

# ADVERSE EFFECTS FOLLOWING IMMUNIZATION OF COVID-19 VACCINES IN ISLAMABAD

Muhammad Yar Subhan Qadir<sup>1</sup>, Huzaifa Akram<sup>2</sup>, Farah Ahmed<sup>3</sup>, Basharat Ullah Baig<sup>4</sup>, Zaeem Zia<sup>4</sup>

<sup>1</sup>Jhpiego- A John Hopkins University Affiliate NSTP-NUST, Islamabad Pakistan

<sup>2</sup>Health Services Academy, Islamabad Pakistan

<sup>3</sup>College of Physicians and Surgeons Pakistan, Karachi Pakistan

<sup>4</sup>Ministry of National Health Services Regulations and Coordination, Pakistan

## ABSTRACT

**Background:** The COVID-19 vaccines were developed by different countries and organizations and were rays of hope towards the end of the COVID-19 pandemic. However, the concerns related to adverse effects following immunization was a constant source of hesitancy toward vaccination. The research used cross-sectional study for four months to understand the different adverse effects following COVID-19 vaccination in Islamabad.

**Material and Methods:** Around 400 participants were selected through a purposive sampling strategy. We included persons who received the selected COVID-19 vaccine at least 5 days ago and had a complete understanding of adverse effects. The 24th version of SPSS was used to analyze the data.

**Results:** The results showed that among participant no one experienced life-threatening adverse effects. However, about 52.5% (n=210) of participants showed adverse effects following COVID-19 vaccination. Among the participants showing adverse effects 59% (n=72) were in the age group of 18-30 years, 64% (n=105) were in the age group of above 30 to 50 years and 34% (n=33) were in the age group of above 50-70 years. The results showed that 70% (n=100) of recipients of the Cansino vaccine reported different adverse effects and Sinopharm recipients showed least adverse effects at 43% (n=100).

**Conclusion:** None of the participants showed any life-threatening adverse effects. However, recipients of all types of vaccines reported various adverse effects.

**Keywords:** COVID-19; Adverse effect following immunization; COVID-19 vaccine

## BACKGROUND

The COVID-19 pandemic was declared in 2020 on 11 March<sup>1</sup> and it resulted in millions of deaths around the globe. A number of efforts were made globally to counter pandemic of COVID-19<sup>2</sup> and multiple types of vaccines were developed by different nations. The success of the COVID-19 vaccine is only possible when the majority of the population is vaccinated in the world.<sup>3</sup> Most of the COVID-19 vaccines had minor adverse effects in most populations worldwide<sup>4</sup> but severe adverse effects had also been reported by COVID-19 vaccine recipient in a few countries. The hesitancy toward vaccines was observed in many countries.<sup>5</sup> There were many factors for this hesitancy<sup>6</sup> and one major reason for this was the adverse effects of COVID-19 vaccines.

COVID-19 vaccination started in Pakistan on 2nd February 2021 by the Prime Minister of Pakistan.<sup>8</sup> Initially, only Sinopharm was provided to healthcare workers and to elderly people, then new vaccines such as Sinovac, Cansino, Astraneca, and Pfizer were also available. Pakistan also started its own vaccine with help of China; the Pakvac.<sup>9</sup> The issue of adverse effects had been haunting the general public of Pakistan. The Government used different strategies to advocate the safety of COVID-19 vaccines.

Since different vaccines were administered in Pakistan, this study was done to assess the adverse effects following vaccination of Sinopharm, Sinovac, Astraneca, and Cansino in Islamabad, Pakistan. The study is helpful in understanding the different adverse effects experienced by vaccine recipients in different vaccines and in different age groups.

## MATERIAL AND METHODS

A cross-sectional study was conducted on people getting the COVID-19 vaccine in two vaccine centers in Islamabad. The vaccine recipients equal to and above age 18 years of age were enrolled for assessing the adverse effects. The data collection was carried out


**Correspondence:** Dr. Muhammad Yar Sobhan Qadir  
National Technical Advisor IPC in Jhpiego- A John Hopkins  
University Affiliate NSTP-NUST, Islamabad Pakistan

**Email:** [sobhanqadir@vahoo.com](mailto:sobhanqadir@vahoo.com)

*This article can be cited as:* Qadir MYS, Akram H, Ahmed F, Baig BU, Zia Z. Adverse effects following immunization of COVID-19 vaccines in Islamabad. *Infect Dis J Pak.* 2023; 32 (1): 21-24.

