

## POST COVID VACCINATION SYMPTOMS AMONG INDIVIDUALS VACCINATED IN DIFFERENT VACCINATION CENTRES OF A TERTIARY CARE HOSPITAL IN MANGALORE

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### Abstract

**Background:** SARS-CoV-2 infection can be effectively reduced with vaccination. Despite the numerous reported post vaccination symptoms, there is very limited literature. The study was intended to evaluate the proportion of vaccine recipients experiencing post vaccination symptoms. The aim also included assessing the incidence of immediate post vaccination symptoms to the first dose/second dose of COVID-19 vaccine and to study the spectrum of post-vaccination symptom profile (within 30 minutes and 24 hours). **Materials and Methods:** The cross-sectional study was carried out on 833 individuals, above 18 years who received covid vaccine from the different vaccination centres under KMC HOSPITAL, Mangalore. Data collected through online google survey form was analysed using IBM SPSS 25 software. **Result:** Among the 833 vaccine recipients only 236 individuals received 2 doses of vaccine .70% received COVISHIELD while 30% received COVAXIN. Vaccinated individuals experienced more symptoms within 24 hours (72.4% after first dose ,45.8% after second dose), compared to those who experienced symptoms within 30 minutes (31% after first dose,19.1% after second dose). Proportion of post vaccination symptoms were higher with first dose COVISHILED (within 24 hours-77.7%) and significantly lower with second dose of COVISHIELD (within 30 minutes-13%). Most common symptoms were muscle pain, headache, tiredness, fever and least common symptoms were vomiting, diarrhoea, cough. **Conclusion:** Vaccinated individuals experienced more symptoms within 24 hours after first dose. Majority of the symptoms were minor, which subsided with oral paracetamol or without any intervention. This study will help medical professionals to educate the public, dispel incorrect information and reduce vaccine hesitancy.

## INTRODUCTION

At the end of 2019, a novel coronavirus now known as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was identified as the cause of a cluster of pneumonia cases in Wuhan, a city in the Hubei Province of China. It rapidly spread, resulting in a global pandemic. In February 2020, the World Health Organization named the disease COVID-19, which stands for coronavirus disease 2019.<sup>[1]</sup>

Vaccines to prevent SARS-CoV-2 infection are considered the most promising approach for curbing the pandemic and are being vigorously pursued. By the end of 2020, several vaccines had become

available for use in different parts of the world, over 40 candidate vaccines were in human trials, and over 150 were in preclinical trials.<sup>[2]</sup> India launched COVID-19 vaccination drive on 16 January 2021 with COVISHIELD and COVAXIN vaccines in phases. The aim was to vaccinate health care workers (HCW) followed by frontline workers in phase I. In phase II, People over 60 and between 45 and 59 but who have other illnesses were targeted.<sup>[3]</sup> COVISHIELD has been developed by the Oxford-AstraZeneca and is being manufactured by the Serum Institute of India (SII). COVISHIELD has been prepared using the viral vector platform which is a totally different technology. A chimpanzee

adenovirus – ChAdOx1 – has been modified to enable it to carry the COVID-19 spike protein into the cells of humans. Well, this cold virus is basically incapable of infecting the receiver but can very well teach the immune system to prepare a mechanism against such viruses. The interval between 1st and 2nd doses is 12-16 weeks. Efficacy after the second dose can vary from 70-90%. COVISHIELD has been approved for people aged 18 years and above. COVAXIN has been developed by Hyderabad-based Bharat Biotech International Ltd in association with the Indian Council of Medical Research (ICMR) and the National Institute of Virology (NIV). COVAXIN is an inactivated vaccine, which has been prepared on a tried and tested platform of dead viruses. This vaccine is developed with Whole-Virion Inactivated Vero Cell-derived technology. They contain inactivated viruses, which cannot infect a person but still can teach the immune system to prepare a defence mechanism against the active virus. The interval between the 2 doses is 4-6 weeks. Efficacy after the second dose can vary from 78-100%. COVAXIN can be given to people aged 12 years and above. Although the protective efficacy is frequently discussed, little is known about the real-world post-vaccination experience outside of clinical trial conditions. After injecting the vaccine, some experienced redness, itching and pain at the site of injection, headache, muscle pain, joint pain, body pain, runny nose, chills or feeling feverish, nausea. Some experienced excessive sweating, breathing difficulty, chest heaviness, giddiness, rashes and itching over the body. We in the department of emergency medicine have observed that many patients are visiting our department with complaints of post vaccination symptoms and also developing vaccine hesitancy due to these symptoms. With this background current study was carried out to estimate the proportion and profile of various post covid vaccination symptoms. Knowledge about what to expect after vaccination will help educate the public, dispel misinformation and reduce vaccine hesitancy.

