

# Covid-19 Vaccine Acceptance And Hesitancy Among Medical Students Of Faisalabad

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## Abstract

**Introduction:** The study was conducted to determine the Covid-19 vaccine acceptance and hesitancy among medical students who are more susceptible to being infected being the frontline workers.

**Materials and Methods:** This analytical cross-sectional study was conducted on medical students of 1<sup>st</sup> to final year MBBS of various medical institutions in Faisalabad. The study duration was 3 months (August 2021 to October 2021). The sample size was 391 and divided into 2 age groups i.e. above and below 21 years and 245 (62.7%) comprised of females. The inclusion criteria were those students who gave consent and filled out the questionnaire and the exclusion criterion was who didn't concede. The data was analyzed on SPSS 25. The confidence interval was set to be 95% with a 5% margin of error.

**Results:** More than half of the participants i.e. 214 (54.7) had got the sinopharm vaccine. Vaccine hesitancy was found in 28 (7.2%) students and a major reason was concern about vaccine safety. Significant relationship ( $p = \leq 0.05$ ) was found between vaccine acceptance and hesitancy group, and vaccines made in Europe or America are safer or more effective than those made in other regions ( $p$ -value = 0.003); get the COVID-19 vaccine only because it is made mandatory for me by govt. authorities or college and not on my own and willing to motivate fellow students to take Covid vaccine ( $p$ -value = 0.00); taking the Covid-19 vaccine is a societal responsibility ( $p$ -value = 0.00); I am concerned that the present COVID-19 vaccines may not be effective enough ( $p$ -value = 0.001) and I am concerned about the serious adverse events from the currently available COVID-19 vaccines ( $p$ -value = 0.007).

**Conclusion:** Health education programs should be arranged to improve awareness and trust in the Covid-19 vaccine. Concerns of medical students should be addressed on priority as future healthcare providers. Steps should be taken to improve Covid-19 vaccine hesitancy through providing accurate and reliable information, addressing concerns and misinformation, building trust, engaging with communities, making vaccines accessible, and addressing vaccine equity.

**Keywords:** Covid-19, medical students, vaccine acceptance, hesitancy.

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## 1. Introduction

Coronaviruses are a large family of viruses that are known to cause illnesses ranging from the common cold to more severe diseases such as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2 formerly called 2019-nCoV) and Middle East Respiratory Syndrome (MERS).<sup>1</sup> Covid-19 is a major public health issue revolving in developed and developing countries and it created a lot of mega issues to the economy and the health-related status of nations.<sup>2</sup> However, vaccination for Covid 19 has already been started to combat the issue. But there are a lot of hurdles faced by the higher authorities regarding vaccination of the common public and medical students.<sup>3</sup>

Vaccination started in Pakistan in February, and stepwise vaccination took place according to specific

age groups. The aim was to lower the risk of the virus and to fight against the virus as much as we can. Common vaccines in Pakistan are Sinopharm and Sinovac which are from China; mostly, the public is vaccinated by these. However, for foreign visits, Moderna and Pfizer are preferable.<sup>4</sup> However, there were a lot of conspiracy theories spread related to vaccines. These theories created hesitancy among medical students as well as in public, which is a large hurdle for vaccination.<sup>5</sup>

Up till now according to National Command and Operation Centre (NCOC), 31,632,731 people are fully vaccinated and many of the population are still not vaccinated. It is a very poor sign for the elimination of the problem as COVID-related deaths are increasing again due to DELTA variants and atypical symptoms are seen this time.<sup>6</sup>

Medical Students continue to be on the front line of the nation's fight against COVID-19. By providing critical care to those who are or might be infected with the virus that causes COVID-19, some healthcare personnel are at increased risk of infection from COVID-19. All healthcare personnel are recommended to get vaccinated against COVID-19.<sup>7</sup> Hesitancy can be defined as the quality or state of being hesitant, such as a lack of willingness or eagerness to do something. Hesitancy against Covid vaccine is the lack of willingness to vaccinate itself to combat the disease.<sup>8</sup> Many of our medical students are still hesitant about vaccination. The reasons for this problem are conspiracy theories that the COVID vaccine will cause reduced fertility as it is the main side effect of the vaccine. Secondly, many medical students are afraid of its side effects as this vaccine is new in the market.<sup>9</sup> Other factors for refusal included vaccine novelty, wanting others to receive it first, insufficient time for decision-making, and having a negative perception of vaccine efficacy and safety. Some students are also afraid of overcrowding seen at vaccination centers and some have a notion that because even after vaccination, the risk of getting an infection is still there, there is no use for it. So, these are the barriers to vaccination and causes of hesitancy among medical students. But most medical students accept vaccination and willingly accept the Covid vaccine.<sup>10</sup>

Under all these circumstances, it is the need of an hour to explore the vaccine acceptance and hesitancy among medical students during the COVID-19 pandemic and the factors related to it. This study is expected to measure the frequency of vaccine acceptance and hesitancy among medical students. The information gathered will aid in the identification of potential concerns that need to be addressed to ensure adequate vaccination coverage among this group, as well as the development of educational programs in counseling vaccine-hesitant patients.

