

Knowledge and attitude pertinent to COVID-19 and willingness to COVID vaccination among medical students of University College of Medicine & Dentistry Lahore

Javeria Usman¹, Ifrah Arshad², Anosha Fatima³, Muhammad Ahsan⁴, Namra Minal⁵

¹ Assistant Professor, University of Lahore, Lahore.

^{2,3,4,5} Final year MBBS Student, University of Lahore, Lahore.

Author's Contribution

^{1,2} Conception of study

^{2,3,4,5} Experimentation/Study conduction

¹ Analysis/Interpretation/Discussion

^{1,2,3,4} Manuscript Writing

^{1,3} Critical Review

Corresponding Author

Dr. Javeria Usman

Assistant Professor,
University of Lahore,

Lahore

Email: javeria.usman@ucm.uol.edu.pk

Article Processing

Received: 24/04/2021

Accepted: 12/08/2021

Cite this Article: Usman, J., Arshad, I., Fatima, A., Ahsan, M., Minal, N. Knowledge and attitude pertinent to COVID-19 and willingness to COVID vaccination among medical students of University College of Medicine & Dentistry Lahore. *Journal of Rawalpindi Medical College*. 31 Aug. 2021; 25 COVID-19 Supplement-1, 61-66.

DOI: <https://doi.org/10.37939/jrnc.v25i1.1643>

Conflict of Interest: Nil

Funding Source: Nil

Access Online:



Abstract

Objectives: To determine the awareness and attitude of medical students towards Coronavirus disease and the COVID-19 vaccine and to assess the willingness to get vaccinated against COVID-19.

Materials and Methods: This was a cross sectional descriptive study conducted among all undergraduate medical students at University College of Medicine and dentistry, University of Lahore (UOL). A self-developed questionnaire containing demographic information, 8 knowledge and attitude items and 11 items for willingness to get COVID-19 vaccine was filled by 410 participants. Data was analyzed using SPSS version 25.

Results: More than ninety five percent of participants were aware of the cause, mode of transmission and mortality associated with corona disease; however, a handful of them knew about the purpose of using vaccine. Majority of the participants believed that COVID-19 vaccine will be effective and a good way to get protected from the disease. Regarding willingness to get covid-19 vaccine, more than half of the participants wanted to be the first to get vaccinated but majority were concerned about the efficacy of COVID-19 vaccine.

Conclusion: The medical students of University College of Medicine and dentistry, University of Lahore (UOL) had an adequate level of knowledge and awareness towards COVID-19 and a positive attitude towards COVID-19 vaccination. Our study noted a high level of COVID-19 vaccine acceptance among medical students, yet there were significant concerns about the vaccine efficacy.

Keywords: Coronavirus, Awareness, Medical students, COVID-19 vaccine, willingness.

Introduction

Sudden outbreak of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in 2019 has led to major destruction of economy, education and health globally. As per World Health organization (WHO) the current pandemic has affected 61.6 million people and the number of deaths are 1.44 million worldwide.¹ The situation in Pakistan is no different, where we are fighting the second wave of pandemic with 392,356 affected and 7,942 deaths.²

Clinical trials for developing a vaccine against SARS-CoV-2 began soon after the disease flared up and was declared a global threat by WHO.³ On December 11, 2020 Pfizer and its German partner BioNTech got approval of its vaccine against COVID-19 from FDA.⁴ Soon this was followed by a number of companies developing covid-19 vaccines. Till now, Drug Regulatory Authority of Pakistan (DRAP) has approved three vaccines for use in Pakistan – China's Sinopharm, Russia's Sputnik V and the Oxford University-AstraZeneca vaccine.⁵

Immunization is one of the greatest success stories in the history of global health.⁶ Vaccination against coronavirus is considered to be the ultimate solution to control this disease, and while it is being developed, the next challenge will be the uptake of vaccine by the people once it is available. However, Vaccine hesitancy is a prominent risk to be considered and has been stated as one of the ten threats to the health worldwide.⁷

Developing countries like Pakistan that cannot afford a long term lockdown due to economic crisis; are looking forward towards a successful launch of FDA approved vaccine against COVID-19. But, with the rise in corona virus cases numerous conspiracy theories came forward,^{8,9} which can add to vaccine hesitancy. Vaccination hesitancy has been a challenge for Pakistan as previously experienced in case of polio virus.¹⁰

The rationale of this study is to analyze the knowledge and attitude of students towards coronavirus and willingness to get anti corona vaccine. The data collected from this research will give us an overview regarding COVID vaccine acceptance among our future doctors and will be helpful for the concerned authorities and health care system in planning and preparation towards COVID-19 vaccination.

