

ORIGINAL ARTICLE

AWARENESS AND KNOWLEDGE AMONGST MEDICINE AND ALLIED STUDENTS REGARDING CORONAVIRUS IN A UNIVERSITY IN KARACHI FOLLOWING AN OUTBREAK

Savera Narejo, Maryam Saida Qureshi, Fouzia Naem Effendi*, Alishba Khan, Farah Fatima Abbas**, Saadia Akram***, Munazza S Obaid†

Medical student (MBBS) at Dow International Medical College, Karachi, *Department of Community Health Sciences, Bahria University Medical and Dental College, Bahria Medical University, Karachi, **Department of Clinical Laboratory Sciences, Dow Institute of Medical Technology, Dow University of Health Science, ***Baqai Medical University, †Department of Community Medicine, Dow International Medical College, Dow University of Health Sciences, Karachi, Pakistan

Background: Awareness motivates one to adopt protective measures and enables them to spread the knowledge amongst their peers. The study was conducted to assess and compare the knowledge and awareness among Medical and Allied Students regarding COVID-19 at a University in Karachi, Sindh. **Methods:** This was a cross-sectional survey consisting of 23 close-ended items conducted online, amongst undergraduate Medical and Allied Students. **Results:** The 520 study participants filled out the web-based survey 232 (44.6%) from Medicine and 288 (55.4%) from Allied Sciences. The mean age of the study Participants were 21.18 ± 1.784 years. The majority students were from medical 176 (33.8%) and medical technology field 108 (20.8%), followed by nursing, dental, physiotherapy and other allied health sciences departments. Awareness and knowledge regarding corona virus were found more in allied sciences students than in medical students ($p=0.0001$). **Conclusion:** Awareness and knowledge regarding COVID-19 were better allied sciences students than in medical students.

Keyword: Covid-19, knowledge, awareness, medical, allied sciences, students, pandemic

Pak J Physiol 2022;18(1):58–62

INTRODUCTION

News about the CoVID-19 outbreak sparked quite the conversation at the beginning of 2020. Its history dates back to 8th Dec 2019, when an array of seemingly idiopathic pneumonia cases resembling viral pneumonia emerged in Wuhan, Hubei, China.¹ On the 30th Jan 2020, the World Health Organization declared the CoVID-19, a global health emergency² whereas on 11th Mar, 2020 the disease was declared a pandemic³. The term ‘human coronavirus’ (HCoV) was used for a series of harmless pathogens that cause the common cold in otherwise healthy people, with the first report dating back to 1965.⁴ Recently, however, more severe forms of the virus have emerged, causing dangerous infections and even resulting in death.⁵ Currently, common findings are cough, fever, and fatigue, with clinical findings of leukopenia, leukocytosis, and lymphopenia. Patients critically ill with the disease present with acute respiratory distress syndrome, arrhythmia, and shock.⁶

During any emergency, the constant stream of information we receive through social media and news channels reaches an all-time high, and very little is done to stop unchecked facts from unleashing themselves onto the public.⁷ The novel coronavirus is not different.⁸ There seem to be vast differences of opinion amongst the public. Some look at the low fatality rate and the fact that most patients have underlying co-morbidities and think that the virus is ‘no big deal’ and continue with their lives blissfully, unaware that they might be

asymptomatic carriers and infect those to whom the virus may actually be fatal⁹, and undermine the importance of social distancing¹⁰, whereas others at the other end of the spectrum panic and proceed to buy the entire stock of their nearest supermarket in order to stay at home for the rest of the year. It is vital especially for the youth pursuing higher studies to educate themselves about the virus so they can educate and thereby ensure the safety of those around them. Unchecked facts and rumours can seriously hinder public health efforts and must be debunked immediately.¹¹ Increased awareness results in better infection control whereas a lack thereof enables avoidable disease transmission and inaction regarding one’s health.¹² This causes problems in detection and treatment.¹³ Students with information from the correct resources tend to have more positive attitudes towards those who are infected and less likely to stigmatize victims.¹⁴ Without adequate knowledge or comprehension of the gravity of the situation, students will not understand why complying with the recommended behavioural changes is essential.¹⁵ Awareness of the situation motivates one to adopt protective measures.¹⁶ University students are at the forefront of the next generation and it is vital for them to be able to spread knowledge amongst their peers.¹⁷

The objective of this study was to assess and compare the knowledge and awareness among medical and allied sciences students regarding the novel coronavirus at a university in Karachi.

