Short Term Side Effects of COVID-19 Vaccination in Patients Presenting At a Tertiary Care Hospital, Lahore

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Abstract

Objective: To determine the frequency and factors associated with short term side effects of COVID-19 vaccination in patients presenting at Tertiary Care Hospital, Lahore

Material and Methods: This was a cross-sectional study with non-probability sampling conducted at the vaccination center of a tertiary care hospital, Lahore, among 381 adults from December 2021-Feburaray 2022. Data was collected through a semi-structured questionnaire and analyzed using SPSS version 23 whereas p-value ≤ 0.05 was taken as significant.

Results: Among 381 adults, 171 (44.9%) experienced short term side effects after COVID-19 vaccination. There were 163(42.8%) males and 218(57.2%) females with a mean age of 30.09±9.26 years. Among 171(44.9%), weakness 72 (18.9%) was the most reported side effect, followed by local swelling 69(18.1%), local pain 63(16.5%) and fever 52(13.6%).Female gender, fear about side effects, family member's experience of side effects, vaccination due to self-protection, media and government advice were significant factors associated with short term side effects.

Conclusion: Short term side effects were reported among 171 (44.9%) of patients. Health education and public awareness are required to remove the fear of side effects among public.

Keywords: Covid-19, Vaccination, Fear, Side effects.

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Introduction

COVID-19 emerged as pneumonia of unknown etiology in Wuhan City of China in 2019. Later, respiratory droplet analysis showed a novel coronavirus and named as 2019-nCoV. It was re-named as Coronavirus disease-19 (COVID-19) by the World Health Organization (WHO) on February 11, 2020. Also, it was declared as a public health emergency of international concern (PH EIC) on 30th January 2020 and a Pandemic on 11th March 2020 by the WHO.[1,2,3] Containment measures such as border control, country wide lockdown, quarantine houses, sealing of areas, standard operating procedures implementation such as use of masks, sanitizer and social distancing were recommended to be key preventive strategies.[4] In such a situation vaccine was a ray of hope, hence different vaccine designs were utilized to formulate vaccination against COVID-19 namely live attenuated viral vaccine, recombinant viral-vectored vaccines, inactivated viral vaccines, protein subunit vaccines, virus-like particles and nucleic acid-based vaccines.[5] The first COVID-19 vaccination got authorization for emergency use in the USA in December 2020.[6] Since 2021, approximately 7.5 billion vaccination coverage has been reported globally. About 120 million people have been vaccinated in Pakistan.[7]

Vaccination safety was ensured by competent authori-

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ties, still public hesitancy for vaccination was the biggest challenge at that time. Due to rumor mills, vaccine hesitancy was substantial in Pakistan as per expectations, as we have observed that in the case of polio.[7,8]

It has been reported that 50-90% persons who received COVID-19 vaccination complained of some side effects which included redness, swelling and pain as local and headache, muscle pain and fatigue as systemic side effects.[6] Various studies conducted in Pakistan showed that pain at injection site was the most commonly reported side effect, followed by swelling, myalgia, fever and headache.[7,9]

As literature review suggested scarce research in Lahore hence, this study was designed to determine short term side effects of COVID-19 vaccination in Lahore.

Materials and Methods

This was a cross-sectional study with non-probability sampling conducted at the vaccination center of a tertiary care hospital, Lahore, among 381 adults from December 2021-Feburaray 2022. After approval from the ethical review board of the institute, a total of 381 adults of both genders, ≥ 18 years of age who gave consent were included through convenient sampling. Adults who refused to participate, those who were less than 18 years of age according to their identity card and those who did not receive COVID-19 vaccination were excluded from the study.

