

KNOWLEDGE, ATTITUDES, AND PRACTICES OF UNIVERSITY STUDENTS OF LAHORE REGARDING CORONAVIRUS VACCINES

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Abstract

Background and Objective: A new coronavirus SARS -COV-2 is responsible for the disease termed COVID-19. On 31st December, 2019, several cases of viral Pneumonia were reported to WHO from Wuhan, China. In Pakistan first case was reported on 20th February, 2020. It was declared as Pandemic by WHO on 11th March, 2020. The loss of human life throughout the world along with economic and social interruption was devastating. The aim of this study is to assess knowledge, attitude and practices of university students of Lahore regarding coronavirus vaccines.

Methods: An online cross-sectional study was conducted among 171 university students on a self-administered structured pre-tested questionnaire from 1st July 2021 to 15 August 2021 after approval from Institutional Review Board. A written consent form was filled by each student online. The questionnaire comprised of four sections. First section dealt with sociodemographic profile and second, third and fourth section had questions related to knowledge, attitude and practices respectively. The data was analyzed using SPSS version 27. The knowledge, attitude and practices were graded as good (>70% correct answers), satisfactory (50-70%) and poor (<50%). Chi-square tests were applied to find out any statistical significance between the sociodemographic parameters and knowledge, attitude and practice regarding COVID-19 vaccine. P-value of ≤ 0.05 is considered to be statistically significant.

Results: The mean age of the respondents was 21.652 ± 2.14 years. Good knowledge, attitude and practices were 36.8%, 88.3% and 52.3% respectively. Willingness towards vaccination was shown by 89.5% students. Only 48% students had received both doses of the vaccine, while only 6.4% knew about all the vaccines that were available in Pakistan. Age was statistically associated with knowledge ($p=0.03$) and gender with attitude ($p=0.048$).

Conclusion: It can be concluded from the study that the students had poor knowledge but their attitude and practices were much better. Organizing health education sessions and awareness seminars will help in increasing the knowledge of the students leading to improved attitude and practices towards disease prevention.

Key words: COVID-19 Vaccine, Knowledge, Attitude, Practices,

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Novel coronavirus 2019 (SARS-CoV-2) belongs to the family of Coronaviridae that causes the coronavirus infection^{1,2}. The first person who became a victim to COVID-19 infection was a 55 year old man

in China in November 2019.³ On 4th January 2020 WHO reported the pneumonia cases from China on social media and declared it as a Public Health Emergency of International Concern (PHEIC) on 30th January 2020 and a pandemic on 11th March 2020 when the number of affected countries were 114 affecting 118,000 individuals and over 40000 deaths^{4,5}. Pakistan reported its first case on 26th February 2020.⁶

Vaccination is the safest way to build protection against COVID-19 as it can have serious, life-threatening complications and there are no specific antiviral

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medications to treat COVID-19 infection completely.⁷ On 24, June 2020, China approved the CanSino BIO vaccine for limited use in the military personnel and two inactivated viruses' vaccines for emergency use in high-risk occupations.⁸ On 11th August 2020, Russia announced the approval of its Sputnik V vaccine for emergency use, though one month later only small amounts of the vaccine had been distributed for use outside of the phase 3 trial.⁹ Pfizer-BioNTech by UK was the first ever COVID-19 vaccine that was approved in the world for coronavirus in December 2020.¹⁰ Pakistan received the first shipment of Sinopharm vaccine from China on February 1, 2021 and the first dose administered on February 2, 2021 in Islamabad.¹¹ Vaccines that are available in Pakistan all together in public and private vaccination centers include Sinopharm, SinoVac, Sputnik V, AstraZeneca, Pfizer-BioNTech and CanSinoBio. Health care workers in Pakistan were the first group that was offered the vaccine and then the high-risk age group 60 years and above and so on, but vaccine hesitancy is a constant threat to this vaccination program.¹² Among 735 students in Italy, descriptive analysis showed that 633 (86.1%) students would choose to have a vaccination for the COVID-19 coronavirus while 102 (13.9%) students showed low intention of getting vaccinated.¹³ Acceptance of vaccines was significantly affected by the general perception of the population regarding vaccines and concerns about safety/efficacy of the vaccine.¹⁴ Very few studies have been conducted in Pakistan related to knowledge, attitude and practices of university students regarding COVID-19 vaccine. These students are the future of Pakistan and they can motivate their families and general population for vaccination against coronavirus. Poor knowledge of the vaccine and non-serious attitude towards the vaccination are both dangerous situations that needs to be corrected.

