# Knowledge and Awareness of Medical Students for Protective Measures against COVID-19

Mukhtar Hussain[1], M Ahmad Mukhtar[2], Amna Mukhtar[3], Aeimen Khalid[2], Naila Tariq[2] and Rubina Mukhtar[4]

## ABSTRACT

**Objective:** Our study aimed to assess the knowledge and awareness of medical students for preventive and protective measures towards Covid-19.

**Study Design:** descriptive observational cross sectional study

**Place and Duration of Study:** This study was conducted at the institutes of southern Punjab including Nishtar Medical University, Multan, Bakhtawer Amin Medical College, Multan and Quade Azam Medical College, Bahawalpur from June, 2020 to September, 2020.

**Materials and Methods:** A structured questionnaire based on demographic, COVID -19 related information and practice for preventive measures was distributed online among medical students of southern Punjab, Pakistan. The response of students was recorded and result was analyzed.

**Results:** Out of 736 students 287 (39%) were males and 449 (61%) were females. Over all 85% students showed appreciable awareness for predisposing factors, virology, preventive and protective measures Clinical students were more aware as compare to pre-clinical students. Awareness was better among male students as compare to females one. The most common source of gaining knowledge was social media. Clinical students were in good practice of preventive and protective measures. Direct dealing or contact with Corona patients in wards might be the cardinal reason for good awareness and preventive practice in clinical students. Observation of the intensive treatment required for symptomatic patients and poor outcome in some patients is another fundamental ground that increases the Covid fear or anxiety and the thirst for gaining more information and knowledge.

**Conclusion:** Medical students are asset of a nation, being the future frontline worriers against these kinds of pandemics. Overall, the Covid Related knowledge was deficit among pre-clinical and female medical students. Awareness for covid-19 pandemic is the one and only key to protect our medical students and its associated mental and physical impact but unfortunately is an ignored aspect in developing countries. There is need of intervention by public health department for designing awareness and education plans.

**Key Words:** Awareness, Corona Virus, COVID-19, pandemic, Viral Infection, Anxiety, Medical students

## INTRODUCTION

COVID-19 pandemic is currently, the most concerned health challenge worldwide[1]. After starting in China it imprisoned the most of the countries of the world[2, 3]. It affected not only economy but also physical and mental health of people[4]. Millions of deaths have been recorded worldwide because of this pandemic[5].

[1.] Quad e Azam Medical College (QAMC), Bahawalpur.
[2.] Nishtar Medical University, Multan.
[3.] Bakhtawer Ameen Medical College, Multan.
[4.] Department of Radiology, MINAR Cancer Hospital, Multan.

Correspondence: Dr. Rubina Mukhtar, Consultant Radiologist, MINAR Cancer Hospital, Multan
Contact No: 0322-6188650
Email: binamukhtar@hotmail.com

Its proven transmission from animals and human to human is via direct communication, coughing, sneezing or direct touching[6,7]. Observing social distancing, self-quarantine, use of face mask and adopting the habit of frequent hand washing are the key measures in control of its spread[8]. Due to Non availability of definitive treatment protocols, main focus of management for Covid patients is supportive treatment. Preventive measures are implemented worldwide that has key role in control of this communicable deadly disease [9, 10]. Awareness and knowledge is fundamental necessity to control current situation, as proven by previous studies that epidemics of such type are best controlled by enhancing the knowledge and awareness of public [11-13].

Medical students in clinical years attain noteworthy significance of having bilateral risk of contracting disease and transmitting it to others. Medical students are involved in history taking and initial patient evaluation for signs and symptoms and further guidance. Previous studies show that lack of knowledge results in misdiagnosis and mismanagement due to poor skill for patient evaluation and recognition of clinical

symptoms and signs. Moreover medical students are blessed to get opportunity of being advocate of health knowledge in society so it is highly imperative for them to gain maximum knowledge for diagnosis and preventive measures of COVID-19. Over and above Medical students can be a source of transmitting disease to Immuno compromised patients and those with co morbidities who are highly susceptible to contract disease. In modern era of technology, the most common and fastest source to gain and disseminate the knowledge and information is social media leaving other sources of literature or books behind [14]. Media has established role in creating awareness in public. Public messages on media have shown change in behavior of people for cigarette smoking and other deleterious factors and habits. It is research based proven fact that media act as double edged sword. On one side it has positive role in creating behavioral changes in public by highlighting the high threat of certain habits and behaviors. But on other side daily updates for increasing number of deaths on media and news creates fear and phobia for Covid-19 [15,16].

