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# **Assessment of post third dose (Precautionary dose) COVID-19 vaccination side effects among critical care nurses in rural tertiary care hospital**

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**Abstract**---Background: The Corona virus disease 2019 (COVID-19) is a contagious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). From October, 2021 onwards many countries were experiencing a further occurrence of SARS-CoV-2 infections despite of successful vaccination campaigns. This situation has been suggested to be caused by the greater infectiousness of the delta variant of SARS-CoV-2, and by progressively decreasing immunity as time passes from earlier vaccination. In view of the

current occurrence, several countries are planning to administer a third precautionary dose of COVID-19 vaccine. Since the critical care nurses are more vulnerable for COVID, we studied the precautionary COVID vaccination related side effects among them. Subjects and Methods: This A cross-sectional study was conducted among 75 critical care nurses who had received covishield vaccine. The survey included a total of 13 questions and was divided into 2 parts. The first part dealt with demographic data and second part with questions related to study. Results: 75 critical care nurses participated in the study voluntarily. Post 3<sup>rd</sup> precautionary dose 47(63%) nurses had no side effects while remaining nurses complained of minor problems such as pain at the site of injection, mild fever, chills, nausea and vomiting, joint pain and headache. Out of all only 8(11%) nurses had taken medication to relieve post vaccination effect which was paracetamol. Conclusion: Many of the critical care nurses faced some of side effects of precautionary dose of COVID-19 vaccine however there were no severe type side effects were observed. All side effects faced were minor and got resolved with paracetamol tablet consumption. Most of the nurses are willing to promote to other nurses to take COVID-19 vaccine based on their experience.

**Keywords**---COVID-19, covishield vaccination, precautionary dose.

## 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.<sup>[1,2]</sup> 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.<sup>[3,4]</sup> 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).<sup>[5]</sup> In spite of the effort to stop the transmission of COVID-19, the infection has spread throughout China, and in January 2020, cases were also reported in countries like Thailand, Japan, and South Korea.<sup>[6,7]</sup> Within less than 3 months, 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.<sup>[8]</sup> Since December-2019, the COVID-19 pandemic has resulted in more than 52.1 M cases and more than 6.2 M deaths worldwide.<sup>[9]</sup>

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.<sup>[10]</sup> 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, gammacoronavirus, and deltacoronavirus.<sup>[11]</sup>

In India, two types of vaccines, covishield and covaxin, got an emergency use approval on 3<sup>rd</sup> of Jan 2021.<sup>[12]</sup> 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.<sup>[13,14,15]</sup> The arrival of the delta variant of SARS-CoV-2, which coincided with increase no. of cases among vaccinated persons, so this waning immunity and the potency for continuing circulation of additional SARS-CoV-2 variants suggested the need for a third (Precautionary) dose of the COVID-19 vaccine who had taken as before 1<sup>st</sup> and 2<sup>nd</sup> dose of COVID-19 vaccine.<sup>[16]</sup>

The COVID-19 pandemic has created a new face of reality where individuals are challenged a previously unknown disease and its effects. This situation is providing a unique opportunity to investigate vaccine attitudes during a period of heightened disease hence we conducted a study among critical care nurses to know the post 3<sup>rd</sup> dose (precautionary dose) COVID 19 vaccination effects.

### **Materials and Methods**

A cross-sectional questionnaire-based study was conducted among critical care nurses in our tertiary care rural hospital. Critical care nurses of surgical and medical critical care units were included in this study, who had taken covishield vaccination. Anonymity, confidentiality and identity of respondents were maintained and participation was voluntary. Ethical approval for this study was obtained from the Institutional Ethical Committee.

The questionnaire was sent through electronic format by using E- forms. The questions were modified as per expert's suggestions. The survey included 13 questions and was divided into two parts. The first part dealt with personal data and second dealt with the questions related to the study. Inclusion criteria were, critical care nurses of surgical (SICU) and medical (MICU) and cardiac (CCU) critical care units, willing to give consent for the study and have taken covishield vaccine. Nurses of other places of hospital and not willing to provide the consent were excluded.

