

Covid-19 Vaccine Acceptance, Intention to Participate and its Associated Adverse Events Happening among the Vaccinated Population of Lahore, Pakistan

ALMINA SHAFIQ¹, MADIHA ASGHAR², QURAT UL AIN³, SANIA MAQBOOL⁴, RABIA ASLAM⁵, SANA MEHMOOD⁶

^{1,2,3}Lecturer at Department of Biomedical Laboratory Sciences SHS University of Management and Technology Lahore

⁴Demonstrator at Department of Physical Medicine and Rehabilitation SHS, University of Management and Technology, Lahore,

⁵Lecturer at Department of Biomedical Laboratory Sciences SHS University of Management and Technology Lahore

⁶Demonstrator at Department of Clinical Services SHS University of Management and Technology Lahore

Correspondence to Dr. Sania Maqbool, E-mail : saniamaqbool28@gmail.com, Cell : 0332-4164484

ABSTRACT

Background: This cross-sectional study being instrumented by a close ended questionnaire was conducted to evaluate society's affirmation for being jabbed with COVID-19 vaccine, their acquisition towards immunization and associated anomalies in vaccinated people. According to the recent update from WHO, the glob is facing 5th wave of pandemic "Omicron". However, the problem is that vaccines were in trials. Majority of people were demonstrating reluctance for being immunization against COVID-19 due prevailing oddities after vaccination.

Aim: To measure the possible adverse effects caused by the vaccination and society's participation towards immunization.

Methodology: In this study we adapted cross sectional study design by means of convenience sampling. Study instrument was a close ended questionnaire. Data was collected from only vaccinated participants by visiting universities, medical personnel, colleges and other society sectors under the supervision of team members. Data transferred to software SPSS to extract the results. Cross tabulation was used for demographic analysis such as age, gender and vaccine type jabbed.

Results: The most common adverse effects include inflammation at site of injection, fever, nausea and vomiting, diarrhea, abdominal pain, joint pain and numbness of limbs were highlighted. Mostly jabbed vaccine types include Sinopharm and Sinovac. Majority of respondents showed willingness for immunization however, only a small proportion was afraid for being vaccinated. The significance in our study that we have conducted study for acceptance of vaccine, intention of participants towards immunization and adverse events associated with different types of COVID-19 vaccines in vaccinated population residing in different towns of Lahore, Pakistan.

Conclusions: In our local population, majority accepted the vaccine and didn't deny to administer the vaccine. Pain, redness, lethargy, nausea, vomiting, diarrhea, abdominal pain, numbness and arthritis were noted to be the most common side effects of COVID-19 vaccine.

Keywords: COVID-19, Vaccine Acceptance, Pakistan, Vaccinated Population

INTRODUCTION

Coronaviruses are viruses that belong to the Corona viridae family. Corona viruses have enveloped virions viral particles that are around 120 nm in diameter. The word comes from the club-shaped glycoprotein spikes in the envelope, which give the viruses a crown like, or coronal, appearance. The nucleocapsid is helical or tubular and is made up of a protein shell called a capsid that contains the viral nucleic acids. A single strand of positive-sense RNA makes up the coronavirus genome (ribonucleic acid)¹.

SARS-CoV-2 is structurally identical to SARS-CoV and MERS-CoV, with four primary structural proteins: spike, envelope glycoprotein, nucleocapsid, and membrane, as well as 16 nonstructural proteins and 5-8 accessory proteins. The crown-shaped surface spike glycoprotein is found on the virions' outer surface and is cleaved into an amino terminal S1 subunit that aids virus incorporation into the host cell and a carboxyl terminal S2 subunit that is responsible for virus-cell membrane fusion². But in order to prevent the disease, a vaccine must not only be secure and efficient, but also well-liked by the people who will ultimately be immunized. Herd immunity can only be attained through effective vaccination, which will help contain the COVID-19 pandemic³. The Covid-19 pandemic is damaging on a worldwide scale. The pandemic is accompanied by a number of conspiracy theories that are spreading through mainstream and social media outlets, in addition to human, economic, and social concerns⁴. Globally, the continuous COVID-19 pandemic has an influence on both individual and public life, and its containment in the near future appears to be very challenging. Although it might be contained like other viruses like HKU1, NL63, 229E, and OC43, the primary issue continues to be the significant human and financial loss⁵.