## MATERIALS AND METHODS

This observational cross sectional Study was conducted at institutes of southern Punjab including Nishtar Medical University, Multan, Bakhtawer Amin Medical College, Multan and Quade Azam Medical College, Bahawalpur. A self-designed objective type questionnaire derived from previous literature on awareness about pandemics in past, was sent to students Online via watsapp and emails. Questionnaire was designed to evaluate the knowledge and awareness of medical students of this region with reference to, risk factors, causative factors, and mode of transmission, clinical presentation, complications, outcomes and protective measures. Total 736 students participated in study. Students, who were volunteer and showed keenness, responded positively by filling Performa, were included in the study and students not willing to participate were excluded from the study. Data was collected recorded and analyzed using SPSS version 24. Frequency and percentages were calculated to define the Qualitative statistics. Mean and standard deviation was calculated for descriptive values like age. Variables were calculated applying Chi square test with significant p value defined as $< 0.05$ and independent student t test was applied to determine association of scores from different groups.

## RESULTS

Out of total 736 students 39% were male and 61% were females. 56.2% were preclinical and 47.8% were clinical students. Demographic features are expressed in Table 01. Two groups of Students were defined based on gender and level of study year. Response to questionnaire for awareness about Covid-19 pandemic is summarized in table 2. Response of students regarding practice of protective measures and their approach towards management, and interest in educational and awareness programs is summarized in table 3.

Knowledge regarding causative agent was good overall. Knowledge in regards to other aspects of covid-19 pandemic including risk factors, clinical presentation and mode of transmission was better in clinical students with no significant gender based difference. Knowledge about Incubation period, its fatality and protective measures was comparatively deficit among female and preclinical students. The most common and favorite source of information or knowledge among medical students was Social media.

**Table No.1: Showing Demographic Features**

| Demographic Feature | Frequency | Percentage |
|---|---|---|
| **Gender** | | |
| Females | 449 | 61% |
| Male | 287 | 39% |
| Total | 736 | 100% |
| Age | | |
| 18-20 | 294 | 40% |
| 20-25 | 442 | 60% |
| Total | 736 | 100% |
| **Study year** | | |
| Pre-Clinical students (1st & 2nd year) | 486 | 66% |
| Clinical students ( 3rd,4th,5th year) | 250 | 34% |
| Total | 736 | 100% |
| **Days scholar/Hostelite** | | |
| Days scholar | 236 | 32% |
| Hostelite | 500 | 68% |
| Total | 736 | 100% |

**Table No.2: Showing Response of Students to Questionnaire**

| | Questions | Sex | | | | P value | Educational status | | | | P value |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Male | | Female | | | Preclinical | | clinical | | |
| | | No | % | No | % | | No | % | No | % | |
| 1. | Do you know what Corona Pandemic is? | | | | | | | | | | |
| | Yes | 287 | 100 | 377 | 84.4 | NS | 404 | 83.1 | 250 | 100 | NS |
| | No | Nil | | 70 | 15.6 | | 82 | 16.9 | Nil | | |
| 2. | What is infective agent for CORONA? | | | | | | | | | | |
| | Virus | 282 | 98.2 | 242 | 54 | 0.002 | 387 | 79.7 | 248 | 99.3 | NS |

