Assessment of Exposure to Factors Favoring Covid 19 Transmission among Medical Students in South Kerala during the First Wave of the Pandemic

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Abstract

Transmission of SARS -Cov occurs primarily primarily between people through direct, indirect, or close contact with infected people through infected secretions such as saliva and respiratory secretions. To prevent transmission there are several measures implanted by health authorities all over the world like social distancing, use of face masks, hand washing or use of sanitizer, contact tracing and quarantine, isolation, etc. This study was intended to determine medical students' exposure (while at home due to lockdown) to environmental factors favoring the transmission of Covid 19. After getting institutional ethical clearance a cross-sectional study was done among 82 medical students. The mode of data collection was through google forms. The students were asked to report the factors (already practicing) that favor covid 19 transmission to which they were exposed during the last 2 weeks. All the study subjects were tested for Covid 19 during the next 2-week period. Data were analyzed descriptively to find out the number and percentage. The median age of the sample was 22 years (Q_1 21, Q_3 23). Comorbidities that could favor covid 19 transmission were present in 12.2% of students. The percentage of students who visited crowded places in the last 2 weeks which could increase the risk of transmission ranged from 6 % to 29%. Social distancing was practiced by 51%, Wearing a mask was practiced by 62%, and using soap/sanitizer by 73% of medical students. Out of the total 82 medical students 4 tested positive for Covid 19. The study concluded that exposure to risk factors of covid 19 transmission was optimum among medical students during the pandemic phase.

Keywords: Covid 19, transmission, Pandemic

Introduction

Coronaviruses are a large family of viruses that are known to cause illnesses ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS) and severe acute respiratory syndrome (SARS). A novel coronavirus (SARS –CoV 2) was identified in 2019 in Wuhan, China. This is a new coronavirus that has not been previously identified in humans. On 11 March

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2020, WHO declared Novel Coronavirus Disease (COVID-19) outbreak as a pandemic[1]. So far there are 4.4 cores confirmed cases in India and 5.3 lakhs deaths[2].

The first case of COVID-19 reported in India is from Kerala state on 30 January 2020 and within three days cases increased to three on February 3, 2020. These cases were related to students who had returned from Wuhan, China. COVID-19 was reported in various states of India during March. Most cases are imported as infected people with a travel history to affected countries. The state of Kerala so far reported 67.67 lakhs of cases and 70,913 deaths [3][4].

Current evidence suggests that transmission of SARS-CoV-2 occurs primarily between people through direct, indirect, or close contact with infected people through infected secretions such as saliva and respiratory secretions, or through their respiratory droplets, which are expelled when an infected person coughs, sneezes, talks or sings. As environmental contamination has been documented by many reports, likely that people can also be infected by touching these surfaces and touching their eyes, nose, or mouth before cleaning their hands. Airborne transmission of the virus can occur in healthcare settings where specific medical procedures, called aerosol-generating procedures, generate very small droplets called aerosols[5][6].

Based on what we currently know, the transmission of COVID-19 is primarily occurring from people when they have symptoms, and can also occur just before they develop symptoms when they are close to others for prolonged periods. While someone who never develops symptoms can also pass the virus to others, it is still not clear to what extent this occurs. A recent study from China that clearly and appropriately defined asymptomatic infections suggests that the proportion of infected people who never developed symptoms was 23%. [7][5]. To prevent transmission there are several measures implemented by the Government of India and its States like Social distancing, The use of face masks, Hand washing or use of sanitizer, contact tracing, the practicing quarantine, and testing those who develop symptoms so that they can be isolated if they are infected and require care.

Young adults represent 20% of the population of the state of Kerala. Non-compliance to covid 19 regulations were high among young adults with higher education and high Socioeconomic status [8]. As far as medical students are concerned it is their responsibility to play a supportive role in practicing the regulations insisted by Covid 19 and thereby reduce the risk of spreading. This study was intended to find out the exposure of medical students (while at home due to lockdown) to environmental factors favoring the transmission of Covid 19.

