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# IMPACT OF COVID VACCINATION IN INDIA: A STUDY OF MEERUT DISTRICT

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## ABSTRACT

*Early in December 2019, the COVID-19 pandemic broke out in Wuhan, China, and quickly spread throughout the world, devastating human health. To combat the COVID-19 pandemic, quick work was needed to develop and test vaccines for safety and efficacy due to the public health emergency. COVID-19 vaccines were approved for emergency use before the conclusion of traditional clinical trial phases, but there isn't a thorough analysis of the safety information provided by the vaccination trials. There is no data on vaccination effects on the Indian population that are gender-specific. This study aims to evaluate the adverse effects of different vaccines for COVID-19, particularly in young adults based on health issues they encountered, and to determine the factors linked to experiencing adverse events after vaccination, also focusing on gender-specific side effects of vaccine (if there are any). Furthermore, there was a noticeable increase in the number of individuals reporting mental illness. Therefore, this study also attempts to understand the impact of the COVID-19 vaccination on the mental health of people in India with a particular focus on the Meerut district. A structured Google questionnaire will be utilized to collect the required data for the study through a random sampling technique from 200 young adults in the Meerut district who have received at least one dose of the COVID-19 vaccine. Descriptive statistics were used to examine the frequency and length of systemic and generalized symptoms.*

**KEYWORDS:** *Covid-19, Health issues, vaccination,*

## INTRODUCTION

The beta-coronavirus SARS-CoV-2 first appeared in China's Wuhan region in 2019. It passed through the barriers between species and infected people through human-to-human transmission.

The 2019 Coronavirus disease were declared a pandemic by The World Health Organization on 11th March 2020. The rapid spread of coronavirus caused the failure of the healthcare system and lead to the global economic crises (Bilotta et al., 2021). According to the WHO as of 9 July 2024, the total number of Covid 19 cases is 775,678,432 and the total number of deceased persons due to coronavirus is 7,052,472.

The fast spread of COVID-19 infection severely impacted human health and created an emergency to formulate an effective vaccine to fight this virus. The severity of infection leads to the urgent need to the test of efficacy and safety of vaccines in a very short period (Kaur, Dutta, & Bhardwaj, et al., 2021). To fight Covid 19 pandemic two different types of vaccines were developed based on viral vectors and mRNA technology (Bilotta et al., 2021).

The government had to grant emergency approval for COVID-19 vaccines to control the situation. However, the lengthy duration of clinical trials represents a significant barrier to the rapid development of vaccines. The United States Food and Drug Administration (FDA) and the World Health Organisation (WHO) have established guidelines that require a vaccine candidate to successfully undergo not less than a trilogy of placebo-controlled clinical trials to validate its efficacy and safety which can take years to finish.

However, the approval of Covid 19 vaccines was based on limited clinical tests conducted within a brief timeframe which was not sufficient time to access all short- and long-term adverse impacts associated with different Covid-19 vaccines (Kaur, Dutta, & Charan, et al., 2021), so it becomes very crucial to further evaluate the adverse impacts of Covid 19 vaccines to improve the safety and the efficacy of these vaccines for the well-being of the society. This research paper focuses on the side effects (if any) experienced and the types of health problems faced by people after getting vaccinated.

## LITERATURE REVIEW

Kaur et al. (2021) analyzed the data of 32044 subjects collected from the WHO database related to the adverse events of different COVID-19 vaccines and found that the adverse events were higher in European females in the age group of 18 to 64 years. The study showed that the majority of adverse events were associated with the BNT162b2 (Pfizer) vaccine. General

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disorders, nervous system disorders, musculoskeletal disorders, headache, pyrexia, and fatigue were commonly reported adverse events due to the vaccination. Alhossan et al. (2022) systematically reviewed different published studies related to the adverse events of COVID-19 vaccines in Saudi Arabia. The study found that there is around 40% incidence of adverse events after the COVID-19 vaccination, and the AstraZeneca vaccine is associated with a higher risk as compared to the Pfizer-BioNTech vaccine. Chen et al. (2022) reviewed different trials related to the nervous and muscular adverse events due to the COVID-19 vaccination. The study found that nervous and muscular adverse events are common, out of which muscle pain and headaches are most common. Mushtaq et al. (2022) Reviewed different pieces of literature related to the adverse effects of various Coronavirus vaccines being used worldwide. The study found that there are short-term adverse effects of different COVID-19 vaccines, which include fever, headache, and myalgia. The study also found that thrombosis is mostly seen in people who have taken the adenoviral vector vaccines. Adverse effects associated with the mRNA vaccines are myocarditis, cutaneous eruptions, and glomerular diseases.

Balasubramanian, Faheem, Padhy, and Menon, (2022) Review the available reports of psychiatric adverse effects associated with COVID-19 vaccines. To locate relevant papers, we conducted searches using electronic resources such as PubMed and Google Scholar. Eleven reports detailed the 14 cases of psychiatric reactions that we identified; altered mental states, psychosis, mania, depression, and functional neurological disorders were the most frequent ones. The index case was usually a young or middle-aged adult. The use of vaccines based on mRNA or vectors was covered in every publication. Given that every person experienced symptoms within ten days following the vaccination, it seems that this is a high-risk window that has to be watched closely.