MATERIAL AND METHODS

This was a cross-sectional survey and was conducted in medical and allied sciences students from a university in Karachi, from Jun to Nov 2020. Ethical Approval was obtained from the Principals of medicine and allied colleges to conduct the research and the proposal was submitted to Institutional Review Board of the University (Ref: IRB-1686/DUHS/ Approval/2020/). Informed written consent was sought from all participating students and confidentiality was maintained. No harm was done to anyone whosoever in conducting this research.

Sample size was calculated by using Open-Epi software. In a study from India regarding COVID-19 awareness among health care students the correct responses reported were 72.1%.¹⁸ Hence taking 95% confidence level the computed sample size was 315. By adding, 10% expected non-response rate, a total of 347 was suggested. A total of 520 undergraduate students, 176 belonging to MBBS (88 students from a public Medical College and a private Medical College each) and 344 from allied sciences were chosen by convenience sampling.

Since there was a major crisis globally in respect to Covid-19 pandemic, there was lockdown in Karachi, and social distancing was to be maintained, the data was collected online.

A 23 item questionnaire was used from two studies.^{19,20} The demographic data was asked in 6 items whereas 17 items were to evaluate knowledge and awareness regarding Covid-19 pandemic, the filling of the questionnaire was piloted on a few students to check the understanding, and on an average it took 8 minutes for each student to complete the form. The demographics included the gender, university, age, and level of education. The primary outcome included about how the student got to know about the virus, its fatality rate, the symptoms, risk factors, if the student thinks it's curable, and safety precautions concerning the virus. All questions used were closed-ended.

Data was analysed using SPSS-20. Descriptive statistics (frequencies and percentages) were used to describe the quantitative and categorical variables. Chi-square tests were used to determine any significant association between the students' responses and independent variables such as gender and educational level of the students. Student's *t*-test was applied comparing medicine versus allied students' knowledge scores, and $p \leq 0.05$ was considered significant.

RESULTS

The 520 study participants filled out the web-based survey. Mean age of the study participants was 21.18 ± 1.784 years. The majority (176, 33.8%) of students was from medical, and medical technology

field (108, 20.8%), followed by nursing, dental, physiotherapy, and other allied health sciences. The demographic characteristics of the study participants are detailed in Table-1.

Table-2 illustrates the knowledge and awareness about novel Covid-19 among the respondents. Majority (73%) of the study participants in both medical and allied departments did not correctly identify when the first outbreak of novel corona virus occurred. A high proportion (96.80%) of participants provided the correct response while the rest (2.9%) did not know the place of origin of corona virus. Majority (72.9%) of the participants had the knowledge regarding incubation period of the corona virus. A high proportion (48.50%) of allied study participants provided the significant correct response as compared to medical students (41.90%), while 7.1% did not have any idea whether COVID-19 is contagious or not ($p=0.031$).

Only a few participants had knowledge regarding the routes of transmission of Covid-19, (19.8% allied students, compared to 12.1% medical students) ($p=0.028$). Awareness regarding the fatality rates of Covid-19 was 10.8% among allied students and 8.30% in medical students ($p=0.003$), majority of the students got their responses incorrect (57.2%). Awareness of covid-19 vaccine was seen more in allied students (46.9%) as compared to medical students (41%) ($p=0.004$). Awareness regarding the curability against covid-19 disease was seen considerably less overall but medical students (5.6%) had more correct responses as compared to allied students (2.1%) ($p=0.001$). Majority (45.3%) of the students did not have awareness regarding the severity of corona virus infection. Allied students were more aware about the severity of the disease as compared to medical students.

