

Study of symptoms following COVID-19 vaccination in Western Punjab

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Abstract

Introduction

Various types of COVID-19 vaccines with a variety of mechanisms of action have been developed recently in various countries throughout the world. At this stage only little is known about the post-vaccination experience beyond the clinical trials and very less information of vaccination side effect profile is known from real world scenario. Education of the general public regarding usual and expected post-vaccination symptoms will help in reducing reluctance for vaccination and improve willingness to get vaccinated.

Aim

To assess the immediate response to the first dose of COVID-19 vaccine.

To study the spectrum of post-vaccination symptom profile for individual vaccines.

Methods

We conducted a cross-sectional survey which included questions particularly related to the immediate vaccine side effects from a North Indian population. Priority in India was given to healthcare workers, people above 50 years and those with co-morbidities below 50 years as it was rolled all across India on January 16th 2021. The survey was sent to all relevant participants who received COVID-19 vaccine till 5th March 2022.

Multiple choice question formats was used for extracting information from the participants.

Results

Approximately 500 people responded to the survey over a period up to 5th March 2022. Local pain at injection site was the most common symptom noted, followed by myalgia and tiredness. 80.3% people reported symptoms within the first 12 hours after receiving vaccination. In about 32.1% of people the symptoms persisted for 12 hours, 25.1 % for 13-24 hours 31% for 24-48 hours, 6.7% for 48-96 hours & in 5.1 % stayed for more than 96 hours.

Conclusions

70.6% of those who completed the survey reported short-lived post-vaccination symptoms. Local pain at injection site, fever, tiredness and myalgias were most commonly reported. Previous 2nd and 3rd trials of these vaccines too had revealed findings consistent with the present findings, suggesting an immune response commonly associated with vaccines.

INTRODUCTION:

The Covid-19 outbreak was first detected in December 2019 in Wuhan, China.¹ It was identified as a corona virus which targets the respiratory system of humans.² Many other countries were subsequently involved including United States, Canada, Thailand, , Germany,

India, , Vietnam etc.³ The fatality rate was estimated to be 170 out of 7,824. As COVID-19 spread to different continents, the WHO was compelled to recognize this outbreak as a pandemic, SARS-CoV-2 on 11th March.⁴ This is the third serious worldwide outbreak in the last 20 years.⁵ The common symptoms of this ailment are dyspnea headache, fever, myalgias, diarrhea and is transmitted from person to person through direct contact or via droplets in sneezing or coughing from the diseased person.⁶

Various types of COVID-19 vaccines with a variety of mechanisms of action have been developed recently in various countries throughout the world. At this stage only little is known about the post-vaccination experience beyond the clinical trials and very less information of vaccination side effect profile is known from real world scenario. Education of the general public regarding usual and expected post-vaccination symptoms will help in reducing reluctance for vaccination and improve willingness to get vaccinated.

METHODS:

We did a cross-sectional survey which included questions pertaining to the immediate post vaccination experience from India. Priority in India was given to healthcare workers, people above 50 years and those with co-morbidities below 50 years as it was rolled all across India on January 16th 2021. The survey was sent to all relevant participants who received COVID-19 vaccine till 5th March 2022.

Sample Size⁷: 500 participants.

Inclusion Criteria: Participants who are associated (Students/Faculty/Healthcare workers/Others) with Adesh University as well as other healthcare facilities of Punjab, and have had a vaccination dose at any healthcare facility in India.

Multiple choice question format was used for extracting information from the participants.

Statistical Analysis

The baseline characteristics of the data were assessed by descriptive Statistics. All qualitative variables in frequency and percentages and all quantitative variables were expressed in form of mean and standard deviation. For those variables which were categorical, chi-square test was used for their comparison. For those variables which were continuous, one-way ANOVA test was used. SPSS version 20.00 was used in analyzing data entered on Microsoft excel.

RESULTS:

Approximately 500 people responded to the survey.

Among those who responded to the survey, 40.7% were between the age group of 18-24 years followed by 21.5% of the age group of 25-34 years (Figure-1). 44.1% of the respondents were male and 55.9% were female (Figure-2). Vaccination by majority of the people was taken in Punjab itself (Figure-3).

