COVID-19, A CROSS-SECTIONAL STUDY ON THE SEVERITY OF SYMPTOMS AMONGST VACCINATED AND UNVACCINATED PEOPLE

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ABSTRACT:

SARS-CoV-2 causes COV1D-19, a contagious sickness It's an enveloped virus with RNA as its genetic material that infects host cells with spike proteins, causing a variety of pathological and immunological alterations that may vary mild to severe illness, complications, and even death. The main goal of our research is to see how severe COVID-19 symptoms are in unimmunised and immunised people. To observe how efficacious the vaccine is towards SARS-CoV-2. To compare the study's findings, such as the symptom severity and the efficacy of available vaccines. To determine the currently available vaccines' effectiveness in India. The initial survey focused on sociodemographic information, symptomatology, causation, infection severity, and laboratory abnormalities. The other survey form asked about sociodemographic information, symptomatology, causation, and immunisation history. The severity of COVID-19 symptoms in both vaccinated and unvaccinated patients was measured using data from questionnaires. In group 1, 58 % had a mild infection, 32% had a moderate illness, but only 6% were severely infected and 4% were asymptomatic; 60% were treated at home with the aid of doctors, 36% were treated using home remedies, and only 4% were admitted to hospital. In group 2, 34% of patients had a mild infection, 28% had a moderate infection, and 38% had a severe infection. And 36% of patients required hospitalization, 60% were treated at home with the help of doctors, and 4% were treated using home remedies. Among 100 patients who participated in the study, 7 death and 8 reinfection cases were reported. Among fully vaccinated people, the infections with SARS-CoV-2 were mild with reduced chances of hospitalisations, when compared to un-vaccinated or partially vaccinated. In rural parts of Telangana, Karnataka, Andhra Pradesh and other regions, there are various misapprehensions regarding COVID-19 vaccination, like issues attributed to its efficacy, due to which people restrict themselves from getting vaccinated and make fake vaccination certificates. In order to collect more data, breakthrough infection research in India should take place in a variety of settings, including rural regions, urban areas and other institutions.

KEY WORDS: Covid-19, Vaccine, Booster dose, Symptomatology, Hospitalizaton, Recovery,Re-infection.

INTRODUCTION:

Coronavirus is an enveloped RNA beta coronavirus with spikes ranging in size from 9 nm to 12nm and a diameter of 60 nm to 140 nm[1,2,3]. The spike protein is made up of two functional subunits(S1 and S2), with S1 being in charge of binding to the host cell receptor and S2 being in charge of viral and host cellular membrane fusion. Coronaviruses infect new hosts through gene mutations and genetic diversity.[4,5] SARS-CoV-2 is considered a natural reservoir in bats, but infection in host is linked to an intermediary host, such as the pangolin. It is transferred through infected people's coughing, sneezing, or talking, as well as direct person-to-person close contact. If someone touches contaminated objects and then rubs their eyes, nose, or mouth, they may become infected. Aerosols can stay in the air for longer in places with poor or no ventilation, and places that are crowded can promote the transmission of infection.[6-9] When the vaccine enters the body, the adenovirus vectors within it enter the cells and replicate the SARS-CoV-2 virus's spike protein. The immune system steps in and begins making antibodies against the virus as soon as the cell identifies this alien spike protein.The body will have established a natural immunity against SARS-CoV-2 after immunisation without ever encountering the virus. The cells are better equipped to identify and defend themselves form future viral infection..The main aim of our research is to study how severe the Covid-19 symptoms are in unimmunized and immunized patients and to measure the level of protection over SARS-CoV-2 via vaccination objectives were to obtain sociodemographic details, comorbidities, social habits, causality, and symptomatology, To compare the symptomatology and severity of the condition between the study groupps, To collect information about the mode of treatment like home care or hospitalization, To observe the short and long-term effects of vaccines, To estimate the effectiveness of available Covid-19 vaccines in India, To obtain the outcomes of this study, i.e., the intensity of symptoms and the potency of existing vaccinations. Also, check if any reinfection cases and compare the number of death cases among both the study groups. [10-12]

