

Effects of Covid Vaccine on Diabetic and Obese Patients – An Observational Study

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ABSTRACT:

BACKGROUND: Many individuals around the world are at increased risk of severe clinical outcomes after SARS-CoV-2 infection due to underlying health conditions. Both diabetes and obesity are major risk factors for many non-communicable diseases. According to WHO information, COVID-19 Vaccines are safe, and getting vaccinated will help us to protect against developing severe COVID-19 disease and dying from COVID-19. So people may experience some mild side effects after getting vaccinated, which are signs that your body is building protection.⁽¹⁾ The aim of this study was to observe the acute side effects of vaccinated first line workers with diabetes and obesity in a tertiary care hospital.

KEYWORDS: COVID vaccine, obesity, diabetes

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I. INTRODUCTION:

COVID-19 is an infectious disease caused by a newly discovered corona virus. Most people infected with the COVID-19 virus will experience mild to moderate respiratory illness. Older people and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness.^[2] Diabetes is a chronic, metabolic disease characterized by elevated levels of blood glucose (or blood sugar), which leads over time to serious damage to the heart, blood vessels, eyes, kidneys, and nerves.^[3]

“Overweight and obesity are defined as abnormal or excessive fat accumulation that presents a risk to health. A body mass index (BMI) over 25 is considered overweight, and over 30 is obese.^[4] Obesity –related conditions seem to worsen the effects of COVID-19; indeed, the centre for Disease Control and Prevention (CDC) reported that people with heart disease and diabetes are at higher risk of COVID-19 complications.

According to the American Diabetes Association (American Diabetes Association, 2021) there is still no scientific evidence on the consequences of coronavirus acute respiratory syndrome 2 (SARS-CoV-2) on diabetes comorbidities, but it is known that diabetics are more likely to develop COVID-19 disease, particularly the elderly^[5] (International Diabetes Federation. IDF, 2021) Comorbidities such as obesity^[6, 7], type 2 diabetes (T2D)^[8]

Vaccination is a simple, safe, and effective way of protecting people against harmful diseases, before they come into contact with them. It uses your body’s natural defences to build resistance to specific infections and makes your immune system stronger.^[9] But there are some side effects, which are normal signs that our body is building protection. Some Common side effects are Pain & swelling at the site of injection, fever, chills, tiredness, headache etc.

Why we use vaccines- Vaccines can prevent infectious diseases. Examples of vaccine-preventable diseases are: measles, polio, hepatitis B, influenza and many others. When most people in a community are vaccinated against a disease, the ability of the pathogen to spread is limited. This is called ‘herd’ or ‘indirect’ or ‘population’ immunity. When many people have immunity, this also indirectly protects people who cannot be vaccinated, such as very young babies and those who have compromised immune systems.^[10]

How vaccines work - Vaccines greatly reduce the risk of infection by training the immune system to recognize and fight pathogens such as viruses or bacteria. Vaccines safely deliver an immunogen which is a specific type of antigen that elicits an immune response, to train the immune system to recognize the pathogen when it is encountered naturally.^[11]

AIM:

To observe the effects of COVID vaccine on diabetic and obese patients

OBJECTIVES:

To study the acute and Sub-acute side-effects developed for COVID vaccine in diabetic and obese patients.

II. Methodology:

It is an observational study. The study is conducted on the first line workers with diabetes and obesity who took COVID vaccine (Covaxin) in Dr. PSIMS & RF, China Avutpalli, A.P., India during Dec 2021 to Feb 2022. Informed consent form is obtained from the subjects before the study. The study population are observed for acute and sub-acute side-effects for a week after first vaccination. **Inclusion:** Subjects with diabetic and obese conditions who received COVID vaccine and gave the consent are included. **Exclusion:** Subjects who are under treatment & medication for any health conditions. Subjects with serious systemic illness (Acute /Chronic) during vaccination period and who are not willing to participate and give the consent are excluded.