| No. | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Bacteria | 05 | 1.8 | 207 | 46 | | 98 | 20.3 | 02 | 0.7 | |
| 3. | Does chronic disease increases the risk for Corona? | | | | | | | | | | |
| | Yes | 254 | 88.6 | 322 | 71.8 | NS | 317 | 65.2 | 238 | 95.3 | 0.025 |
| | No | 33 | 11.4 | 127 | 28.2 | | 169 | 34.8 | 12 | 4.6 | |
| 4. | Can Corona be fatal/Causes death? | | | | | | | | | | |
| | Yes | 287 | 100 | 370 | 82.4 | NS | 393 | 80.9 | 250 | 100 | 0.017 |
| | No | Nil | | 79 | 17.6 | | 93 | 19.1 | Nil | | |
| 5. | Corona can be controlled by applying protective measures | | | | | | | | | | |
| | Yes | 245 | 85.2 | 309 | 68.8 | NS | 333 | 68.6 | 227 | 90.7 | 0.028 |
| | No | 42.4 | 14.8 | 140 | 31.2 | | 153 | 31.4 | 23 | 9.3 | |
| 6. | Incubation period of Corona is | | | | | | | | | | |
| | 24 hours | 10 | 3.5 | 57 | 12.7 | | 101 | 20.8 | 5 | 0.7 | |
| | 1-10 days | 05 | 1.7 | 21 | 4.7 | | 39 | 8.1 | 12 | 4.6 | 0.034 |
| | 1-4 weeks | 269 | 93 | 361 | 80.4 | | 327 | 67.4 | 233 | 93.7 | |
| | >5 weeks | 05 | 1.7 | 9 | 2.2 | | 17 | 3.6 | 00 | 00 | |
| 7. | Disease can be transmitted via | | | | | | | | | | |
| | Skin contact | 01 | 0.4 | 101 | 22.3 | 0.008 | 83 | 17.2 | 7 | 2.7 | 0.029 |
| | Droplet infection | 267 | 93 | 292 | 64.9 | | 342 | 70.2 | 235 | 94.1 | |
| | Oro fecal route | 18 | 6.5 | 56 | 12.5 | | 61 | 12.6 | 8 | 3.1 | |
| 8. | Presenting complaints include | | | | | | | | | | |
| | Fever | 17 | 6.0 | 79 | 17.3 | | 94 | 19.3 | 12 | 4.7 | |
| | Cough | 15 | 5.3 | 52 | 11.7 | 0.026 | 69 | 14.2 | 07 | 2.7 | 0.001 |
| | Shortness of breath(SOB) | 15 | 5.3 | 52 | 11.7 | | 72 | 14.8 | 05 | 2.0 | |
| | All of above | 240 | 83.4 | 266 | 59.3 | | 248 | 51.6 | 226 | 90.6 | |
| 9. | Common Source of information are | | | | | | | | | | |
| | Newspaper | 07 | 2.6 | 3 | 0.67 | | 23 | 4.88 | 00 | | |
| | Television | 29 | 10 | 83 | 18.5 | | 30 | 6.11 | 15 | 6 | |
| | Social media | 251 | 87.4 | 363 | 80.03 | | 433 | 89.09 | 235 | 94 | |

**Table No.3: Showing Response of Students towards Practice for Preventive Measures**

| | Questions | Numbers | %tages |
|---|---|---|---|
| 1 | Do you afraid of infecting Corona by yourself or your family member? | | |
| | Yes | 480 | 81.4% |
| | No | 109 | 18.6% |
| 2 | Which of the following protective measure you practice? | | |
| | Social distancing & Self quarantine | 44 | 7.5% |
| | Face mask | 540 | 91.68% |
| | Hand sanitizer& frequent hand wash | 5 | 0.82 |
| 3 | Did you get vaccination? | | |
| | Yes | 521 | 88.4% |
| | No | 68 | 11.6% |
| 4 | Do you use following protective measures while dealing Corona patient? | 548 | 93% |
| | Use gloves | 529 | 90% |
| | N95 Mask | 579 | 98.3% |
| | Hand sanitizer | 589 | 100% |
| | gown | 431 | 73.1% |
| | All above | 357 | 60.6% |
| | Are you satisfied with available information? | | |
| | Yes | 137 | 23.2% |
| | No | 452 | 76.8% |
| | What source do you use to get information? | | |
| | Television | 67 | 11.4% |
| | Print media i.e. newspaper | 12 | 2.0% |
| | Social media i.e. face book, whattsapp etc. | 510 | 84.6% |
| | Would you like to join awareness and educational programmes about Corona pandemic? | | |
| | Yes | 503 | 85.4% |
| | No | 86 | 14.6% |

# DISCUSSION

Knowledge gap among medical students about Covid-19 pandemic in regards of prevention, dissemination and treatment has been shown by some studies [17]. Previous studies manifested that misdiagnosis and mismanagement is common due to paucity of Knowledge leading to poor skills for history taking and recognition of signs and symptoms [18]. This aspect of shortfalls in control of pandemic is supplemental in developing countries like ours. In view of previous studies and irrevocable current widespread global issue of Covid-19 pandemic, this study was carried out to find out the level of knowledge and awareness of our medical students of southern Punjab, Pakistan. As per we know, no such study yet conducted in this region that also signify our study.