Pandey et al (2021) The COVID-19 pandemic, which has lasted for more than a year, has raised awareness of the virus's effects on mental and neurological health. In addition to severe symptoms like brain stroke, neurological abnormalities such inflammation, cognitive decline, and loss of smell are frequent in infected patients. Beyond the immediate consequences, social isolation and lockdowns have had a substantial impact on mental health across all age groups, with pressures causing emotional outbursts and harmful conduct. The pandemic response is further complicated by the fact that vaccine hesitancy remains despite widespread distribution, owing to worries about both efficacy and side effects. To inform effective policy interventions aimed at mitigating the ongoing mental health crisis amidst the pandemic, this review emphasizes the necessity of addressing the direct and indirect effects of COVID-19 on mental health as well as factors contributing to vaccine hesitancy, particularly among disadvantaged populations. especially within underprivileged groups

Kaur et al (2021) This study carried out a comprehensive review of published safety data from COVID-19 vaccination trials. Eleven pertinent studies were found using searches conducted between December 2019 and 2020 on PubMed, Embase, and Google Scholar. Most adverse reactions that were recorded were mild to moderate and disappeared within three to four days. Fever, tiredness, headache, and myalgia were among the systemic symptoms; discomfort, swelling, and redness at the injection site were among the local reactions. Several trials found transitory laboratory abnormalities, although they were not clinically meaningful. Severe adverse effects were rare and had nothing to do with the vaccination. All things considered, the research suggests that COVID-19 immunizations might be safe, but it also highlights the need for ongoing surveillance, especially in communities that are more vulnerable.

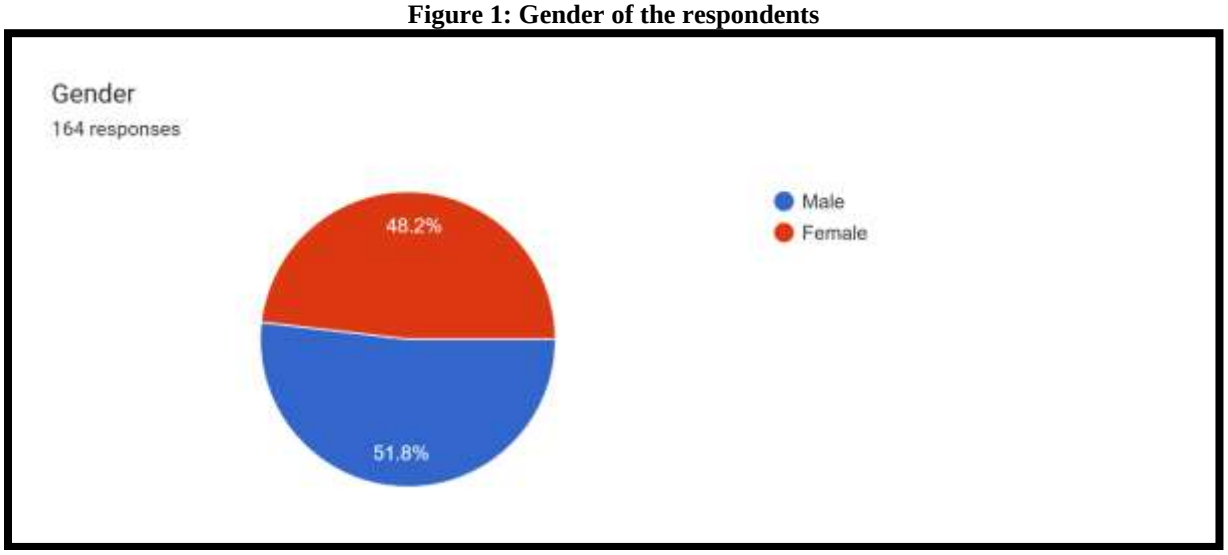
## METHODOLOGY

A cross-sectional study based on an online survey was carried out using Google Forms. The purpose of the survey was to determine the side effects that people reported having after getting the COVID-19 vaccine. The self-administered forms were designed using Google Forms comprising of 13 mandatory questions to collect data regarding the physical as well as psychological difficulties faced by people. After screening it was found out that a total of 164 participants participated in the study by providing information regarding their personal experiences.