The Covishield vaccine (manufactured by Serum Institute of India) was administered to 423 (87.4%), while as Covaxin vaccine (Bharat Biotech) was administered to 40 (8.3%). Pfizer and Sputnik vaccines were administered to 5 from other countries. Either Covaxin or Covishield vaccine was administered to almost all (95.7%) the participants (Figure-4).

Profession wise, the majority were doctors (52.5%), followed by other professionals (39.6%), hospital staff (5.3%) nurses (2.2%) hospital technicians (0.4%) (Figure-5).

A minimum of one post-vaccination symptom was reported by 70.6% of the participants of those who had any vaccine.(Figure-6). Out of those who received vaccine , fatigue was reported by 47.6% ,body aches were reported by 50% , pyrexia by 54.1% ,63.8% reported pain at site of injection, 15.7% reported joint pains,4.9% reported nausea , 5.9% reported sore throat , 6.9% reported giddiness,4.9% reported rigors and 3% reported diarrhea. These above mentioned symptoms were most common among those who received vaccination (Figure-7). In the first 12 hours , post vaccination symptoms were reported by 80% (Figure-8). In 32.1% of people the symptoms persisted for 12 hours, in 25.1 % for 13-24 hours 31% for 24-48 hours, 6.7% for 48-96 hours & in 5.1 % stayed for more than 96 hours(Figure-9).

Among the participants 80.1% did not have any pre existing conditions whereas 11% had hypertension, 6.1% had diabetes mellitus, 2.8% allergies, 2.2% asthma, 2% pre existing heart condition, 0.2% pre existing kidney disease(Figure-10).

In total 174 (36.3%) people experienced inconvenience at work the next day whereas 305 (63.7%) did not experience any inconvenience (Figure-11).

246 (51.2%) of the participants had to take paracetamol for their symptoms whereas 234 (48.8%) did not have to take it (Figure12).