METHODS

An online cross-sectional study was conducted among 171 university students on a self-administered structured pre-tested questionnaire from 1st July 2021 to 15 August 2021 after approval from Institutional

Review Board. The questionnaire was designed and submitted into the Google survey tool (Google Forms) and a shareable link was generated and disseminated on various social media outlets (e.g., Facebook, WhatsApp, etc.). A minimum sample of 156 individuals had been selected using 95% confidence interval, 5% level of significance, 8% margin of error and 100000 total anticipated target population of study however 171 respondents voluntarily filled the questionnaire. All Students from undergraduate programs from 1st semester to final semester (04 years) who voluntarily filled the questionnaire were included in the study. Age, gender, year of study and residential site were independent variables of the study. The dependent variables were knowledge, attitude and practices regarding the Coronavirus Vaccines.

A written consent form was filled by each student online. The questionnaire comprised of four sections. First section dealt with sociodemographic profile while second, third and fourth section had questions related to knowledge, attitude and practices respectively. Twelve questions about knowledge, five about attitude and four about practices were asked. Each correct answer was given one mark the knowledge, attitude and practices were graded as good (>70% correct answers), satisfactory (50-70%) and poor (<50%). The data was analyzed using SPSS version 27. Simple frequency tables were generated for independent and dependent variables. Chi-square test was applied to find out any statistical significance between the socio-demographic parameters with knowledge, attitude and practice regarding COVID-19 vaccine.

RESULTS

A total of 171 undergraduate university students responded to the online questionnaire. The mean age of respondents was 21.652 ± 2.14 years and 112 (65.5%) belonged to the age group 21-25 years. Out of 171, majority were female 117(68.4%), 140(81.9%) participants belonged to the urban area and 68 (39.8%) were students of 4th year.

About 166 (97.1%) students had heard about COVID-19 vaccine but only 69 (40.4%) answered

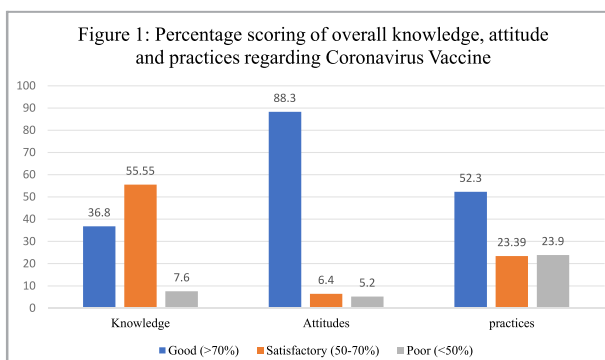
correctly about the route of administration of the vaccine. Regarding attitude, 153(89.5%) participants showed willingness to get covid vaccine and wanted to continue essential Standard Operating Procedures (SOPs) after vaccination also. One twenty six (73.7%) respondents were vaccinated for COVID-19 vaccine and 92 (53.8%) had experienced side effects. (Table 1)

The scoring of overall good, satisfactory, and poor knowledge, attitude and practices is described in Figure 1. (Figure 1)