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## RESULTS AND DISCUSSIONS

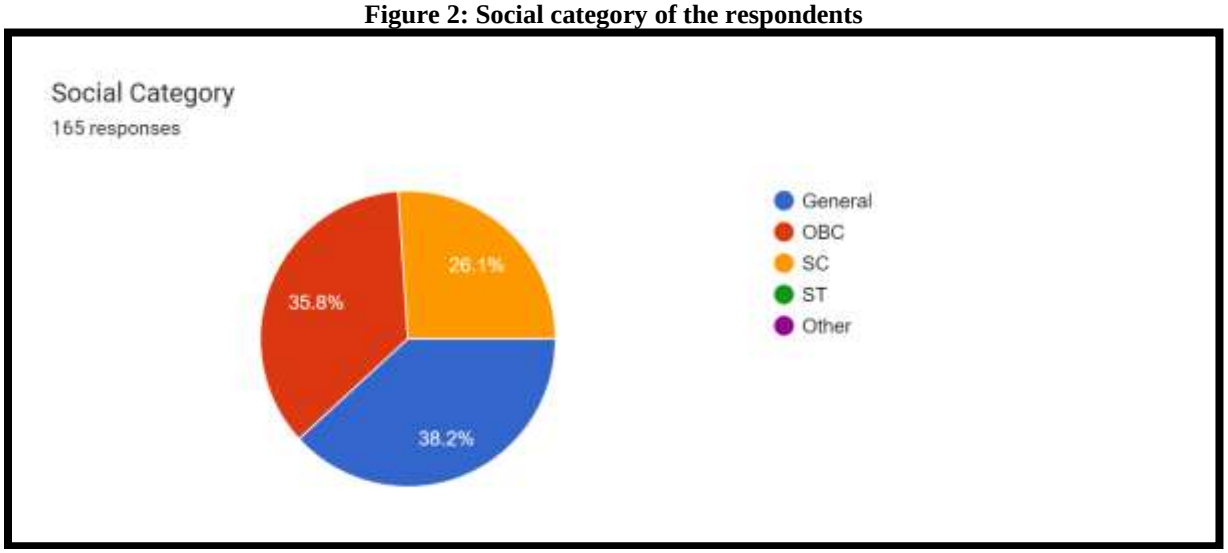
**Figure 1: Gender of the respondents**




*Source: Based on data collected through Google forms*

The pie chart in figure 1 illustrates the percentage of respondents according to their gender. It is evident from the above chart that 51.8 % of the respondents are male and 48.2% of the respondents are female.

**Figure 2: Social category of the respondents**

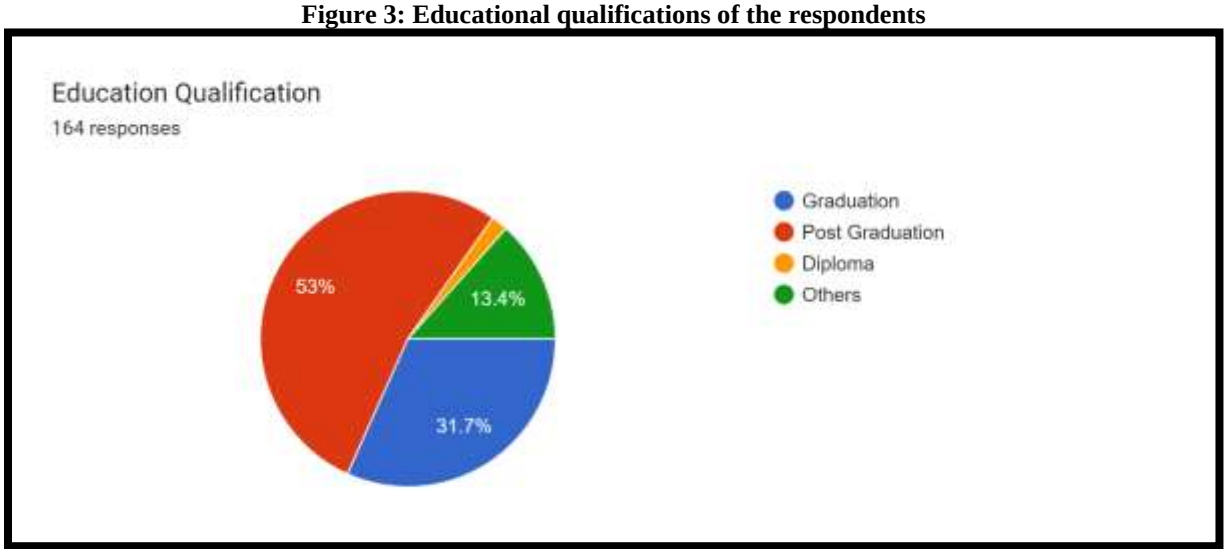



*Source: Based on data collected through Google forms*

The pie chart in figure 2 depicts the percentage of respondents from different social categories. 38.2% of the respondents belonged to general category whereas 35.8% belonged to OBC (Other Backward Castes) category and 26.1 belonged to SC (Scheduled Castes) category.