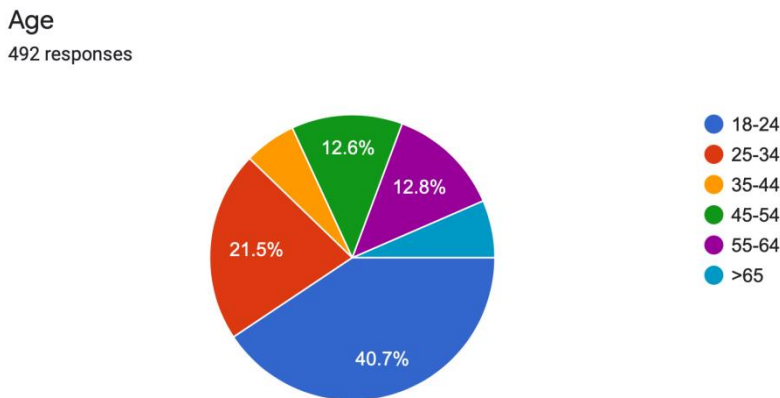


Figure 1

GENDER
494 responses

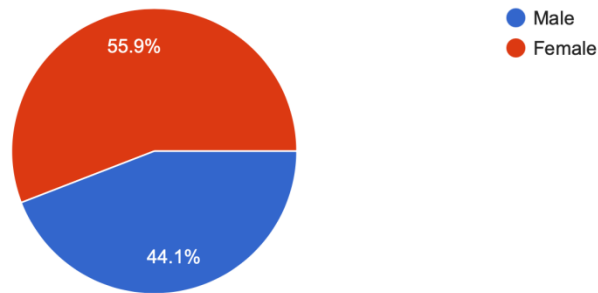


Figure 2

Vaccination Centre
492 responses

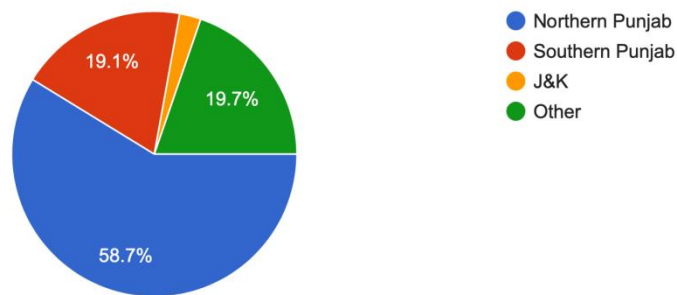


Figure 3

Vaccine Used
484 responses

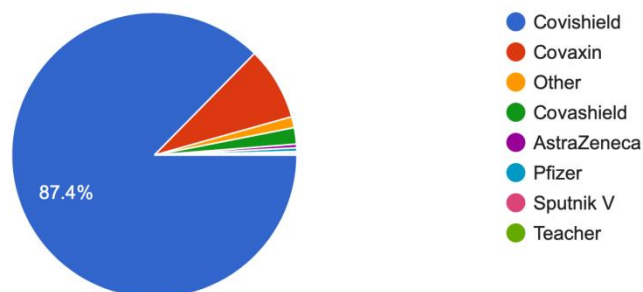


Figure 4

Profession
493 responses

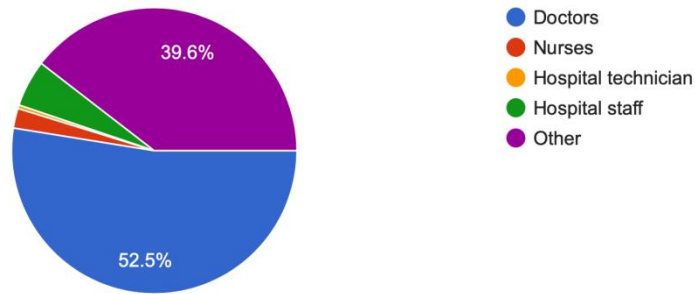


Figure 5

Any symptoms after vaccination
489 responses

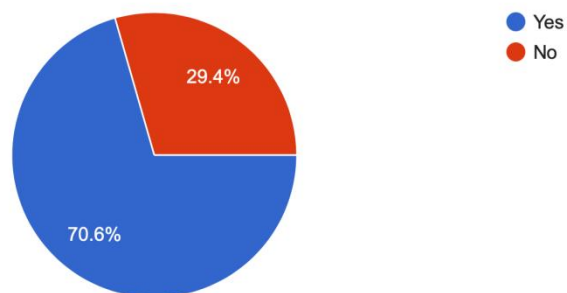


Figure 6

If Symptoms were present , (specify)

