

Knowledge of Undergraduate Medical Students on Differences between COVID-19 and Influenza Virus

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ABSTRACT

Aim: To assess the knowledge of medical students to differentiate between the features of Corona virus and Common cold Influenza virus.

Methodology: A cross-sectional study was conducted on undergraduate medical students (MBBS) from both private and public institutes across Punjab, Pakistan between 20th April 2020 to 1st June 2020. This was done using a validated, structured online questionnaire which was based on WHO recommendations and facts, assessing knowledge of both Corona and Influenza. A total of 253 medical students were chosen after random sampling, who had completed the survey.

Results: Median age was 22 years and a total of 56.5% participants were female and 43.5% male. Overall, more than 90% of the respondents correctly answered the questions related to COVID-19 and the knowledge score revealed that above 90% had good knowledge about Coronavirus. 73.5% being aware of the virus type (RNA), 95.7% knew the transmission route, 86.6% were familiar with the incubation period and more than 90% acquainted with the symptoms of COVID-19. Knowledge level for Influenza was moderate with only 55.7% of the participants accurately answering related questions. Majority of the students used social media as source of information.

Conclusion: The undergraduate medical students of Punjab showed good knowledge of COVID-19. However, there is a lack of comprehensive knowledge of Influenza Virus. Thus, there is an inadequate knowledge base to differentiate it from Corona virus. This is alarming in the light of the current pandemic and therefore there is a need for immediate action to improve learning for future doctors for becoming a better health provider.

Keywords: Knowledge, medical students, Covid-19, Influenza

INTRODUCTION

Coronaviruses are a group of related viruses that can cause disease in mammals and birds^{1,2}. In humans, they can cause respiratory tract infections which vary from mild to lethal symptoms³. Mild forms can cause common cold while more lethal varieties can cause SARS and MERS. In 2019 a new form of the coronavirus was identified, known as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and the disease it caused is called the Corona virus disease 2019 (COVID-19)⁴. In March 2020, the World Health Organization declared it as a worldwide pandemic^{5,6}. As the COVID-19 break continues to evolve, comparisons have been drawn to Influenza. Although both SARS-COV-2 and Influenza cause respiratory disease and are transmitted by contact or airborne droplets^{7,8}. The illnesses caused by them are entirely different. Therefore, it is very important for public health authorities to respond to each virus individually. Furthermore, under the given circumstances where health care workers all around the world are busy tackling the pandemic, medical students can play the role of aiding the frontline warriors with precluding any erroneous information prevalent in the general public regarding the assumption of taking flu and COVID-19 as a single entity. This seems a necessary step since the spread of corona virus has also given rise to fallacious information leading to masses getting perturbed.

Medical students can reach through telemedicine to the general population and help in identifying general flu and corona symptoms, while boosting the lightly staffed clinicians in taking patient history, foreshadowing any emergency, provide patient information by coordinating between patients and physicians and also help in updating the patient's families about health care plan, eventually mollifying the general public⁹. While all this can be put to utility, this requires general guidelines to be given to medical students and simultaneously assessing their clinical knowledge.

This research evaluates the extent of medical student's knowledge in identifying the differences between corona and general flu with the correct responses serving as an indicator for adequate knowledge. This can serve as data-based evidence, which can be presented to health care authorities for claiming that medical students can be subjugated by professionals not only in identifying difference of symptoms in flu and corona, but also in reporting affected patients. This will aid health care systems, government authorities, general masses and the wider world by helping them implement protective measures which reduces disease dissemination¹⁰. For a time, when no specific treatment is available and potential vaccine is still under trial¹¹.

The knowledge level of students gathered from this study can serve as a reference for planning intervention in educational training since institutes play a crucial role through training dynamic doctors¹². Better understanding of

Received on 27-07-2020

Accepted on 17-11-2020

COVID-19 is necessary for medical students who are serving as a boost to the healthcare system during the pandemic¹³.

METHODOLOGY

An online cross-sectional study was conducted on undergraduate medical students from both private and public institutes across Punjab, Pakistan between 20th April 2020 to 1st June 2020. This was done using a validated, structured online questionnaire which was based on WHO recommendations and facts, assessing knowledge of both Corona and Influenza. A total of 253 medical students were chosen after random sampling, who had completed the survey.

The study was approved by the ethical review committee. The population under study consisted of medical students studying MBBS, from first to final year. The survey link was sent online mentioning the objective of the study, while also highlighting that participation in the study was voluntary. The questionnaire consisted of three main sections where the first part determined the socio-demographic variables of the students including gender, age, education level (1st to final year), medical college(private or public), city and source of knowledge. The second 9-item section measured the student's knowledge about Covid-19, such as its virus type (RNA), transmission, incubation period, symptoms and complications.