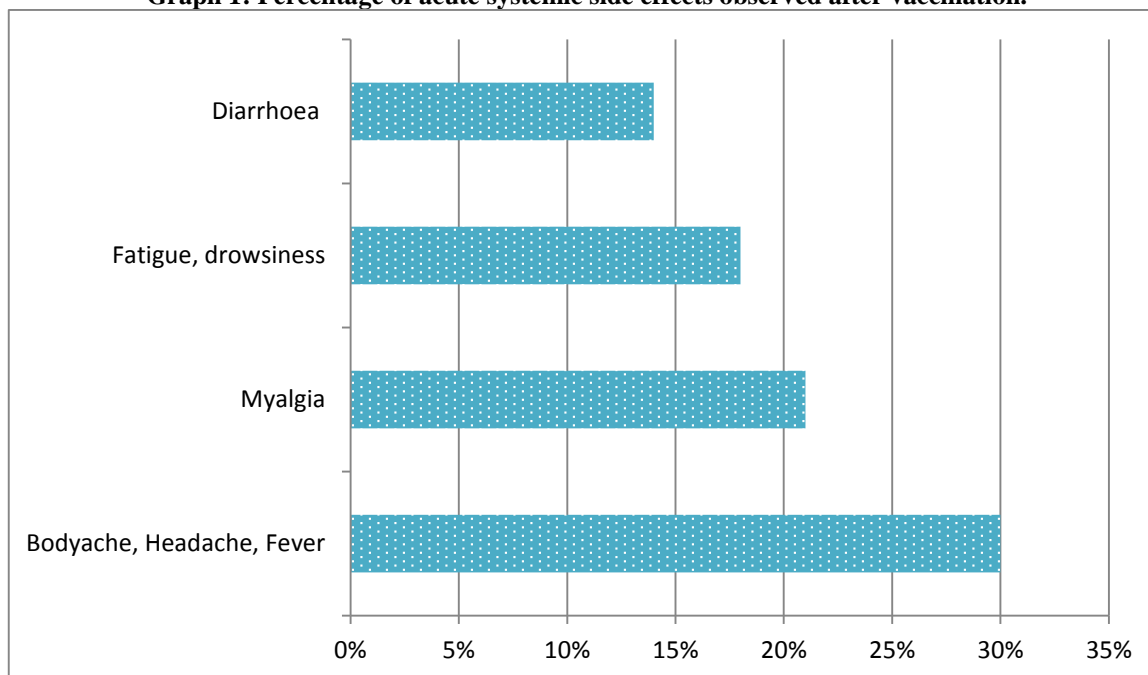
III. Results:

A total of around 125 subjects who took vaccine are observed for acute side effects. Among them 94 are females and 31 are male subjects with the age around 32- 50years. After vaccination the side effects observed are very mild. We have observed for both systemic (headache, fever, fatigue, chills, diarrhoea, myalgia, nausea etc.,) and local side effects (pain, swelling, itch, tenderness, warmth, bruising etc.)

Out of 125 only 42% of subjects complain pain at the site of injection till 1 or 2 days, around 6% of subjects have itch, tenderness at the vaccination site and <1% of subjects report any allergic reactions like rash, swelling etc.,

In systemic side effects 30% of subject complains of body ache, headache & fever. Myalgia was reported in 21%, fatigue & drowsiness was seen in 18% of subjects and diarrhoea in 14% of subjects. Only 4% of subjects show effects like low fever, chills, weakness/ dizziness etc.,(Graph 1) continuously for a week. Some elder people show changes in B.P. initially, and dehydration is also observed. In our observation, till now the subjects who received COVID vaccine had shown only mild general side effects. A broad range of local and systemic side effects following COVID-19 vaccination have, however, been reported in late-phase trial data.

Graph 1: Percentage of acute systemic side effects observed after vaccination.



IV. Discussion:

According to some studies, it is indicated that SARS-CoV-2 was more frequent in women with obesity (BMI >35kg/m²) although this correlation is not statistically significant. There are still no studies to support our results after vaccination; however it is known that diabetic patients with obesity are more likely to get COVID-19 and develop more severe disease.^[12-14] On the other hand, we speculate that our results may be associated with physical inactivity and excess calorie intake. According to the study done in UK to record the side effects after vaccination by using an app, 25.4% indicated having one or more systemic adverse effect, and 66.2% reported one or more local adverse effects.⁽¹⁵⁾

Our study has the limitations of small sample size did not allow us to draw more concise data. Second, we did not obtain information about the type of vaccine given to our patients and their immunity. The strength of the study is the fact that it is being conducted on a very specific population.

V. Conclusion:

In the fight against COVID-19 pandemic, the focus in 2021 has fortunately turned to vaccination strategies. The successful development of several vaccines, and their proven efficacy and short-term safety in large scale multinational trials against severe acute respiratory syndrome coronavirus-2, offers promise in controlling the pandemic. Many countries are now started their vaccination programmes, and prioritising health-care workers and the most vulnerable individuals within the population—e.g. the elderly and those with chronic health conditions. Detail on COVID-19 vaccination tolerability in the general population is still emerging (i.e., the post-licensing data is still awaited) and will likely differ based on type and formulation of vaccine. Till now, the COVID Vaccine (Covaxin) has shown an acceptable safety profile against symptomatic COVID-19. Further observation and study is needed for these results.

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