## MATERIALS AND METHODS

Cross sectional Study was conducted from September 2021 to November 2021 in various vaccination centres under KMC Hospital, Dr. B.R. Ambedkar, Circle, Mangalore (KMC Marena

Sports. Arena. Kaprigudde, KMC Attavar, KMC Hospital. Dr. B.R. Ambedkar Circle, Durgasanjeevani Manipal Hospital Kateel, Pragathi Speciality Hospital, Puttur).

The study population included individuals above the age of 18 years who had received covid vaccine and excluded those who did not gave consent for the survey. An online Google survey form was created and an automatic message with link to fill the google survey form was sent to vaccine recipients registered phone number. Only the completed forms were considered for final analysis.

## Statistical Analysis

The collected data entered in and analysed using IBM SPSS (Statistical Package for Social Sciences) Statistics for Window Version 25.0. Armonk, NY: IBM Corp. The results were expressed in proportion.

## RESULTS

In our study,833 individuals above the age of 18 years who received covid vaccine formed the study population. The Mean age of the study population is 33.4. It was observed that majority of the vaccine recipients were males (n =494,59.3%). Out of 833 individuals (n=37,4.4%) have hypertension, (n=4,0.4%) have epilepsy, (n=39,4.7%) have diabetes mellitus, (n=1,0.1%) have parkinsonism, (n=18,2.2%) have bronchial asthma, (n=2,0.2%) have heart disease, (n=18,2.2%) have hypothyroidism, (n=1,0.1%) have PCOD, (n=3,0.4%) have dyslipidemia and (n=1,0.1%) have chronic kidney disease. Among the study population 24.7%(n=206) had allergic reaction in the past [medicine(n=17,2%) food (n=25,3%) pet animals(n=5,0.6%) environment (n=159 19.1%)] and (n=90,10.8%) suffered from covid disease in the past.

Of which, 236 individuals received both doses of vaccine. Most of the individuals received COVISHIELD vaccine(n=583,70%) than COVAXIN vaccine (n=250,30%).

It was observed that incidence of post covid vaccination symptoms were more within 24 hours after receiving COVISHIELD first dose vaccine and least within 30 minutes after receiving COVISHIELD second dose vaccine.

**Table 1: Time Schedule of Post Vaccination Symptoms**

	COVISHIELD	COVAXIN
1 st dose(n=833)	n=583(70%)	n=250(30%)
30 minutes	180(30.9%)	78(31.2%)
24 hours	453(77.7%)	150(60%)
2 nd dose (n=236)	n=146(61.8%)	n=90(38.13%)
30 minutes	19(13%)	26(28.9%)
24 hours	60(41.1%)	48(53.3%)

**Table 2: Symptom Profile Within 30 Minutes of First Dose Vaccination.**

	<b>First dose n (%)</b>
Muscle Pain	136(16.3%)
Tiredness	95(11.4%)
Headache	77(9.2%)
Fever	59(7.1%)
Swelling at Injection Site	47(5.6%)
Redness at Injection Site	23(2.8%)
Giddiness	16(1.9%)
Itching at Injection Site	16(1.9%)
Joint Pain	14(1.7%)
Pain at Injection Site	13(1.6%)
Nausea	10(1.2%)
Breathlessness	4(0.5%)
Chest Heaviness	4(0.5%)
Rashes	4(0.5%)
Cough	3(0.4%)
Sweating	2(0.2%)
Vomiting	2(0.2%)
Diarrhea	2(0.2%)
Tingling	2(0.2%)

Above table illustrates most common post covid vaccination symptoms after first dose within 30 minutes were Muscle pain, Tiredness and least were sweating, diarrhoea, vomiting, tingling.

