



COVID-19 VACCINE HESITANCY AMONG MEDICAL STUDENTS.

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ABSTRACT

INTRODUCTION: Since the beginning of coronavirus disease in World, there is lot of research being published in medical journals. **OBJECTIVE**

: In current study, we aimed to explore the coronavirus – 19 vaccine acceptances and hesitancy among medical students and determining the barriers that adversely affects the vaccination, **METHODS:** A case control descriptive study was conducted at Department of Basic Medical Sciences, Suleman Roshan Medical College from January 2021 to September 2021. A questionnaire was designed in accordance to previous studies on vaccine hesitancy among medical students. Online proforma link was shared by the principal researcher within the social and internet network of medical students as a group. A sample of 600 medical students was collected hesitancy or refusal among medical students. SPSS v 19.0 (IBM, Inc. USA) analyzed data variables using P-value of ≤ 0.05 (95% CI) was taken as significant. **RESULTS:** Concerns of vaccine safety was observed in 53.1%, fear of side effects in 19.1%, vaccine made much quickly to be trusted 18.7%, don't believe vaccine makes immune in 17.1% and COVID-19 is over, no need of vaccine was observed in 12.8% participants. Definitely refusal, hesitancy (not sure) and hesitancy refusal were observed in 119 (19.8%), 203 (33.5%) and 76 (12.6%) of participants. Definitely acceptance and acceptance with hesitancy was observed in 113 (18.8%) and 89 (14.7%) of participants. **CONCLUSION:** It is concluded there is need to intensify public awareness to halt the hesitancy for vaccination, thereby improving the COVID-19 vaccination. **KEY WORDS:** Covid – 19 Vaccines, Hesitancy, Adverse Effects, Awareness

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INTRODUCTION

Starting from the Wuhan China, the coronavirus disease 2019 (COVID-19) speeded throughout the Earth globe. It became a global pandemic and WHO called for emergency measures throughout the World. Till May 2021, 162 million patients were confirmed positively and caused >3.4 million death.¹ At the

beginning neither vaccine nor medicine was available for the patients. Till it was possible in 2021, a COVID-19 vaccine was made available for prevention. Currently, majority of population have been vaccinated in Pakistan but still the unvaccinated population is existing and are at risk of COVID-19

infection.^{2,3} World has inflicted three waves of COVID-19 infection. Pandemic has been affecting the countries over the globe. Massive humanitarian crisis has observed with million hospitalizations and deaths. Beside physical measures, the only preventive key against COVID-19 is the vaccination.^{2,3} During first phase of vaccination, the health care workers and the medical students were offered vaccination, either voluntarily or forcibly through barriers. More than one vaccine variety is available in the country including booster dose Pfizer vaccine. All those >18 years were vaccinated but now the spectrum has changed for the younger ages too. Registration for COVID-19 vaccine is done online and through mobile phone service that is developed by the government NCOC (National Command Operation Center).^{2,3} Online service includes tracking of individuals being vaccinated through short message serve (SMS) reminders and NADRA generated vaccination certificates that are mandatory to keep personally.^{2,3} One of the major problems that is observed with COVID-19 vaccinations is the personal hesitance because of being not sure that it will protect or not, or may be causing some other disease. Vaccine hesitancy has been frequently noted among the medical students.^{4,5} COVID-19 vaccine is available but many people are reluctant to getting vaccinated similar to the medical students despite prominent media coverage and TV news.^{2,3} Adverse events, rapid vaccine development, poor efficacy and insecure handling are major reasons for vaccine hesitance among medical students.^{5,6} Medical student's vaccination is essential as they are exposed to the patients during their clinical teaching. Considering recent surge in the coronavirus disease, it is needed to study the major obstacles regarding vaccine hesitance among medical students. The present is the first study being reported from medical college students of Sindh.