Materials and Methods

A cross-sectional descriptive study was conducted among all MBBS students of UMDU University College of Medicine and dentistry, University of Lahore from 22nd Jan 2021 to 20 Feb 2021; after approval from ethical review board. A sample size of 410 was calculated (using formula $n = z^2 p (1-p) / d^2$) with 95% confidence interval and 5% margin of error. Stratified random sampling was used to select participants. All the MBBS students were divided into five strata according to the level of qualification from first year to final year and sample of each strata was calculated [using the formula $N = (\text{sample size} / \text{population size}) \times \text{stratum size}$].

A questionnaire was developed after a thorough literature review and reviewed by five experts for representativeness, clarity and relevance. The questionnaire contained demographic information, 8 knowledge and attitude items and 11 items for willingness to get COVID-19 vaccine. It was then pilot tested on 15 students. The questionnaire required approximately 7 minutes to be filled. The questionnaire was sorted on google forms and delivered to the target population via emails and WhatsApp groups along with the information form stating the introduction of the researcher and the objectives of the study. No response was discarded. The data was collected over a period of three weeks. The whole data was entered on SPSS version 25 for analysis. The results were presented in the form of frequencies, percentages and tables.

Results

A total of 410 medical students were selected to participate in the survey. The demographics of the participants are presented in Table 1.

Table 1: Demographics

| Characteristics | Frequency | Percentage % |
|----------------------------------|-----------|--------------|
| Age | | |
| 18-21 years | 130 | 31.7 |
| 22-25 years | 280 | 68.29 |
| Gender | | |
| Males | 218 | 53.2 |
| Females | 192 | 46.8 |
| Educational status (MBBS) | | |
| 1st year | 55 | 13.42 |
| 2nd year | 65 | 15.85 |

| | | |
|------------|-----|-------|
| 3rd year | 82 | 20 |
| 4th year | 96 | 23.41 |
| Final year | 112 | 27.32 |

mortality associated with corona disease. Unfortunately, 60.5% of the participants had the misleading opinion that COVID-19 vaccine can be used to treat corona virus infection (Table 2).

More than ninety five percent of participants were aware of the cause, mode of transmission and

Table 2: Knowledge of undergraduate medical students about corona disease and covid-19 vaccine

| Statements | Correct answer frequency | Percentage % |
|--|--------------------------|--------------|
| Coronavirus is transmitted by close contact with infected person or animal | 395 | 96.3 |
| Coronavirus can be fatal | 392 | 95.6 |
| Coronavirus infection can be easily treated using antibiotics | 325 | 79.3 |
| Vaccination can prevent coronavirus infection | 344 | 83.9 |
| Vaccination can treat coronavirus infection | 162 | 39.5 |
| Even healthy person need vaccination for COVID-19 | 336 | 82 |
| Vaccines contain substances that have been proven harmful to person's health | 295 | 72 |
| People who recovered from covid-19 are not at risk of re-infection | 83.6 | 13.7 |

Most of the participants believed that the vaccine will be effective and a good way to get protected from the disease and the vaccination program will be beneficial for the community.

Unfortunately, only approximately 50% of the participants were confident with the Ministry of health making decisions regarding COVID-19 vaccination (Table 3, part I).

