

Post COVID 19 vaccination symptoms among the health care workers in Egypt

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Abstract

Background: Vaccines are the most important strategy to overcome the global pandemic of COVID 19. Although the vaccine's protective effectiveness is commonly addressed, little is known regarding the adverse effects after vaccination. Therefore, this study's primary objective was to study the prevalence of different COVID-19 vaccine side effects among the early vaccinated healthcare workers in Egypt.

Methods: A cross-sectional observational study was done to assess the post vaccination symptoms among the health care workers who were vaccinated with COVID vaccine in Egypt.

Results: One hundred and ninety-two health care workers (HCWs) responded to this questionnaire. The most common symptoms reported after the 1st dose of vaccination were pain at injection site (81.7%), followed by tiredness (70.7%) then myalgia and bone pain (62.8%). The most reported distressing symptoms after the 2nd dose were local pain at injection site (18.8%), tiredness (13.6%) and headache (10.5%).

Conclusion: We concluded that post vaccination symptoms among health care workers were mild, short symptoms, and there were no serious adverse effects after the first dose as well as the second dose. The majority of participants did not report COVID-19 infection after vaccination which confirms the efficacy and safety of the vaccine.

Key words: Covid vaccine, healthcare workers, Egypt

Introduction

The global pandemic of COVID-19 has affected about 517,648,631 confirmed cases including 6,261,708 deaths, reported to World Health Organization (WHO) so Emergency Approval of COVID-19 virus vaccines were launched by WHO with a total of 11,655,356,423 vaccine doses having been administered (1).

The best defense against COVID-19 infection is the successful development and implementation of vaccinations. The decrease in infection rates with the introduction of vaccines, together with measures to mask and socially isolate those with Coronavirus, boosted hopes that it can be contained (2).

Response to a viral infection is either innate or an adaptive immune response. When adaptive immune cells (B cells and T cells) come into contact with the same virus for the second time, they clear it out before infection occurs. Immune memory is used in vaccines to defend against diseases caused by prior infection or an effective vaccine. Vaccination functions by simulating natural immunity. The first dose activates the immune system's first memory, while the second dose paralyzes it (3).

In clinical trials and real-world effectiveness studies, COVID-19 vaccines have shown high levels of efficacy in older adults, healthcare workers, and the general population, with 50–70 percent protection against infection or mild disease and 75–85 percent protection against hospitalization or death. After two doses, effectiveness against infection or moderate disease is 65–90%, and against severe disease is 90–100% (4).

However, the success of a vaccination program to provide 'herd immunity' (the proportion of subjects with immunity in each population) remains dependent on a high proportion of the population being vaccinated. Vaccines' potential negative effects were the most common reason for vaccine hesitation among people (5).

Although the vaccine's protective effectiveness is commonly addressed, little is known regarding the real-world experience after vaccination outside of scientific trials. Knowledge of what to expect following vaccination will aid in public education, dispelling myths, and reducing vaccine apprehension (6).

Therefore, this study's primary objective was to study the prevalence of different COVID-19 vaccine side effects among the early vaccinated healthcare workers in Egypt.

Methods

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Therefore, this study's primary objective was to study the prevalence of different COVID-19 vaccine side effects among the early vaccinated healthcare workers in Egypt.

Results

One hundred and ninety-two health care workers (HCWs) responded to the questionnaire, all of whom received the first dose of vaccine but only 60 respondents received the second dose. The mean age of the participants was 34.54 ± 8.02 ; the majority of them were females (74.3%), non-smoker (94.8%), and the most common shared specialty was Internal medicine and its specialties (36.6%) Most were working in Ministry of Health hospitals (54.4%); the most common documented chronic medical illness was Eczema or previous allergic history (18.8%). About 32.3% confirmed past history of COVID-19 infection before vaccination (Table 1).