## 2. Materials & Methods

The study design was an analytical cross-sectional study. It was conducted on medical students of various medical institutions in Faisalabad and their consent was taken beforehand. The study duration was 3 months (August 2021 to October 2021). Ethical approval was taken from the ethical review committee. The total

sample size was calculated keeping in mind the objectives of this particular study by considering different parameters and using a W.H.O. sample size calculator with a 95% confidence level, and a 5% margin of error, it was computed to be 391. Non-probability purposive sampling was done. The inclusion criteria were those students who gave consent and filled out the questionnaire. A validated and structured questionnaire was used, developed by Victoria C Lucia et al titled "Self-report to assess vaccine hesitancy and acceptance among medical students towards the novel COVID-19 vaccine" based on a framework from previous studies about Covid-19 vaccine acceptance and hesitancy.<sup>11-13</sup> The questionnaire consisted of five sections: demographic data, Covid infection and choice of vaccines, awareness and overall attitude regarding vaccine acceptance, perception of vulnerability to COVID-19 and attitude regarding the use of the vaccine for community and concerns regarding COVID-19 vaccines and trust of official information. Confidentiality was maintained and SPSS version 25 was used for analysis of this data. A chi-square test of significance was applied to see the relationship between vaccine acceptance and hesitant group with demographics and participants' awareness, attitudes, perceptions, and concerns regarding Covid-19 vaccines. A p-value  $\leq 0.05$  was taken as significant.

## 3. Results

Out of a total of 391 participants, 146(37.3%) were males and 245(62.7%) were females. Most of the students had been vaccinated with Sinopharm i.e., 214 (54.7%) followed by Sinovac i.e., 134 (34.3%) participants. When asked "Will you take the Covid-19 vaccine when offered or hesitate/refuse if allowed?", 14 (3.6%) students disagreed and also a similar number of participants were not sure about it so vaccine hesitancy was found in 28 (7.2%) students in which the most common reason in 50% of students was concern about vaccine safety followed by concerns about vaccine efficacy (28%) as shown in table 1.

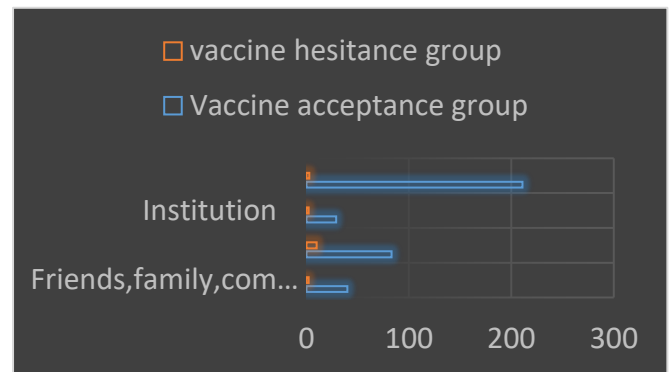
Medical students were then divided into two groups based on vaccine acceptance and hesitancy and their awareness, attitude, perception of vulnerability and concerns regarding Covid vaccination were recorded as shown in table 2.

**Table-1** Reasons of Covid-19 vaccine hesitation

	Number (N)	Percentage (%)
Concerned about vaccine safety	14	50
Concerned about the efficacy of the vaccine	8	28
Not needed for young individuals like me	5	18
Not needed as many people are now immune to the virus	1	4

Internet/social media was the most common source of information regarding Covid-19 vaccines for the vaccine acceptance group. Further, we found that a

larger proportion of vaccine-hesitant students obtained vaccine-related information from government campaigns as in Fig. 1.