Receiving date: **04 Feb 2023** Acceptance Date: **29 Mar 2023**

Revision date: **02 Dec 2023** Publication Date: **31 Mar 2023**

 This is an Open Access article distributed under the terms of the Creative Commons Attribution-Non-Commercial 4.0 International License.

between March and June 2021. The sample size was 400 hundred (100 samples for each type of vaccine Sinopharm, Sinovac, Astrazeneca, and Cansino). The subjects were selected by purposive sampling technique who were coming for a second dose or those who had received a single dose of the COVID-19 vaccine at least 5 days ago to have a clear understanding of adverse effects. The data was collected by using a simple easily understandable questionnaire that include questions regarding sociodemographic factors (age, sex, primary employment, smoking status), use of aspirin, source of information about vaccine and reason for getting a vaccine, type of vaccine received, and side effects experienced following immunization. The reason for the study was explained by the doctor to the subjects and informed consent was taken for inclusion in the study. The data was collected for Sinopharm, Sinovac, and Astrazeneca on the day of the second dose and for Cansino data was collected telephonically after 5-7 days of vaccination. The questionnaire was filled out by the doctor after taking the history of adverse effects. It was initially piloted on 20 vaccine recipients and then a modified questionnaire was used for final data collection. The cases of coagulations, anaphylactic shocks, myocarditis, and altered state of consciousness or death were termed as severe adverse effect. The data was analyzed using the 24th version of SPSS.

## RESULTS

It is observed that a total of 52.5% (n=210) out of 400 recipients complained about different types of adverse

effects following immunization. Total of 44% (n=44) recipients of Sinopharm, 72% recipients (n=72) of Cansino, 46% recipients (n=46) of Sinovac, and 48% of recipients (n=48) of AstraZeneca presented with different types of adverse effects.

Total of 8.3% smoker presented with adverse effect while p value was calculated as 0.25, similarly 5.6% of people using Aspirin presented with adverse effect and p value calculated as 0.6 making both variables as non-significant.

A total of 67.7% (n=271) percent recipients mentioned that they wanted to get a vaccination in order to prevent COVID-19 infection, 30.7% (n=123) mentioned they got the vaccination only because it is required at an office/job place, and 1% (n=4) recipient mentioned it as a requirement to travel, and other of 0.5% (n=2) mentioned selected other options as a reason to get a vaccination.

A total of 35% (n=140) recipients of the vaccine mentioned that they got information about COVID-19 from the Health department, 33% (n=132) recipient mentioned that they got information regarding COVID-19 vaccination from electronic media, 14.7% (n=59) recipient's source of information was social media, similarly 14.7% (n=59) got information about COVID-19 vaccination from friends and relatives, a total of 1.5% (n=6) get information from the website of the Ministry of National Health Services, Regulations and coordination Pakistan, and 1% (n=4) recipients got information from Newspapers.

**Table-I: Age and Gender Based distribution of adverse effects following immunization**

Frequency of AEFI in age groups					
Age group (years)		Yes	% (n)	No	% (n)
18-30	(n=122)	59%	(72)	41%	(50)
Above 30-50	(n=164)	64%	(105)	36%	(59)
Above 50-70	(n=97)	34%	(33)	66%	(64)
Above 70	(n=17)	0%	(00)	0%	(00)
Frequency of AEFI in gender groups					
Type of Side effects	Out of 225 Males recipients (%)		Out of 175 females' recipients (%)		
Headache	16%		19.4%		
Fever	30.6%		28%		
Body ache	25.3%		27.4%		
Tiredness	6.3%		9.1%		
Dizziness	0.45%		1.14%		
Vertigo	0.45%		1.14%		
Palpitation	00 %		00%		
Change in blood pressure	00 %		00%		
Any allergic reaction	00%		00%		
Any other complaint	0.45%		0.57%		

**Table-II: Frequency of AEFI in different COVID-19 vaccines.**

Types of Side effect	Sinopharm (n=100)	Cansino (n=100)	Sinovac (n=100)	Astrazaneca (n=100)
Headache	18%	16%	19%	19%
Fever	21%	46%	22%	18%
Body Ache	21%	36%	22%	23%
Tiredness	8%	10%	7%	10%
Dizziness	1%	0%	2%	2%
Vertigo	1%	1%	1%	1%
Palpitation	0%	0%	0%	0%
Change in blood pressure	0%	0%	0%	0%
Allergic reaction	0%	0%	0%	0%
Any other side effects*	1%	0%	1%	0%

\*2 subjects reported that they got COVID-19 after vaccination, although both agreed that they were not following the SOPs of COVID-19 completely. There were many recipients who showed more than one symptom too.