**Table 3: Symptom Profile Within 30 Minutes of Second Dose Vaccination.**

	<b>Second Dose n (%)</b>
Muscle Pain	26(11 %)
Tiredness	12(5.1%)
Headache	11(4.7%)
Fever	6(2.5%)
Redness at Injection Site	3(1.3%)
Itching at Injection Site	3(1.3%)
Swelling at Injection Site	1(0.4%)
Tingling	1(0.4%)
Nausea	1(0.4%)
Giddiness	1(0.4%)
Joint Pain	1(0.4%)

Most common post covid vaccination symptoms within 30 minutes of second dose vaccination were Muscle pain, Tiredness

**Table 4: Symptom Profile Within 24 Hours of First Dose Vaccination.**

	<b>First dose n (%)</b>
Muscle Pain	334(40.2%)
Fever	316(38%)
Tiredness	288(34.7%)
Headache	272(32.7%)
Swelling at Injection Site	84(10.1%)
Joint Pain	74(8.9%)
Nausea	33(4%)
Redness at Injection Site	31(3.7%)
Giddiness	28(3.4%)
Itching at Injection Site	20(2.4%)
Pain at Injection Site	19(2.3%)
Cough	14(1.7%)
Tingling	8(1%)
Rashes	7(0.8%)
Vomiting	7(0.8%)
Chest Heaviness	7(0.8%)
Breathlessness	6(0.7%)
Diarrhea	6(0.7%)
Fainted	5(0.6%)

After first dose majority of the individuals had muscle pain and fever while minority of them experienced breathlessness, diarrhea and fainted.

**Table 5: Symptom profile within 24 hours of second dose vaccination.**

	<b>Second dose n (%)</b>
Muscle Pain	59(25.1%)
Tiredness	49(20.9%)
Headache	35(15%)
Fever	28(11.9%)

Joint Pain	8(3.4%)
Redness at Injection Site	6(2.6%)
Itching at Injection Site	5(2.1%)
Tingling	4(1.7%)
Giddiness	4(1.7%)
Nausea	4(1.7%)
Cough	2(0.9%)
Vomiting	2(0.9%)
Breathlessness	1(0.4%)

Most common symptoms within 24 hours of second dose vaccination were muscle pain and tiredness, least were breathlessness.

**Table 6: Symptom Profile within 30 minutes of First Dose COVAXIN and COVISHIELD vaccination.**

	COVAXIN, n (%)	COVISHIELD, n (%)
Muscle Pain	40(16%)	96(16.5%)
Tiredness	23(9.2%)	72(12.3%)
Headache	17(6.8%)	60(10.3%)
Swelling at Injection Site	14(5.6%)	33(5.7%)
Redness at Injection Site	6(2.4%)	17(2.9%)
Itching at Injection Site	4(1.6%)	12(2.1%)
Pain at Injection Site	4(1.6%)	9(1.5%)
Joint Pain	3(1.2%)	11(1.9%)
Giddiness	3(1.2%)	13(2.2%)
Fever	2(0.8%)	57(9.8%)
Chest Heaviness	1(0.4%)	3(0.5%)
Rashes	1(0.4%)	3(0.5%)
Breathlessness	1(0.4%)	3(0.5%)
Cough	1(0.4%)	2(0.3)
Nausea	0	11(1.7%)
Vomiting	0	2(0.3%)
Diarrhea	0	2(0.3%)
Tingling	0	2(0.3%)
Sweating	0	2(0.3%)

It was observed that muscle pain and tiredness were the most common post vaccination symptoms for both COVISHIELD AND COVAXIN