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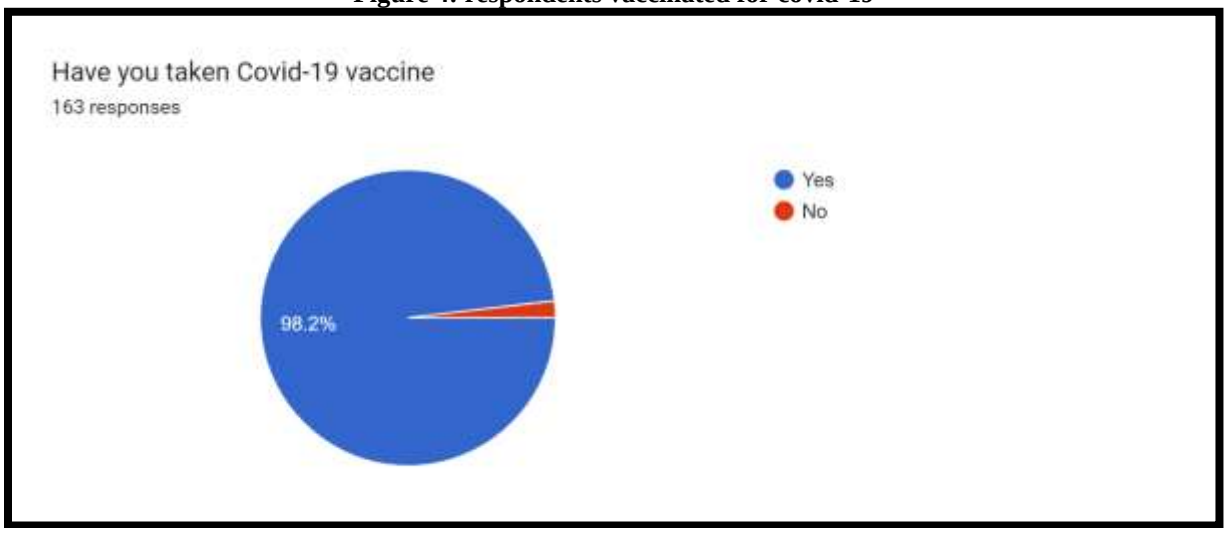
**Figure 3: Educational qualifications of the respondents**




*Source: Based on data collected through Google forms*

The pie chart in Figure 3 depicts the educational qualifications of the respondents and it can be seen that most of the respondents have completed post-graduation (53%), 31.7% of the respondents have completed graduation, 1.9% have attained some kind of diploma and 13.4% have some other type of qualifications. Hence it can be concluded that most of the respondents were well educated.

**Figure 4: respondents vaccinated for covid-19**

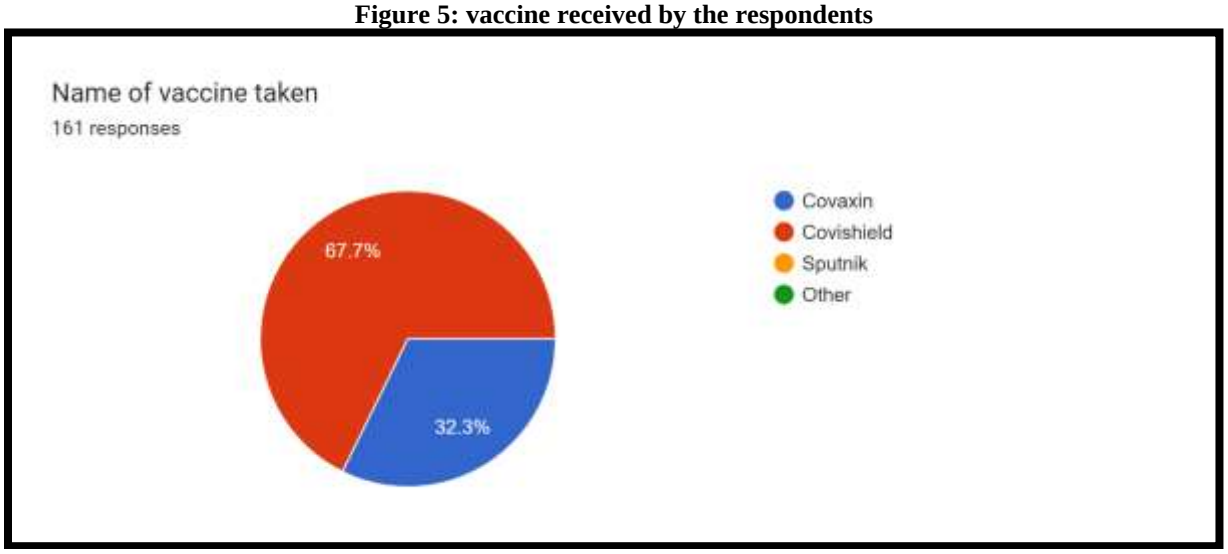



*Source: Based on data collected through Google forms*

The pie chart in figure 4 shows how many of the respondents have taken covid-19 vaccine and it can be seen that 98.2% had taken the vaccine and only 1.8% of the respondents were those who had not taken any vaccine for covid.