METHODOLOGY:

The study was conducted for six months in 100 patients, which includes 50 COVID-19 patients infected after vaccination and 50 COVID-19 patients infected before vaccination.The study was conducted in patients infected with COVID-19 in India (both prior to and after taking vaccines). The study included subjects aged 18 and above. The subjects who have a negative test report of RT-PCR were excluded.Those who have positive RT-PCR report but are not willing to provide their details were excluded[13]. incompletely filled forms were excluded. Two different data collection forms were created for this study one for Immunised people who were infected with COVID-19 and the other for Un-immunised people who suffered from COVID-19. Questionnaire 1 includes sociodemographic details, symptomatology, causality, and immunisation details. Questionnaire 2 includes sociodemographic details, symptomatology, causality, severity of infection, and laboratory abnormalities. The types of questions included in the above questionnaires are open-ended, close-ended, dichotomous, and multiple-choice questions. Likert Scale and WHO clinical assessment scale was used in both the questionnaires to assess the severity of the symptoms[14,15].

The data obtained was recorded and was classified suitably in Group 1 (vaccinated) and Group 2 (unvaccinated). Group 1 (vaccinated) and Group 2 (unvaccinated) were compared with respect to their sociodemographic details, symptoms, causality, and immunisation details. The data was rated on the Likert Scale, i.e., 0–4. The pain score is assessed using a rating scale known as the 5 point Likert Scale[16].

Result and Discussion:

Of 100 study participants, 50 patients were vaccinated (group 1) and 50 were unvaccinated (group 2). The vaccines used among group 1 were as follows and Among 100 patients, 28% patients received COVAXIN, 70% received Covishield and 2% received Sputnik-V. Among 100 patients, 74% of the people were infected with SARS-CoV-2 after 1st dose and 26% of the people were infected with SARS-CoV-2 after 2nd dose.
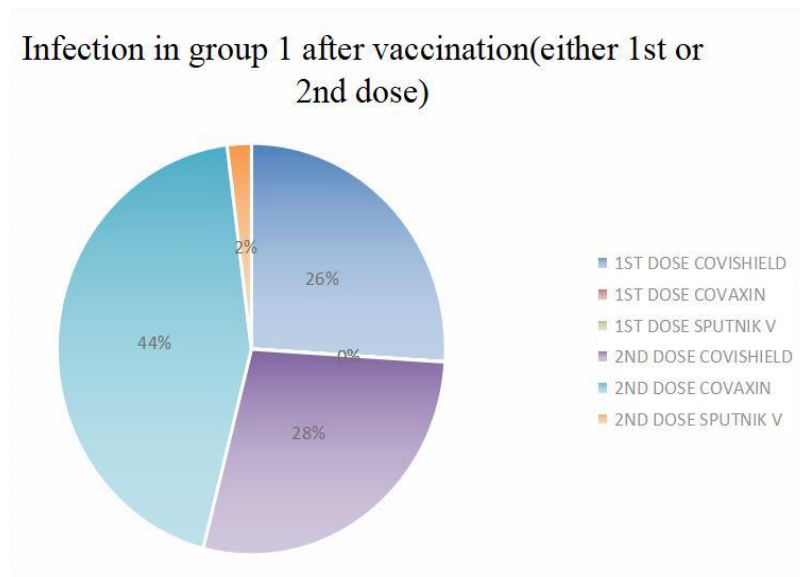
Graph 1: Vaccines used in both groups