**Figure-1** Main source of information regarding the COVID-19 vaccine.

**Table-2** Responses of medical students belonging to vaccine acceptance and hesitance groups (n = 391)

Survey Items		Vaccine acceptance group (n = 363)	Vaccine hesitancy group (n = 28)	p-value
Demographics				
Gender	Male	135	11	0.394
	Female	228	17	
Age group	Above 21 years	270	19	0.856
	Below 21 years	93	9	
Year of Study	1 <sup>st</sup> year	48	6	0.232
	2 <sup>nd</sup> year	54	1	
	3 <sup>rd</sup> year	53	3	
	4 <sup>th</sup> year	112	11	
	5 <sup>th</sup> year	96	7	
Residence	Urban	310	26	0.754
	Rural	53	2	

Currently, are you?	Day scholar	216	12	0.239
	Hostelite	147	16	
Father/guardian occupation	Government job	132	9	0.524
	Private job	59	6	
	Self-employed	172	13	
Covid infection and choice of vaccines				
Diagnosed Covid disease in present or past	Yes	77	4	0.52
	No	286	24	
Have any of your diagnosed Covid positive family members or friends stayed with you	Yes	200	12	0.21
	No	163	16	
Consider it important to choose between different available Covid 19 vaccines	Agree	283	14	<0.001*
	Disagree	36	8	
	Not sure	44	6	
Vaccines made in Europe or America are safer or more effective than those made in other regions	Agree	135	8	0.003*
	Disagree	112	10	
	Not sure	116	10	
Awareness and overall attitude regarding vaccine acceptance				
MBBS students are eligible for vaccination	Yes	352	26	0.095
	No	3	0	
	Not sure	8	2	
Get the COVID-19 vaccine only because it is made mandatory for me by govt. authorities or college and not on my own	Agree	119	12	<0.001*
	Disagree	232	12	
	Not sure	12	4	
Willing to take part in Covid vaccine trial	Agree	204	11	0.037*
	Disagree	61	9	

	Not sure	98	8	
Share information regarding vaccine safety with family, friends and the community	Yes	345	22	0.001*
	No	18	6	
Willing to motivate fellow students to take Covid vaccine	Agree	339	16	<0.001*
	Disagree	6	7	
	Not sure	18	5	
Concerned if the vaccine is not offered to you	Yes	316	19	<0.001*
	No	28	5	
	Not sure	19	4	
Perception of vulnerability to COVID-19 and attitude regarding the use of the vaccine for community				
'I am likely to get COVID-19 in the course of my duties as a medical student.'	Agree	297	22	0.509
	Disagree	26	3	
	Not sure	40	3	
'COVID-19 vaccine can reduce the spread of the disease in the community.'	Agree	300	14	<0.001*
	Disagree	26	7	
	Not sure	37	7	
'COVID-19 vaccine can help reduce severe COVID-19 disease.'	Agree	327	19	<0.001*
	Disagree	11	3	
	Not sure	25	6	
'COVID-19 vaccine should be made mandatory for everyone above 18 years	Agree	324	16	<0.001*
	Disagree	14	5	
	Not sure	25	7	
Taking the Covid-19 vaccine is a societal responsibility	Agree	333	17	<0.001*
	Disagree	6	3	
	Not sure	24	8	
Concern regarding COVID-19 vaccines and trust in official information				

'I am concerned that the present COVID-19 vaccines may not be effective enough	Agree	162	15	0.001*
	Disagree	110	5	
	Not sure	91	8	
'I am concerned about the serious adverse events from the currently available COVID-19 vaccines'	Agree	147	18	0.007*
	Disagree	145	5	
	Not sure	79	5	
'I am concerned about the present COVID-19 vaccines might not have been tested rigorously before launch'	Agree	138	13	0.006*
	Disagree	126	7	
	Not sure	99	8	
'I trust the information I am receiving about the COVID-19 vaccine from the government or public health experts.'	Agree	274	15	0.009*
	Disagree	24	6	
	Not sure	65	7	

## 5. Discussion

Vaccine apprehension is a stumbling block in world wide efforts to contain the current pandemic, which is wreaking havoc on human health and the economy. Understanding and increasing student acceptability of vaccination is critical for the development of an effective post-pandemic approach.<sup>14</sup> A study done by Amar Ibrahim Omer Yahia et al showed that COVID-19 vaccine hesitancy was higher among women and those living in urban areas.<sup>15</sup> These results are similar to our study where female participants and urban dwellers showed more resistance to vaccination. A study done by Jyoti Jain et al showed vaccine hesitancy was found among 10.6% of medical students. Lack of trust in vaccine safety and efficacy, less number of vaccine trials and less trust in public health experts and government officials were the main concerns.<sup>16</sup> These results were almost similar to our study in which 7.2% of vaccine hesitancy was found in medical students and their concerns were also the same except that they have trust in government officials regarding Covid vaccination. A study done by Arati K. Kelekar showed that 23% of medical students were hesitant about