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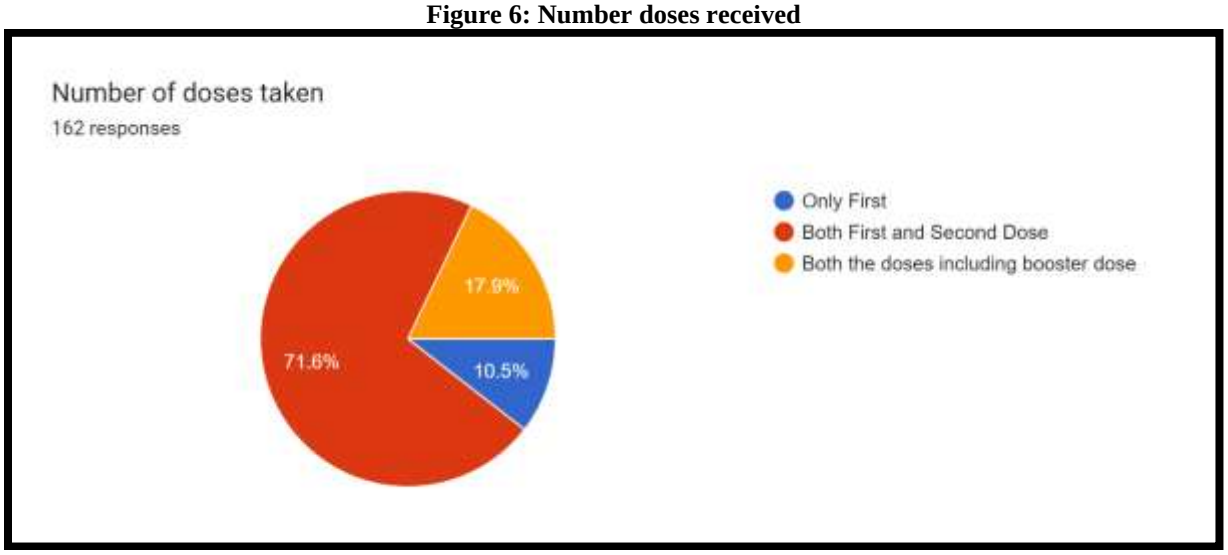
**Figure 5: vaccine received by the respondents**




*Source: Based on data collected through Google forms*

Figure 5 depicts the percentage of respondents and name of vaccine which they have taken. 67% of the respondents had opted for Covishield whereas only 32.3% of the respondents had taken covaxin.

**Figure 6: Number doses received**

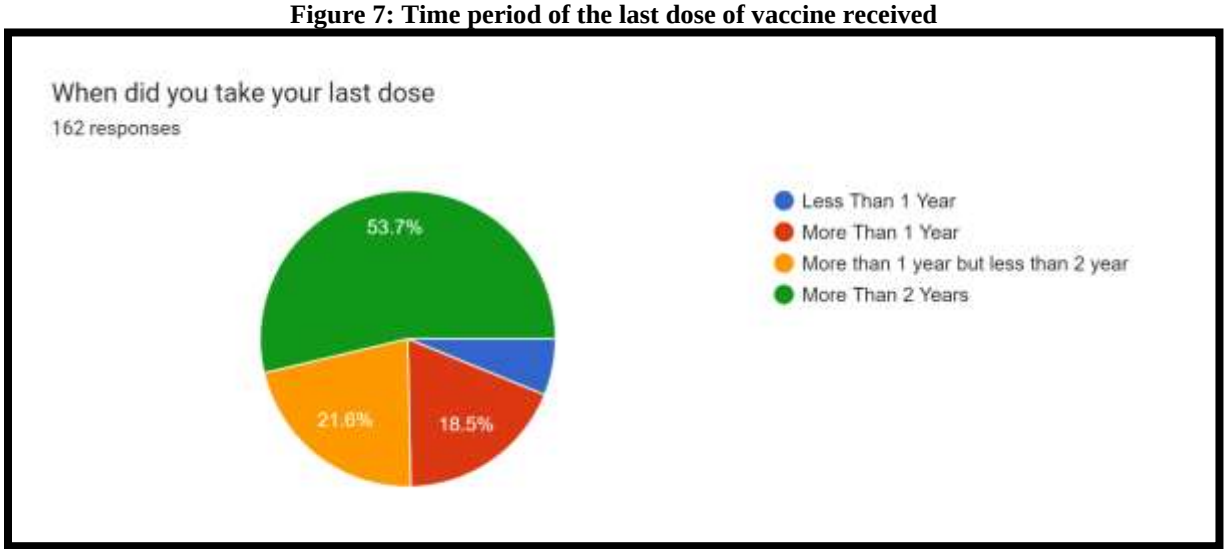



*Source: Based on data collected through Google forms*

Figure 6 reflects upon the number of doses of the particular vaccine received by the respondents for protection from covid-19. It is evident that 71.6% of the respondents had taken the first and the second dose whereas 17.9% of the respondents had taken first, second as well as the booster dose and only 10.5% had taken only one dose.