Table 3, part I: Willingness to vaccinate against covid-19

| Statements | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
|---|----------------|-------------|------------|-----------|-------------------|
| You believe that COVID-19 vaccine offered by the government program will be beneficial for the community. | 130 (31.7%) | 198 (48.3%) | 68 (16.6%) | 10 (2.4%) | 4 (1%) |
| You think that COVID-19 vaccination should be made compulsory. | 154 (37.6%) | 159 (38.8%) | 66 (16.1%) | 21 (5.1%) | 10 (2.4%) |
| You trust the decisions of health authorities regarding COVID-19 vaccination. | 89 (21.7%) | 160 (39%) | 123 (30%) | 28 (6.8%) | 10 (2.4%) |
| You believe that COVID-19 vaccine would be effective. | 89 (21.7%) | 220 (53.7%) | 87 (21.2%) | 7 (1.7%) | 7 (1.7%) |
| You will advise your relatives and family to immunize themselves. | 127 (31%) | 219 (53.4%) | 51 (12.4%) | 10 (2.4%) | 3 (0.7%) |

Regarding willingness to get covid vaccine, more than 70% of the participants wanted to be the first to get vaccinated. The majority of respondents (24.34%) who denied vaccination first were concerned about the efficacy of vaccine and wanted to opt it once the trials end and results are published. Few of them (1.2%)

wanted the elderly and frontline workers to receive the vaccine first and handful of them believed in conspiracy theories.

Around 68.5% of the participants were willing to take part in vaccination trials, but the rest of the respondents (31.5%) denied. A proportion of them

(6.4%) believed that, it is new vaccine and an imported one, thus may carry more risk than previous vaccines. Few of the respondents (1.26%) explained that as the vaccine is prepared in a very short time and under stressful conditions, the formula may not be as effective as the others well tested vaccines.

Only 16.4 % of the participants believed in conspiracy theories regarding covid-19 vaccine, the most

prominent of which are; micro-chip implantation theory associated with Bill gates and a theory that corona virus has been introduced as a part of economic war between developed countries (Table 3, part II).

Table 3, part II:

| <i>Statements</i> | <i>Yes</i> | <i>No</i> |
|--|------------------------------|------------------------------|
| When a COVID-19 vaccine is introduced, do u want be the first to get it? *If no, please state the reason. | 300.53 (73.3%) | 109.47 (26.7%) |
| Would u rather wait & see what other people do? Are you willing to take part in covid-19 vaccine trials? *If not please state the reasons. | 234(57.1%) 280.85 (68.5%) | 176 (42.9%) 129.15(31.5%) |
| Are you concerned about potential side effects of the vaccine? Do u believe that COVID-19 vaccine would carry more risk than older vaccines? *If yes, why? | 335 (81.7%) 186 (45.4%) | 75 (18.3%) 224 (54.6%) |
| Do you believe in the conspiracy theories regarding coronavirus vaccination? *If yes, which conspiracy theory? | 67.24(16.4%) | 342.76(83.6%) |

Discussion

Infectious diseases were and will remain a constant threat to the mankind globally.¹¹ The novel corona virus disease that has been declared as global emergency was first discovered in China in December 2019, but soon spread across the globe. Pakistan reported its first case of COVID-19 in February 2020.¹² Since then COVID-19 is the subject of debate among

every group of individuals, television and social media. This has led to increased awareness about the fatal virus on one side but has procreated a number of conspiracy theories and misconceptions on the other side.

This study found out that most of our participants had the basic knowledge about the cause, mode of transmission and mortality associated with COVID-19. This is in accordance with local¹³ and international

studies.¹⁴ Credit can be given to the government, media, hospitals, health care professionals for spreading awareness about precautionary measures through every medium.

As COVID-19 vaccine has provided a ray of hope amongst the panicky world, the insufficient knowledge and conspiracy theories about the COVID-19 vaccine are posing a serious threat to covid vaccination in Pakistan.¹⁵ Regarding knowledge about COVID-19 vaccine, only 39.5% of the respondents knew about the purpose of vaccine. This is contrary to the published literature which shows high knowledge scores about vaccines among medical students.¹⁶ Lack of knowledge about vaccines and their mechanism of action in our students may be due to lack of attention by the students, considering vaccination a minor topic and not considering vaccine requiring diseases such as measles, mumps and rubella life threatening; as they are mostly under control in Pakistan.

This study shows strong acceptance of COVID-19 vaccine among the responders. This is compatible with the published literature.¹⁷ This acceptance of COVID-19 vaccine in medical students is far greater than H1N1 pandemic influenza vaccination rate in china which was estimated around 37%¹⁸ as well as other countries which ranged from 17 to 67%.^{19,20} This increase acceptance of COVID-19 vaccine in our study may be due to the fact that the study participants are medical students and they have a positive attitude towards COVID-19 vaccination.

