



## Research Article

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# Covid-19 perception and knowledge among various college going medical students: a questionnaire- based survey

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## Abstract

**Background and Objectives:** The extensive spread of the COVID-19 pandemic is a major concern among the healthcare profession. The study aims to assess the perception and knowledge about COVID 19 outbreak among various college going medical students. **Materials and Methods:** A total of 1141 responders completed a questionnaire- based survey on the perception and knowledge about COVID 19 outbreak among various college going medical students. Data collection and the distribution of responses was presented as frequencies and percentages. Data was analyzed using convenient sampling method. Based on the percentage of correct responses descriptive statistics were performed for all groups and subgroups and for the percentage of correct responses individual pair wise comparisons were done using the median test. **Results:** 90% of the responders provided correct answers indicating adequate overall awareness for all subgroups. More than 75% of the responders were aware of the various symptoms and mode of transmission of COVID 19. However, only 26% of the responders were unaware about the spread of COVID 19 infection, 93% responders know about the primary actions taken after getting infected with COVID 19. Almost all (95%) of our responders were aware of the preferred method for hand hygiene. **Conclusion:** This study showed good knowledge of COVID-19 among 1136 various college going medical students with an overall knowledge score of more than 90%. The results of the study helped us to conclude that students showed extensive knowledge about general information of COVID-19 like its route of transmission, people at high risk symptoms and signs, and complications. Hopefully, conducting periodic webinars could be a useful tool to create more awareness in this regard for all healthcare students and professionals.

**Keywords:** Corona Virus, COVID-19, Medical students, Social media, N95/FFP2, Hand washing, Public measures

## INTRODUCTION

Corona Virus is a zoonotic pathogen, transmitted via droplet, direct contact and feco-oral route [2]. In the past, multiple epidemic outbreaks occurred, which includes Severe Acute Respiratory Syndrome (SARS) during 2002 that resulted in 800 mortality and Middle East respiratory syndrome (MERS)-CoV during 2012 that resulted in 860 mortality [2]. COVID 19 outbreak has rapidly spread to many countries, approximately 8 years after MERS-CoV epidemic, and claimed several lives. The first case was reported in Wuhan, Hubei Province in China in December 2019. On January 30, 2020, the World Health Organization (WHO) has declared COVID-19 as a public health emergency of international concern [3]. WHO, on the 11th of March 2020, declared COVID-19 as a global pandemic. Till date, no antiviral drugs or vaccines are reported or made available to prevent or cure COVID-19 infection. Applying preventive strategies in our day to day life to control this infection are of paramount importance, in the absence of such curative measures.

SARS-CoV-2 is an enveloped non-segmented positive sense RNA virus [4]. Six of the coronaviruses, namely  $\alpha$ -CoVs, HCoV-229E, HCoV-NL63,  $\beta$ -CoVs, HCoV-HKU1 and HCoV-OC43, have been identified to be responsible to cause mild respiratory symptoms similar to that associated with the common cold, while SARS-CoV-2, SARS-CoV, and MERS-CoV are associated with lethal respiratory infections [5]. SARS-CoV-2 uses the angiotensin-converting enzyme 2 (ACE2) receptor and invades the lower respiratory tract cells [6].

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Novel coronavirus infected person is the main source of infection. Direct transmission occurs through close contact, mainly through respiratory droplets which are released when the infected person coughs, sneezes, or talks. Infection can also occur if a person touches an infected surface and then touches his or her eyes, nose, or mouth. The median incubation period is 5.1 days (range 2–14 days). The precise interval during which an individual with COVID-19 is infectious is uncertain. The extent and role played by pre-clinical/ asymptomatic infections in transmission still remain under investigation.

Ever since the first case of COVID-19 reported in China, governments and public health organizations worldwide deployed several measures to raise awareness, improve knowledge, and to strengthen the preventive measures to control transmission of the disease [7]. However, lack of knowledge about of the population at risk, inadequate understanding of COVID-19 transmission, and voids in the practice of preventive measures are still widespread among many. <sup>8</sup>This is the probable reason that COVID-19 infections continue to spread around the world with profound morbidity and mortality.

As there are a large amount of false information circulating on social media with regard to the transmission of disease and methods of acquisition, assessment of the knowledge and behaviour of public toward such outbreaks are essential <sup>9</sup>. Healthcare professionals, service providers and medical sciences students play a pivotal role in providing the scientific explanations. Such assessments have proven useful as an important means in the education and raising awareness of best practice in previous viral outbreaks including SARS, MERS, and Ebola [10].