Overall better knowledge and attitude towards protective measures for Covis-19 is shown among clinical and male students in our study. Direct involvement of clinical students in patients dealing for taking history and initial evaluation that increases their confidence level on one hand and practical knowledge on other hand is a basic suggested ground of this difference. Another cause forcing them to enhance their knowledge for preventive measures and its management might be the metal trauma gained by direct observation of Covid affected patients, their management in isolation far from dear ones and fatal outcome. Previous studies show the undeniable constructive relation of knowledge with level of study year, senior the student more the knowledge [2, 8, 19]. International research is continuously revising the treatment of Covid-19 with yet no consensus on its definite treatment.[20] Different trails on vaccination are going on. All these factors compel to update of knowledge. Our study shows the most popular and main source of information in medical students is a social media. Rapid shift of learning pattern has been seen in recent past. Recent publications showed increased utilization of internet and social media for Covid-19 updates. The influential role of social media to update and disseminate information cannot be challenged but on the other hand might be harmful by propagating wrong information[21,22]. Continues media updates for Covid related death rate creates the dread leading to anxiety, Depression and other psychological impacts. No question about hot favorite source of information by youth is social media but Strategic planning is prime need for its pragmatic utilization, to overcome the fallibilities resulting from deficiency of basic knowledge. Online short courses for medical students might be the solution.

Female students were not much erudite in comparison to male. It's highly reflective of our society where females have less exposure to public and media. Moreover females are generally least updated for current affairs[23, 24]. There is exigency to annihilate the shortfall of knowledge among medical students observed in our study and to orchestrate curriculum for medical students incorporating all clinical aspects of Covid-19 including the virology, epidemiology, pathology and management. Courses on infectious diseases should be part and parcel of their medical curriculum[25, 26]. Benefits of internal assessment grades or certificate can be offered to compel the students to attend the online education programs or courses during the current situations of lock down. Indubitably, early diagnosis has indispensable role in reducing the mortality rate of any disease through the proper treatment in time leading to better recovery. Our study showed, comparatively, the awareness of clinical presentation of Covid-19 patients was not superlative among females and preclinical students. To conquer this meagerness of knowledge, short courses on subject of infectious diseases covering all aspects of risk factors, etiology, clinical presentation and diagnosis, management and complications could be organized for medical students as a part and parcel of their main course [25, 26].

# CONCLUSION

Our study shows, overall dearth in basic knowledge and awareness about Covid -19 among medical students. However awareness and practice for protective measures was comparatively better among clinical and male students. A pivotal yardstick to measure pandemic control is compliance with behavior change and protective measures that is not shown good enough. Medical students are frontline soldiers of future that necessitate the strategic planning to refine their curriculum aimed to amplify their knowledge and enhance their expertise with high potential to foil this kind of pandemics in future.

**Author's Contribution:**

| | |
|---|---|
| Concept & Design of Study: | Mukhtar Hussain, M Ahmad Mukhtar |
| Drafting: | M Ahmad Mukhtar, Amna Mukhtar |
| Data Analysis: | Aeimen Khalid, Naila Tariq, Rubina Mukhtar |
| Revisiting Critically: | Mukhtar Hussain, M Ahmad Mukhtar |
| Final Approval of version: | Mukhtar Hussain, M Ahmad Mukhtar |

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

# REFERENCES

1. 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).

2. Ikhlaq A, Hunniya B-E, Riaz IB, Ijaz F. Awareness and attitude of undergraduate medical students towards 2019-novel corona virus. Pak J Med Sci 2020;36(COVID19-S4):S32.

3. Lai CC, Shih TP, Ko WC, Tang HJ, Hsueh PR. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and coronavirus disease-2019 (COVID-19): The epidemic and the challenges. Int J Antimicrobial Agents 2020;55(3):105924.

4. Qarawi ATA, Ng SJ, Gad A, Mai LN, Al-Ahdal TMA, Sharma A, et al. Awareness and Preparedness of Hospital Staff against Novel Coronavirus (COVID-2019): A Global Survey-Study Protocol 2020.

