SIDE EFFECTS OF COVID-19 VACCINATION AMONG ADULTS IN DISTRICT PESHAWAR

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ABSTRACT

OBJECTIVES

This study aimed to evaluate the side effects of COVID-19 vaccination among adults in the district of Peshawar.

METHODOLOGY

A descriptive cross-sectional study was conducted in Peshawar. The sample size comprised 200 participants, with 63.5% being male and 36.5% female. A convenient sampling technique was used. The study included individuals who had received at least one dose of any vaccine, i.e., Pfizer, AstraZeneca, Sinovac, Sinopharm, and Moderna.

RESULTS

A significant association was found between vaccine type and injection site pain ($\chi^2 = 10.161$, $p = 0.03$). The Pfizer and Sinovac vaccines showed higher pain reports than AstraZeneca, Sinopharm, and Moderna. The incidence of headaches, fatigue, and fever was similar across the different vaccines. The prevalence of fever was similar across the different vaccines. A significant association was found between vaccine type and myalgia ($\chi^2 = 9.970$, $p = 0.04$). The Sinovac vaccine had a higher incidence of myalgia compared to other vaccines. Dizziness was reported at similar rates across the different vaccines ($\chi^2 = 3.891$, $p = 0.42$). The Pfizer and Sinovac vaccines were associated with a higher incidence of shortness of breath compared to other vaccines ($\chi^2 = 10.349$, $p = 0.03$). The Pfizer vaccine had the highest reports of bone pain compared to other vaccines ($\chi^2 = 17.098$, $p < 0.001$). The Sinovac vaccine had a higher incidence of diarrhea compared to other vaccines ($\chi^2 = 15.985$, $p = 0.04$). The Pfizer vaccine had a higher incidence of arm numbness compared to other vaccines ($\chi^2 = 11.310$, $p = 0.02$).

CONCLUSION

The study identified significant associations between certain COVID-19 vaccines and specific side effects. These findings highlight the importance of monitoring and addressing potential side effects to ensure the success of the national vaccination program in Peshawar district. Further research is warranted to investigate the long-term side effects of vaccination.

KEYWORDS: *Side Effects, Adults, COVID-19, Pfizer, AstraZeneca*

INTRODUCTION

In virology, a different type of viral species can infect a human being.[1] Meanwhile, it was developed on 31 December 2019. It has developed into a very big worldwide philanthropic disaster, upsetting the health conditions of the nation, cause an economic crisis during the peak phase of mortality worldwide. So, according to the conflict of interest, different therapeutic measures were necessary to over less the effect of the coronavirus. Different researchers have found hydroxychloroquine and remdesivir effective against coronavirus disease.[2] In 2019-2021, different states have stated confirmed cases with a ratio of 120 million cases and over 2.66 million deaths. The disease of (COVID-19) reached Pakistan in 2020.[3] The first patient of the coronavirus was registered in Karachi on 26 February 2020 at the time of (COVID-19. WHO (World health organization) called as 6th public emergency internationally. Massive treatment through vaccination is required to lessen the spread of the (CoVid-19) virus. Pakistan was many of the early countries starting the vaccination program.[4] A large number of coronavirus vaccination is needed. Meanwhile, the public stayed undefined about the safety and efficiency of the different coronavirus vaccines.[5] The advantage of vaccination is to make a healthy nation fight the virus, but every vaccine has its side effects. The same is true of covid vaccines, which have certain side effects after the first and second doses.[5] Five types of vaccines are propelled in Pakistan: AstraZeneca (AS), PfizerBio-Tech (PB) and Moderna (M). These three types of vaccines are RNA and mRNA-based vaccines. According to Google, 219