With this mode of transmission, healthcare workers, along with their extended work hours, burnout, and fatigue, physical and psychological stress, are at the highest risk of being infected. The objective of this study is to assess the awareness of COVID-19 disease and its related infection control practices among healthcare professionals and medical students. This was a questionnaire-based survey, which was compiled based on the current interim guidelines and information for healthcare personnel published by the US Centers for Disease Control and Prevention (CDC) and WHO.

**MATERIALS AND METHODS**

**Study design:** A cross-sectional study was conducted among college going medical students. The survey was prepared and sends to

responders in an online platform. The period of the survey was between 15<sup>th</sup> of July2020 to 1<sup>st</sup> of August2020.

**Study Tool:** The questionnaire consisted of socio-demographic questions; questions related to hand hygiene techniques and 17 questions on knowledge and infection control practices related to COVID-19 disease. Consent was obtained from all participants in this study.

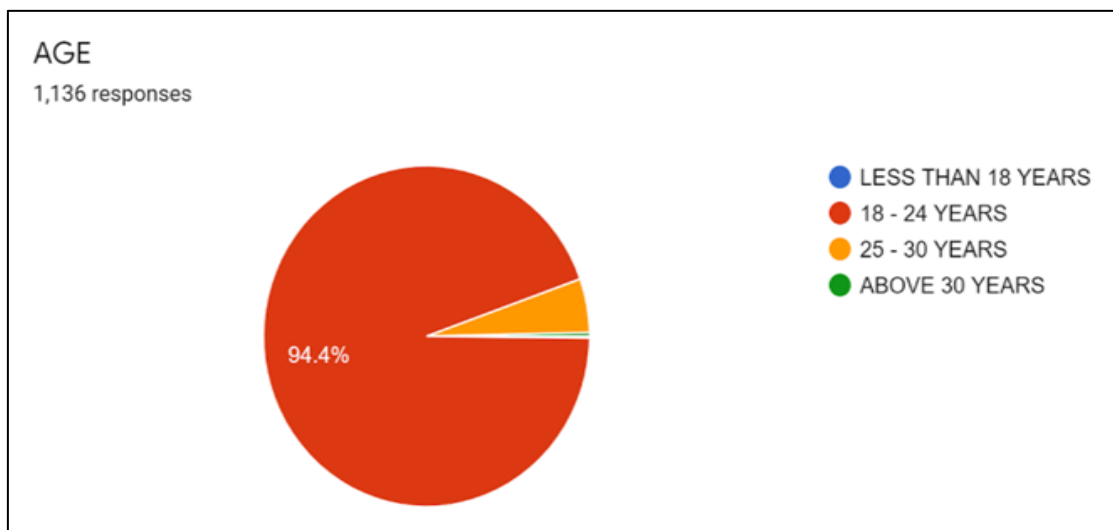
**Study Population and Sample Size:** Sample size for this study was 1136 based on convenient sampling method used for data collection. Sub-groups were classified on the basis of gender, age (less than 18 years, 18-24years, 25-30 years and more than 30 years) and profession (students from medical, dental, nursing, paramedical). Sub-groups were also classified on the basis of the training received by the responders for hand hygiene procedures. Data were tabulated in bar graphs, pie charts and descriptive statistics were also recorded. Inclusion criteria were students from medical, dental, nursing, paramedical colleges. Exclusion criteria included responders without informed consent.

After collecting the responses they were entered onto Microsoft excel sheet and subjected to descriptive data analysis using SPSS for Windows.