It was significant that allied students (52.1%) had more knowledge about the symptoms of COVID-19 as compared to medical students (44%) ($p=0.007$). More allied students (41.3%) had the awareness about the cause of spread of covid-19 as compared to medical students (30.2%). Widely the allied students (55.2%) were aware about the precautions against covid-19 as compared to medical students (44.2%). Most of the allied students (53.70%) were more knowledgeable regarding the spread of Covid-19 as compared to medical students (44.20%). Knowledge of age group involved in severity of Covid-19 and knowledge of treatment regarding Covid-19 patients were not expressed by both the study groups. (Table-2)

The main sources of information was social media ($n=466$, 66%) followed by news media ($n=149$, 27.30%). Remaining participants reported that they got the information through friends and other sources. A few students got information from their college resources. Details of sources of information are represented in Figure-1.

Table-1: Demographic characteristics of study participants (n=520)

Characteristics	Participants	Percentages
Gender		
Male	86	16.5
Female	434	83.5
Mean Age (Years)	21.18±1.748	
Categories of student		
National students	483	92.9
International students	37	7.1
Course of study		
Medical	176	33.8
Dental	56	10.8
Nursing	96	18.5
Medical technology	108	20.8
Physiotherapy	44	8.5
Other allied sciences	40	7.7

Table-2: Knowledge and awareness about Corona virus among study participants (n=520)

Variable	Medical sciences	Allied sciences	p
When did the first deadly outbreak of Coronavirus occur?			
Correct	30 (5.80%)	19 (3.70%)	0.005
Incorrect	172 (33.10%)	208 (40.0%)	
Don't Know	30 (5.80%)	61 (11.70%)	
Where did the current Coronavirus originate from?			
Correct	225 (43.30%)	278 (53.50%)	0.925
Incorrect	1 (0.20%)	1 (0.20%)	
Don't Know	6 (1.2%)	9 (1.70%)	
Incubation Period			
Correct	179 (34.40%)	200 (38.50%)	0.054
Incorrect	49 (9.40%)	74 (14.20%)	
Don't Know	4 (0.80%)	14 (2.70%)	
Contagious Awareness			
Correct	218 (41.90%)	252 (48.50%)	0.031
Incorrect	5 (1.00%)	8 (1.50%)	
Don't Know	9 (1.70%)	28 (5.40%)	
Routes of Transmission			
Correct	63 (12.1%)	103 (19.8%)	0.028
Incorrect	169 (32.5%)	182 (35.0%)	
Don't Know	0 (0.0%)	3 (0.6%)	
Awareness about fatality rate			
Correct	43 (8.3%)	56 (10.8%)	0.003
Incorrect	149 (28.7%)	148 (28.5%)	
Don't Know	40 (7.7%)	84 (16.2%)	
Awareness about vaccine			
Correct	213 (41.0%)	244 (46.9%)	0.004
Incorrect	9 (1.7%)	8 (1.5%)	
Don't Know	10 (1.9%)	36 (6.9%)	
Awareness about cure			
Correct	29 (5.6%)	11 (2.1%)	0.001
Incorrect	201 (38.7%)	270 (51.9%)	
Don't Know	2 (0.4%)	7 (1.3%)	
How severe is the infection of corona?			
Correct	120 (23.1%)	164 (31.5%)	0.235
Incorrect	112 (21.5%)	124 (23.8%)	
Symptoms of corona			
Correct	229 (44.0%)	271 (52.1%)	0.007
Incorrect	3 (0.6%)	17 (3.3%)	
Awareness about spread of disease			
Correct	157 (30.2%)	215 (41.3%)	0.08
Incorrect	75 (14.4%)	73 (14.0%)	
Awareness about age groups involved regarding disease severity			
Correct	8 (1.5%)	8 (1.5%)	0.66
Incorrect	224 (43.1%)	280 (53.8%)	
Knowledge about treatment			
Correct	97 (18.7%)	101 (19.4%)	0.116
Incorrect	135 (26.0%)	187 (36.0%)	
Awareness about precautions against COVID-19			
Correct	230 (44.2%)	287 (55.2%)	0.41
Incorrect	2 (0.4%)	1 (0.2%)	
Knowledge about spread of corona infection			
Correct	230 (44.20%)	279 (53.7%)	0.075
Incorrect	2 (0.4%)	9 (1.7%)	