Statistically significant association was observed with age in relation to knowledge ($p=0.03$) of vaccine. Whereas there is significant association of attitude with gender and residential area regarding COVID-19 vaccination ($p=0.048$ and $p=0.014$) respectively. Statistically significant relationship was observed for year of study with the attitude of students for COVID-19 vaccine ($p=0.029$) (Table 2)

105 (50%) students preferred vaccination by

government because firstly it was free, secondly 109 (48%) respondents trusted healthcare/ government services. While 40% students who did not prefer government services had trust issues, 28% expressed inconve-



nient timing of centers and 32% mentioned that the staff was non cooperative. Almost 164 (95.9%) were aware of the benefits of vaccination and same number of students were vaccinated in childhood. When asked about benefits of vaccination only 77(45.0%) students knew that it reduces the severity of disease. 19(10.1%)

Table 1: Questions determining knowledge, attitude and practices regarding coronavirus vaccines

Questions asked about knowledge of covid vaccine	Correct answer / yes
Ever heard about COVID-19 vaccine	166(97.1%)
First mass vaccination done for COVID-19 in the world(Dec 2020)	69(40.4%)
Duration of interval between two doses of vaccine(21-28 days)	133(77.8%)
Route of administration of COVID-19 vaccine (intramuscular)	113(66.1%)
Types of vaccines available in Pakistan	11(6.4%)
Vaccine given in a single dose(CanSino)	67(39.2%)
Vaccines provide protection against variants of Coronavirus(yes)	135(78.9%)
Patients who have suffered from Coronavirus infection can be given COVID-19 Vaccine(yes)	151(88.3%)
Patients who have recovered from coronavirus infection should be vaccinated against COVID-19(2 months after recovery)	38(22.2%)
Time required by the body to build immunity after complete vaccination(2 weeks)	84(49.1%)
Getting both doses of same vaccine is important(yes)	149(87.1%)
Lowest age limit for being vaccinated by corona vaccine in Pakistan(18 years)	139(81.3%)
Questions asked about attitude regarding covid vaccination	Positive attitude
Want to get vaccinated	153(89.5%)
Prefer to get free vaccination by government	163(95.3%)
Continue following SOPS after vaccination	153(89.5%)
Advise family to get vaccinated	155(90.6%)
Believe that vaccination is the only way to reduce incidence of infection	126(73.7%)
Questions regarding practice of covid vaccine	Yes
Vaccinated against corona virus infection	126(73.7%)
Received both doses of same vaccine	82(48.0%)
Experienced side effects of vaccine	92(53.8%)
Still practicing SOPs after getting vaccinated	148(86.5%)

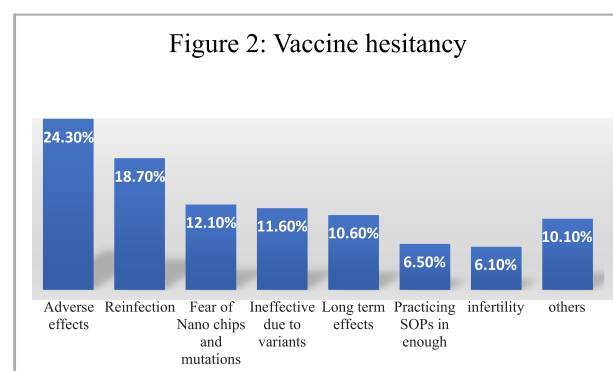
Table 2: Relationship of knowledge, attitude and practices regarding coronavirus vaccine with age, gender, residence and year of study.