Table 1: The basic characteristics of the participants (N=192)

Item		N	%
Age	Mean \pmSD	34.54\pm 8.02	
Gender	Female	142	74.3%
	Male	50	25.5%
History of medical disease	DM	2	1%
	Hypertension	14	7.3%
	Heart disease	1	0.5%
	Bronchial asthma	12	6.3%
	Autoimmune disease	9	4.7%
	Eczema or previous allergic history	36	18.8%
	Other medical diseases	17	9.8%
Smoking	Current	3	1.6%
	Ex-smoker	7	3.6%
	Non-smoker	182	94.8%
Specialty	General surgery and surgical specialties	11	5.7%
	Internal medicine, its specialties,	70	36.6%
	Critical care Emergency Anesthesia	10	1.9%
	Ophthalmology	10	1.9%
	Infection control	1	0.5%
	Radiology	14	7.3%
	Clinical and chemical pathology	5	2.6%
	House officers	31	16.2%
	Gynecology, obstetric and Family planning	8	4.1%
	Pediatrics	15	7.8%
	Academic	16	8.3%
	General medicine	8	4.1%
	Work place during COVID	University hospitals	78
Educational hospitals		10	5.2%
Ministry of Health hospitals		104	54.4%
Working or previously worked in isolation hospitals		42	21.9%
Past history of COVID-19 infection before vaccination	Yes	62	32.3%
	Maybe	47	24.5%
No of vaccinations received	1 st dose	192	100%
	2 nd dose	60	31.4%

The most reported symptoms after the 1st dose were local pain at injection site followed by tiredness and myalgia or bone pains. The most reported distressing symptoms after the 2nd dose were local pain at injection site, tiredness and headache. About 70.7% of participants needed medications for symptoms relief after the 1st dose while only 11.5% of them needed that after the 2nd dose. The minority of participants (9.4% and 4.7%) did not have any symptoms after the 1st dose and after the 2nd dose respectively (Table 2).

Table 2: Frequency of different symptoms after 1st and 2nd dose

Symptoms	After 1 st dose		After 2 nd dose	
	No	%	No	%
Tiredness	135	70.7	26	13.6
Myalgia or bone pain	120	62.8	18	9.4
Fever	85	44.5	8	4.2
Headache	88	46.1	20	10.5
Local pain at injection site	156	81.7	36	18.8
Joint pain	53	27.7	10	5.2
Nausea	24	12.6	3	1.6
Diarrhea	11	5.8	2	1.0
Sore throat	19	9.9	1	0.5
Insomnia	28	14.7	2	1.0
Allergic rash	5	2.6	1	0.5
Chills or rigors	40	20.9	4	2.1
Vomiting	2	1.0	2	1.0
Syncope	2	1.0	1	0.5
Cough	9	4.7	3	1.6
Chest tightness	17	8.9	5	2.6
Redness at injection site	53	27.7	10	5.2
None	18	9.4	9	4.7
Need medication for symptom relief	135	70.7	22	11.5

The onset of symptoms after the 1st dose was 14 hours and lasted for 24 hours while after the 2nd dose the symptoms appeared after 6 hours and lasted for 14 hours (Table 3).

Table 3: Onset of appearance, duration of symptoms and Number of COVID infected participants after vaccination

	1 st dose	2 nd dose
Onset of appearance of symptoms in hours	14.05±53.03	6.55± 7.60
Duration of symptoms in hours	24.94±24.43	14.97± 19.80
Number of COVID infected participants after vaccination	13	6.8 %

There was no statistically significant difference between different age groups regarding different symptoms after the 1st dose apart from tiredness, local pain at injection site, nausea and cough. There is a statistically significant difference between different age groups regarding receiving the 2nd dose of vaccine, as older patients were more keen on completing the doses than younger participants (Table 4).

Table 4: Relation between different symptoms and different age groups after 1st dose