All participants were given a brief introduction about the purpose and outcome of the study. The participation was completely voluntary, and they could withdraw from the study anytime without any consequence. Participants were interviewed following the administration of the COVID-19 vaccination. The questionnaire included socio-demographic characteristics, knowledge about vaccination, acceptance of COVID-19 vaccine, concerns regarding COVID-19 vaccine and side effects after vaccination. In order to ensure no adverse reaction was ignored, the participants were first asked to report any reactions they might have suffered after receiving the vaccine within three days. On the fourth day, the researcher contacted participants through phone and asked about a list of adverse reactions. The side effects were local swelling at the injection site, weakness, fever, nausea, joint pain, itching, decreased appetite and decrease sleep. These variables were chosen as these were reported in clinical trials of vaccination and the most frequent side effects reported by other studies[6,8,9]. Participants who reported no side effects were also included in this study.

Data was then entered and analyzed through SPSS Version 23.0 and frequency and means with standard deviation were calculated. Chi square was applied to assess strength of association, where p-value ≤ 0.05 was taken as significant at 95% confidence interval.

Results

Total of 381 individuals were questioned, 171 individuals (44.9%) had short term side effects after Covid-19 vaccination whereas 210(55.1%) did not report any short-term side effects. Among participants, 163(42.8%) were male, while the mean age of participants was 30.09 ± 9.26 years. About 59(15.5%) were illiterate, 285 (74.8%) were employed. The study also showed that 151(39.6%) had fear that they will have side effects before going for vaccination, while 193 (50.7%) participants claimed that their family members have experienced some sort of side effect. Approximately, 36(9.4%) experienced side effects within an hour, 111(29.1%) in one day and 24(6.2%) in 3 days and about 87(22.8%) had side effect after the 1st dose. About 250(65.6%) of the

Table 1: *Association of variables with short term side effects of COVID-19 vaccination (n=381)*

Variable		Experienced Side effects		P-Value
		Yes n (%)	No n (%)	
Gender	Male	59 (36.2%)	104 (63.8%)	0.003
	Female	112 (51.4%)	106 (48.6%)	
Fear About Side effects	Yes	113 (74.8)	38 (25.2)	0.000
	No	58 (25.2)	172 (74.8)	
Family member experienced side effects	Yes	125(64.8)	68(35.2%)	0.000
	No	46(24.5%)	142(75.5%)	
Will opt vaccination of different type	Yes	151(49.3)	155(50.7)	0.000
	No	20(26.7)	55(73.3)	
Will opt booster dose	Yes	141(48.1)	152(51.9)	0.020
	No	30(34.1)	58(65.9)	
Vaccinated for self-protection	Yes	99(39.6)	151(60.4)	0.004
	No	72(55)	59(45)	
Vaccinated due to Government advice	Yes	48(37.2)	81(62.8)	0.031
	No	123(48.8)	129(51.2)	
Vaccinated due to media advice	Yes	28(31.8)	60(68.2)	0.005
	No	143(48.8)	150(51.2)	

**P-value <0.05 significant. Test Applied: chi-square*

population examined reported that they were getting vaccination for their own protection. On the other hand, 88(23.1%) were motivated by the media and 129(33.9%) were getting vaccination due to the government's advice. About 293(76.9%) were willing to get a booster jab, 115(30.2%) think that it can cause infertility while 255 (66.9%) considered it safe during lactation.

Table 2: *Association of socio demographic and other vaccine related factors with occurrence of vaccine related side effects (n=171)*