370 responses

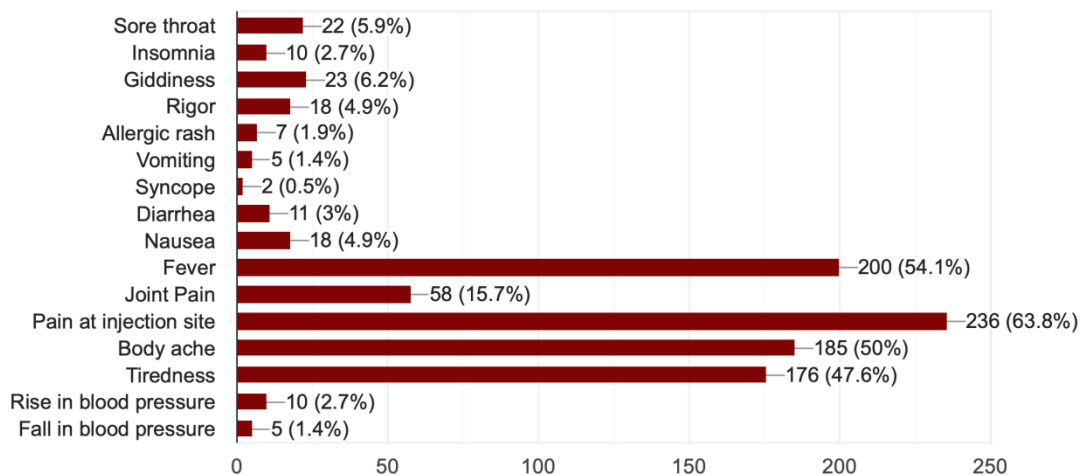


Figure 7

Onset of Symptoms

371 responses

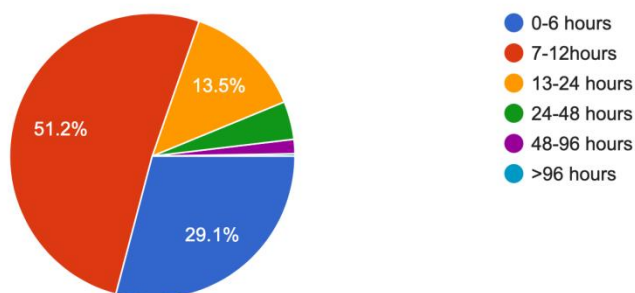


Figure 8

Duration of Symptoms

371 responses

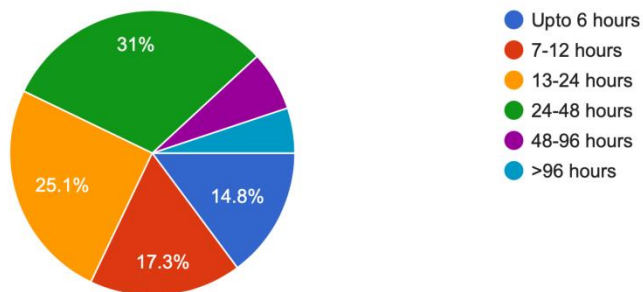


Figure 9

Do you have any of these pre existing conditions ?

457 responses

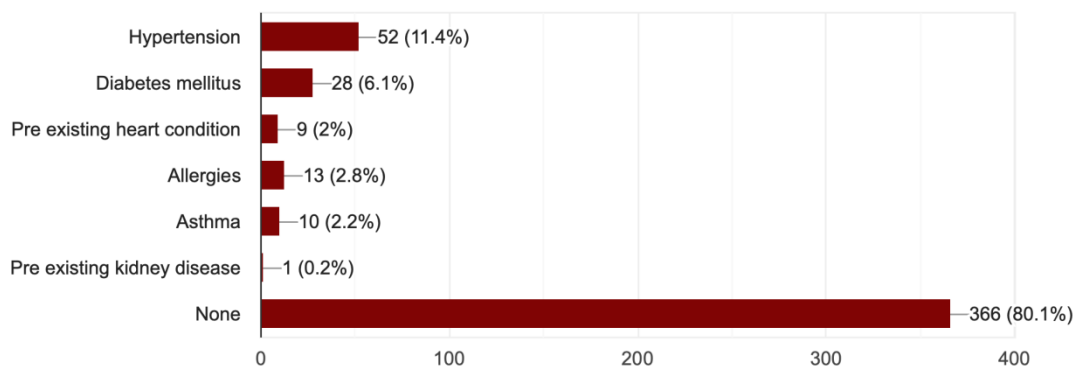


Figure 10

Inconvenience at work the next day?

479 responses

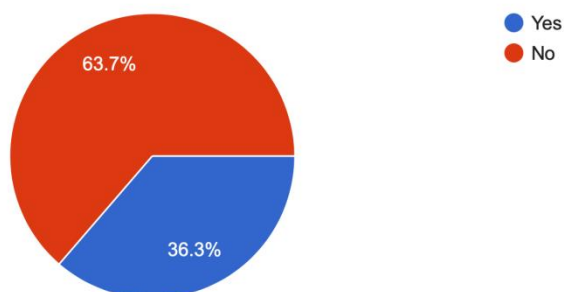
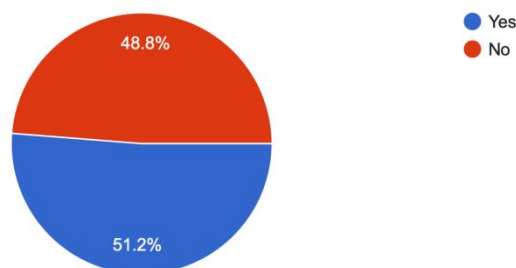


Figure 11

Figure 12

Did you've to take paracetamol for your symptoms?
480 responses



DISCUSSION:

People who participated in the study, reported vaccination side effects, if any and informed about the same. Mild to moderate symptoms without any serious implications were reported by 70.6% while no symptoms were reported by rest of the 29.4%.

Pain at the vaccine site was the most common symptom (63.8%), followed by pyrexia (54.1%), body aches (50%) and fatigue/tiredness (47.6%). 15% of them reported joint pains.

