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Original Research Article

Evaluation of short term effects of first and second dose COVID-19 vaccination among critical care nurses in rural tertiary care hospital

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ABSTRACT

The Corona virus disease 2019 is a contagious disease caused by severe acute respiratory syndrome coronavirus 2. The disease has since spread worldwide, leading to an ongoing pandemic. The attitude and knowledge of health care specialists towards vaccination is very important. Hence we conducted a study among critical care nurses.

This cross sectional study is conducted among 76 adult critical care unit nurses who received Covishield vaccine. The survey included 13 questions.

Post first dose of vaccination; Out of 76 critical care nurse, 49 (64.5%) were males and 27 (35.5%) were females. 42(55.3%) nurses were posted for covid duty while 34(44.7%) were never posted for covid duty, among these all 31(40.8%) were suffered with covid infection before vaccination. Post first dose of COVID 19 vaccination, 65(85.5%) nurses developed symptoms while 11 (14.5%) were asymptomatic.

Post second dose of vaccination; Out of Out of 76 critical care nurses participated in the study, 50 (66%) were males and 26 (34%) were females. 42(55%) nurses were posted for covid duty while 34 (45%) were never posted for covid duty. Among all critical care nurses 31 (40.8%) were diagnosed with COVID 19 positive before vaccination while 45(59.2%) were found to be COVID negative. Post second dose of COVID 19 vaccination, 50(66%) nurses developed symptoms while 26(34%) were asymptomatic.

Based on our study the side effects are present with covishield vaccine. Nurses are willing to take booster dose and to promote vaccination too.

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1. Introduction

In month of December 2019, a group of patients with pneumonia of unknown origin were identified in Wuhan, Hubei Province, China. Among them, most patients had history of visiting Huanan Seafood Wholesale Market. On December 31, 2019, the Chinese Center for Disease Control and Prevention (China CDC) and Wuhan City

health authorities reported an outbreak of pneumonia of unknown causes in Wuhan City.^{1,2} On January 7, 2020, the China CDC identified a novel coronavirus from the lower respiratory tract samples of the patients with pneumonia and disclosed the genomic sequence on January 11.^{3,4} This novel coronavirus was named severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2). The World Health Organization (WHO) later named Coronavirus Disease 2019 (COVID-19).⁵ In spite of the effort to stop the transmission of COVID-19, the infection

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has spread throughout China, and in January 2020, cases were also reported in countries like Thailand, Japan, and South Korea.^{6,7} Within less than 3 months since the unknown pathogen was discovered, the infection spread to at least 114 countries and caused more than 4,000 deaths. Thereafter, on 11 March, the WHO announced COVID-19 outbreak as pandemic.⁸

Corona viruses are enveloped positive sense single-stranded RNA viruses sized 80–220 nm in diameter. The envelop have crown-like, 20-nm in length spikes that appear like corona of the sun under electron microscopy, hence given its name coronavirus. It carries the largest genome among the currently known RNA viruses.⁹ Corona viruses belongs to the subfamily Coronavirinae, within the family of Coronaviridae and the order of Nidovirales. This subfamily further divides into 4 genera – alphacoronavirus, betacoronavirus, gamma coronavirus, and deltacoronavirus.¹⁰

In India, two types of vaccines, COVISHIELD and COVAXIN, got an emergency use approval on 3rd of Jan 2021.¹¹ COVISHIELD is an adenovirus vector-nonreplicating virus vaccine, which is carrying recombinant spike protein of SARS-CoV-2. It had shown acceptable safety profile in phase I/II trials and an efficacy of 74% in preventing infections in the analysis of phase III trials.^{12–14} The effectiveness of this vaccine among the Indian population requires to be established hence we conducted a study among critical care nurses to know the post COVID 19 vaccination effects.

2. Materials and Methods

This cross-sectional questionnaire-based study was conducted among critical care nurses working in our rural tertiary care unit. Ethical approval for this study was obtained from the Institutional Ethical Committee. Critical care nurses of surgical (SICU), medical (MICU) and cardiac unit (CCU) were included in this study. Anonymity, confidentiality and identity of respondents were maintained and participation was voluntary. The critical care nurses of pediatric intensive care unit are excluded from the study.