Objective

1. To assess the self-reported exposure to factors favoring Covid 19 transmission among medical students in a medical college in South Kerala during the first wave pandemic.

Methodology

A Cross-sectional study was conducted among the medical students of Government Medical College Kollam in Kerala during the period of lockdown in the pandemic phase of Covid 19 in the year 2021. The medical college was closed during the lockdown period as instructed by the government. For attending university examinations, the students were called back to medical college. The students on arrival were quarantined for 14 days and Covid 19 test was done at the end of 14 days. The medical students were interviewed regarding their adherence to Covid 19 regulations imparted by the government for the last 2 weeks of their arrival at the medical college to assess the risk of transmission.

The sample size was found using the prevalence of covid 19 from (a previously published study [9]) as 19% and Z at 95% Confidence interval, and a relative precision of 20%, using the equation for sample size $Z^2_{\alpha/2}$ PQ/L^2,n is found as 390 and adjusted the same for the finite population of 100 using the equation n/1+(n/N population) final sample size arrived was 80. Data was collected through google forms containing semi-structured questionnaire using social media platforms. Covid positivity status was determined after 14 days. Covid 19 tests were done at Virology Research Institute Government Medical College Kollam according to the revised Indian Council of Medical Research guidelines [10]. Sociodemographic variables, pre-existing medical

illness, and Compliance to covid 19 regulations like adherence to SMS (Social distancing, face mask, soap/ sanitizer) strategy were recorded. The use /practice of SMS guidelines always was taken as adherence in this study.

Data analysis was done using the Statistical Package of Social Sciences software version 20 (trial version). Quantitative variables were summarised using mean and standard decisions and Median with Q1 and Q3 for nonnormal distributions, whereas qualitative variables were expressed as percentages and proportions.

Ethical Considerations

Consent was obtained from medical students electronically before the administration of the questionnaire. Permission from the concerned departments was obtained. Institutional ethical clearance was obtained before starting the study. (IEC NO 4/EC-4/2021/GMCKLM)

Results

The study was conducted among 82 medical students to find out the self-reported adherence to covid 19 regulations. Females and males constituted 59.8% (49/82) and 40.2% (33/82) of study participants respectively. The median age of study participants was 22 (21,23) years. Out of the 82 students 2 students had come from neighboring states outside the Kerala state to report back to the medical college. The other 80 students were from different districts of Kerala. Analysis was done to know the housing conditions of the students and revealed that only two students had overcrowding at their houses. Comorbidities that could be a risk factor for Covid 19 infection like diabetes mellitus, hypertension, use of systemic steroids, bronchial asthma, and neurological diseases were asked and 10 students out of 82 (12.2%) had given comorbidities.

The practice of SMS (Social distancing, Mask use, and Hand washing with soap/sanitizer) was assessed among medical students during the lockdown period and the results are given in table 1. The results showed that overall adherence to the practice of Social distancing was 51% and to wearing a mask it was 62% and 73% for the habit of using soap/sanitizer

Table 1: Table showing adherence to SMS among medical students during the lockdown period.

Practice	Social distancing	Mask	Soap/ Sanitizer
Always	42(51.2%)	51(62.2%)	60(73.2%)
Sometimes	29(35.41%)	18(22%)	22(26.8%)
Never	11(3.4%)	13(15.9%)	0

During the lockdown period, the motto from the government was to 'stay home stay safe'. The history of going out of home in the last two weeks before the interview was obtained. 16 students reported staying at home in the last two weeks, 52 reported going out once or twice, 11 got out more than three times and 3 of them reported going out on almost all days.