Symptoms	Age groups				P value
	25-34	35-45	More than 45	X2	
Tiredness	20(90.9%)	73(73.0%)	42(60.9%)	7.809 ^a	.020
Myalgia or bone pain	16(72.7%)	61(61.0%)	43(62.3%)	1.074 ^a	.585
Fever	12(54.5%)	48(48.0%)	25(36.2%)	3.305 ^a	.192
Headache	8(36.4%)	48(48.0%)	32(46.4%)	.987 ^a	.611
Local pain at injection site	21(95.5%)	84(84.0%)	51(73.9%)	5.930 ^a	.052
Joint pain	3(13.6%)	30(30.0%)	20(29.0%)	2.491 ^a	.288
Nausea	6(27.3%)	14(14.0%)	4(5.8%)	7.396 ^a	.025
Diarrhoea	0(0.0%)	6(6.0%)	5(7.2%)	1.636 ^a	.441
Sore throat	4(18.2%)	11(11.0%)	4(5.8%)	3.116 ^a	.211
Insomnia	1(4.5%)	18(18.0%)	9(13.0%)	2.835 ^a	.242
Allergic rash	0(0.0%)	1(1.0%)	4(5.8%)	4.354 ^a	.113
Chills or rigors	4(18.2%)	25(25.0%)	11(15.9%)	2.138 ^a	.343
Vomiting	1(4.5%)	0(0.0%)	1(1.4%)	3.764 ^a	.152
Syncope	1(4.5%)	1(1.0%)	0(0.0%)	3.331 ^a	.189
Cough	1(4.5%)	8(8.0%)	0(0.0%)	5.821 ^a	.054
Chest tightness	2(9.1%)	8(8.0%)	7(10.1%)	.233 ^a	.089
Redness at injection site	8(36.4%)	26(26.0%)	19(27.5%)	.968 ^a	.616
None	2(9.1%)	9(9.0%)	7(10.1%)	.066 ^a	.968
Inconvenience to routine work on the next day	13(59.1%)	52(52.0%)	34(49.3%)	.646 ^a	.724
Need of any medication for symptom relief	14(63.6%)	72(72.0%)	49(71.0%)	.615 ^a	.735
Did you receive the 2nd dose	3(13.6%)	29(29.0%)	28(40.6%)	6.188 ^a	.045

There is no statistically significant difference between different age groups regarding different symptoms after the 2nd dose apart from vomiting, syncope, cough and redness at injection site. There is a statistically significant difference between different age groups regarding feeling more confident to work after COVID-19 vaccination. The majority of the participants (93.2%) did not report COVID-19 infection symptoms after vaccination. Only 7.14% of people who received AstraZeneca and 5.5% of people who received Sinopharm reported post vaccine COVID infection (Table 5).

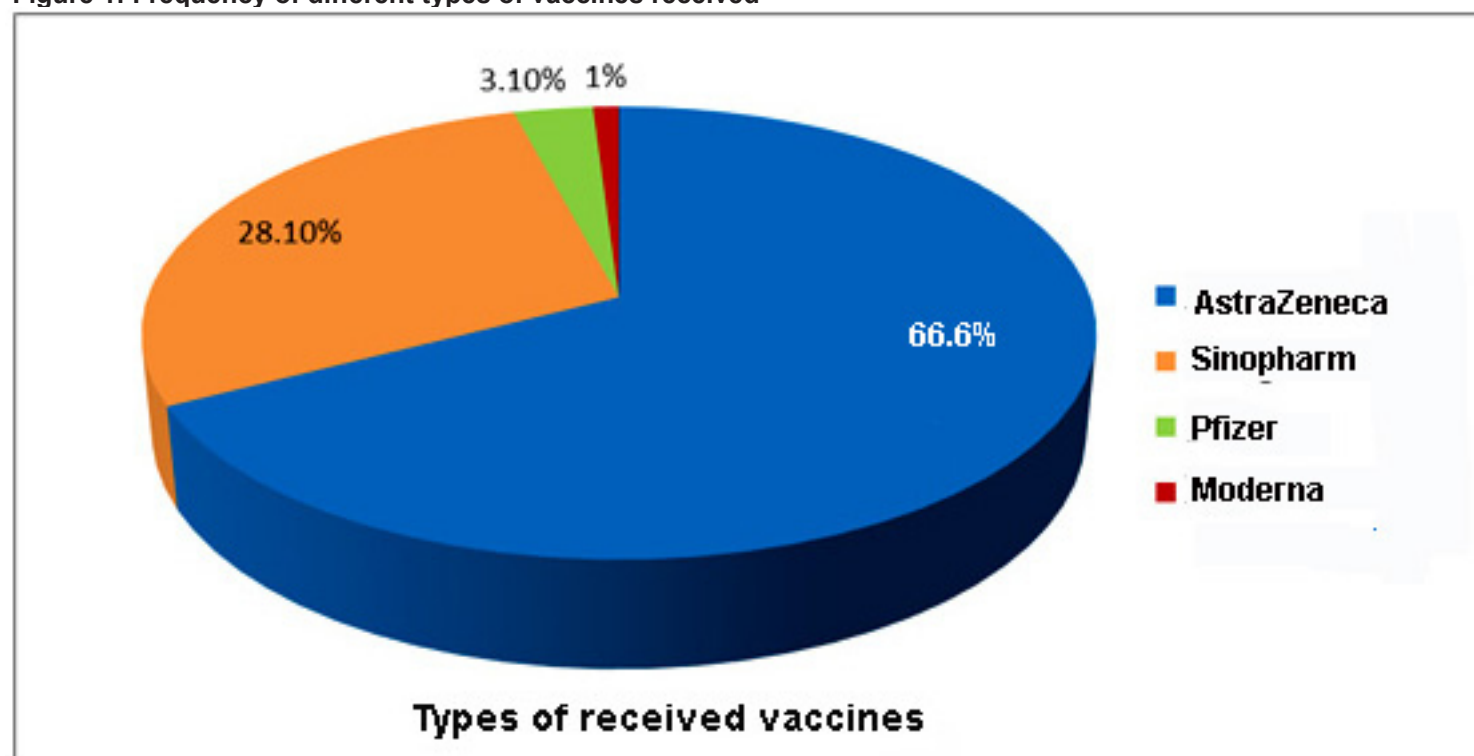
The most commonly received vaccine (66.6) was AstraZeneca while the least commonly received (1%) was Moderna (Figure 1).