DOSE AFTER WHICH INFECTION HAS OCCURED
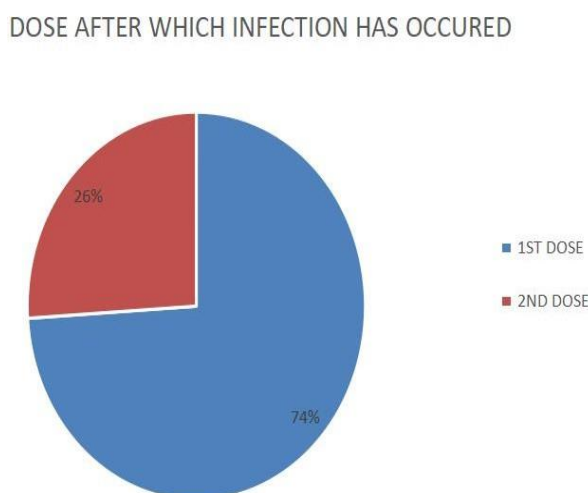
- 1ST DOSE
- 2ND DOSE

Graph 2: Dose after which infection has occured

VACCINE USED IN GROUP 1 & 2

- COVAXIN
- COVISHIELD
- SPUTNIK V
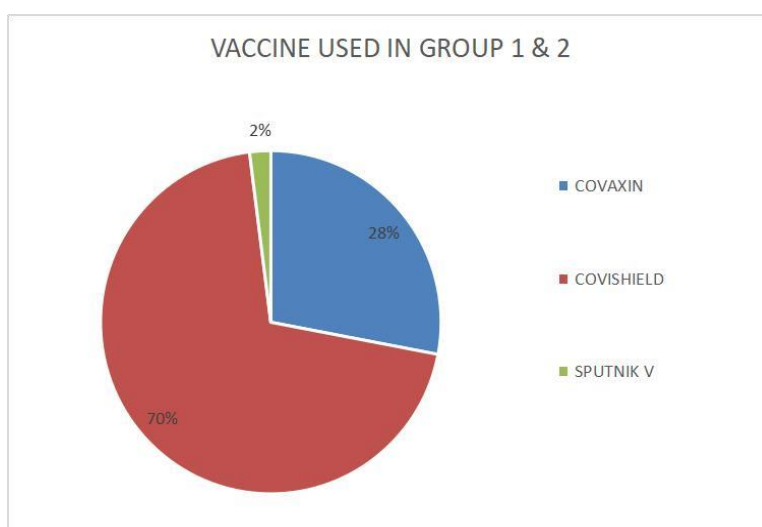
*Graph 3: Dose after which infection has occurred*

Among 100 patients, 26% of the patients were infected after 1st dose of Covishield, 0% were infected after 1st dose of COVAXIN and Sputnik-V, 28% of the patients were infected after 2nd dose of Covishield, 44% were infected after 2nd dose of COVAXIN and 2% were infectedafter 1st dose of Sputnik-V.

Graph 4: Sociodemographic details- gender
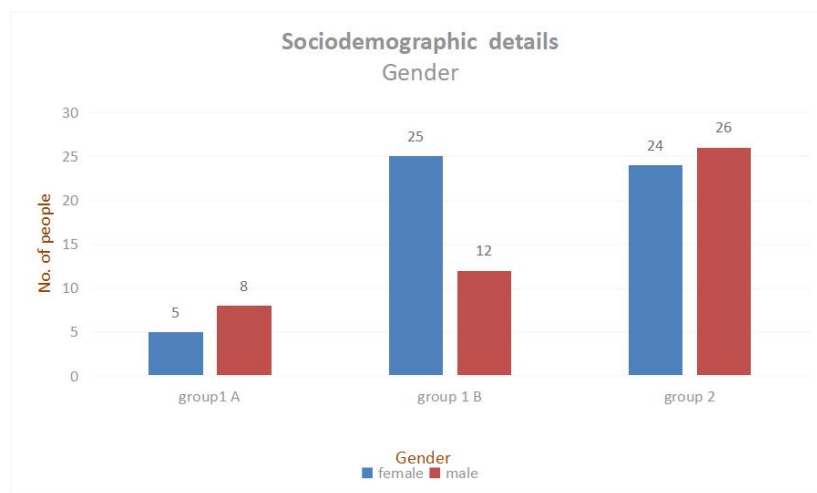
Among group 1A(Partially vaccinated), 3 patients were between an age group of 18-25, 7 patients were between an age group of 25-45, 3 patients were above 45years. Among group 1B(Fully vaccinated), 9 patients were between an age group of 18-25, 18patients were between an age group of 25-45, 10 patients were above 45years. Among group 2(Unvaccinated), 4 patients were between an age group of 18-25, 23 patientswere between an age group of 25-45, 23 patients were above 45years.