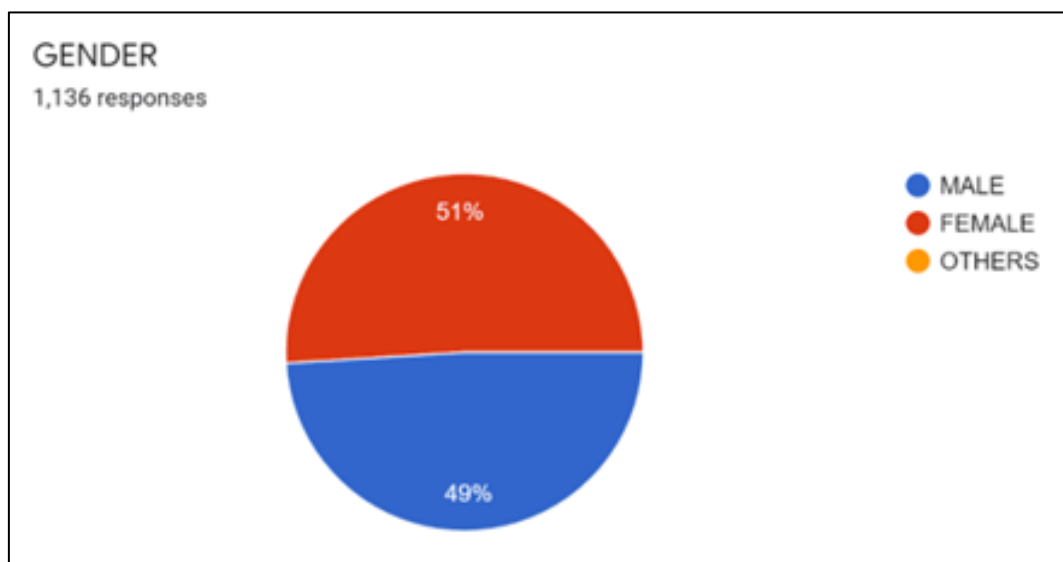
**RESULTS**

A total of 1141 health care professionals from the Kerala responded to the survey. The majority of the responders were from the age group of 18-24 years (n=1072). Approximately 49% (n=557) of the responders were females. Among the various sub-groups, 28.6% (n = 322) of the medical students, 17.6% (n=199) of the nursing students, 29.3% (n=330) of the dental students and 24.5(n=276) of the paramedical students completed the survey (Figure 1&2).

Among the participants 83.6% heard about COVID 19 from social media. 90.2% responders promoted increased frequency of hand washing. Majority i.e. 96.4% were aware about direct and indirect modes of transmission of the disease. 89.9% were aware about government data protocols about COVID 19. A majority i.e. 96.8% were knowledgeable about situations to indicate medical advice and about 93.7 % responded that they knew that there was no cure for this infection. (Table 1)



**Figure 1:** Distribution of Study Subjects Based on Age



**Figure 2:** Distribution of Study Subjects Based on Gender

**Table 1:** Responses to the Questionnaire

Questions	Options	Number Of Responses	% Of Responses
Heard about COVID 19 from	TV news	150	13.2
	Web sites	11	1
	Friend and colleagues	11	1
	Educational session	12	1.1
	Social media	950	83.6
	All of the above	2	0.1
Symptoms	Fever	20	1.8
	Dry cough	24	2.1
	Loss of taste or smell	2	0.2
	Loss of appetite	1	0.1
	Difficulty in breathing	39	3.4
	Chest pain	1	0.1
	All of the above	1044	92
	Don't know	3	0.3
Frequency of hand washing	Strongly disagree	2	0.2
	Disagree	4	0.4
	Neither agree nor disagree	46	4
	Agree	59	5.2
	Strongly agree	1025	90.2
Going out of home for essentials	Strongly disagree	8	0.7
	Disagree	6	0.5
	Neither agree nor disagree	11	1
	Agree	26	2.3
	Strongly agree	1084	95.5
Making conscious effort for touching face less frequently	Strongly Disagree	19	1.7
	Disagree	21	1.8
	Neither agree nor disagree	51	4.5
	Agree	74	6.5
	Strongly agree	971	85.5
Awareness about symptoms after which professional help has to be get	Strongly Disagree	6	0.5
	Disagree	5	0.4
	Neither agree nor disagree	24	2.1
	Agree	54	4.8
	Strongly agree	1044	92.1
Awareness about Govt. data protocols from where information about COVID can be gathered	Strongly Disagree	3	0.3
	Disagree	8	0.7
	Neither agree nor disagree	34	3
	Agree	69	6.1
	Strongly agree	1020	89.9
Virus causing COVID 19	SARS	76	6.8

infection	SARS-COV-2	868	77.4
	2019 – n CoV	55	4.9
	Both b and c	81	7.2
	Both a and c	41	3.7
Main mode of transmission	Direct contact	32	2.8
	Indirect contact	9	0.8
	Both	1094	96.4
PPE of individuals transporting patient contains	Gloves	1	0.1
	Gowns	4	0.4
	N 95 mask	57	5
	All of the above	1069	94.5
Situation in which hand hygiene prevent transmission to health workers	After touching patient	12	1.1
	Immediately after exposure to body fluids	10	0.9
	After exposure to immediate surroundings of the patient	8	0.7
	On and upon removal of PPE	26	2.3
	All of the above	1070	95
Which of the situation medical advice indicated	Close contact with a person known to have COVID 19	25	2.2
	Currently residing in an area with ongoing COVID 19 infection	3	0.3
	Recent travel from an area with ongoing spread of COVID 19	8	0.7
	All of the above	1087	96.8
	Long sleeved water repellent disposable	43	3.8
	Long sleeved water resistant disposable	121	10.8
	Cover all	953	85.3
Recommended type of face mask	Surgical mask	26	2.3
	FFP -1	3	0.3
	N 95 / FFP -2	1075	96.3
	Respirators	12	1.1
Primary action to be taken by a person if COVID 19 related symptoms are shown	Report their condition to health workers	1057	93.7
	Reside in their residence and self-isolation	57	5.1
	Continue their work	2	0.2
	Not to tell anybody	9	0.8
	B and A	1	0.1
Aware about no cure for the infection	Yes	1059	93.7
	No	14	1.2
	Unsure	56	5.1
Awareness about spread of infection without showing symptoms	Yes	1108	97.9
	No	8	0.5
	Unsure	18	1.6