SUBJECTS AND METHODS

A cross-sectional descriptive study was conducted at the Department of Basic Medical Sciences, the Suleman Roshan Medical College, Tando Adam from January 2021 to September 2021. Prior written permission in form of "ethics approval" was taken from the institute's ERC committee. Study aimed what are the perceptions and level of hesitance, acceptance, beliefs and barriers against COVID

- 19 vaccines. A proforma was designed containing the questions for the aim of study. An anonymous well designed proforma was uploaded online for the participants. Online Google and WhatsApp media were employed for proforma/questionnaire availability, filling and uploading filled proforma/questionnaire by the participants. Online data was handled by the

principal authors. Medical students were informed about the purpose of study, and were advised they are free to answer as per their perceptions of vaccination. They were informed that they are not influenced by any agency and hurdles to explain their inner feelings and thought about the vaccination. Pre

- structured proforma/questionnaire was designed and validated by the Public Health Specialist of Community Medicine Department of Institute. Proforma/questionnaire was designed in accordance to previous studies on vaccine hesitancy in general and among medical students.^{7,8} Questionnaire was designed in English language that is understood by medical students. Online proforma link was shared by the principal researcher within the social and internet network of medical students as a group. Students were informed to collect COVID - 19 vaccines information from the internet, televisions, social media, campus pamphlets, vaccine guidelines and any other source they are free to watch. A sample of 600 medical students was collected pertaining to the reported⁶ prevalence of COVID-19 vaccine hesitancy or refusal among medical students. A previous study from India⁶ reported 10.6% vaccine hesitancy among medical students. This yielded sample of 600 participants equal to the lowermost 6% prevalence in Egypt, with α - value of 5% and 25% relative precision value.

Completely filled proforma/questionnaires were downloaded in separate word 'FILE'. Data was copy and pasted in the Microsoft Excel Sheet. SPSS v 19.0 (IBM, Inc. USA) analyzed the data variables using Student's t -test for continuous and Chi - square test for categorical variables. 2 -tailed P-value of ≤ 0.05 (95% CI) was taken as significant.

RESULTS

Age (mean \pm SD) of participant medical students was 21.5 \pm 3.15 years (P=0.053). Source of COVID - 19 vaccine information is summarized in table - 1 that shows social media 36.6%, internet 35.8%, television 12.2%, and newspapers 8.13%, medical staff 3.11% and others (not specified) 3.51%. Beliefs and barriers to COVID - 19 vaccine hesitancy are shown in table - 2. Concerns of vaccine safety was observed in 53.1%, fear of side effects in 19.1%, vaccine made much quickly to be trusted 18.7%, Don't believe vaccine makes immune in 17.1%, and COVID - 19 is over, no need of vaccine was

observed in 12.8% participants. Definitely refusal, hesitancy (not sure) and hesitancy refusal were observed in 119 (19.8%), 203 (33.5%) and 76 (12.6%) of participants.

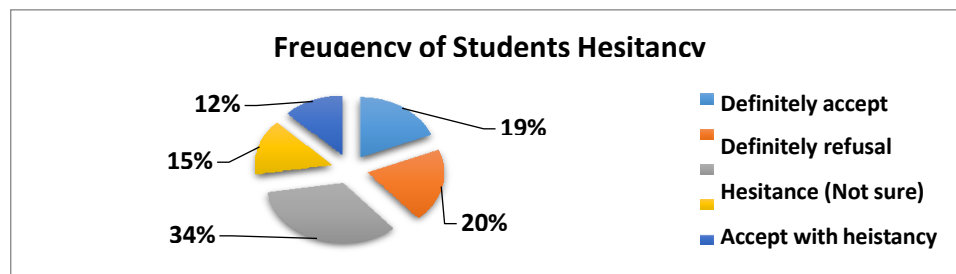
Definitely acceptance and acceptance with hesitancy was observed in 113 (18.8%) and 89 (14.7%) of participants.

Table 1. Source of COVID – 19 Vaccine information (n=600)

	Frequency	%
Social media	219	36.6
Internet	215	35.8
Television	77	12.8
Newspapers	49	8.13
Medical staff	19	3.11
Others	21	3.51

Table 2. Beliefs and Barriers for COVID – 19 vaccine hesitancy (n=600)

COVID – 19 vaccine	N	%
Fear of Side effects	115	19.1
Concerns of vaccine safety	319	53.1
Inconvenient vaccine	67	11.1
Don't believe vaccine makes immune?	103	17.1
COVID – 19 is over, no need of vaccine	77	12.8
Vaccine doesn't work due to mutation	49	8.16
Vaccine is not effective	57	9.51
Vaccine contains microchips,	19	3.16
Vaccine makes infertile	37	6.16
Vaccines made too quickly to be trusted	113	18.7
Vaccine alters DNA	39	6.51
Already infected with COVID – 19, don't need vaccination,	57	9.51
Vaccine may cause corona virus infection	17	2.83



