



## Side Effects of COVID-19 Vaccinations

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### Mini Review

Volume 8 Issue 1

Received Date: January 29, 2024

Published Date: February 12, 2024

DOI: 10.23880/cprj-16000183

### Abstract

In December 2020, the first COVID-19 vaccinations were granted emergency use permission in the US. 1.2 billion vaccination doses have been delivered worldwide. However, some individuals are hesitant to get the COVID-19 vaccine due to safety concerns and unwanted effects. In randomized clinical trials of COVID-19 vaccinations, side effects reported included injection site discomfort, redness, swelling, as well as systemic symptoms such as weariness, headache, muscle or joint pain. Serious adverse events were infrequent. Although the majority of side effects were moderate, research found that 50% to 90% of subjects had them. While government-sponsored reporting systems have provided information on side effects, there is a lack of real-world patient-reported data on those who are more likely to have them after getting the COVID-19 vaccine. The study aimed to detect and report adverse effects related with COVID-19 immunization in an online population. Additionally, the study aimed to uncover variables linked to more severe unfavorable effects. These findings may improve public knowledge of harmful effects from COVID-19 vaccinations.

**Keywords:** COVID-19; Vaccination; Immunity

**Abbreviations:** DCGI: Drugs Controller General of India; ICMR: Indian Council of Medical Research.

### Introduction

Vaccines are one of the most effective approaches for eliminating COVID-19, saving millions of lives annually. Furthermore, the optimal choice is a safe and effective vaccination with minimal side effects. The absence of an effective and licenced COVID-19 therapy has sparked a vaccination research race, with 259 COVID-19 vaccine projects beginning on November 11, 2020. Rapid vaccine development has increased the potential for safety hazards

[1]. On January 14, 2021, people started getting baseline and monthly surveys inquiring if they had ever had a COVID-19 (SARS-CoV-2) vaccination. After a subject reported getting a vaccine, follow-up questions inquired about the number of doses, dates, brand, and location of the vaccination. Volunteers were asked to complete a monthly follow-up survey about obtaining extra vaccination doses. Monthly surveys were used to reduce participant burden and accommodate vaccination delivery regimens that separated doses by 3–4 weeks. Partial immunisation was defined as getting one dose of any vaccine except JNJ-78436735 (Johnson & Johnson). Full immunisation was defined as getting 1 dose of JNJ-78436735 or 2 doses of any other vaccine. Data on further

doses were not gathered since third or booster doses had not yet been advised at the time of collection. Only subjects who reported getting BNT162b2 (Pfizer/BioNTech), mRNA-1273 (Moderna), or JNJ-78436735 vaccinations were included in the final analysis, as other vaccines were not widely used in this trial. Participants were asked to report any adverse effects of vaccination, including fever, chills, fatigue, sore throat, muscle pain, joint pain, headache, other pain, redness or swelling at the injection site, rash elsewhere, allergic reaction or anaphylaxis, and none of the above. The response options were chosen based on reported adverse effects in vaccination clinical studies. Participants could offer free-text replies to the choice of "other." Participants who reported adverse effects were questioned about their duration and self-rated severity (very mild, mild, moderate, severe, or very severe) [2,3].

On January 3, 2021, the Drugs Controller General of India (DCGI) approved the Bharat biotech vaccine against COVID-19, a locally manufactured inactivated vaccine named "COVAXIN" in collaboration with the Indian Council of Medical Research (ICMR), for emergency use alongside the Covishield Oxford-AstraZeneca vaccine manufactured locally by the Serum Institute of India.

### Adverse Effects of Covid-19 Vaccinations in India

Local injection site reactions were more prevalent following Covaxin vaccination (50.8%) than Covishield (34.93%) at a median of 1 day (IQR 0-1) after the second dose and continued for a median of 3 days (IQR 1-3). Delayed local arm responses were more common following the Covishield vaccination (1.4%) than the Covaxin (0.7%), starting 4 days (IQR 1-7) after the initial vaccine and lasting 1.5 days (IQR 1-3). Urticaria was most common following the Covishield vaccine, typically 1 day after the first dose and less than 1 day (IQR 0-1) after the second dose. Pain other than the injection site occurred largely after the Covishield vaccination (10.3%) and persisted for a median of 3 days (IQR 1-10), compared to 4.4% after the Covaxin [4].