### **Results**

A total of 75 nurses participated in this study. The study included 52 (70%) male nurses and 23 (30%) female nurses. The survey had 13 questionnaires of which 3 questions dealt with demographic data (Table 1) of respondent and 10 questions for assessing the outcomes and effects of COVID 19 vaccination. Table 2 compiles all the response to the 10 questions related to the study.

Table 1: Demographic details

S.N	DEMOGRAPHIC DATA	Total no. (Percentage)
1)	Age group:	
	20yr -30 yr	47(63%)
	31 yr - 40 yr	26(35%)
	More than 40 yr.	2(2%)
2)	Gender	
	Male	52(70%)
	Female	23(30%)
3)	ICU unit	
	MICU	41(55%)
	SICU	21(28%)
	CCU	13(17%)

Table 2: Response to the questions

S.N	Questions	Yes Total no. (%)	No Total no. (%)
1	Have you ever been diagnosed with COVID 19 infection before third dose(precautionary dose)of COVID19 vaccination?	22(30%)	53(70%)
2	Have you suffered with COVID 19 infection more than once?	1(1%)	74(99%)
3	Have you received COVISHIELD COVID 19 vaccine as before?(1 <sup>st</sup> & 2 <sup>nd</sup> dose)	75(100%)	0
4	Have you taken third dose (precautionary dose) of COVID 19 vaccine?	75(100%)	0
5	Did you suffer from any symptoms post vaccination?	27(34%)	47(66%)
6	Did your symptoms last for more than 24 hours ?	3(4%)	72(96%)
7	Have you taken any medication as prophylaxis to prevent side effects of third dose of COVID 19 vaccination?	4(6%)	71(94%)
8	To prevent vaccine related complications,did you take any medications post vaccination?	8(11%)	67(89%)
9	Was it required for you to get admitted in hospital post vaccination?	0	75(100%)
10	Do you recommend third dose (precautionary dose) of COVID 19 vaccination to your relatives?	73(98%)	2(2%)

## Discussion

We conducted this study to assess the effects of post 3<sup>rd</sup> dose (precautionary dose) COVID-19 vaccines among critical care nurses. As always, 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 also attitude and utilization of vaccination by healthcare professionals (HCP) is a major factor that is consistently associated with patient acceptance and vaccination, adherence to vaccination schedules, and reduced hesitation.<sup>[17]</sup> Patients often trust and rely on healthcare professionals for information about vaccines and vaccine-preventable diseases, as well as the therapeutic and public health benefits associated with immunization. Among the publications on HCPs' vaccination behaviour, several studies identified that HCPs were more likely to recommend vaccination if they were themselves vaccinated. A study in the United Kingdom (UK) showed that some 60% of nurses were more likely to recommend vaccine to their patients after having vaccination.<sup>[18]</sup>

As per Centers of Disease Control and Prevention (CDC), the common adverse effects of COVID-19 vaccines include pain, swelling and redness at injection site, as well as fatigue, chills, fever, myalgia, headache, and nausea.<sup>[19]</sup> In our study, after the third dose (precautionary dose) of covishield vaccination, among the participated respondents, 19(26.4%) complaint of pain at the site of injection. As compare to 1<sup>st</sup> and 2<sup>nd</sup> dose of covishield covid-19 vaccination, after third precautionary dose of covishield covid-19 vaccine, we found less no. of respondents who developed febrile reactions such as only 6(8.3%) respondents developed mild fever, 2(2.8%) developed chills and rigor. Some 5(6.9%) nurses complained of headache whereas 47(65.3%) respondents did not develop any side effects. (Figure 1)