Despite the acceptance of COVID-19 vaccine by majority of the participants, there are still certain obstacles in the transition from vaccination plan to real uptake of the vaccine. About 81.7% of the participants were concerned about the potential side effects of the vaccine. A major hindrance to a vaccination decision making by a community, is reported to be the concerns about the safety of a particular vaccine; specifically the newly developed vaccines which have not been completely tested in human beings.^{21,22} For instance, despite of having vaccine acceptance rate of 67% for influenza vaccine, about 13% of Australian population stated that they will delay the vaccination till the safety of vaccine is completely proven.¹⁹ This high rate of concerns about COVID-19 vaccine observed in our study may be due to a number of conspiracy theories circulating in our community⁸ as well as socio-religious controversies.²³ These concerns may lead to the main cause of vaccine hesitancy in Pakistani community. We hope that the higher rate of concerns about COVID-19 vaccine may reduce once we have the vaccine availability, as a study published in Denmark

stated that, when the safety of newly developed vaccines becomes proportionate to the vaccines which are already in use, the importance of vaccine safety factor on vaccination decision-making becomes less than other characteristics such as vaccine efficacy and cost.²⁴

This is the first study to examine the willingness to get vaccinated against COVID-19 among Pakistani medical students during COVID-19 pandemic period. This study also explored the basic knowledge about the cause, mode of transmission and mortality associated with COVID-19 among medical students.

Conclusion

Most of the medical students of UCMD, UOL had basic knowledge about corona virus. A high level of COVID-19 vaccine acceptance among medical students is reported, yet majority are concerned about the safety of the vaccine. This may hinder the real uptake of vaccine in future. As Pakistan has already suffered a forceful opposition against polio vaccination leading to failure in eradicating the disease from the country; false beliefs, confusions and misconceptions among the public towards COVID-19 vaccines will have calamitous effects regarding attempts to confine the pandemic. We suggest that health authorities and health professionals should respond swiftly to any anti-vaccine campaign in the country by providing authentic information to the public.

References

1. WHO Coronavirus Disease (COVID-19) Dashboard | WHO Coronavirus Disease (COVID-19) Dashboard. <https://covid19.who.int/>
2. COVID-19 Health Advisory Platform by Ministry of National Health Services Regulations and Coordination. <https://covid.gov.pk/>
3. Kaur SP, Gupta V. COVID-19 Vaccine: A comprehensive status report. Vol. 288, Virus Research. Elsevier B.V.; 2020. p. 198114.
4. Pfizer-BioNTech COVID-19 Vaccine | FDA <https://www.fda.gov/emergency-preparedness-and-response/coronavirus-disease-2019-covid-19/pfizer-biontech-covid-19-vaccine>
5. Private sector to be exempt from price caps on import of Covid-19 vaccines - DAWN.COM <https://www.dawn.com/news/1606771>
6. Greenwood B. The contribution of vaccination to global health: Past, present and future. Vol. 369, Philosophical Transactions of the Royal Society B: Biological Sciences. Royal Society of London; 2014/pmc/articles/PMC4024226/?report=abstract
7. Ten threats to global health in 2019 <https://www.who.int/news-room/spotlight/ten-threats-to-global-health-in-2019>