species of viruses can infect human beings. The world got infected and has faced many deadly viruses like H1N1 and (COVID-19).[6] People face many problems, difficulties, and fear in living normal functions like before COVID-19 in the present healthcare system. Scientists need to create advanced or safe vaccines for this new deadly virus, a new variant of the virus which causes coronavirus disease.[9] It has massive adverse effects on the world.[7] The coronavirus disease vaccine hesitation and acceptance was high in both states Owed different incidents rate, cultural difference, and availability of the advanced covidvaccine.[4] As well as it is the fact that we have seen hesitancy against already established vaccine like polio, hepatitis, and measles vaccine.[10] A study found that the vaccine acceptance rate was 90.6% among high- and medium-income people in China.[11] Vaccines have proven to be successful management of disease prevention. Still, vaccine aversion is a major global problem reported by World Health Organization.[12] The news circulated about the vaccination process and the Food and Drug Administration (FDA) approval has brought hope to people. Pfizer was the first approved covid-19 vaccine in Pakistan.[13] The Pfizer-BioNTech (BNT162b2) vaccine has shown good safety and efficacy in people worldwide, including Pakistan.[14] However, the hesitation was still very high because of side effects of the vaccines reported by some studies, like headache, weakness, fatigue, myalgia, and muscle and body pain. As well as a local injection site, shoulder pain, chills, coldness, and fever.[14] Some reports have also reported increased adverse effects in people with prior COVID-19.[15] Some rumours are circulated and debated on various social media sites about COVID-19 vaccines post-vaccination adverse effects, crucially highlighting infertility.[16] Sino pharm and Sinovac from China, Pfizer and Moderna from the USA, AstraZeneca from Oxford (UK), and Sputnik-V from Russia are vaccines used so far in Pakistan.(13) Although in all the above, Moderna and Pfizer vaccines are messenger RNA (mRNA) vaccines, when mRNA enters our bodies, the immune system starts producing antibodies against this foreign particle.[17] The vaccination benefits emphasized increasing the probability of immunization and reducing the burden of infectious diseases.[18] The COVID-19 pandemic continues to pose a significant threat to global public health. Vaccination programs have emerged as a crucial strategy to mitigate the spread of the virus and reduce its impact on individuals and communities. However, concerns about potential side effects have arisen, impacting the success of national vaccination campaigns. This study aimed to address this gap by examining the short-term side effects of COVID-19 vaccination among adults in the district of Peshawar, Pakistan.

METHODOLOGY

The study employed a cross-sectional descriptive design and was conducted over a period of one month, from May 1 to June 1, in the district of Peshawar. The focus of the study was on individuals who had received COVID-19 vaccines. Convenient sampling technique was used to collect data for the study. A total of 200 samples were randomly selected and included in the analysis. The inclusion criteria for the study participants were as follows: individuals who had received vaccination, both males and females aged between 18 and 50, residents of the Peshawar district. Exclusion criteria included children, individuals over the age of 50, mentally ill patients, and volunteers who did not consent to provide data. Data was collected using a questionnaire specifically developed for the research study. The questionnaire was designed to gather information related to the occurrence of side effects following COVID-19 vaccination. The questionnaire was administered to the study participants via a questionnaire platform. Ethical approval for the study was obtained from the head of the institute. The collected data was analyzed using the Statistical Package for Social Sciences (SPSS) version 2.0. Descriptive statistics, such as frequencies and percentages, were calculated for each variable of interest. Chi-square tests were conducted to examine the association between vaccine type and the occurrence of different side effects. The level of significance was set at $p < 0.05$.

RESULTS

Table 1: Association between COVID-19 Vaccines and Side Effects among Adults in Peshawar District