The third 11-item section gauged knowledge about general flu in a similar fashion but with addition of a question for its vaccination. The analysis was carried out using SPSS 25. For the analysis, difference was considered statistically significant when p<0.05. To quantify the students' knowledge the correct answers were converted to a percentage over a range of 0% to 100% and eventually for statistical evaluation of the entire questionnaire three categories were considered i.e. less knowledge (lower than 50%), moderate (50% to 75%) and good knowledge (greater than 75%). The qualitative variables were presented in the form of percentages and information expressed in the form of pie charts and tables.

RESULTS

A total of 253 medical students chosen after random sampling, who had completed the survey, with female medical students being in majority. The participants were divided on the basis of age, into two groups (Table 1).

Table I: Baseline characteristics of participants (n=253)

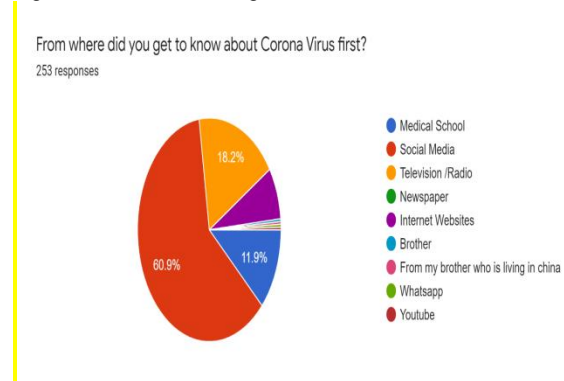
Characteristics	Participants
Gender	
Male	110(43.5%)
Female	143(56.5%)
Age	
Group A(18-22 years)	153 (60.5%)
Group B(22-26 years)	100 (39.5%)
Discipline	
MBBS(all)	253 (100%)
Year of study	
1 st Year	25 (9.9%)
2 nd Year	55 (21.7%)
3 rd Year	26 (10.3%)
4 th Year	41 (16.2%)
Final Year	106 (41.9%)

The major source of information about coronaviruses wasn't an educational institute, but social media, followed by television were more constructive (Table I, Fig.1)

Table II: Source of knowledge of Coronavirus (n=253)

Question	Answer
<i>What is the source of knowledge?</i>	
Educational Institute	28(11.9%)
Social Media	154(60.9%)
Television	46(18.2%)
Health website	21(8.2%)
Other	4(1.5%)

Fig.1: Source of knowledge of Coronavirus



The level of awareness about Corona virus among medical students (Table III). About 90% of the participants had acquaintance with Coronavirus with 73.5% correctly knowing the virus type (RNA), 95.7% knew the transmission route, 86.6% discretely knew the incubation period and 76.3% were aware of the symptoms caused by the disease.

Table III Knowledge of medical students about Coronavirus (n=253)

Question	Correct answer
1.What type of virus is Corona? (RNA)	186(73.5%)
2.Corona Virus spreads predominantly via?	242(95.7%)
3.Incubation period of Coronavirus is?	219(86.6%)
4.The onset of symptoms of Coronavirus are?	193(76.3%)
5.Type of cough in Corona virus?	237(93.7%)
6.Do patients of Corona feel fever and fatigue?	232(91.7%)
7.Which system depicts the symptoms of Covid-19 till date?	251(99.2%)
8.Do Covid -19 critical patients face respiratory difficulties?	250(98.8%)
9.Which patients of Corona need ventilator support?	244(96.4%)

Percent based correct responses regarding General flu were 55.7%. Overall, 65.6% were aware of its virus type. Majority, 93.7% correctly knew the route of transmission,66 % knew the incubation period and 61.3% were aware of the symptom's consequent of the disease (able IV)

Table IV: Knowledge of medical students about General flu

Question	Correct answer(n=253)
1.General flu is caused by?	242(95.7%)
2.What is the type of Influenza virus?	166(65.6%)
3.Route of transmission of flu is?	237(93.7%)
4.Incubation period of virus is?	167(66%)
5.Onset of symptoms?	155(61.3%)
6.Type of cough in Flu patients?	49(19.4%)
7.Do you think these patients face respiratory difficulties?	92(36.4%)
8.Do patients of General flu present with runny nose?	236(93.3%)
9.Do patients of General flu suffer from a loss of appetite?	112(44.3%)
10.Is Diarrhea in patients with Influenza a predominant feature?	43(17%)
11.Vaccine type for Influenza virus is?	51(20%)

The overall knowledge regarding corona virus was categorized as 'good' (greater than 75%). In contrast, it was 'moderate' (50% to 75%) for General Flu. There was a statistically significant difference in the knowledge level of female students on the question regarding onset of General flu symptoms ($p=0.03$). Additional statistical significance was seen in age group less than 22, on the questions of corona virus transmission route, onset of its symptoms, influenza viruses transmission route and whether diarrhea is a predominant feature in influenza or not ($p=0.023$, $p=0.018$, $p=0.003$ and $p=0.002$ respectively). Further elaboration of the results revealed that final year students accurately answered more questions in domains of both Corona and Influenza virus when compared to the students in all other years.