The study included a total of 13 questionnaires after validation of it by two independent experts (Table 1). The questions were divided into two parts. The first part dealt with personal data and second dealt with the questions related to the study.

3. Results

The age, gender and type of ICU where critical care nurses are working, is summarized in Table 2.

3.1. Post first and second dose of COVID-19 vaccination

A total of 76 nurses participated in this study which included 50 (66%) male nurses and 26 (34%) female nurses. All the participants had received covishield vaccine.

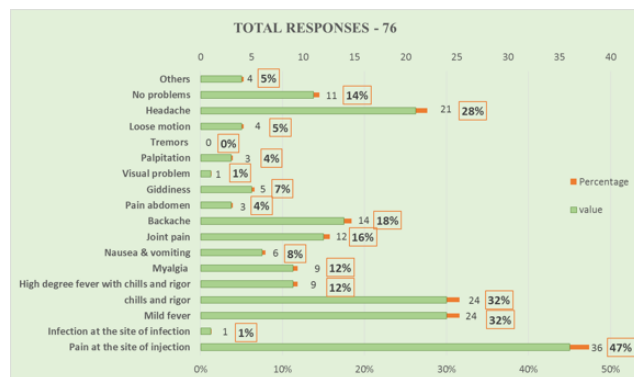


Fig. 1: Observed side effects post vaccination of 1st dose.

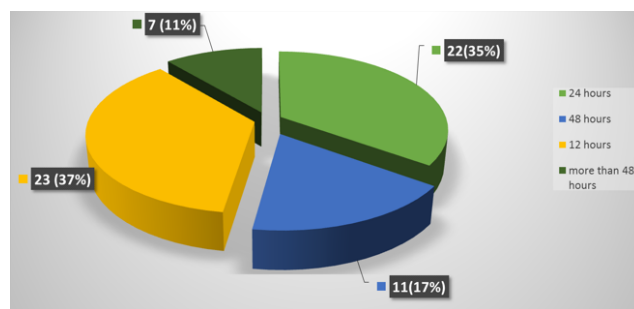


Fig. 2: Duration of side effects experienced post vaccination of 1st dose.

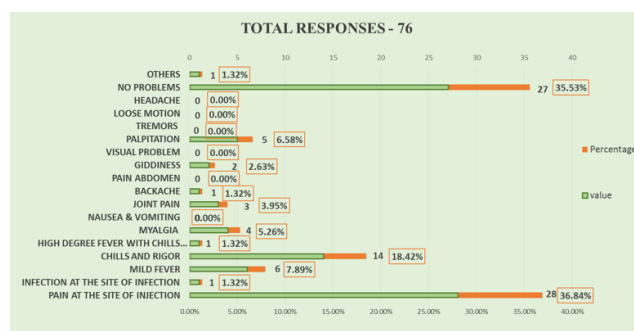


Fig. 3: Observed side effects post vaccination of 2nd dose.

4. Discussion

Vaccination is often said to be one of the most effective way in preventing any of the infectious disease. World is in midst of this COVID 19 pandemic. As always

Table 1: Questions

S.N	Question	Answer
1	Have you ever worked in Covid ward/ICU?	Yes/No
2	Have you ever been diagnosed with COVID 19 before vaccination?	Yes/No
3	Have you received your first dose of COVID 19 vaccine?	Yes/No
4	Did you suffer from any symptoms post vaccination?	Yes/No
5	Did your symptoms last for more then 24 -48 hours.	Yes/No
6	Have you taken any medication as prophylaxis to prevent side effects of First dose of COVID 19 vaccination?	Yes/No
7	To prevent vaccine related complications,did you take any medications post vaccination?	Yes/No
8	Was it required for you to get admitted in hospital post vaccination?	Yes/No
9	Are you ready to take the booster dose of COVID 19 vaccine?	Yes/No
10	Will you recommend COVID 19 vaccination for your relatives?	Yes/No