In a very short period of time, this viral sickness has claimed countless priceless lives not just in Pakistan but all across the world. On January 30, 2020, this deadly virus was declared a PHEIC (public health emergency of international concern)⁶.

It is critical that we have a thorough grasp of the concerns that discourage people from wanting to engage in the global immunisation endeavour in order to better understand how willingness to take a vaccine can be encouraged. There are various possible hurdles to vaccination adoption, but the primary one is the widespread belief that vaccines are ineffective or, even worse, harmful to the health and interests of recipients⁷.

Infection is spread mostly from person to person by respiratory droplets. It is possible to take a faeco-oral route. Sputum, pharyngeal swabs, and feces have all tested positive for the virus. SARS-CoV-2 vertical transmission has been reported and confirmed by a positive COVID-19 nasopharyngeal swab. COVID-19 has a median incubation period of 5 days, with most patients developing symptoms between 12 and 16 days⁸.

Basically, ACE2 is a protein on the surface of many types of human body cells. It acts as an enzyme that produces small proteins by cutting up the larger protein molecules (angiotensinogen). It attaches to the spike protein of covid-19 with its receptors like a key gets fit in its lock. It acts as cellular doorway. It is found in many types of cells like lungs, heart, blood vessels, kidneys, liver and GIT tract. It is also present in epithelial cells of certain tissues and create protective barrier⁹. If we pay attention about the demographic aspects of covid-19, People in any decade of their ages can be affected by this virus and other related viral disorders. But mainly, individuals in between 40-60 of age group or above 60 and suffering from other medical comorbidities such as CVS, kidney failure, liver disorders and smokers have higher chances to get infected. Males are at higher risk to get infected with this virus and have higher mortality rate than females¹⁰.

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According to the Strategic Advisory Group of Experts on Immunization (SAGE) of the World Health Organization (WHO), vaccine hesitancy is the "delay in acceptance or refusal of vaccination despite availability of vaccination services". "Vaccine hesitancy can vary in form and intensity based on when and where it occurs and what vaccine is involved" The Global South, which includes Pakistan, is becoming more reluctant to receive the COVID-19 vaccination despite being severely affected by the coronavirus pandemic¹¹. One of the most important methods for stopping the majority of viral diseases is vaccination. In addition to lowering illness incidence, they also boost herd immunity. Another factor that contributes to the success of immunisation programmes and ensures the achievement of herd immunity at the community level, in addition to a vaccine's efficacy and safety, is public acceptance¹².

COVID-19 vaccine clinical trial and to get vaccinated against COVID-19 in France during the pandemic, the study concluded that almost 75% of the French people were likely to take-up COVID-19 vaccine and nearly 50% of the people were agree to take part in a COVID-19 vaccine trial. However, Vaccine reluctance was linked with rejection for participation in a COVID-19 vaccine clinical trial¹³.

Another research showed reluctance in the acceptance of COVID-19 immunization. And that hesitancy was correlated with age, literacy rate, occupation and society support. However, half number of respondents believed that immunization effectively stops and control the severity of COVID-19¹⁴.

Most frequent side effects were pain, rash and inflammation at the injection site. The participants who had received Pfizer and AstraZeneca were reported local site reaction. Malaise, Pyrexia, body aches and gastrointestinal adverse effects were more frequent in individuals who had received Pfizer and AstraZeneca than those who had received Sinopharm. Out of these three vaccines Sinopharm is safer than Pfizer and AstraZeneca¹⁵.

Another cross sectional survey-based study to collect information on the adverse effects of Pfizer- BioNTech COVID-19 vaccine. Pain at the site of injection, malaise, body aches, pyrexia and headache were observed to be the most frequent adverse effects of Pfizer- BioNTech COVID-19 immunization. People below 43 years of age reported these general adverse events. This study also concluded that people who had received two doses of vaccine had high frequency of side effects¹⁶. Roughly 18% to 31% of the respondents reported no adverse events after immunization. While remaining participants experienced pain and redness at the site of injection malaise, muscular aches, headache and pyrexia. In this research no severe adverse effects were reported¹⁷.