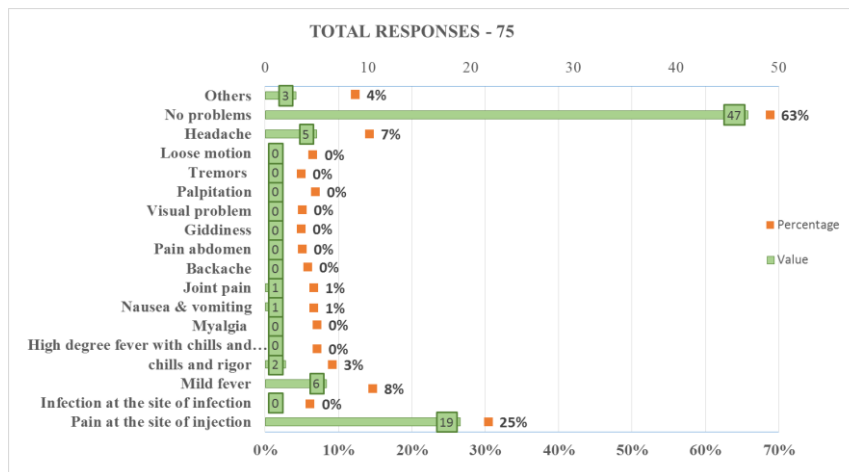


Figure 1: Post COVID 19 vaccine side effects after third (precautionary) dose of covishield vaccination

Out of all, some 6(8.2%) nurses had symptoms lasted for 24 hours while in 9 (12.3%) had symptoms lasted for 12 hours and 3(4.1%) nurses showed symptoms which lasted 6 hours ;we found only 3(4.1%) nurses showed symptoms which lasted more then 24 hours where as rest 54(70%) nurses had no symptoms at all post vaccination. (Figure 2) WHO Global Advisory Committee recommended vaccine recipients to have urgent medical care if the severe symptoms stays more then 4-5 days after vaccination.<sup>[20]</sup> Most of the side effects occurred within two or three days following vaccination, the majority of which are mild , expected and common. This was found to be consistent with other studies. A similar kind of study suggested 95% efficacy after 3<sup>rd</sup> dose of covid-19 vaccination. Where as also found the similar kind of post 3<sup>rd</sup> dose vaccination effects such as nausea 48(0.9%), diarrhea 25(10.5%), vomiting 11(0.2%), pain at injection site 651(12.9%) and erythema 22(0.4%), while pyrexia 242(4.8%) , chills 233(4.6%), myalgia 239(4.7%), and headache in 255(5%) respondents found among 5055 respondents.<sup>[21]</sup>

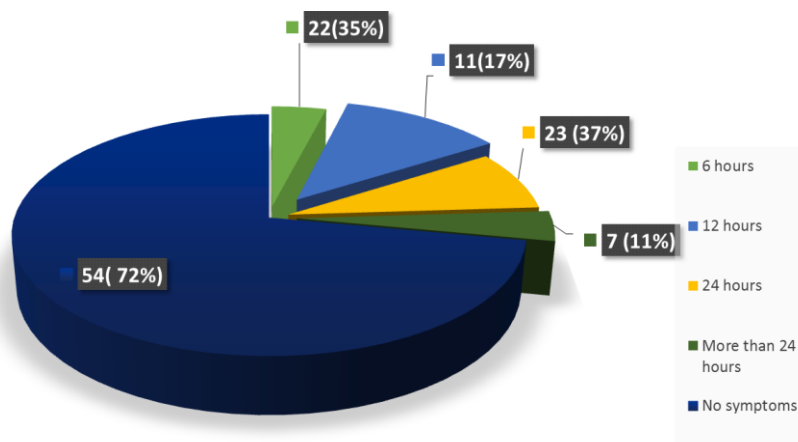


Figure 2: Symptoms experienced in terms of hours.

On asking to respondents about when and how many times do you get suffer from covid -19 disease , we got the respond like out of 75 nurses some 12 (16%) had suffered before 1<sup>st</sup> dose of covishield covid -19 vaccination where as after first dose it was 1(1.3%) and after second dose it was 9(12%) only. So, some 21(28%) nurses suffered once while 1(1.3%) nurse suffered twice with covid -19 infection uptill. where as rest all 53(70.7%) nurses had not suffered yet. (Figure 3)