Table 2: Demographic details

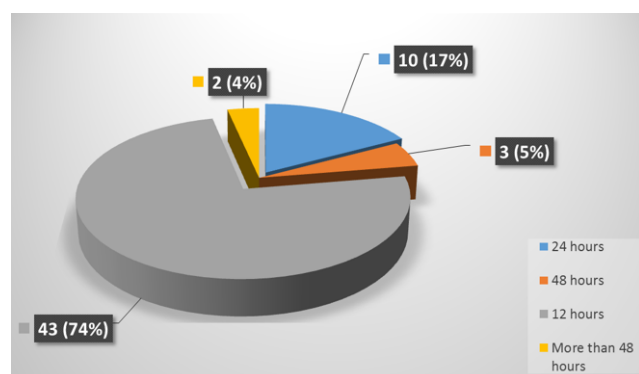
Age group	
20yr -30 yr	54 (71%)
31 yr - 40 yr	17(22.3%)
More than 40 yr.	5 (6.7%)
Gender	
Male	50(66%)
Female	26(34%)
ICU unit	
MICU	32(42.1%)
SICU	31(40.8%)
CCU	13(17.1%)
Working since	
< 6 month	18(23.7%)
6 month - 1yr.	18(23.7%)
> 1 year	40(52.6%)

Table 3: The participant's response to 1st covid vaccine dose

S.N	Question	YesTotal no. (percentage)	NoTotal no. (percentage)
1	Have you ever worked in Covid ward/ICU?	42(55.3%)	34(44.7%)
2	Have you ever been diagnosed with COVID 19 before vaccination?	45(59.2%)	31(40.8%)
3	Have you received your second dose of COVID 19 vaccine?	76(100%)	0
4	Did you suffer from any symptoms post vaccination?	50(66%)	26(34%)
5	Did your symptoms last for more then 24 -48 hours.	5(7%)	71(93%)
6	Have you taken any medication as prophylaxis to prevent side effects of second dose of COVID 19 vaccination?	6(8%)	70(92%)
7	To prevent vaccine related complications,did you take any medications post vaccination?	50(66%)	26(3%)
8	Was it required for you to get admitted in hospital post vaccination?	3(4%)	73(96%)
9	Will you recommend COVID 19 vaccination for your relatives?	75(99%)	1(1%)

Table 4: The participant's response to 2nd covid vaccine dose

S.N	Question	Yes Total no. (percentage)	No Total no. (percentage)
1	Have you ever worked in Covid ward/ICU?	42(55.3%)	34(44.7%)
2	Have you ever been diagnosed with COVID 19 before vaccination?	45(59.2%)	31(40.8%)
3	Have you received your second dose of COVID 19 vaccine?	76(100%)	0
4	Did you suffer from any symptoms post vaccination?	50(66%)	26(34%)
5	Did your symptoms last for more than 24 -48 hours.	5(7%)	71(93%)
6	Have you taken any medication as prophylaxis to prevent side effects of second dose of COVID 19 vaccination?	6(8%)	70(92%)
7	To prevent vaccine related complications,did you take any medications post vaccination?	50(66%)	26(3%)
8	Was it required for you to get admitted in hospital post vaccination?	3(4%)	73(96%)
9	Will you recommend COVID 19 vaccination for your relatives?	75(99%)	1(1%)

**Fig. 4:** Duration of side effects experienced post vaccination of 2nd dose.

, healthcare professionals are being front-line in this national emergency, working very hard, without looking over day and night and unfortunately, some of them have also been found to be infected so, healthcare professionals vaccination is very much important and several studies identified that HCPs were more likely to be recommend vaccination if they themselves are vaccinated.