Graph 1. Frequency of Medical Students Hesitancy to COVID – 19 vaccines

DISCUSSION

The purpose of study was to explore the coronavirus – 19 vaccine hesitancy among medical students. Study determined some of the barriers that adversely affect the vaccination to overcome for improving the vaccination status. Present study found poor awareness for the COVID-19 vaccine. We found definitely refusal, hesitancy (not sure) and hesitancy refusal were observed in 119 (19.8%), 203 (33.5%) and 76 (12.6%) of participants. The findings points towards poor interest and awareness among medical students and are in keeping with previous studies.^{9,10} COVID – 19 vaccines hesitancy has been observed among medical college students that have diffused through wandering rumors and myths through social media. This needs more aggressive propaganda against the adverse effects and false information.¹¹ Definitely acceptance and acceptance with hesitancy was observed in 113 (18.8%) and 89 (14.7%) of participants in present study. this is also in agreement with previous studies.^{12,13} Those hesitating to vaccination were also less convinced regarding the safety, side effects, efficiency, efficacy, and usefulness of vaccine against the severe COVID-19 disease. Innovators of COVID-19 vaccination may play a positive role in facilitating vaccination status of medical student.¹⁴ Beliefs and barriers of students should also be observed in conjunction to the matrix of multiple sources of fake information to them through social media. The present study shows social media and internet as the most reliable source of COVID – 19 vaccine information despite being true or false. Participants got COVID – 19 vaccine information; 36.6% from social media, 35.8% internet, 12.2% television, 8.13% newspapers, 3.11% medical staff and 3.51% from others (not specified). Social media and internet are influential on the COVID – 19 vaccine information and these findings are supported by previous studies.^{15,16} Realignment of source COVID – 19 vaccine information needs to clarify to overcome the problem of vaccine hesitancy. Social media played major role in spreading false information among the vaccine-hesitant students. The social media information is unverified, bogus, tooth – tale and potentially misleading promoted by anti-vaccination groups.¹⁵⁻¹⁸ This

may be overcome by the countering anti-vaccination fake information through intensified campaigns in systemic way with involvement of senior doctors, peers, teachers, and official websites.^{15,16} Involvement of senior doctors will be more influential in overcoming the anti – vaccine propaganda by fake persons. Acceptance of vaccine by medical staff positively motivates the general public as an example.¹⁷⁻¹⁹ COVID – 19 vaccine hesitancy in present study was found in large number of medical students. The findings are in keeping with previous studies^{6,15,16} reported from m university students and health care workers. Serious concerns were raised for the vaccine efficacy and students were of opinion that whether vaccine induces an immune response sufficient to protect against future disease is a justified questions and at present there is no answer. Vaccine efficacy is also responsible for hesitancy to accept it.^{20,21} Serious concerns appeared for the long term vaccine safety and efficacy, long term adverse effects such as infertility, this was coupled with apprehension the vaccine is not tested rigorously clinically and there is no enough data available of any possible long term adverse events. Short term adverse effects such as fever were also inconveniencing the participants. Findings of present study match to health beliefs wherein the perceived harms and perceived benefits are not clear.^{20,21} Limitations of present study are small sample size of medical students; hence it is not justified to make the results generalized. Hesitancy may have underestimated hidden vaccine hesitance due to multiple questions that were beyond the limits of questionnaire. Generalizability of vaccine hesitancy among medical students needs to be further informed in context of national studies. Further nationwide studies are recommended.

CONCLUSION

COVID-19 vaccine hesitancy was found among large number medical students. Public awareness campaigns, targeted oversight of vaccine trials, and information on safety and efficacy of vaccine may help trust building enough to reduce COVID-19 vaccine hesitancy among medical students and general public. A number of factors related to vaccine itself need public clarification to remove the vaccine hesitancy through

answering the unanswered questions for the vaccine. Further studies and surveys are recommended to convince the country man of vaccine efficacy and safety.

ETHICS APPROVAL: The ERC gave ethical review approval

CONSENT TO PARTICIPATE: written and verbal consent was taken from subjects and next of kin

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CONFLICT OF INTEREST: No competing interest declared.

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