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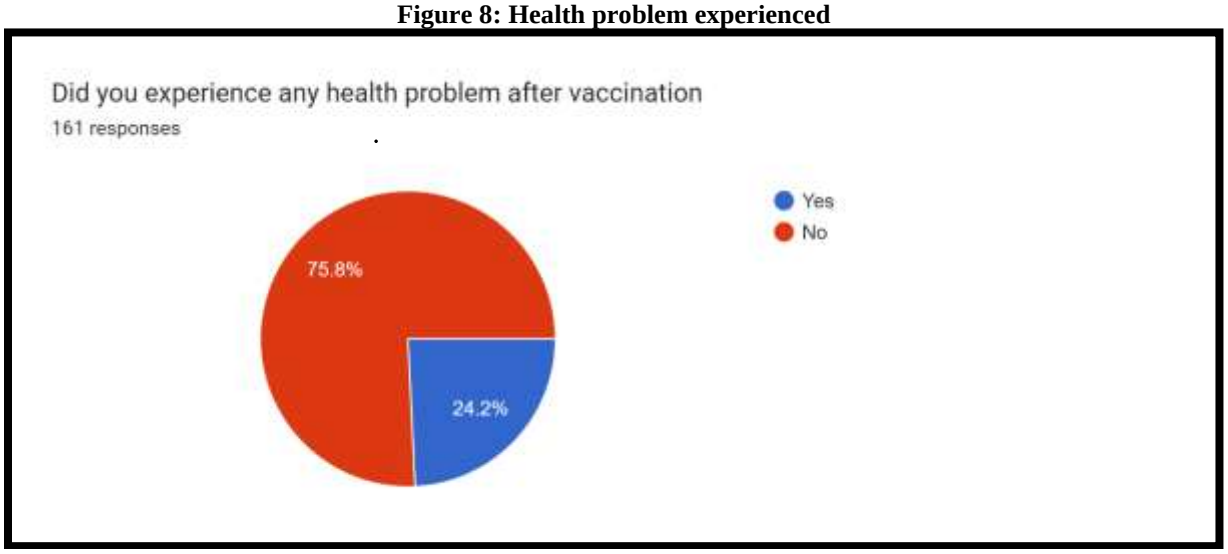
**Figure 7: Time period of the last dose of vaccine received**




*Source: Based on data collected through Google forms*

Figure 7 depicts when was the last dose taken by the respondents and it is clearly evident that 53.7% of the respondents took the last dose more than 2 years ago, whereas 18.5% took the last dose more than 1 year ago, 21.6% of the respondents took the last dose more than 1 year and less than 2 years ago.