8. Ahmed W, Vidal-Alaball J, Downing J, Segui FL. COVID-19 and the 5G conspiracy theory: Social network analysis of twitter data. *J Med Res*;22(5):e19458. Available from: <https://www.jmir.org/2020/5/e19458/>
9. Shaban Rafi M. Dialogic Content Analysis of Misinformation about COVID-19 on Social Media in Pakistan. *Linguist Lit Rev*;6(2):131–43. Available from: <https://doi.org/10.32350/llr.62.12>
10. Ali M, Ahmad N, Khan H, Ali S, Akbar F, Hussain Z. Polio vaccination controversy in Pakistan. Vol. 394, *The Lancet*. Lancet Publishing Group; 2019. p. 915–6. <https://pubmed.ncbi.nlm.nih.gov/31526731/>
11. Bloom DE, Cadarette D. Infectious disease threats in the twenty-first century: Strengthening the global response. Vol. 10, *Frontiers in Immunology*. Frontiers Media S.A.; 2019. p. 549. </pmc/articles/PMC6447676/?report=abstract>
12. Abid K, Bari YA, Younas M, Tahir Javaid S, Imran A. Progress of COVID-19 Epidemic in Pakistan. *Asia-Pacific J Public Heal*. 2020 May 1;32(4):154–6. </pmc/articles/PMC7240311/?report=abstract>
13. Ikhlaiq A, Bint-E-riaz H, Bashir I, Ijaz F. Awareness and attitude of undergraduate medical students towards 2019-novel corona virus. *Pakistan J Med Sci*. 2020 May 18;36(COVID19-S4):S32–6. doi.org/10.12669/pjms.36.COVID19-S4.2636
14. 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 Apr 2;12(4). </pmc/articles/PMC7198075/?report=abstract>
15. Khan YH, Mallhi TH, Alotaibi NH, Alzarea AI, Alanazi AS, Tanveer N, et al. Threat of COVID-19 vaccine hesitancy in Pakistan: The need for measures to neutralize misleading narratives. Vol. 103, *American Journal of Tropical Medicine and Hygiene*. American Society of Tropical Medicine and Hygiene; 2020. p. 603–4. <https://www.ajtmh.org/content/journals/10.4269/ajtmh.20-0654>
16. Dybsand LL, Hall KJ, Carson PJ. Immunization attitudes, opinions, and knowledge of healthcare professional students at two Midwestern universities in the United States. *BMC Med Educ* 2019 191. 2019 Jul 2;19(1):1–9. <https://bmcmmeduc.biomedcentral.com/articles/10.1186/s12909-019-1678-8>
17. Wang J, Jing R, Lai X, Zhang H, Lyu Y, Knoll MD, et al. Acceptance of COVID-19 Vaccination during the COVID-19 Pandemic in China. *Vaccines*. 2020 Aug 27;8(3):482. <https://www.mdpi.com/2076-393X/8/3/482>
18. Wang Q, Yue N, Zheng M, Wang D, Duan C, Yu X, et al. Influenza vaccination coverage of population and the factors influencing influenza vaccination in mainland China: A meta-analysis. *Vaccine*. 2018 Nov 1;36(48):7262–9. <https://linkinghub.elsevier.com/retrieve/pii/S0264410X18314117>
19. Eastwood K, Durrheim DN, Jones A, Butler M. Acceptance of pandemic (H1N1) 2009 influenza vaccination by the Australian public. *Med J Aust*. 2010 Jan 4;192(1):33–6. <https://onlinelibrary.wiley.com/doi/abs/10.5694/j.1326-5377.2010.tb03399.x>
20. Schwarzingger M, Flicoteaux R, Cortarenoda S, Obadia Y, Moatti J-P. Low Acceptability of A/H1N1 Pandemic Vaccination in French Adult Population: Did Public Health Policy Fuel Public Dissonance? Li W, editor. *PLoS One*. 2010 Apr 16;5(4):e10199. <https://dx.plos.org/10.1371/journal.pone.0010199>
21. Sypsa V, Livanios T, Psychogiou M, Malliori M, Tsiodras S, Nikolakopoulos I, et al. Public perceptions in relation to intention to receive pandemic influenza vaccination in a random population sample: evidence from a cross-sectional telephone survey. *Euro Surveill*. 2009;14(49).
22. Seale H, Heywood AE, McLaws ML, Ward KF, Lowbridge CP, Van D, et al. Why do I need it? I am not at risk! Public perceptions towards the pandemic (H1N1) 2009 vaccine. *BMC Infect Dis*. 2010 Apr 19;10.
23. Ahmad A. Fulfilling Muslim needs on Covid-19 vaccines. 2020. <https://www.nst.com.my/opinion/columnists/2020/12/645687/fulfilling-muslim-needs-covid-19-vaccines>
24. Determann D, Korfage IJ, Lambooij MS, Bliemer M, Richardus JH, Steyerberg EW, et al. Acceptance of vaccinations in pandemic outbreaks: A discrete choice experiment. *PLoS One*. 2014 Jul 24;9(7).