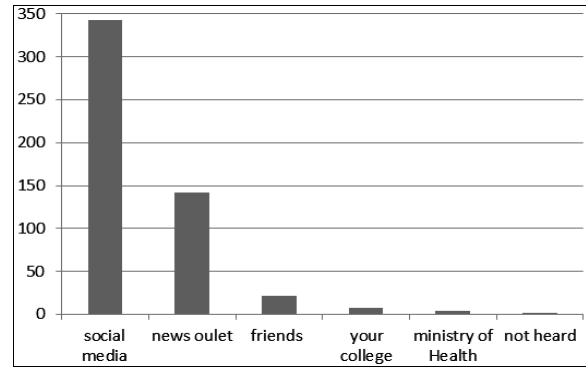


Figure-1: Sources of information about COVID-19

DISCUSSION

After its emergence, COVID-19 quickly ensnared the world, bringing everything to a standstill. As a result, healthcare and allied health professionals became frontline workers overnight, exposing themselves to infection to save others. This study was designed to compare and contrast the knowledge and attitudes of medical and allied students.

One of the most significant findings we discovered was that a good majority of students seem to have found out most of their information on social media (66%), demonstrating social media's importance in propagating information. In fact, most participants seem to have heard the word 'coronavirus' only after the outbreak taking place in China in December 2019, after which the number of posts, news articles and stories about the virus peaked. Another study carried out in India between medical and allied students also found that most students obtained their information from social media.²¹ The fact that most participants had only heard about coronaviruses until then further exemplifies the significant role social media played. This indicates that healthcare workers and those qualified to give information about the virus should harness the power of the internet and social media when it comes to educating the public about important issues regarding health and keep them up to date with new research findings.

The correct answer rates of these questions ranged from 1.5–53.7%, lower than a study carried out by Zhong *et al*²² where answer rates ranged from 70.2–98.6%. This was unexpected as we assessed medical and allied students and expected them to be more knowledgeable; however, this study was carried out when the pandemic was in its early stages so this may have affected how people answered. Another study done in Pakistan showed on the contrary that medical students fared outstandingly well. Sharing and acquiring knowledge for growth is frequently hampered by later unsatisfactory results. Mismanagement of knowledge, according to the literature, is a possible cause. If the barriers to knowledge sharing in acquired growth are not properly understood, such mismanagement can occur. In

general, it's rather surprising that non-medical students knew significantly more about the virus as compared to medical students in some areas, such as the route of transmission where more allied sciences students answered correctly compared to medical students, yet the number of correct answers was very low in both groups. This contrasts to similar finding from India where more than half (53.71%) of medical and allied health science students correctly identified COVID-19 transmission.²¹

About 44% medical and 52.1% allied students gave the correct response about the symptoms. However, this is lower than surveys where 98.63% Chinese and 90% Egyptian residents have accurately identified the symptoms of COVID-19.^{22,23} This suggests that since most students use social media to get information, Pakistani media should find new ways of educating the public. Our study discovered that 46.9% allied and 41% medical students knew that there was no vaccine for COVID-19 available at the time of this study (before 2021). This finding is remarkably similar to a cross-sectional study carried out in Jordan, where 89% medical and non-medical university students knew about the then unavailability of the vaccine.²⁴