Variables		Side-effects		P Value
		Yes	No	
		Weakness		
Gender	Male	17(28.8)	42(71.2)	0.011
	Female	55(49.1)	57(50.9)	
Family Member experience side effects	Yes	59(47.2)	66(52.8)	0.026
	No	13(28.3)	33(71.7)	
Vaccinated due to media advice	Yes	7(25)	21(75)	0.045
	No	65(45.5)	78(54.5)	
		Nausea		
Education	Illiterate	8(26.7)	22(73.3)	0.008
	Literate	13(9.2)	128(90.8)	
Occupation	Employed	8(6.3)	119(93.7)	0.000
	Unemployed	13(29.5)	31(70.5)	
Vaccinated due to media advice	Yes	0(0)	28(100)	0.027
	No	21(14.7)	122(85.3)	
Side effect after dose	First Dose	6(6.9)	81(93.1)	0.029
	Second Dose	15(17.9)	69(82.1)	
		Fever		
Fear about side effects	Yes	43(38.1)	70(61.9)	0.002
	No	9(15.5)	49(84.5)	
Vaccinated due to media advice	Yes	4(14.3)	24(85.7)	0.043
	No	48(33.6)	95(66.4)	
Family income	Up to 50,000	38(26.2)	107(73.8)	0.005
	More than 50,000	14(53.8)	12(46.2)	
		Local Pain		
Family income	Up to 50,000	60(41.4)	85(58.6)	0.004
	More than 50,000	3(11.5)	23(88.5)	
Family Member experience side effects	Yes	56(44.8)	69(55.2)	0.000
	No	7(15.2)	39(84.8)	
Side effects after dose	First Dose	42(48.3)	45(51.7)	0.002
	Second Dose	21(25)	63(75)	
		Local Swelling		
Vaccinated due to media advice	Yes	17(60.7)	11(39.3)	0.016
	No	52(36.4)	91(63.6)	

**P-value <0.05 significant. Test Applied: chi-square*

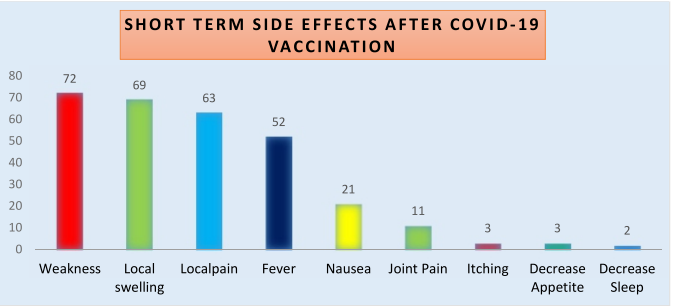

Fig-1: *Short-term side effects of COVID-19 vaccination*

Discussion

The COIVD-19 disease was a leading public health dilemma that can cause mild to severe respiratory illness including mortality. This pandemic was inciting the panic due to a number of reasons as it was a new virus, no one had its immunity and it was highly contagious. The main strategy to overcome this deadly infection was the proper vaccination of people. The disease mostly affected the elderly people, individuals suffering from co-morbidities such as diabetes and carcinoma. Therefore, the present study was carried out at the Vaccination Center of Tertiary Care Hospital, Lahore to determine the short-term side effects following COVID-19 vaccination and found that the respondents who had side effects following COVID-19 vaccination, 74.3% were up to 35 years old and 25.7% were above 35 years old. A similar study carried out by Azimi and teammates (2021) reported that among participants, who had side effects after vaccination, 56.8% were up to 40 years old and 43.2% were above 40 years old.[10] It was found during the study that the majority (57.2%) of the respondents were female, while 42.8% were male respondents. The findings of our study are comparable with a study undertaken by Alamer and fellows (2021) who also confirmed that most of the participants (52.0%) were females and 48.0% were males.[11] Education plays an important role and motivates people to get vaccinations. It is worth mentioning here that 47.2% of respondents were matric and above, while 15.5% were illiterate. The findings of a study conducted by Tahir and comrades (2021) are better than our study results reported that 59.6% of participants were above intermediate and the remaining were having intermediate qualification.[12] Study revealed that among respondents, 39.6% had fear of side effects of vaccine, but the results of a study performed by Syed and companions (2021) highlighted that a significant majority (95.8%) had fear of side effect

of vaccine.[13] The results of our study exhibited better scenario than the study carried out by Elnaem and coworkers (2021) who asserted that 76.8% of participants had any side effects of vaccine, while in our study the prevalence of any side effect was 44.9%.[14] In our study, 9.4% of respondents felt side effects in one hour, while 29.1% and 6.3% of respondents felt side effect after <24 hours and ≥ 72 hours, respectively. Likewise, Adam and associates (2021) reported that 32.1% of respondents had no side effect while 59.4% and 8.5% of respondents felt side effects after <24 hours and >24 hours, respectively.[15] The findings of our study further highlighted 22.8% and 22% of respondents felt side effect after the first dose and second dose, respectively. However, Elnaem and coworkers (2021) indicated in their study that 24.4% and 39.0% of participants felt side effect after the first dose and second dose, respectively.[14]