## DISCUSSION

Currently, COVID-19 is a global topic of discussion. Ever since COVID-19 was announced a pandemic by the WHO, the knowledge, attitude and practices toward COVID-19 has been growing. Health-care workers and medical students being the frontline warriors should have an understanding that public measures are key to a timely control of this pandemic. There are only limited number of studies being conducted to assess the gravity of understanding the importance of following these public health measures such as wearing masks when in public, practicing social distancing and hand washing [11].

This study was conducted to analyse the depth of understanding of students from medical fraternity, about the mode of transmission of this pandemic disease, its signs and symptoms awareness of protocols to be followed to prevent the disease. Constant participation of

medical students in providing patient care, combined with the high and unpredictable disease transmission, puts them at higher risk for contracting as well as transmitting the disease.

Social media as a source of information is a two-way street. It is a cost-effective, and easily accessible source while on the other hand, it spread fake information easily. Medical students should carefully scrutinize coronavirus related scientific materials before sharing or applying it. In our study, 83.6 % of responders claims social media as their source of information about the disease. Ghoeil *et al* observed that 65.17% of medical students obtained knowledge about COVID-19 from social media [12]. However, in a study by Bhagavathula AS *et al*. revealed participants' main source of information was official government websites (33%) followed by social media (30%) [13].

Medical students should be well aware about the most common as well as severe symptoms of COVID-19 infection through validated sources to avoid the misconception. About 92% of our responders were aware that the symptoms of this disease could vary from mild versions like loss of taste to difficulty in breathing and chest pain. In this study, we also found that, 96.4% of students identified, commonly described routes of disease transmission such as respiratory droplets, close contact, and exposure to contaminated surfaces, as likely sources of transmission of COVID 19 infection.

Assessing knowledge of precautionary measures for contracting the disease, almost all of our study participants (94.5%) knew about the measures that should be adopted for the prevention of COVID-19. Preventive measures included maintaining 1 m distance, cleaning hands with soap water, use of alcohol based sanitizer and avoiding personal contact. This finding is in agreement with the studies conducted among healthcare workers (85.6% and 98.31%) [14] and students (98.6% and 93.8%) [15]. Majority of participants (96.3%) endorse wearing a surgical/face mask protect people from getting infected with COVID-19. Contrary to our results, only 37.8% and 29.7% of people from the US and UK agree with the same statement<sup>16</sup>. Correct hand hygiene practices play a crucial role in preventing the spread of infection. The WHO “Five Moments of hand hygiene” defines key moments when healthcare providers must carry out hand hygiene [17].

N95 /FFP2 were preferred by 96.3% of the responders for aerosol-generating procedures. Proper disposal of the used masks and hand hygiene should be performed. The CDC sequence of donning a face mask is as follows: securing ties or elastic bands at the middle of head and neck, fitting the flexible band to the nose bridge, fit snug to face and below the chin, fit-check respirator. A clean long sleeve water resistant was preferred by 85.3%. A gown with goggles or disposable face shield and clean non-sterile gloves are recommended upon entry to the patient room area. Besides being aware of the required PPE, it is also important to know the correct sequence of “donning and doffing” of PPE [18].

About 80–90% of the respondents were aware of whom to contact if they have unprotected exposure to a known or suspected COVID-19 patient. In the current study higher awareness level was recorded in the respondents. The current situation demands urgent development of strategies to prevent infection among high-risk populations including pre-exposure and post-exposure prophylaxis. Various drugs including antivirals and antimalarial are under trial currently.

All the results from this study could not be compared with existing literature due to the scarcity of published results it is recommended that such studies should be carried out in various parts of the country among medical students to assess their perception and knowledge.

## CONCLUSION

Current global pandemic situation demands substantial awareness of COVID-19. This study showed good knowledge of COVID-19 among 1136 various college going medical students with an overall knowledge score of more than 90%. Our responders exhibited extensive knowledge to most questions about general information, mode of transmission, people at high risk, symptoms, and complications of COVID-19. Hopefully, conducting periodic webinars for educational intervention for all healthcare students and professionals could be a useful and safe tool to create more awareness.

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