Appropriate Practices were seen in 95.23%.

population was asymptomatic. Out of the symptomatic population Fever (52.9%), Body ache (44.1%) and Cough (38%) were the most common complaints. Fatigue (81%) was the most common physical complaint after recovery whereas depression (35.7%) and anxiety (46.4%) were the most common residual mental symptoms after recovery. Tables 1-3

Discussion

A number of studies reflected on various aspects of Covid-19 pandemic [23-27]. To the best of our knowledge, this is one of the first knowledge, attitude and practice studies about COVID-19 in medical college in a rural setting in India.

The participants of the survey being 3rd year MBBS students who have been posted in wards for their clinical postings were also more at risk for infection of Covid due to their interaction with the patients in a hospital setting.

The first stage in directing efforts in the educational process, which have been proven to affect future behaviour, is to assess knowledge of precautionary measures for developing the disease. Participants took preventive steps such as hand washing with soap (91%) and avoiding crowded places (88.5%).

98.9% of participants claimed they used masks correctly but only 12.2% used masks at home (which is advised by who),

Through this study the Knowledge, Attitudes and Practices of the Medical students could be quantified Table 4.

Conclusion

A significantly high percentage of the population of medical students (nearly 95%) have the correct knowledge, attitude and practices towards prevention of covid-19 infection. This shows that besides the government guidelines, the medical college authorities have been successful in the sensitization of the pandemic.

Only 32% of the students were affected with Covid, out of which only 2 students were hospitalized. This indicates that the Preventive measures taken by the students had proven to be effective.

The varying responses about the correct interval between two doses of Covid vaccine was probably because of ever-fluctuating guidelines from the Ministry of Health.

Although the government has been making a lot of efforts to spread awareness, special awareness programs and workshops can be introduced for medical students and henceforth, a chain of information can be started using the medical students as an easy yet cost effective method of increasing the awareness in the general population.

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