**Table-III: Association of smoking status and use of aspirin with Adverse effect following immunization**

Variable	Response	Adverse effect
Smoker	Yes	8.3%
	No	91.7%
Use of Aspirin	Yes	5.6%
	No	94.4%

## DISCUSSION

The side effects following immunization with the COVID19 vaccines (Sinopharm, Sinovac, Astrazaneca, and Cansino) which were administered in Pakistan were assessed. The major side effects reported were fever, headache, body ache, lethargy, and a few presented with dizziness, vertigo, and allergic reaction. No one presented with severe adverse reactions as per study findings. Another study was conducted in the United Arab Emirates in 2021 which results showed that fatigue and headache were more common side effects post-first dose of the Sinopharm vaccine.<sup>10</sup> A study which was conducted in Saudi Arabia results shows that 62 % of participants experienced headache and 66% fever. Fatigue and fever were most commonly experienced post first dose of Astrazaneca.<sup>11</sup> Similarly, a study was conducted in Iran in 2021 which results showed that most common adverse effect following vaccination were chill/fever (26.86%) fatigue (28.37%) and skeletal pain (22.38%).<sup>12</sup>

The study results also show that the 30 above-50 year's age group experienced more side effects than the younger and older age groups. While no one above 70 years of age showed any side effects as per the study findings. In the gender-based distribution of side effects, headache, fever, and body aches were most common in males while dizziness and vertigo were most common in females. Similarly, a cross-sectional study conducted in Malaysia in 2021 shows similar results that the age group > 60 years experienced no side effects, and the likelihood of side effects were 7.4 higher in the younger age group 18-30 years.<sup>13</sup>

However, results also showed that males were less likely to experience side effects, especially those who received Sinovac. A study conducted in Eastern Ethiopia in 2021 results show that the magnitude of adverse effects experienced was higher in males than females.<sup>14</sup>

The study results showed that most participants experienced mild to moderate adverse effects following immunization and no severe adverse effect was experienced by participants. Similarly, a study conducted in Malaysia in 2021 showed that participants who experienced minor adverse effects were 40.9%, 48% experienced mild to moderate and 0.8% experienced severe adverse effects.<sup>13</sup>

About 67.7% of participants who were getting vaccination mentioned that they were willing for the vaccination for their safety without any compulsion. 30.7% of people mentioned that they got the vaccine due to their official requirement and 01% were those who needed it for traveling purposes at the time of data collection and 0.7% were in another category.

As far as the sources of information were concerned, 33% of people mentioned electronic media as the main source of information, 14.7% showed social media as the main source of information and 35% of people showed health department as main source of information. Similarly, A study conducted in Malaysia in 2021 results showed that mostly source of information on COVID-19 vaccine in participants was the official website of the ministry of health 53.7%,

social media 22.1%, 12% internet source such as Google and YouTube and 8.7% WHO.<sup>13</sup>

## CONCLUSION

Different types of vaccines had different side effects and on the basis of this data, we can find out which vaccine should be preferred in which particular age group in Pakistan. However, it is clear that as per data, no life-threatening adverse reactions were observed in people getting vaccination in Pakistan. As new variants are emerging in the country and no serious adverse effects were observed after vaccination, it is high time to push the vaccination campaign even further to save majority of the population. The people getting vaccination should know that they can experience mild to moderate side effects and no serious effects following immunization.