**Figure 8: Health problem experienced**

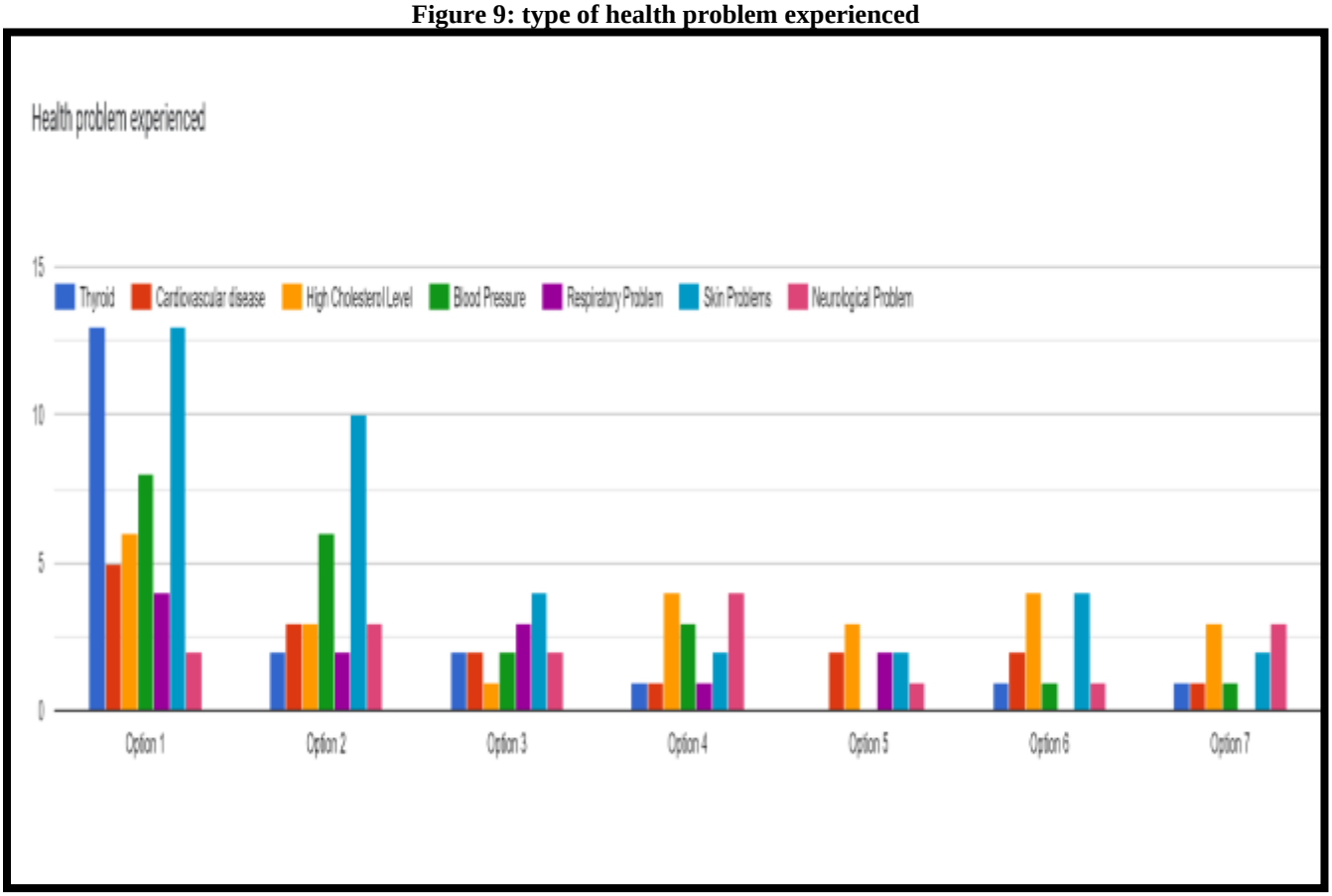



*Source: Based on data collected through Google forms*

The graph in figure 8 reflects the experience of the respondents regarding any health problems faced by them after the vaccination. As evident from the above graph 75.8% said that they did not experience any health problems whereas 24.2% experienced health issues after the vaccination.

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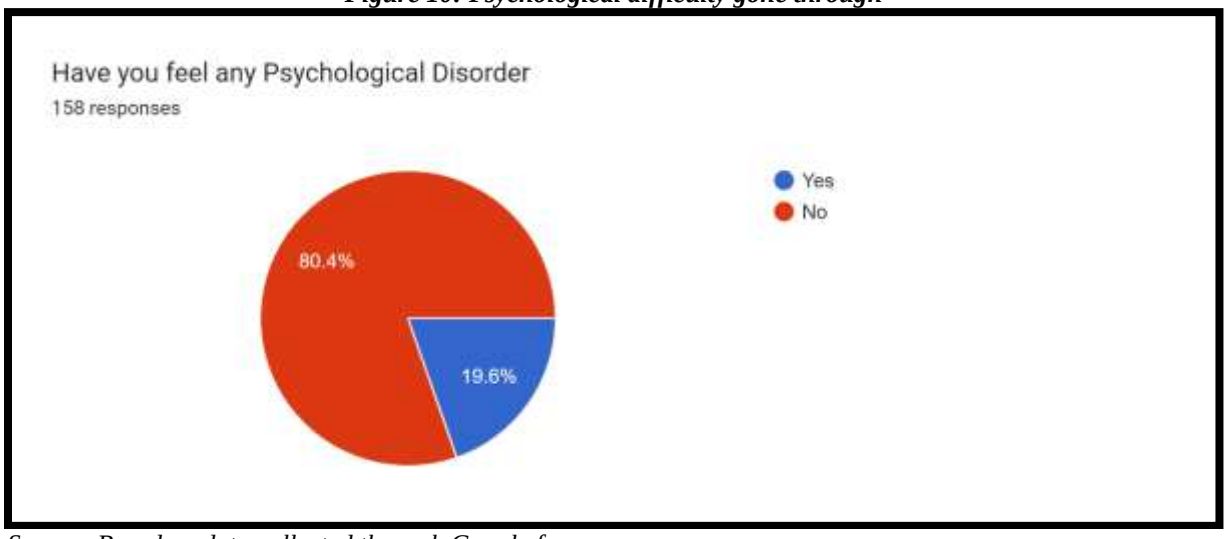
**Figure 9: type of health problem experienced**




*Source: Based on data collected through Google forms*

Figure 9 depicts the health problems experienced by the participants after getting vaccinated for the COVID-19 virus. It is evident from the above graph that most of the respondents chose thyroid, skin problems, and blood pressure as the most common problems being faced followed by cholesterol, neurological problems, and respiratory problems.