Among group 1A(Partially vaccinated), 5 were females and 8 were males. Among group 1B (Fully vaccinated), 25 were females and 12 were males. Among group 2(Unvaccinated), 24 were females and 26 were males.
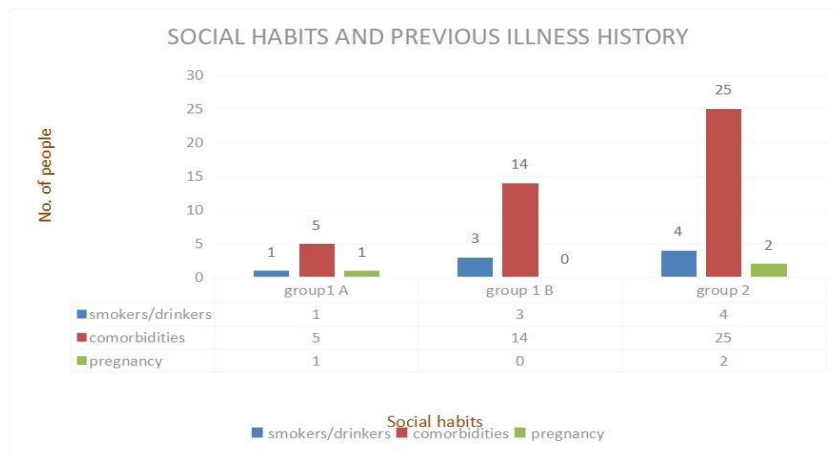

Graph 5: Social habits

Among group 1A (Partially vaccinated), 1 person was smoker, 5 people had comorbidities and 1 woman was pregnant. Among group 1B (Fully vaccinated), 3 people were smokers, 14 people had co morbidities and 0 were pregnant. Among group 2 (Unvaccinated), 4 people were smokers, 25 people had co morbidities and 2 women were pregnant.

Graph 6: Socio demographic details- States from which group 1(vaccinated) cases were collected
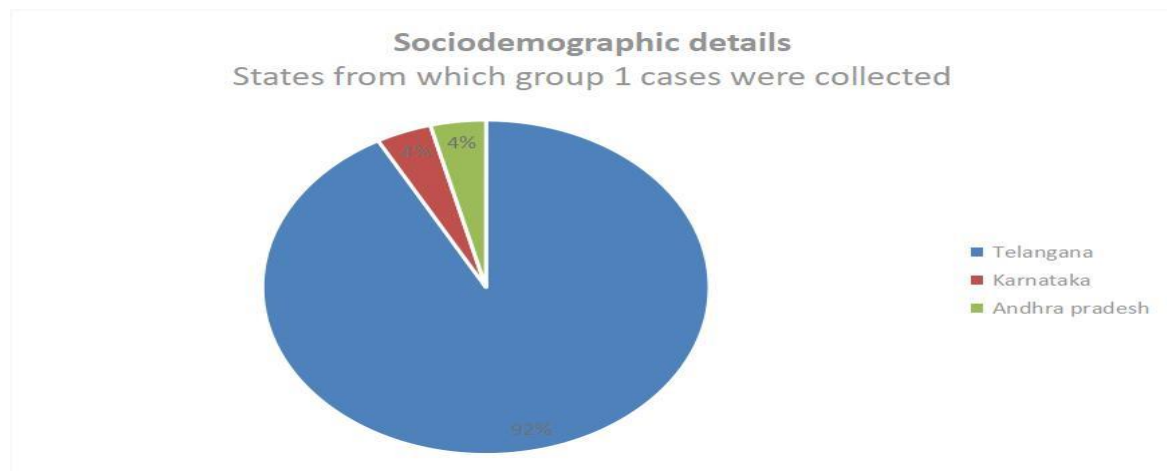

92% Group 1 cases were collected from Telangana, 4% cases were collected from Karnataka and 4% cases were collected from AP.