AstraZeneca vaccine showed the highest proportion of received vaccines 66.6%, while Sinopharm, Pfizer and Moderna types received by little portion.

Table 5: Relation between different symptoms and different age groups after 2nd dose

Symptoms	Age groups			X2	P value
	25-34	35-45	More than 45		
Tiredness	2(9.1%)	12(12.0%)	12(17.4%)	6.522 ^a	.163
Myalgia or bone pain	0(0.0%)	10(10.0%)	8(11.6%)	7.037 ^a	.134
Fever	0(0.0%)	3(3.0%)	5(7.2%)	7.236 ^a	.124
Headache	1(4.5%)	9(9.0%)	10(14.5%)	6.344 ^a	.175
Local pain at injection site	3(13.6%)	15(15.0%)	18(26.1%)	8.097 ^a	.088
Joint pain	0(0.0%)	5(5.0%)	5(7.2%)	6.492 ^a	.165
Nausea	0(0.0%)	2(2.0%)	1(1.4%)	6.615 ^a	.158
Diarrhoea	0(0.0%)	1(1.0%)	1(1.4%)	6.240 ^a	.182
Sore throat	0(0.0%)	1(1.0%)	0(0.0%)	7.342 ^a	.119
Insomnia	0(0.0%)	1(1.0%)	1(1.4%)	6.240 ^a	.182
Allergic rash	0(0.0%)	0(0.0%)	1(1.4%)	7.465 ^a	.113
Chills or rigors	0(0.0%)	2(2.0%)	2(2.9%)	6.297 ^a	.178
Vomiting	0(0.0%)	1(1.0%)	1(1.4%)	6.240 ^a	.182
Syncope	0(0.0%)	0(0.0%)	1(1.4%)	7.465 ^a	.113
Cough	0(0.0%)	2(2.0%)	1(1.4%)	6.615 ^a	.158
Chest tightness	0(0.0%)	2(2.0%)	3(4.3%)	6.647 ^a	.156
Redness at injection site	0(0.0%)	5(5.0%)	5(7.2%)	6.492 ^a	.165
None	0(0.0%)	6(6.0%)	3(4.3%)	7.619 ^a	.107
Need of any medication for symptom relief	0(0.0%)	11(11.0%)	11(15.9%)	7.067 ^a	.132
Feeling more confident to work after vaccination	14(63.6%)	34(34.0%)	27(39.1%)	6.642 ^a	.036
Were you infected with COVID after vaccination	0(0.0%)	8(8.0%)	5(7.2%)	1.852 ^a	.396

Figure 1: Frequency of different types of vaccines received



Discussion

It's critical to understand all of the symptoms that follow COVID-19 vaccination because this will help raise public understanding about the vaccine's safety and lessen vaccine apprehension.