As far as short-term side effects of COVID-19 vaccination are concerned, the study demonstrated that most of the respondents (18.9%) felt weakness, followed by local swelling (18.1%), local pain (16.5%), fever (13.6%), nausea (5.5%), joint pain (2.9%), decreased appetite (0.8%), itching (0.8%) and decreased sleep (0.5%). A similar study carried out by Abbas and collaborators (2021) confirmed that the majority of the participants (45.4%) had fatigue / malaise, followed by headache/migraine (39.5%), fever (33.7%), soreness, redness, swelling at the injection site (27.3%), chills and rigor (20.5%) and flu-like symptoms (13.7%).[16] Likewise, Adam and associates (2021) reported that the majority of the respondents had fever (41.2%), followed by myalgia (36.71%), malaise (36.71%), headache (24.2%), muscles & joint pain (23.0%), pain & swelling at injection site (19.7%), chills (13.9%), dizziness (8.2%), nausea (7.3%), sore throat (7.3%), diarrhea (6.1%), depression (3.9%), cough (3.3%), dyspnea (3.3%), anxiety (2.1%), redness at injection side (1.2%), anosmia (1.2%) and seizure (0.9%).[15]

The study also identified the reasons for uptake of COVID-19 vaccination and found that the majority (65.6%) said they are taking COVID-19 vaccination for protection, 33.9% said on government advice and 23.1% said due to media advertisement. A study undertaken by Tahir and comrades (2021) confirmed that the majority (81.6%) of the respondents who were willing to take vaccine stated that they wanted to protect themselves.[12] A similar scenario was also reported by an Indian study undertaken by Kishore and partners (2021) who reported that 49.4% took COVID-19 vaccine for their protection.[17] It is worth-mentioning here that many respondents (76.9%) were willing to go for a booster dose. The findings of a study conducted by Lai and colleagues (2021) are comparable but exhibited better scenario than our study results, which confirmed that 84.8% of participants were ready to go for a booster dose.[18] Among the respondents, 30.2% had the misconception that vaccines can cause infertility. Almost the same results were reported by a study conducted by Rahman et al. (2021) who asserted that >35.0% participants believed that the vaccine could create infertility.[19] In our study, 66.9% of participants agreed that the vaccine is safe during lactation. A study undertaken by Mose (2021) reported that 61.0% of lactating mothers were willing to receive the COVID-19 vaccine.[20]

Chi-square analysis reported that females were more prone to experience side effects a compared to males. Similar findings were reported by Yasmin et al., (2023) from Pakistan, Jayadevan and colleagues (2021) from India.[21,22] This difference was also observed in other inactivated virus vaccinations, such as measles and rubella. This can be due to strong immune system and frequent side effects reporting by females. Limitations of this study included convenient purposive sampling. Hence, results cannot be generalized. Also, clinical examination, past medical history and co-morbidities were not inquired in this study. Further studies with community based survey and inclusion of the above factors are recommended.

Conclusion

The current study concluded that the mostly observed side effects were weakness, local swelling, local pain and fever. Short term side effects of COVID-19 vaccination were found more among females than males. However, no serious side effects were reported. Health education through media and community based sessions can help in rectification of misconceptions and boost vaccine uptake.

Conflict of Interest: ***None***

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Authors Contribution

KH: Conceptualization of Project
KH: Data Collection
RH: Literature Search
SK: Statistical Analysis
MUF: Drafting, Revision
SK, ZT: Writing of Manuscript