MATERIALS AND METHODS

Study Design is Cross sectional survey-based study. Data was collected from universities, colleges, offices, health personnel and

other vaccinated people. The study was completed in 2-3 months after the approval of synopsis. We used convenient sampling to collect data. The target population was vaccinated population against COVID-19. Estimated sample 464 has been used for this study.

Data Collection Procedure: Samples were collected from vaccinated population of Lahore, Pakistan through close ended questionnaire and data was analyzed by putting data into SPSS.

RESULTS

In this present, cross-sectional survey studies, total of 464 individuals who have been jabbed with vaccine against COVID-19 were included. Gender wise distribution reported that 243 were male and 221 were female. Among them, 377 were in the range of 15-35 years, 81 were in the range of 35- 40 years. Out of the 464 vaccinated individuals, only 119 reported that they have fear of being vaccinated, 47 were those who deny the importance of vaccine.(Table 1). Regarding the vaccine type administered, Sinovac, Sinopharm, PakVac-Cansino, Moderna, AstraZeneca, BioNTech-Pfizer, Sputnik V were was found to be 33%, 43.5%, 5.6 %, 5.2%, 2.2%, 10.3%, 0.2% (Table 2). Overall, the frequency of pain & redness, lethargy, fever, nausea & vomiting, diarrhea, abdominal pain, numbness and joint pain was found to be 44.5%, 42.5%, 39%, 14.7%, 9.9%, 10.6%, 22.2% .Regarding the association vaccine type with the adverse events, we have found high percentages in the pain & redness, lethargy, fever and nausea and numbness, with vaccine type Sinovac, Sinopharm, Moderna, Pfizer. Related to Sinovac, they were 68%, 65%, 56%, 21%, 17% and 29%. For Sinopharm, they were 76%, 78%, 57%, 18%, 18% and 42%. Regarding Moderna, 16%, 15%, 17%, 5%, 3% and 9%. For Pfizer, 29%, 25%, 28%, 15%, 3% and 13% (Table 3 part 1 &2).

Table 1: Demographic data (n=46)

State	Gender		Marital Status		Age	
	Male	Female	Single	Married	15-35	35-40
Demographic	243	221	333	131	377	87
Frequency						
Percentage	52.4	47.6	71.8	28.2	81	19

Table 2 : Different vaccine types and frequency of participants

Vaccine	Frequency	Percentage
Sinovac	153	33
Sinopharm	202	43.5
PakVac- Cansino	26	5.6
Moderna	24	5.2
AstraZeneca	10	2.2
BioNTech-Pfizer	18	10.3
Sputnik V	1	0.2

Table 3 (Part 1) Vaccine types and particular adverse event association

Vaccine	Inflammation		Lethargy		Fever		Nausea	
Sinovac	17	3.7	13	2.8	29	6.3	18	3.9
Sinopharm	18	3.9	20	4.3	42	9.1	20	4.3
PakVac	5	1.1	5	1.1	9	1.9	9	1.9
Moderna	3	0.6	6	1.3	9	1.9	7	1.5
AstraZeneca	0	0	0	0	1	0.2	2	0.4
Pfizer	3	0.6	5	1.1	13	2.8	9	1.9
Sputnik V	0	0	0	0	0	0	0	0

Table 3 (Part 2)

Vaccine	Inflammation		Lethargy		Fever		Nausea	
Sinovac	68	14.7	65	14	56	12.1	21	4.5
Sinopharm	76	16.4	78	16.8	57	12.3	18	3.9
PakVac	14	3.0	12	2.6	15	3.2	5	1.1
Moderna	16	3.4	15	3.2	17	3.7	5	1.1
AstraZeneca	2	0.4	2	0.4	8	1.7	4	0.9
Pfizer	29	6.3	25	5.4	28	6.0	15	3.2
Sputnik V	0	0	0	0	0	0	0	0

DISCUSSION

Our research is based on the study regarding acceptance of COVID-19 vaccination, intention to participate and the adverse effects caused by the different vaccinations among the general population of different age groups in Lahore, Punjab, Pakistan. Our study includes 464 subjects that was selected by Descriptive domain of observational study design using cross sectional model of study; out of which the 52.4% of the population is male and only 131 of the total population is married.