Graph 7: Sociodemographic details- States from which group 2(unvaccinated) cases were collected
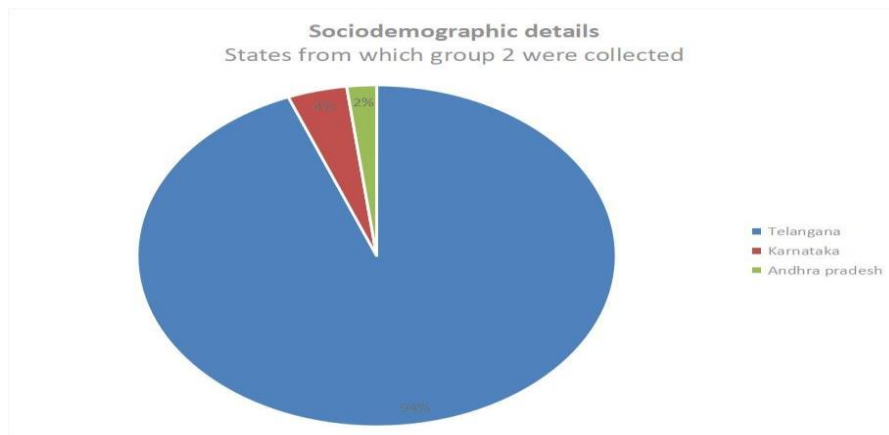

94% Group 1 cases were collected from Telangana, 4% cases were collected from Karnataka and 2% cases were collected from AP. Among patients in Group-1 (vaccinated), 58% had a mild infection, 32% had a moderate infection, and only 6% had a severe infection; 60% were treated at home in consultation with doctors, 36% were treated at home using traditional remedies (steam inhalation, herbal and non-herbal products like ginger, lemon, turmeric, cinnamon), and only 4% required hospitalization. Among patients in Group-2 (unvaccinated), 34% of the patients had mild infections, 28% were moderate, and 38% were severe. 36% of the patients required hospitalization, 60% received treatment at home in consultation with doctors, and 4% were treated at home using traditional ways(steam inhalation, herbal and non-herbal products like ginger, lemon, turmeric, cinnamon)
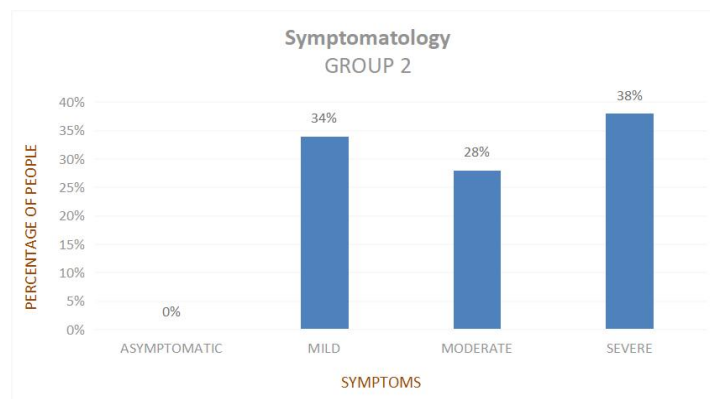
***Graph 8: Symptomatology in Group 1(vaccinated)***
In group 1(vaccinated), 4% were asymptomatic, 58% had mild symptoms, 32% had moderate symptoms and 6% had severe symptoms.
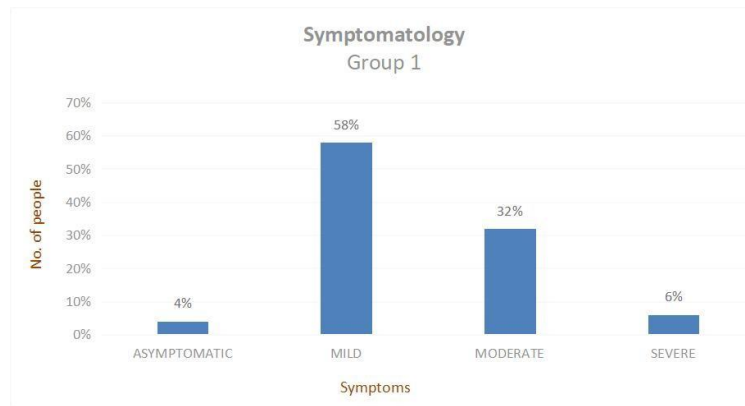
**Graph 9: Symptomatology in Group 2(unvaccinated)**