5. World Health O. Coronavirus disease 2019 (COVID-19): Situation Report, 82. 2020.

6. Hoda J. Identification of information types and sources by the public for promoting awareness of Middle East respiratory syndrome coronavirus in Saudi Arabia. Health Educ Res 2016;31(1):12-23.

7. Paules CI, Marston HD, Fauci AS. Coronavirus infections—more than just the common cold. JAMA 2020;323(8):707-8.

8. Nguyen HT, Do BN, Pham KM, Kim GB, Dam HTB, Nguyen TT, et al. Fear of COVID-19 scale—associations of its scores with health literacy and health-related behaviors among medical students. Int J Environ Res Public Health 2020;17(11):4164.

9. Cheng HY, Jian SW, Liu DP, Ng TC, Huang WT, Lin HH. Contact tracing assessment of COVID-19 transmission dynamics in Taiwan and risk at different exposure periods before and after symptom onset. JAMA Internal Med 2020;180(9): 1156-63.

10. Lai S, Ruktanonchai NW, Zhou L, Prosper O, Luo W, Floyd JR, et al. Effect of non-pharmaceutical interventions to contain COVID-19 in China. Nature 2020;585(7825):410-3.

11. Novel CPERE. The epidemiological characteristics of an outbreak of 2019 novel coronavirus diseases (COVID-19) in China. Zhonghua liu xing bing xue za zhi=Zhonghua liuxingbingxue zazhi 2020;41(2):145.

12. Ajilore K, Atakiti I, Onyenankeya K. College students' knowledge, attitudes and adherence to public service announcements on Ebola in Nigeria: Suggestions for improving future Ebola prevention education programmes. Health Education J 2017; 76(6):648-60.

13. Tachfouti N, Slama K, Berraho M, Nejjari C. The impact of knowledge and attitudes on adherence to tuberculosis treatment: a case-control study in a Moroccan region. Pan Afri Med J 2012;12(1).

14. Aldowyan N, Abdallah AS, El-Gharabawy R. Knowledge, attitude and practice (KAP) study about middle east respiratory syndrome coronavirus (MERS-CoV) among population in Saudi Arabia. Int Archives Med 2017;10.

15. Shu K, Sliva A, Wang S, Tang J, Liu H. Fake news detection on social media: A data mining perspective. ACM SIGKDD explorations newsletter. 2017;19(1):22-36.

16. Li H, Sakamoto Y. The influence of collective opinion on true-false judgment and information-sharing decision. Howe School Research Paper 2013(2013-8).

17. Herman B, Rosychuk RJ, Bailey T, Lake R, Yonge O, Marrie TJ. Medical students and pandemic influenza. Emerging Infectious Diseases 2007;13(11):1781.

18. Gaffar BO, El Tantawi M, Al-Ansari AA, AlAgl AS, Farooqi FA, Almas KM. Knowledge and practices of dentists regarding MERS-CoV. Saudi Med J 2019;40:714-20.

19. Kharma MY, Alalwani MS, Amer MF, Tarakji B, Aws G. Assessment of the awareness level of dental students toward Middle East Respiratory Syndrome-coronavirus. J Int Society Preventive Community Dentistry 2015;5(3):163.

20. Chawla D, Chirla D, Dalwai S, Deorari AK, Ganatra A, Gandhi A, et al. Perinatal-neonatal management of COVID-19 infection—guidelines of the Federation of Obstetric and Gynaecological Societies of India (FOGSI), National Neonatology Forum of India (NNF), and Indian Academy of Pediatrics (IAP). Ind Pediatr 2020;57(6):536-48.

21. Zhou Z, Bai R. Roles of social media in disseminating health information: An exploratory study in China, 2015.

22. Szomszor M, Kostkova P, St Louis C, editors. Twitter informatics: tracking and understanding public reaction during the 2009 swine flu pandemic2011: IEEE.

23. Frederickson M. Women are getting less research done than men during this coronavirus pandemic. The Conversation 2020;18.

24. Pollak S. Women know less about politics than men worldwide. Guardian; 2013.

25. McMaster D, Veremu M, Santucci C. COVID-19: opportunities for professional development and disruptive innovation. The Clin Teacher 2020; 17(3):238.

26. Guerrier G, D'Ortenzio E. Teaching anthropology to medical students. The Lancet 2015;385 (9968):603.