DISCUSSION

This study showed that social media has become the major tool to disseminate knowledge, as results demonstrated that more than 60% of the students obtained their information about COVID-19 through it, which is consistent with recent reported data¹⁴. The second major source was the television, accounting for 18.2%. More students are likely to be dependent on social media than traditional medical education for learning¹⁵. However, WHO defined the excessive information on social media as 'info emic'¹⁶. Relying on social media for valuable information may amplify doubts since it facilitates content promotion rather than facts¹⁷. This leads to misinformation and an untowardly impact on the general population¹⁸.

It was observed that above 90% medical students had good knowledge about Coronavirus. The high knowledge score is likely due to the exposure to information for covid-19 on social media, television and with WHO declaring it as a pandemic due to its transmission and pathogenicity¹⁹. On the contrary, knowledge level for influenza was moderate and unanticipatedly only 55.7% of the participants accurately answered the questions.

Influenza virus is taught thoroughly, not only during virology lectures in third year but all throughout the clinical years of medical school. This implies that a false sense of confidence regarding knowledge about influenza virus exists among medical students.

The study shows that evidence-based learning and making systemized efforts to remove strong yet false perceptions about a topic needs to be commenced along with aligning education and training to students required needs. Student's perception of competence can then be evaluated by a training course in which they are comprehensively educated separately on Covid-19 and in comparison, with Influenza because the conjecture of medical students aiding as a work force can be questioned when students engage in work without enough preparation leading to adverse health outcomes instead of improvement.

Apprehension of COVID-19, indicates that medical students to some extent can assist with out-patient care and education and it seems necessary because fundamental information must be accessible to the public to facilitate in the identification and differentiation of risk factors which they easily tend to confuse and becomes

unable to deal with is an emerging threat. This should be done only, as instructed by national and international board of medical colleges such as 'The Association of American Medical Colleges' (AAMC) when a critical healthcare force is required.

The year of study was linked with high level of knowledge showing that final year students scored well on questions related to both corona and influenza virus. Educational programs can therefore be focused on the level of awareness of juniors, which in our study are first and second year medical students, yet this does not adjourn final year medical students from the training. Other variables like gender did not primarily show a statistical significance except for the question on the onset of general flu symptoms. One reason for it could be variability of symptom onset in different individuals. Age group less than 22, were able to answer more questions accurately in contraindication to the common notion that higher the age more the knowledge, as depicted in various studies^{20,21}.

Limitations: The study was conducted in a single region i.e. Punjab, and the results may not be applicable to other parts of Pakistan. The data and analysis are based on a cross-sectional study design. Therefore, casual inferences cannot be made easily. Online survey was done without the presence of the researcher while the participant responded to the questions. This can result in fraudulent responses which can be based on other information sources rather than the student's knowledge. There were also drawbacks, in collecting data through google forms with some participants leaving the questionnaire midway. Lastly, the information about Covid-19 is constantly changing. This requires that questions related to its virology must be revised for future surveys.

CONCLUSION

A satisfactory level of awareness was seen amongst medical students regarding Covid-19. However, there was a lack of comprehensive knowledge on influenza virus amongst medical students. This stresses the need for inculcating relevant information and educating medical students in order to differentiate between the two viruses, which is of utmost importance in light of the current pandemic. Planning is required in revising the educational method in the medical school curriculum. There should be addition of new approaches to learning techniques and clinical ward training. Medical students should be actively involved in medical charting of patients and be involved in the out-patient as well as in-patient management. This study is suggestive that if medical students are able to differentiate covid-19 and influenza symptomology, they can play a vital role in facilitating history-based screening of the general public via personal interactions, telemedicine or through social media platforms. Thus, by increasing the knowledge and awareness amongst medical students, there will be enhancement in the commitment towards preventive measures. Medical students can work on engaging the local population and encourage the implementation of public health measures.

Grant Support and Financial Disclosures: None

Conflict of interest: None

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