Side Effects		COVID-19 Vaccines					Chi-square Value	P-Value
		Pfizer	AstraZeneca	Sinovac	Sinopharm	Moderna		
Injection site pain	Yes	33(27.0)	04(3.3)	59(48.4)	18(14.8)	08(6.6)	10.161	0.03
	No	18(23.1)	03(3.8)	52(66.7)	04(5.1)	01(1.3)		
Headache	Yes	21(32.3)	03(4.6)	34(52.3)	04(6.2)	03(4.6)	04.328	0.36
	No	30(22.2)	04(3.0)	77(57.0)	18(13.3)	06(4.4)		
Fatigue	Yes	26(29.2)	04(3.6)	42(47.2)	13(14.6)	05(5.6)	05.211	0.26
	No	25(22.2)	04(3.6)	69(62.2)	09(8.1)	04(3.6)		
Fever	Yes	35(31.8)	04(3.6)	52(47.3)	13(11.8)	06(5.5)	07.465	0.11
	No	16(17.8)	03(3.3)	59(65.6)	09(10.0)	03(3.3)		
Mylagiya	Yes	09(17.0)	04(7.5)	27(50.0)	10(18.9)	03(5.7)	09.970	0.04
	No	42(28.6)	03(2.0)	84(57.1)	12(8.2)	06(4.1)		
Dizziness	Yes	15(30.0)	01(2.0)	23(46.0)	08(16.0)	03(6.0)	03.891	0.42
	No	36(24.0)	06(4.0)	88(58.7)	14(9.3)	06(4.0)		
Shortness of Breath	Yes	21(39.6)	01(1.9)	23(43.4)	04(7.5)	04(7.5)	10.349	0.03
	No	30(20.4)	06(4.1)	88(59.9)	18(12.2)	05(3.4)		
Bone Pain	Yes	16(29.6)	03(5.6)	21(38.9)	07(13.0)	07(13.0)	17.098	0.00
	No	35(24.0)	04(2.7)	90(61.6)	15(10.3)	02(1.4)		
Diarrhoea	Yes	09(23.7)	00(00)	21(55.3)	05(13.2)	03(7.9)	15.985	0.04
	No	42(26.3)	06(3.8)	89(55.6)	17(10.6)	06(3.8)		
Arm Numbness	Yes	19(30.2)	02(3.2)	26(41.3)	10(15.9)	06(9.5)	11.310	0.02
	No	32(23.4)	05(3.6)	85(62.0)	12(8.8)	03(2.2)		

DISCUSSION

On 31 December 2020, the first COVID-19 vaccine (Pfizer/BioNTech) received emergency validation from the World Health Organization (WHO). Currently, there are approximately 200 COVID-19 vaccines undergoing pre-clinical and clinical trials. Due to the rapid production of vaccines, researchers have emphasized the importance of investigating their safety profiles. While clinical trials have demonstrated satisfactory safety profiles, real-world data play a crucial role in assessing vaccine safety due to the limitations of trials. Since the initiation of vaccination campaigns, no serious adverse effects have been reported following the administration of COVID-19 vaccines. However, a study conducted in Saudi Arabia found that 80.6% of vaccine recipients experienced injection site pain, while lower incidences of fatigue (20.1%) and bone or joint pain (1%) were reported after the second vaccine dose.[19] Similarly, a study conducted in Nigeria reported pain at the injection site, fatigue, and fever as the most common side effects, aligning with these findings.[20] A study reported that short-term side effects of covid1-19 vaccines seems to be mostly local or transient in nature.[21] another study reported that COVID-19 illness with increased incidence of vaccination side effects and demonstrates that mRNA vaccines cause milder, less frequent systemic side effects, but more local reactions.[22] The findings of this study regarding injection site pain align with some previous research. Similar to other studies, the Pfizer vaccine was associated with a higher incidence of injection site pain compared to other vaccines.[23] In terms of headache, this study did not find a significant association between vaccine type and headache, which differs from some previous research. One of the studies reported that headache was reported in 30.6% of healthcare workers who received the COVID-19 vaccine. It was predominantly observed among female healthcare workers who had pre-existing primary headaches, thyroid disorders, experienced headaches during COVID-19, or had previously experienced headaches following influenza vaccination.[24] Regarding fatigue and fever, the results of this study find no significant association between vaccine type and these side effects. The findings related to mylagiya, shortness of breath, bone pain, diarrhea, and arm numbness in this study demonstrate some similarities with previous research. The association between vaccine type and these side effects is consistent with some studies that have reported varying rates of these symptoms among different vaccines.[22,25]

LIMITATIONS

It is important to acknowledge the limitations of the study. The use of convenient sampling may limit the generalizability of the findings to the larger population. Additionally, the reliance on self-reporting through the questionnaire may introduce response bias. Furthermore, the study focused on short-term side effects, and the long-term effects of vaccination were not assessed.

CONCLUSIONS

In conclusion, different vaccines exhibited varying side effect profiles. While some adverse effects such as injection site pain, mylagiya, bone pain, and diarrhea were more prevalent with specific vaccines (Pfizer and Sinovac), others like headache, fatigue, fever, dizziness, and arm numbness showed no significant differences among the vaccine types. It is important to consider these differences when evaluating and comparing the safety profiles of different COVID-19 vaccines.

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