**Table 7: Symptom Profile Within 30 Minutes of Second Dose Covaxin and Covishield Vaccination**

	COVAXIN, n (%)	COVISHIELD, n (%)
Muscle pain	18(20%)	8(5.5%)
Tiredness	7(7.8%)	5(3.4%)
Headache	5(5.6%)	6(4.1%)
Fever	3(3.3%)	3(2.1%)
Joint pain	1(1.1%)	0
Nausea	1(1.1%)	0
Redness at injection site	1(1.1%)	2(1.4%)
Swelling at injection site	1(1.1%)	0
Giddiness	0	1(0.7%)
Itching at injection site	0	3(2.1%)
Fainted	0	1(0.7%)

Muscle pain, Headache and tiredness were the most common post vaccination symptoms for both COVISHIELD AND COVAXIN

**Table 8: Symptom profile within 24 hours of first dose COVAXIN and COVISHIELD vaccination**

	COVAXIN, n (%)	COVISHIELD, n (%)
Muscle pain	83(33.2%)	251(43.3%)
Tiredness	56(22.5%)	232(39.9%)
Headache	38(15.2%)	234(40.3%)
Fever	19(7.6%)	297(51%)
Swelling at injection site	19(7.6%)	65(11.2%)
Joint pain	11(4.4%)	63(10.8%)
Pain at injection site	9(3.6%)	10(1.7%)
Giddiness	8(3.2%)	20(3.4%)
Redness at injection site	7(2.8%)	24(4.1%)
Nausea	5(2%)	28(4.8%)
Cough	4(1.6%)	10(1.7%)
Itching at injection site	3(1.2%)	17(2.9%)
Chest heaviness	2(0.8%)	5(0.9%)
Tingling	2(0.8%)	6(1%)
Diarrhea	1(0.4%)	5(0.9%)
Vomiting	0	7(1.2%)

Breathlessness	0	6(1%)
Rashes	0	7(1.2%)
Fainted	0	4(0.7%)

Muscle pain, Headache and tiredness were the most common symptoms after receiving COVAXIN while muscle pain, fever and headache were the most common symptoms after receiving COVISHIELD.

**Table 9: Symptom profile within 24 hours of second dose COVAXIN and COVISHIELD vaccination.**

	COVAXIN, n (%)	COVISHIELD, n (%)
Muscle Pain	31(34.8%)	28(19.2%)
Tiredness	20(22.5%)	29(19.9%)
Headache	12(13.5%)	23(16%)
Fever	5(5.6%)	23(15.8%)
Swelling at Injection Site	3(3.4%)	9(6.2%)
Joint Pain	2(2.2%)	6(4.1%)
Giddiness	2(2.2%)	2(1.4%)
Redness at Injection Site	2(2.2%)	4(2.7%)
Nausea	1(1.1%)	3(2.1%)
Vomiting	0	2(1.4%)
Cough	0	2(1.4%)
Tingling	0	4(2.7%)
Itching at Injection Site	0	5(3.4%)
Breathlessness	0	1(0.7%)

Muscle pain, Headache and tiredness were the most common symptoms after receiving COVAXIN while muscle pain, fever, tiredness and headache were the most common symptoms after receiving COVISHIEL.

Among the symptomatic group 69.7% (after first dose) and 58.3% (after second dose) self-treated with paracetamol tablet, 22.6% after first dose and 36.9 % after second dose symptoms subsided without any intervention, 0.7% after first dose and 1% after second dose consulted the doctors, 0.5% after first dose and 1 % after second dose applied ice pack over injection site, 1.1% after first dose and 2.9 % after second dose visited the hospital. Minimal percentage of symptomatic individuals applied pain balm (0.3%), took rest (4.8%) and video consultation with doctor (0.2%) after first dose of vaccination.