About 48.5% allied and 41.9% medical students give the correct response of whether COVID-19 was contagious or not. Whereas our results were lower compared to 85.31% participants provided the accurate answer.²¹ Barely 8.3% medical and 10.8% allied students had partial knowledge about the fatality rate of COVID-19. The result of this research is lower compared to 38.32% students in India choose the correct response.²¹

LIMITATIONS

The fact that we caused out the study by reaching out to participants via social media poses as a limitation to our study. This prevented us from approaching participants on the spot and may have produced the Hawthorne effect, giving participants time to lookup answers themselves before feeding answers in. This study was conducted in one university only, hence may not accurately represent knowledge levels of students in general. Due to restrictions and lockdowns the study took longer than expected to complete hence the opinions of these students might have changed.

CONCLUSION

The undergraduate allied medical sciences students showed a satisfactory level of awareness and with an obvious difference in awareness level between Medical and Allied Sciences. Better educational efforts with effective techniques are pointed to further increase the level of awareness and to suffice for the shortcomings. More efforts should be directed to all medical students specially, and allied health sciences generally.

ACKNOWLEDGEMENT

We thank the students, colleagues and teachers who helped and promoted the participation in our survey.

REFERENCES

1. Chung M, Bernheim A, Mei X, Zhang N, Huang M, Zeng X, Cui *et al.* CT imaging features of 2019 novel coronavirus (2019-nCoV). *Radiology* 2020;295(1):202–7.
2. Ung COL. Community pharmacist in public health emergencies: Quick to action against the coronavirus 2019-nCoV outbreak. *Res Soc Adm Pharm* 2020;16(4):583–6.
3. Chang D, Lin M, Wei L, Xie L, Zhu G, Cruz CS, Sharma L. Epidemiologic and clinical characteristics of novel corona virus infections involving 13 patients outside Wuhan, China. *JAMA* 2020;323(11):1092–3.
4. Myint SH. Human coronavirus infections. In: Siddell SG. (Ed). *The Coronaviridae*. Boston, MA: Springer; 1995.p. 389–401.
5. To KK, Hung IF, Chan JF, Yuen KY. From SARS coronavirus to novel animal and human coronaviruses. *J Thorac Dis* 2013;5(Suppl 2):S103–8.
6. Wang D, Hu B, Hu C, Zhu F, Liu X, Zhang J, *et al.* Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus-infected pneumonia in Wuhan, China. *JAMA* 2020;323(11):1061–9.
7. Betsch C, Wieler L, Bosnjak M, Ramharter M, Stollorz V, Omer S, *et al.* Germany COVID-19 Snapshot Monitoring (COSMO Germany): Monitoring knowledge, risk perceptions, preventive behaviours, and public trust in the current coronavirus outbreak in Germany. 2020. Available from: <https://www.psycharchives.org/handle/20.500.12034/2386>
8. Kouzy R, Abi Jaoude J, Kraitem A, El Alam MB, Karam B, Adib E, *et al.* Coronavirus Goes Viral: Quantifying the COVID-19 Misinformation Epidemic on Twitter. *Cureus* 2020;12(3):e7255.
9. Rothe C, Schunk M, Sothmann P, Bretzel G, Froeschl G, Wallrauch C, *et al.* Transmission of 2019-nCoV infection from an asymptomatic contact in Germany. *New Engl J Med* 2020;382:970–1.
10. Reluga TC. Game theory of social distancing in response to an epidemic. *PLoS Comput Biol* 2010;6(5):e1000793.
11. Schmid P, Betsch C. Effective strategies for rebutting science denialism in public discussions. *Nat Hum Behav* 2019;3(9):931–9.
12. Kok F, Bouwman L, Desiere F. (Eds). *Personalized Nutrition: Principles and Applications*. Boca Raton: CRC Press; 2007.
13. Liu H, Li M, Jin M, Jing F, Wang H, Chen K. Public awareness of three major infectious diseases in rural Zhejiang province, China: a cross-sectional study. *BMC Infect Dis* 2013;13(1):192.
14. Koralek T, Runnerstrom MG, Brown BJ, Uchegbu C, Basta TB. Lessons from Ebola: sources of outbreak information and the associated impact on UC Irvine and Ohio University college students. *PLoS Curr* 2016;8:ecurrents.
15. Hussain ZA, Hussain SA, Hussain FA. Medical students' knowledge, perceptions, and behavioral intentions towards the H1N1 influenza, swine flu, in Pakistan: A brief report. *Am J Infec Control* 2012;40(3):e11–3.
16. Brug J, Aro AR, Richardus JH. Risk perceptions and behaviour: towards pandemic control of emerging infectious diseases: international research on risk perception in the control of emerging infectious diseases. *Int J Behav Med* 2009;16(1):3–6.
17. Noreen M, Murad S, Furqan M, Sultan A, Bloodsworth P. Knowledge and awareness about breast cancer and its early symptoms among medical and non-medical students of Southern Punjab, Pakistan. *Asian Pac J Cancer Prev* 2015;16(3):979–84.
18. Modi PD, Nair G, Uppe A, Modi J, Tuppekar B, Gharpure AS, *et al.* COVID-19 awareness among healthcare students and professionals in Mumbai Metropolitan Region: A questionnaire-based survey. *Cureus* 2020;12(4):e7514.
19. Almutairi MA. Awareness about Middle East Respiratory Syndrome–Corona Virus (MERS-CoV) among dental students in