The symptoms were mild to moderate in nature in the absence of any serious implications that would require hospitalization in almost all the study participants. Most of the participants reported symptoms that appeared within first 12 hours (2-24 hours) post vaccination, with a mean duration was about 30 hours. In 36.3% the severity of symptoms was high enough so as to create hindrance in work after a day post-vaccination whereas 63.7 % faced no inconvenience at work the next day.

The age and the symptoms experienced after vaccination showed a linear correlation indicating that body's reaction to vaccine show declination with age. 81.3% symptoms appeared among those who were young i.e. (18-34 years), while among those belonging to age > 80 years only 7.4% reported post-vaccination symptoms. There was a linear correlation between post-vaccination symptoms and the age of the individual, suggesting that vaccine reactogenicity declined with age. There was a correlation between body's immune reaction to the vaccine and increase in levels of cytokines known to be involved in inflammation process, however it is not an indicator to be relied on completely. ^[8]

Post vaccination symptoms appeared more likely in females. Women reported early appearance of post-vaccination symptoms as compared to men and time period for which symptoms persisted was also longer in women as compared to men irrespective of age.

Our study observations were matched and correlated with results of phase 2 and phase 3 trials conducted on different COVID-19 vaccines. When standard dose of Oxford –Astrazeneca ChAdOx1 nCoV-19 was administered in the phase 2/3 trial , 86% participants belonging to age group of 18-55 years reported a minimum of one systemic symptom, while as 77% belonging to age group 56–69 years group reported a symptom and 65% belonging to age group > 70 years had a post vaccination symptom.^[9]

It is also important to highlight the fact that minimal symptoms appeared in those who received a placebo injection. When standard dose of Pfizer-Biontech vaccine was administered in phase 3 trial, 42% reported headache while 34% of those who received placebo reported headache^[10]. The term given to describe this phenomenon is “nocebo effect” which occurs from enhanced anticipation of negative outcomes from an intervention.^[11]

Antibody response of body in relation to time after receiving vaccination was not measured in this study. So, it cannot be concluded whether less post-vaccination symptoms among geriatric age group were due to weakening of immune system or there is some other reason behind this observation. Although, levels of antibodies against virus correlate with the symptoms^[12] but, we cannot rely on symptoms post- vaccination for predicting antibody response^[13].

51.2% took paracetamol to get relief from post-vaccination symptoms whereas 48.8% did not use it. It is expected to take paracetamol to get relief from post-vaccination symptoms^[14] , however it is not usually recommended to routinely use pain relievers for prophylactic purposes as it may lead to blunting of immune response.^[14, 15]

Due to lack of knowledge being imparted regarding post-vaccination safety among the general population vaccine hesitancy still persists. By spreading awareness and imparting knowledge regarding the usual and expected symptoms post- vaccination, we can definitely enhance the willingness of general population to receive vaccine. If we impart information among people that symptoms experienced after receiving vaccine are milder and short-lived in nature , it will reduce reluctance of general population to get themselves vaccinated.

LIMITATIONS :

To improve accuracy in results, a survey should be conducted on people who have some sort of interest in that topic. Surveys regarding adverse effects of medications are likely to be answered by someone who has had a problem with that medication to find out the same. Those who developed symptoms following vaccination would thereby show greater interest in this survey in comparison to others. Greater awareness and upgraded information, could be the reason of better reporting rate of any potential symptoms. So, there are chances that the

reporting of symptoms after receiving vaccination in healthcare workers, which came out to be 70.6% may be an overestimation.

Out of people who were included in study, less respondents received the Covaxin, Pfizer vaccines etc which creates hindrance in doing any kind of head to head detailed comparison between them.

CONCLUSION :

In 70.6%, symptoms that were reported were short-lived and disappeared soon without creating much inconvenience or any serious complication. The most commonly prevailing symptoms were – local pain at injection site, pyrexia, body aches and fatigue. Previous 2nd and 3rd trials of these vaccines too had revealed findings consistent with the present findings, indicating that an immune response is associated with the vaccines.

In 70.6% cases, the nature of symptoms was either mild or as anticipated by the participants. No serious complications were reported in the study. Post-vaccination symptoms were more commonly seen among younger individuals.

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