The current study is a descriptive study and used a self-administered questionnaire which includes demographic variables and experience related to COVID-19 vaccination aimed to assess the post COVID-19 vaccination symptoms among healthcare workers in Egypt.

It was shown that most participants in the current study were females (74%). This agreed with Das et al, 2021 (7) who studied post COVID-19 vaccination symptoms among recipients in Dadra and Nagar Haveli, as the majority of participants in that study were also females (67.5%) as females are usually easily motivated to be safe.

In our study, the most common symptoms reported after the 1st dose of vaccination were pain at injection site (81.7%), followed by tiredness (70.7%) then myalgia and bone pain (62.8%). About 70% of participants needed medication for symptoms relief.

This was consistent with the study of Das et al, 2021 (7) as the most common symptoms reported by the beneficiaries were fever (65%) and pain at local site (64.6%).

Also these findings were in line with Lakhanpal et al, 2021 (8) who did a multicenter survey in India and concluded that the most common symptoms post vaccination among recipients was pain at the vaccination site (54.21%) followed by generalized malaise which was present in 36.4% HCWs, but Lakhanpal et al, 2021 (8) stated that 25% of the participants took medication for pain relief which was different to the finding in the current study as 70 % of participants needed medication for pain relief.

This was against Jayadevan et al, 2021 (6) whose study reported local pain at injection site (27%), joint pain (12%), while tiredness and myalgia were more common (45%, 44%).

There was no statistically significant difference between different age groups regarding different symptoms after the 1st dose apart from tiredness, local pain at injection site, nausea and vomiting. Also in the current study there was no statistically significant difference between different age groups regarding different symptoms after the 2nd dose. These symptoms are more reported in the younger age than the older one, which was also a finding by Jayadevan et al, 2021 (6) who reported in the youngest age group (20-29 years) 81.3% developed symptoms, while only 7.4% of those over 80 years reported any symptom suggesting that Vaccine reactogenicity declines with age.

There was a statistically significant difference between different age groups regarding receiving the 2nd dose of vaccine, as older participants were more keen on completing the doses than younger participants.

Regarding psychological symptoms after vaccination, more than thirty percent of our participants were feeling more confident to work after vaccination. This was in agreement with Das et al, 2021 (7) as almost the same percentage was feeling more confident to work after vaccination.

Regarding the type of received vaccine, AstraZeneca vaccine in the current study showed the highest portion of received vaccines (66.6%), while Sinopharm, Pfizer and Moderna types were received by a small portion of respondents.

This was in agreement with the study carried out by Jayadevan et al, 2021 (6), as among the respondents, (95%) had received Covishield, (3.3%) received Covaxin, while (0.8%) each had received Pfizer-Biontech and Sinopharm vaccine from other nations.

The current study reported that the majority of the participants (93.2%) did not report COVID-19 infection after vaccination, while only 7.14% of people who received AstraZeneca and 5.5% of people who received Sinopharm reported post vaccine COVID-19 infection.

While the study done by Cucunawangsih et al, 2021 (9) in Indonesia stated that of 1,040 HCWs who had received two doses of the COVID-19 vaccine only 1.25% tested positive for SARS-CoV-2 RNA between 2 and 11 days after the second vaccination.

The study was limited by the number of participants in the survey as we need larger numbers to be able to generalize the results and this study's main focus was on the short term symptoms of the vaccine.

Conclusion

We concluded that post vaccination symptoms among health care workers were mild short symptoms. There was no serious adverse effects after the first dose as well as the second dose. The majority of participants did not report COVID-19 infection after vaccination which confirms the efficacy and safety of the vaccine.

Recommendations

More studies on post vaccination adverse effects on larger groups of people and after different periods of time are needed to completely cover the incidence of the adverse effects after vaccination.

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