- Riyadh, Saudi Arabia. Pak Oral Dent J 2016;36(3):426–9.
20. Almutairi KM, Al Helih EM, Moussa M, Boshaiqah AE, Saleh Alajilan A, Vinluan JM, *et al.* Awareness, attitudes, and practices related to coronavirus pandemic among public in Saudi Arabia. Fam Community Health 2015;38(4):332–40.
 21. Gohel KH, Patel PB, Shah PM, Patel JR, Pandit N, Raut A. Knowledge and perceptions about COVID-19 among the medical and allied health science students in India: An online cross-sectional survey. Clin Epidemiol Glob Health 2021;9:104–9. doi:10.1016/j.cegh.2020.07.008
 22. Zhong BL, Luo W, Li HM, Zhang QQ, Liu XG, Li WT, Li Y. 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):1745–52.
 23. Abdelhafiz AS, Mohammed Z, Ibrahim ME, Ziady HH, Alorabi M, Ayyad M, *et al.* Knowledge, perceptions, and attitude of Egyptians towards the novel coronavirus disease (COVID-19). J Community Health 2020;45(5):881–90.
 24. Alzoubi H, Alnawaiseh N, Al-Mnayyis A, Lubad MA, Aqel A, Al-Shagahin H. COVID-19 knowledge, attitude and practice among medical and non-medical University Students in Jordan. J Pure Appl Microbiol 2020;14(1):17–24.

Address for Correspondence:

Dr Farah Fatima Abbas, Department of Clinical Laboratory Sciences, Dow Institute of Medical Technology, Dow University of Health Science, Karachi, Pakistan. **Cell:** +92-335-7004883

Email: farah.fatima@duhs.edu.pk

Received: 10 Oct 2021

Reviewed: 23 Dec 2021

Accepted: 26 Dec 2021

Contribution of Authors:

SN: Discussion writing, Data collection

MSQ: Introduction writing, Data collection

FNE: Concept development and Data Analysis

AK: Data collection, finalizing the draft, helped in getting approval from the review board

FFA: Concept development, abstract writing and result writing

SA: Results and Discussion writing

MSO: Organizing getting permissions and discussion writing

Funding: None

Conflict of interest: None