In our study, after the first dose of vaccination, among the participated respondents, 36(47.4%) complaint of pain at the site of injection while 9(11.8%) complaint of myalgia (muscle pain). Body's reaction to any infection is mainly via fever, rise in body temperature hence, our study also showed the similar response to vaccine, 24(31.6%) respondents developed mild fever, 24(31.6%) developed chills and rigor while 9(11.6%) critical care nurses developed high grade fever. Few 21(27.6%) nurses complained of headache (Figure 1). Out of 76, 22(34.9%) nurses had symptoms lasted for 24 hours while in 23(36.5%) had symptoms lasted 12 hours ;11(17.5%) nurses showed symptoms which lasted 48 hours while 7 (11.1%) had symptoms lasting more than 48 hours.(Figure 2)

The study showed that 22 (28.9%) critical care nurses were aware of side effects of the Covid-19 vaccination and had taken analgesics as prophylaxis for the same while 54 (71.1%) had not taken any prior medications. 67.1% of prophylactic medication was paracetamol while 7.9% nurses took paracetamol with another analgesic.

Post vaccination, 59 (77.6 %) critical care nurses had taken medications to prevent complications while 17 (22.4%) did not. Out of these 77.6% had taken paracetamol and 7.9 % took other analgesics. Out of the 76 critical care nurses that voluntarily participated in this survey 72 (94.7%) did not go for any admission in view of vaccination related side effects while the remaining 4 (5.3%) required hospitalization post vaccination for the same.

Whereas ,after the second dose of vaccination, the participated respondents,like 28(35.9%) nurses complaint of pain at the site of injection while 4(5.1%) complaint of myalgia(muscle pain).Body's reaction to any infection is mainly via fever,rise in body temperature hence,our study also showed the similar response to vaccine, 6(7.7%) respondents developed mild fever, 14 (17.9%) developed chills and rigor while only 1(1.3%) critical care nurses developed high grade fever.A some 5(6.4%) nurses complained of palpitation and some 2(2.6%) staff complained of giddiness while 3(3.8%) nurses have complained of joint pain post vaccination (figure 3). Out of all, 10(17.2%) nurses had symptoms lasted for 24 hours while in 43(74.1%) had symptoms lasted 12 hours ; 3(5.2%) nurses showed symptoms which lasted 48 hours while 2(3.4%) had symptoms lasting more than 48 hours.(Figure 4).

The study showed that only 6(7.7%) nurses have taken medication as prophylaxis before second dose of vaccination while 70 (92.3%) had not taken any prior medications. Out of them 34.6% of prophylactic medication was paracetamol while 1.3% medication was any another analgesic.

Post booster dose vaccination, 50(66.7 %) critical care nurses had taken medications to prevent complications while 26(33.3%) did not. Out of these 47(94 %) had taken paracetamol and 2(4 %) had taken other analgesics, while 1(2%) had taken any other drug. In our study we found that, few participants had to go for hospitalization post booster dose vaccination because of non-subsiding adverse effects. Out of the 76 critical care nurses that voluntarily participated in this survey 73(96.8%) did not go for any admission in view of vaccination related side effects while the remaining 3(3.8%) required hospitalization post vaccination for the same.

On asking for booster of the covid-19 vaccine, 65 (85.5%) responded with willingness for a booster while 10 (13.2%) nurses were ready but scared about taking a booster dose and 1 (1.3%) nurses were not willing for a booster. On asking whether they would recommend the vaccine to their family, 71 (93.4%) responded with a yes while 1 (1.3%) nurses had answered no and 4 (5.3%) were not sure for the same.

After the booster dose of vaccination, on asking whether they would recommend the vaccine to their family, 70(89.7%) responded with a yes while 1 (1.3%) nurses had answered no and 5(9%) were indecisive for the same.

5. Limitation of The Study

Since this study is conducted on small sample size, one has to make further studies with larger sample size. All the participants involved in this study had received covishield vaccine. We did not study about other vaccine related problems. Hence further study can be considered for evaluation.

6. Conclusion

Based on our study results, the side effects of post covishield vaccine dose 1 and 2 are present which are treatable. The side effects observed in dose 2 are less severe compared to first dose. Being a health care professional it is our moral responsibility to promote vaccination even if there are treatable side effects. This attitude was observed in our critical care nurses who actually contributes mouth to mouth spread in rural area.

7. Source of Funding

None.

8. Conflict of Interest

None.

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