Out of the 82 students, 10 were coming from 'Containment Zones' (According to the Union Ministry for Health and Family Welfare, containment zones are specific geographic areas where Covid-19 positive cases are found in large numbers). There were 4 students (4.9%) who gave a history of known close contact with Covid 19 positive case in the last 14 days,7 students were not sure about the contact, and 71 students out of the total 82 didn't have a history of known contact with any Covid positive case. One student responded that there was a positive case of home isolation. One student gave a history of air travel outside India. Exposure to crowded places like bus station/bus, railway station/train, Hotel, crowded shops, and market were assessed for the last 2 weeks and the result is given in Table 2

Table 2: Exposure to crowded places during the last 2 weeks

Crowded place	No of subjects	Percentage
Open Market	19	23.2
Bus/ railway station	12	14.6
Hospital	16	19.5
Restaurant	12	14.6
Public transportation	9	11
Social Gathering	6	7.3
Shopping centres	29	35.5

All 82 students were tested for Covid 19 using the True Nat test/ RT- PCR test accredited by the Indian Council of Medical Research. Out of the total 82 medical students test positivity rate in total was

4/82 i.e. 4.8%. The positivity rate among contacts of Confirmed Covid 19 cases was 2% and the positive rate among symptomatic was 25%. There were 2 males and 2 females out of the 4 students diagnosed positive for Covid 19. The details are given below in Table 3.

Table 3: Table showing Covid 19 test done among medical students n=82

Day of testing for Covid since Quarantine started	Reason for testing	Type of test done	Number of students tested	Covid 19 Positive	Covid 19 negative
3rd	Symptomatic	RT- PCR	3	1	2
6th	Contact with Positive case	RT - PCR	5	1	4
7th	Contact with positive case	RT- PCR	3	0	3
10th	Symptomatic	RT-PCR	1	0	1
12th	Contact with Positive case	RT- PCR	4	1	3
13th	Screening	True NAT	49	1	48
14th	Screening	True NAT	17	0	17
Total			82	4	78

Discussion

The number of SARS – Cov 2 cases was rising all over the world. To prevent the transmission there were widespread practices at individual, familial, and community levels. Nevertheless, people were exposed to certain risk factors due to the nature of their health conditions, profession, role, or due to ignorance. This study was done to find out the exposure to factors (self-reported) favoring Covid 19 transmission in the pandemic phase among medical students when they were at home due to regulations imparted by the lockdown. Exposure to risk factors of covid 19 transmission like comorbidities, travel history, visits to high-risk places, and adherence to SMS (Social distancing of 1to 2-meter, face mask, soap/sanitizer) strategy was studied.

The study population consisted of males and females in a ratio of 41:49, and Covid 19 positivity among males and females was found in the ratio of 1:1 in our study. The risk factor of Covid 19 being more in males since Covid 19 is community-acquired and men are out of houses than females. But an equal ratio was found here due to the reason that during lockdown everyone could remain home and also due to the lesser sample size. The transmission mechanisms of SARS-CoV-2 include droplet transmission, close contact transmission, and airborne transmission[6]. The presence of unprotected people in public places increases the risk of Covid 19 transmission and our study described the distribution of subjects who were exposed to crowded places with or without practicing SMS strategy suggesting a higher number were going to crowded places[11]. The Government had advised many regulations during the Covid 19 pandemic phase like Stay home stay safe, containment zones, the practice of SMS, lockdown, and restriction of office hours during the peak pandemic time. Compliance with Covid 19 regulations was studied in the same age group was studied by Nivette et all with a view that young adults are identified internationally as a group with low compliance rates. The level of adherence to social distancing was 51.2%, for mask usage 51%, and hand washing it was 73.2% in our study which is much lower than the compliance reported by Nivette et all in young adults (Social distancing 97% and handwashing 95%)[8]. The prevalence of Covid 19 was 4.8% in the study which is much higher than the national studies (0.73%) owing to the lower sample size [12].

Conclusions

The study was done to find out self-reported exposure to factors favoring transmission of Covid 19 among medical undergraduates. There was greater exposure to crowded places and the practice of Covid 19 regulations was optimum among the medical students.

Limitations

1. Data were collected from records and through google form since there were restrictions for direct interviews.

2. The sample size was restricted to 82 (the maximum number of medical students who were quarantined)
3. Bivariable analysis was not done to find out any association since the numbers in each cell were not adequate for analysis.

Recommendations

Strengthening awareness among medical students regarding the importance of practicing infection control practices in the community.

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