## CONFLICT OF INTEREST

Authors declare no conflict of interest

## GRANT SUPPORT / FINANCIAL DISCLOSURE

None

## AUTHOR CONTRIBUTION

**Muhammad Yar Subhan Qadir:** Conception, the acquisition, Data Collection, Data Analysis

**Huzaifa Akram:** Manuscript writing, Interpretation of the data

**Farah Ahmed:** Revised critically for important intellectual content

**Basharat Ullah Baig, Zaeem Zia:** Data Collection

## REFERENCES

- Cucinotta D, Vanelli M. WHO declares COVID-19 a pandemic. *Acta Biomed.* 2020; 91(1): 157-60. DOI: 10.23750/abm.v91i1.9397
- Dong Y, Dai T, Wei Y, Zhang L, Zheng M, Zhou F. A systematic review of SARS-CoV-2 vaccine candidates. *Sig Transduct Target Ther.* 2020; 5(1): 237. DOI: dx.doi.org/10.1038/s41392-020-00352-y
- Nikolovski J, Koldijk M, Weverling GJ, Spertus J, Turakhia M, Saxon L, *et al.* Factors indicating intention to vaccinate with a COVID-19 vaccine among older U.S. adults. *PLoS One.* 2021; 16(5): e0251963. DOI: doi.org/10.1371/journal.pone.0251963
- Albert E, Aurigemma G, Saucedo J, Gerson DS. Myocarditis following COVID-19 vaccination. *Radiol Case Rep.* 2021; 16(8): 2142-45.
- Aboelsaad IAF, Hafez DM, Almaghaby A, Abdulmoneim SA, El-Ganainy SO, Hamdy NA, *et al.* Systematic review and meta-analysis on COVID-19 vaccine hesitancy. *medRxiv.* 2021; 1-30. DOI: doi.org/10.1101/2021.05.15.21257261
- Abedin M, Islam MA, Rahman FN, Reza HM, Hossain MZ, Hossain MA, *et al.* Willingness to vaccinate against COVID-19 among Bangladeshi adults: Understanding the strategies to optimize vaccination coverage. *PLoS One.* 2021; 16(4): e0250495. DOI: 10.1371/journal.pone.0250495
- What are the side effects of COVID-19 vaccines, and should you worry?. [cited 2023 Mar 10]. Available from: <https://www.medicalnewstoday.com/articles/global-covid-19-vaccine-summary-side-effects>.
- PM Imran kicks off Pakistan's Covid-19 vaccination drive - DAWN.COM [Internet]. [cited 2023 Mar 10]. Available from: <https://www.dawn.com/news/1605089>
- Pakistan produces Chinese CanSinoBio COVID vaccine, brands it PakVac | Reuters.com [Internet]. [cited 2023 Mar 10]. Available from: <https://www.reuters.com/news/picture/pakistan-produces-chinese-cansinobio-cov-idUSKCN2DG1VS>.
- Saeed BQ, Al-Shahrabi R, Alhaj SS, Alkokhardi ZM, Adrees AO. Side effects and perceptions following Sinopharm COVID-19 vaccination. *Int J Infect Dis.* 2021; 111: 219–26. DOI: 10.1016/j.ijid.2021.08.013
- Alhazmi A, Alamer E, Daws D, Hakami M, Darraj M, Abdelwahab S, *et al.* Evaluation of side effects associated with COVID-19 vaccines in Saudi Arabia. *Vaccines.* 2021; 9 (6): 674. DOI: 10.3390/vaccines9060674
- Babae E, Amirkafi A, Tehrani-Banihashemi A, Soleimanvandi Azar N, Eshtrati B, Rampisheh Z, *et al.* Adverse effects following COVID-19 vaccination in Iran. *BMC Infect Dis.* 2022; 22(1): 476. DOI: doi.org/10.1186/s12879-022-07411-5
- Elnaem MH, Mohd Taufek NH, Ab Rahman NS, Mohd Nazar NI, Zin CS, Nuffer W, *et al.* Covid-19 vaccination attitudes, perceptions, and side effect experiences in Malaysia: Do age, gender, and vaccine type matter? *Vaccines.* 2021; 9(10): 1156. DOI: 10.3390/vaccines9101156
- Alemayehu A, Demissie A, Yusuf M, Abdullahi Y, Abdulwehab R, Oljira L, *et al.* COVID-19 vaccine side effect: age and gender disparity in adverse effects following the first dose of AstraZeneca COVID-19 vaccine among the vaccinated population in Eastern Ethiopia: a community-based study. *SAGE open Med.* 2022; 10: 20503121221108616. DOI: 10.1177/20503121221108616