Variable	knowledge			Attitudes			practices		
Age categories	>70%	50-70%	<50%	>70%	50-70%	<50%	>70%	50-70%	<50%
17-20	10(20.4%)	33(67.3%)	6(12.3%)	42(85.7%)	4(8.2%)	3(6.1%)	23(46.9%)	12(24.5%)	14(28.6%)
21-25	49(43.7%)	56(50.0%)	7(6.3%)	100(89.3%)	6(5.4%)	6(5.3%)	61(54.5%)	25(22.3%)	26(23.2%)
26-30	4(40.0%)	6(60.0%)	0(0.0%)	9(90.0%)	1(10.0%)	0(0.0%)	6(60.0%)	3(30.0%)	1(10.0%)
	p-value 0.033			p-value 0.779			p-value 0.696		
Gender									
Male	18(33.3%)	33(61.1%)	3(5.6%)	43(79.7%)	7(12.9%)	4(7.4%)	24(44.4%)	13(24.1%)	17(31.5%)
Female	45(38.4%)	62(53.1%)	10(8.5%)	108(92.3%)	4(3.4%)	5(4.3%)	66(56.4%)	27(23.1%)	24(20.5%)
	p-value 0.560			p-value 0.048			p-value 0.238		
Residence									
Rural	9(29.0%)	19(61.3%)	3(9.7%)	31(100.0%)	0(0.0%)	0(0.0%)	19(61.3%)	4(12.9%)	8(25.8%)
Urban	54(38.6%)	76(54.3%)	10(7.1%)	120(85.7%)	11(7.8%)	9(6.5%)	71(50.7%)	36(25.7%)	33(23.6%)
	p-value 0.581			p-value 0.014			p-value 0.305		
Year of study									
1 st	15(34.1%)	24(54.5%)	5(11.4%)	37(84.1%)	4(9.1%)	3(6.8%)	21(47.7%)	9(20.5%)	14(31.8%)
2 nd	7(35.0%)	11(55.0%)	2(10.0%)	19(95.0%)	0(0.0%)	1(5.0%)	11(55.0%)	8(40.0%)	1(5.0%)
3 rd	16(41.0%)	22(56.4%)	1(2.6%)	32(82.1%)	2(5.1%)	5(12.8%)	18(46.1%)	9(23.1%)	12(30.8%)
4 th	25(36.8%)	38(55.9%)	5(7.3%)	63(92.6%)	5(7.4%)	0(0.0%)	40(58.8%)	14(20.6%)	14(20.6%)
	p-value 0.819			p-value 0.029			p-value 0.129		

students experienced flu, 40 (21.1%) had fever, 23 (12.1%) had cough, 52(27.4%) experienced soreness on injection site, 42(22.1%) reported headache, 5(2.6%) reported myalgias and 9(4.7%) experienced hypersomnia.

Reasons for vaccine hesitancy described by students are listed in Figure 2

Regarding source of information about COVID-19 vaccine, 78 (41.2%) responses were obtained for social media followed by 44 (23.2%) responses for mass media.



DISCUSSION

This study was conducted to assess knowledge, attitude, and practices of university students of Lahore regarding COVID-19 Vaccine. In this study good knowledge, attitude and practices were 36.8%, 88.3% and 52.3% respectively. In a community survey in Bangladesh, the mean scores of knowledge and attitudes were 2.83 ± 1.48 and 9.34 ± 2.39 pointing that knowledge is poor as compared to the positive attitude which is comparable to our study.¹⁵ Another study conducted among undergraduate university students in Ethiopia, 41% had good knowledge and 57.9% had positive attitude towards COVID-19 vaccine.¹⁶ This variation in knowledge, attitude and practices regarding COVID-19 vaccine is due to differences in sample size, age of the population, different methodology, socio cultural differences, access to health services and impact of social media. As mentioned above positive attitude and practices regarding COVID-19 vaccine were much better as compared to the knowledge and this can be attributed to the fear of COVID-19 infection and free of cost vaccination by government.

Main sources of COVID-19 vaccination in a study

was social media (41.2%) and television (23.2%) whereas a study in Lahore also documented that the main source of information for the COVID-19 disease was social media including Facebook/Twitter/Instagram etc (62%) and Television/radio (26.7%).¹⁷ These results are corroborated to our study. In a study of Bangladesh among university students, main source of COVID-19 vaccine information was internet 34.74%, social media 33.4% and electronic media 25.61%.¹⁸ Social media and electronic media are very popular among the young population now a days thus it is an important communication tool for spreading information worldwide.