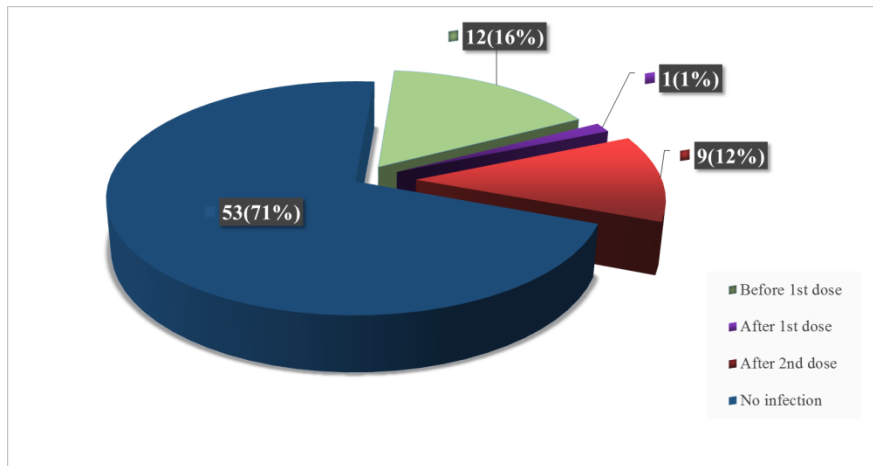


Figure 3: Suffered from COVID-19 infection

The study showed that 4 (5.5%) critical care nurses had taken analgesics as prophylaxis for the same while 71 (94.5%) had not taken any prior medications. Post vaccination only 8 (11 %) critical care nurses had taken medications to prevent complications while 67(89%) did not. All this 8(11%) nurses had taken paracetamol . Out of the 75 critical care nurses that voluntarily participated in this survey, none of them required hospital admission post 3<sup>rd</sup> precautionary dose covishield covid 19 vaccination. As compare to study publish in Israel , they concluded that third dose was estimated to be 93% effective in preventing COVID-19-related admission to hospital, 92% in preventing severe disease, and 81% in preventing COVID-19-related death, as of 7 or more days after the third dose.<sup>[22]</sup> According to Medicines and Healthcare Products Regulatory Agency (MHRA), it has been advised to administer the vaccine with proper caution to individuals who have any history of any allergic reaction to a vaccine, drug or food and especially people who need an adrenaline auto-injector in emergency cases.<sup>[23]</sup> The health care workers keep themselves in forefront for not only care of patient but promotion of health and wellbeing in the society also. In our study the 73 (98%) nurses were willing to recommend third dose (precautionary dose) of covid 19 vaccination to their family members and other relatives (Figure 4), which is a good sign that they are motivating the nonmedical personnel for the covid vaccination even after some of them had faced side effects.

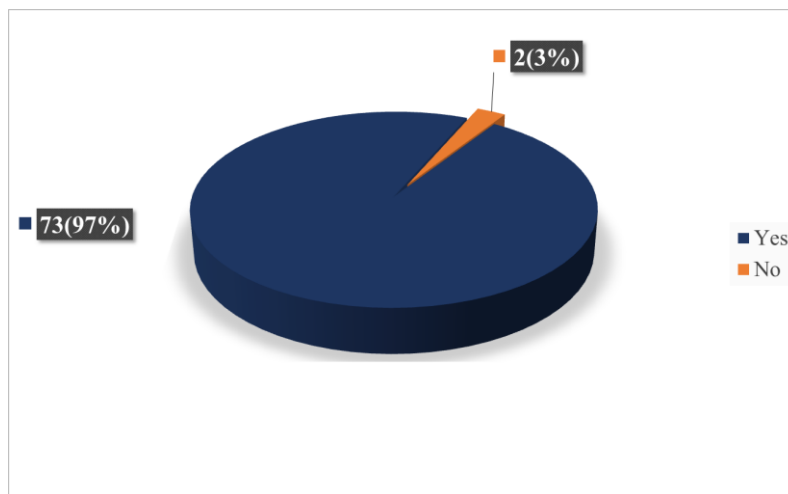


Figure 4: Recommendation of third dose (Precautionary dose) of COVID 19 vaccination to other

### Conclusion

Although most of the critical care nurses faced some of side effects of precautionary dose of covid-19 vaccine however there were no severe type side effects were observed. All side effects faced were minor and got resolved with paracetamol tablet consumption. Most of the nurses are willing to promote to other nurses to take covid-19 vaccine based on their experience.

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