receiving the COVID-19 vaccine which is almost 200% more than our study.<sup>13</sup> A study done by Serena Barello et al reported that 13.9% of students would not or be not sure to vaccinate.<sup>17</sup> A study done by Cheuk Chi Tam et al showed that only 26.1% of participants reported they would take COVID-19 vaccines which means that almost 3/4<sup>th</sup> of participants refused/hesitated to take Covid vaccine which is opposite to our study results.<sup>18</sup> Prior Covid-19 infection has also impacted participants' choice about vaccine acceptance and hesitancy. A study done by Saud Mohammed Raja et al depicted that among different factors associated with vaccine acceptance, one is the history of COVID-19 infection.<sup>19</sup> These results are similar to our study where vaccine hesitancy is more in participants who have no prior covid-19 infection. A systemic review done by Debendra Nath Roy et al showed that "vaccine safety" was recognized mostly in the Asian population among factors which have a greater influence on vaccination coverage. These results are similar to our study where more than half of study participants are concerned about vaccine safety.<sup>20</sup> A study done by Victoria C Lucia et al showed that nearly all participants had positive attitudes towards vaccines and agreed they would likely be exposed to COVID-19;

however, only 53% indicated they would participate in a COVID-19 vaccine trial. These results are similar to our study where 52.17% of students agreed to participate in vaccine trials despite having vaccine acceptance in more than 90% of medical students.<sup>11</sup> A study done by Shima M. Saied showed that most participants believe that everyone in the community should get it (92.6%), vaccination should be compulsory for the general population (69.7%), especially for health care workers (92.1%). Despite that good percentage of students believed that the way to overcome the COVID-19 pandemic is through mass vaccination (67.9%) and that getting vaccinated is the best preventive measure (56.5%), most of them had concerns regarding the adverse effects of the vaccine (96.8%), its ineffectiveness (93.2%) and enough testing (80.2%), safety (54.0%). Students perceived themselves at elevated risk to acquire COVID-19 (77.6%).<sup>12</sup> These results are similar to our study where 87% of participants believe that everyone above 18 years should be vaccinated, including medical students who are eligible for vaccination (96.7%). Although 89.5% of students believe that Covid-19 vaccine uptake is a societal responsibility and more than 80% of students agree that Covid vaccine is critical in reducing the spread of the disease in the community and also decreasing its severity, still many students have concerns regarding its efficacy (45.3%), adverse effects (39.6%) and prior rigorous testing before launch (38.6%). A study done by Rahul Shekhar et al showed that only 8% of HCWs do not plan to get the vaccine. Safety (69%) and effectiveness (69%) were noted as the most common concerns regarding COVID-19 vaccination.<sup>21</sup> These results were similar to our study where around 7% of medical students had hesitation regarding vaccination and their most common concerns also included efficacy and adverse effects related to the vaccine. A systemic review done by Mei Li et al showed that the range of acceptance of Covid vaccine varied widely from 27.7% to 77.3%. Although in healthcare workers, vaccine hesitancy was common but still had a positive towards Covid-19 vaccines. Men, older age and physicians showed more positive attitudes towards vaccine acceptance as compared to women and nurses who had more vaccine hesitancy. Barriers included concerns for the safety, efficacy and effectiveness of the vaccine and distrust of the government which were similar to our study except that our participants trust the government and public health experts regarding Covid vaccine.<sup>22</sup> Our

study was limited by the fact that it was undertaken after COVID-19 immunisation had begun. As a result, it's possible that it underestimated the initial vaccination apprehension of those who eventually changed to the vaccine acceptance group and were vaccinated. The denominator for calculating the response rate could not be calculated since participation in this survey was based on peer-to-peer communication via social media networks. The generalisability of vaccination hesitancy among medical students could not be determined due to the study's nonprobability sampling approach. The breadth of information that could otherwise be captured is frequently missed by online data collection as compared to qualitative methods applied in face-to-face settings.

## 5. Conclusion

Health education programs should be arranged to improve awareness and trust in the Covid-19 vaccine. Concerns of medical students should be addressed on priority as future healthcare providers. Steps should be taken to improve Covid-19 vaccine hesitancy through providing accurate and reliable information, addressing concerns and misinformation, building trust, engaging with communities, making vaccines accessible and addressing vaccine equity.

**CONFLICTS OF INTEREST-** None

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**Contributions:**

M.U.D, U.S- Conception of study

M.U.D, U.S, A.Q, R.A, S.J- Experimentation/Study  
conduction

M.U.D, A.Q, R.A, S.J-Analysis/Interpretation/Discussion

M.U.D, M.S- Manuscript Writing

M.U.D- Critical Review

M.U.D- Facilitation and Material analysis

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