## DISCUSSION

In the current study out of 833 vaccine recipients 236 individuals received 2 doses of vaccine. 70% of the total vaccine recipients received COVISHIELD vaccine while 30% received COVAXIN. Vaccinated individuals experienced more symptoms within 24 hours (72.4% after first dose and 45.8% after second dose) than within 30 minutes (31% after first dose and 19.1% after second dose). Proportion of post vaccination symptoms were high with first dose COVISHILED (within 24 hours-77.7%) and least with second dose COVISHIELD (within 30 minutes-13%). Most common symptoms were muscle pain, headache, tiredness, fever, joint pain, swelling at injection site and least common symptoms were vomiting, diarrhoea, cough, tingling, rashes, sweating and fainting. 15.8% and 9.5% of symptomatic individuals received medication from vaccination centre within 30 minutes after first and second dose vaccine respectively. Most of the post vaccinated symptoms

were self-treated with oral paracetamol (69.7% after first dose and 58.3% after second dose).

A similar study of the adverse events following immunization associated with the first dose of the ChAdOx1 nCoV-19 vaccine was conducted in Kosi University Gospel Hospital from March 3 to March 22, 2021. They investigated the systemic and local adverse events during the 7 days following the vaccination. A total of 1,503 were vaccinated, and the data of 994 were reported. The most commonly adverse events following immunization reported were tenderness at the injection site (94.5%), fatigue (92.9%), pain at the injection site (88.0%), and malaise (83.8%). The severity adverse events was mild-to-moderate, and the severity and number of adverse event were less in the older age group. There were no serious events requiring hospitalization, and most adverse events following immunization improved within a few day.<sup>[4]</sup>

In another study conducted in Nepal about the experience regarding AstraZeneca COVID-19 AZD1222 (COVISHIELD) vaccination showed after four hours of vaccination some health workers complained about irritability in mood and after six hours of vaccination some complained of myalgia, nausea, tenderness at the injection site and feverish feeling. After 12 hours, fever with chills developed which required paracetamol to resolve. By the second day of vaccination, fever and headache were resolved, however myalgia and tenderness at the injection site persisted. On the third day, early morning awakening and head heaviness and tenderness at the injection site persisted.<sup>[5]</sup>

In a study conducted in tertiary care hospital in India about Adverse events following immunization with COVAXIN a total of 1826 participants were assessed and 544 (29.8%) reported at least one of the post vaccination symptoms. Pain at the injection site (14.6%), fever (9.7%), and myalgia (5.9%) were the common adverse events reported by the participants. Post vaccination symptoms were higher

in the first dose (38.1%) when compared to the second dose (26.4%), and this finding was significant with a  $p < 0.001$ .<sup>[6]</sup>

A prospective observational study about Adverse events following ChAdOx1 nCoV-19 Vaccine (COVISHIELD) amongst health care workers was conducted in a tertiary care COVID dedicated hospital of Southern India among 981 health care workers who received 2 doses COVISHIELD vaccine. 1020 non-serious and two serious adverse events were reported within 48 hours of first dose. 220 non-serious AEFI were reported within 48 hours of second dose. No adverse events were reported after 15 days for both the doses.<sup>[7]</sup>

A cross-sectional observational study was conducted at Goa Medical College Surveillance on Adverse Events Following COVISHIELD Vaccine. Of the 418 vaccine recipients, the incidence rate of AEFI (Adverse Events Following Immunization) was 54.31%. Fever, fatigue, and headache were the most commonly reported. None of the adverse events were severe enough for hospitalization.<sup>[8]</sup>

Present study showed that majority of the post vaccination symptoms are mild and resolved with minimal intervention. This highlights that our study findings are similar to other covid vaccine related study.

## CONCLUSION

Vaccinated individuals experienced more symptoms within 24 hours than within 30 minutes. Proportion of post vaccination symptoms were high with first dose COVISHIELD (within 24 hours) and least with second dose COVISHIELD (within 30 minutes). Most common symptoms were muscle pain, headache, tiredness, fever, joint pain, swelling at injection site.

Least common symptoms were vomiting, diarrhoea, cough, tingling, rashes, sweating and fainting.

A very small percentage of symptomatic individuals received medication from vaccination centre within

30 minutes after first and second dose vaccination. Most of the post vaccinated symptoms were self-treated with oral paracetamol.

## Limitations

Limitation of this study is long term post vaccination complications are not addressed.

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