In our study, the age group of the subjects varied from 15 years to above 40. The 66.2% of our subjects was in age group from 15 to 25 years. 70 out of 464 belonged to the group having age 25 to 35 years. 60 of the total subjects were in between 35 to 40 years of age. Only 5.8% of our population is above 40 years.

The study that was done by Sana Abbas et al. 2021 revealed that the Sino Pharm vaccine was well accepted in the subjects of the age group 25 to years with no severe side effects. In another study that was done revealed that the COVID-19 pandemic itself have some particular psychological concerns to ones that are healthcare workers than to the other general population. The distress level recorded in the young people was far less than the older people because of their more exposure to the social media, outdoor activities that were restricted due to the lockdown¹⁸.

The acceptance of the COVID-19 vaccination is based on the myths regarding the re-occurrence, "the death after two years", and the adverse effects that was shared globally. The intentions of the subjects were also taken into the consideration that either they have any kind of fear or the concerns of the subjects regarding the myths and the side effects. The highest percent that claimed that they have the fear of being vaccinated was 119(25.6%). 10.1% of the subjects are those who do not even believe in the cure or in vaccination. 61 subjects revealed that they have believe in the myth of "death after two years". The chance of reoccurrence of COVID-19 in the selected population is 20.3%. 52 subjects showed that they had itches and rashes after vaccination.

Another study was done by Sana Abbas et al. 2021 in which the population size was 205 which showed that malaise and the fever were the most frequent adverse effects of the vaccination. The Gastrointestinal disturbance and common flu symptoms were seen to be more effecting to the younger subjects. The most common side effects were fatigue, malaise that was reported by 45.4% (93 out of 205) and the 39.5% (81 out of 205) of them reported headache. There was a linear relationship that was seen among the manifestation of side effects and the history of comorbidities. A similar study was done and the Sino-pharm was tested, and it was recorded that only localized pain is in the 14% and only 2.4% had fever. In UK, side effects of Astra Zeneca were analyzed. According to that, 70% of the population had fatigue, 68% had headache, 60% had muscle pain and 51% had fever. The adverse effects included the psychological effects among the population. The study done by Mohammed Khaled et al 2021 included 3036 participants and the results were recorded by an online self-reported questionnaire from the people of Kingdom of Saudi Arabia. The 39% of the KSA had psychological distress due to the COVID-19. Those were mildly or severely distressed due to the pandemic outbreak. Moreover, the females in the population were more prone to get psychologically distressed as compared to the males¹⁹.

One of the most important things is that when and how much the symptoms appeared after the administration of the vaccine. So, we collected the data from the given population and the results were quite different because there was not a specific time period of having any adverse effect or cause any other symptoms. So, 206 subjects of the total population reported that they started having symptoms up to 4 hours after taking the vaccine. 155 of them took 12 hours of time before the symptoms of the adverse effects were

appeared. The remaining 103 subjects showed symptoms after 24 hours.

CONCLUSION

The present study was designed this way to reflect participant's perception, point of view regarding adverse events and association of adverse events occurring post-COVID-19 vaccination. In our local population, majority accepted the vaccine and did not deny administering the vaccine. Majority of study participants received Sinopharm & Sinovac. Regarding the adverse events, the frequency of pain & redness, lethargy, fever, nausea & vomiting, diarrhea, abdominal pain, numbness and arthritis was found to be higher as compared to the other adverse events. Sinopharm & Sinovac has reported highest number of participants having pain & redness, lethargy, fever, diarrhea, abdominal pain, numbness of limbs and joint pain.

Limitations: Short duration devoted to study. Small population and small estimated sample size were utilized. Only general population of city Lahore (Punjab) was considered. No association between co-morbidities and COVID-19 immunization was considered.

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