***Figure 10: Psychological difficulty gone through***

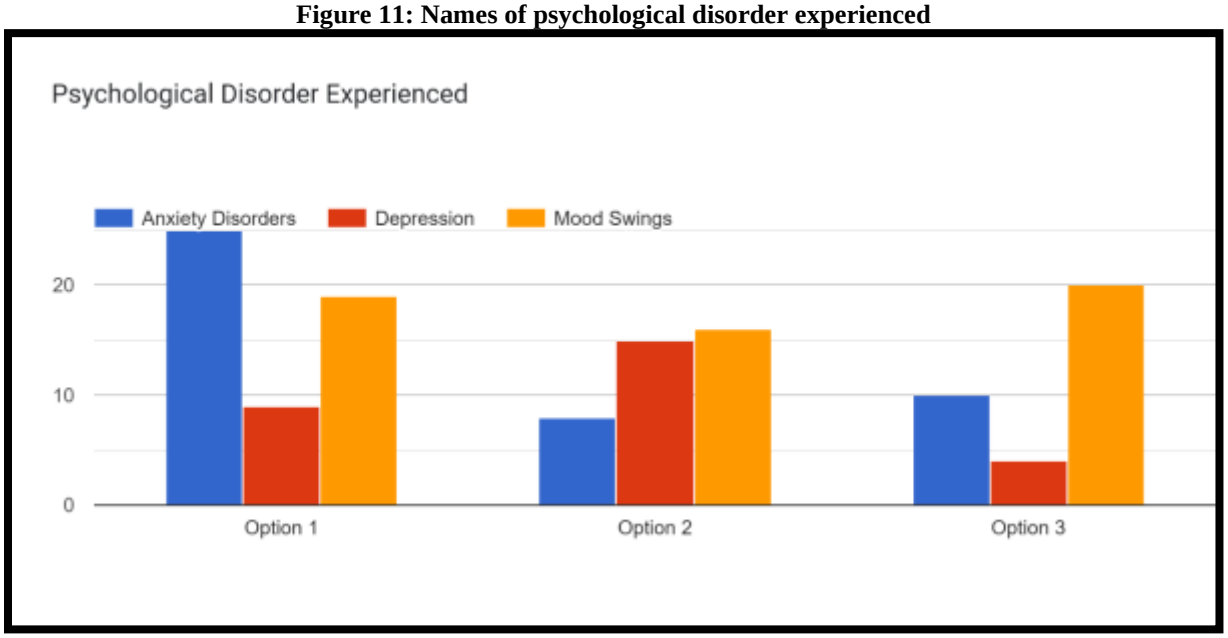



*Source: Based on data collected through Google forms*

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The pie chart in figure 10 depicts the percentage of the respondents who believed to have gone through any type of psychological disorder after getting vaccinated. 80.4% of the respondents denied of go through any type of psychological difficulty whereas 19.6% of the respondents claimed to have experienced psychological disorder.

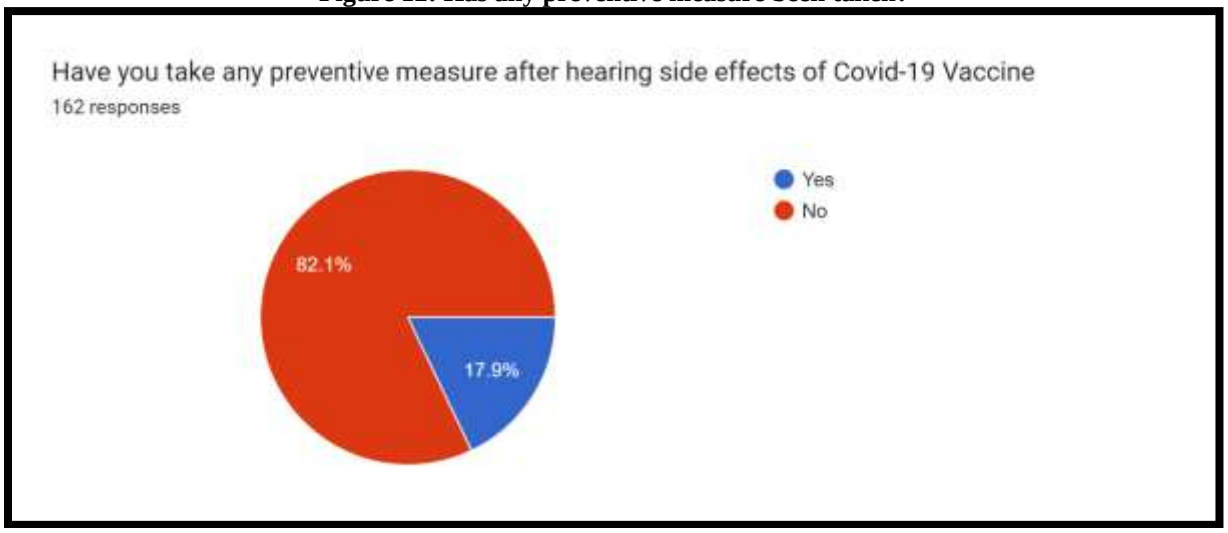
**Figure 11: Names of psychological disorder experienced**




*Source: Based on data collected through Google forms*

Figure 12 illustrates the most common psychological disorders experienced by the respondents who claimed to have gone through psychological difficulties. Most of the respondents chose anxiety as the first option whereas mood swings were the second and third most popular choice.

**Figure 12: Has any preventive measure been taken?**




*Source: Based on data collected through Google forms*

This pie chart in figure 12 shows how much percentage of the respondents took any kind of preventive measures after hearing about the side effects of the covid-1 vaccine. It shows 82.1% of the respondents did not take any such measures whereas 17.9% of the respondents chose yes as the answer.

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## CONCLUSION

- To sum up, out of the 164 participants 98.2% had taken the covid vaccine. 24.2% claimed to have gone through the side effects related to covid-19 vaccine, out of which most of the participants chose anxiety, depression, and mood swings as the psychological difficulties and thyroid, blood pressure, and high cholesterol as the physical side effects faced by them after getting vaccinated.
- It can be concluded that approximately only three-fourths of the participants experienced health issues and less than three fourth took preventive measures against them.
- But vaccines which are designed and believed to be for the betterment and protection of the mankind against different diseases is perceived to be causing side effects which may be due to the lack of proper clinical trials conducted given the lack of tie and death numbers caused by covid-19 virus.
- The sample was restricted to the adult population which left the minor and elderly out of the study.

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