Knowledge about COVID-19 vaccine: During the conduction of this study, the lowest age limit in Pakistan for vaccination was 18 years which was stated by 81.3% of university students. Duration of interval between two doses of vaccine was correctly reported by 77.8% respondents.

Regarding knowledge about the time taken by the body to build immunity after two doses of vaccine was correctly answered by 49.1%. Contrary to this, an Indian study reported that 60% participants correctly answered the age limit and only 32% about the duration of post immunity vaccination.¹⁹ The difference is possibly due to the variability in age and status of education of the two studies. In our study, 88.3% respondents answered correctly as compared to 44% participants of Oman study that post covid patients should receive vaccine.²⁰ There is statistically significant association between age and knowledge regarding vaccination ($p = 0.033$). On the contrary a study of Bangladesh revealed no significant relationship between age and knowledge for covid vaccination ($p=0.792$) as there is marked difference in range of age among the participants

Attitude about COVID-17 vaccine

In present study 89.5% students were willing to get themselves vaccinated whereas a study conducted in Malta²¹ stated 50% willingness for getting covid vaccination whereas in a survey conducted in 19 countries 71.5% showed willingness for the vaccine.²² The

reason for increased willingness may be the multiple variants of corona being discovered rapidly causing panic in public and fear of complications and rising death toll. This may also be attributed to increased level of knowledge due to effective mass media campaigns and trust in the development of vaccine. Ninety percent of students would advise their family members and friends to get vaccinated. Contrary to this 65.5% participants of Bangladesh study would recommend vaccines to their family members and friends. The reason is differences due to age and educational level of participants of the two studies as Bangladesh study was community survey. In this study 73.7% students considered that vaccination is the only way to reduce incidence of infection whereas only 49.4% Indians believed so.²³ In present study 89.5% of participants believed that they should adhere to preventive measures even after getting vaccinated. This result is comparable to the study conducted in Saudi Arabia (81%).²⁴ Most of the students 95.3% preferred free vaccination offered by government, this was consistent with results of a study conducted in China.²⁵ Free vaccination was preferred because the population couldn't afford the vaccine due poor financial conditions of inhabitants of an underdeveloped country and donation of vaccine by United states and China etc.

Significant relationship was reported in this study between gender and attitude towards covid vaccination ($p=0.048$) and similar result was stated in a Bangladesh study ($p=0.021$)¹⁵

There was no statistically significant association between age and attitude in this study ($p=0.779$) but they are related statistically in the study conducted in Jimma university ($p=0.007$)¹⁶

Practices regarding COVID-19 Vaccination

In the current study only 48% of students have received both doses of the vaccine and 53.8% had experienced any form of side effects of vaccine while a similar study conducted on general population in Pakistan showed 53% had received both doses and 55.8% experienced side effects. The discrepancy may be due to dissimilarity in education level and age of

participants in two studies.²⁶

Vaccine acceptance

In this study students were willing to get covid vaccine because of protection (30.6%), reduction of severity of disease (30.1%). On the other hand respondents in a study conducted in China said that they were willing for vaccination on recommendation of health authorities (25.2%), protection (27.7%) and safety (27.3%).²⁷ Reasons for willingness to getting vaccinated vary from place to place depending upon the situation of covid infection at that time.

Vaccination barriers

Fear of adverse effects (24.3%), single vaccine for multiple variants (11.6%) and re infection even after vaccination (18.7%) were major reasons given by students for vaccine hesitancy in our study. Contrary to this uncertainty about safety of vaccine (22.6%) and effectiveness (1.9%) were barriers to vaccination in a study in Oma.²⁰ Causes of Vaccine hesitancy must be discovered. These barriers must be addressed in mass campaigns on vaccination for an effective vaccination drive.

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