COVID-19 immunisation began in India on January 16, 2021, in a gradual way using Covishield. This research was conducted in Pune, Maharashtra, India, where COVID-positive families who had received the first dose of the Covishield vaccine were followed up to see if there were any negative effects after immunisation. A questionnaire provided by the participants was used to obtain the data. Participants described the most prevalent adverse effects as malaise, headache, weariness, sneezing, nausea, and chills, followed by pyrexia (fever) with a sore throat, with sleeplessness being the least common. The adverse effects began 6-8 hours after immunisation, and they typically

persist between 24-100 hours [5].

There were no hospitalisations following the immunisation; however, major adverse effects were noted for more than a week. Participants described the most prevalent adverse effects as malaise, headache, weariness, sneezing, nausea, and chills, followed by pyrexia (fever) with a sore throat, with sleeplessness being the least common. In the investigated family, the average duration of sleeplessness, pyrexia (fever), malaise, headache, exhaustion, sneezing, nausea, chills, sweating, cough, cold, sore throat, and runny nose is 24, 24, 24, 10, 24, 80, 24, 20, 16, 12, 56, and 24 hours, respectively. None of the adverse effects persisted for more than 100 hours in any person. The majority of these adverse effects began within 6-10 hours and persisted between 24 and 100 hours. In India, paracetamol is prescribed to treat post-vaccination side effects. Paracetamol is effective for fever reduction but not for other adverse effects. These side effects are typical and may signal that the vaccination is functioning to create immunity. It is not recommended to take pain relievers or medicines, such as ibuprofen, aspirin (only for people ages 18 or older), or acetaminophen, before vaccination to try to prevent side effects. We also discovered that COVID-positive families had minimal medical issues following their recovery from COVID-19. These difficulties are minimised after vaccination, demonstrating that immunisation is highly essential not just for non-COVID but also for the positive-COVID group [3].

While the vast majority of side effects are mild, it's essential to be aware of potential severe reactions. Serious allergic reactions (anaphylaxis) are extremely rare but can occur. Individuals should be monitored for signs of an allergic reaction, such as difficulty breathing, swelling of the face or throat, and a rapid heartbeat [6]. In cases of severe or persistent symptoms, seeking prompt medical attention is needed. If someone experiences severe or persistent symptoms, seeking immediate medical attention is crucial to addressing the situation promptly [7]. Many healthcare settings have protocols in place to manage allergic reactions, and having trained personnel and appropriate resources available can make a significant difference in ensuring patient safety. It's important for individuals to communicate any history of allergies or previous adverse reactions to healthcare providers before undergoing procedures or receiving medications. This helps healthcare professionals take the necessary precautions and choose the most appropriate course of action [8].

### Conclusion

An intriguing finding from our research is that, despite the fact that the topic of discussion is the vaccine's side effects, just 21.3% of the tweets about them expressed

negative opinions. Nonetheless, it is crucial for the Indian government and non-governmental organisations to assist in enlightening the public about their shared concerns regarding the adverse impacts of COVID-19 vaccinations on social media [9].

Recent research has revealed that the following fears exist: the fear that receiving the COVID-19 vaccine will affect one's productivity at work; the fear that receiving the vaccine could result in death; the fear that receiving the vaccine carries a risk; the fear that receiving the vaccine will have long-term consequences; the fear that receiving the vaccine will have an adverse effect on one's health; the fear that a blood clot will occur; the fear stoked by the media; the safety precautions at the vaccination site; and the effectiveness of the vaccine [10].

Since the onset of the COVID-19 crisis, several studies have been undertaken to determine the best ways to comprehend the general public's perspective of the psychological consequences of COVID-19 as well as the most effective approaches to cope with it [11]. With the collapse of the first wave and the rapid rise of the second wave, government officials and policymakers must grasp how public opinion of various components of the crisis evolves over time. It is critical for governments all around the world to vigorously accelerate the immunisation programme to avert the third and maybe fourth waves of the COVID-19 disaster [11-12].

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