In group 2 (Unvaccinated), 0% were asymptomatic, 34% had mild symptoms, 28% had moderate symptoms and 38% had severe symptoms

Graph 10: Symptoms that lasted for more than 7 days in Group 1(vaccinated)
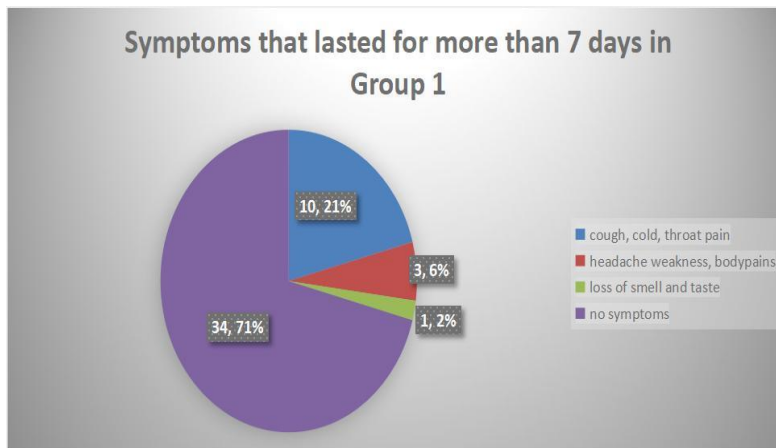
In group 1(vaccinated), 21% patients suffered from cough, cold and throat pain for more than 7 days, 6% suffered from weakness and body pains for more than 7 days, 2% patients suffered from loss of smell and taste for more than 7 days and 71% had no symptoms.

Graph 11: Symptoms that lasted for more than 7 days in Group 2 (unvaccinated)
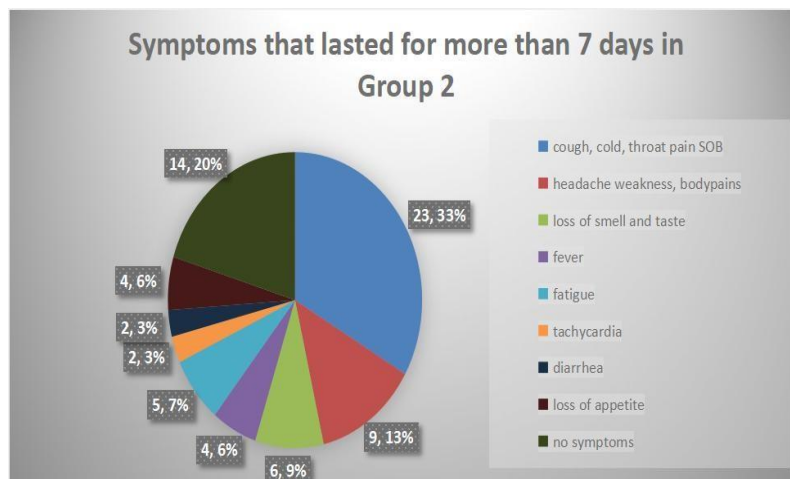
In group 2 (Unvaccinated), 33% patients suffered from cough, cold, SOB and throat pain for more than 7 days, 13% patients suffered from headache, weakness and body pains for more than 7 days, 9% patients suffered from loss of smell and taste for more than 7 days, 6% patients suffered from fever for more than 7 days, 7% patients suffered from fatigue for more than 7 days, 3% patients suffered from tachycardia for more than 7 days, 3% patients suffered from diarrhea for more than 7 days, 6% patients had loss of appetite for more than7 days and 20% had no symptoms.
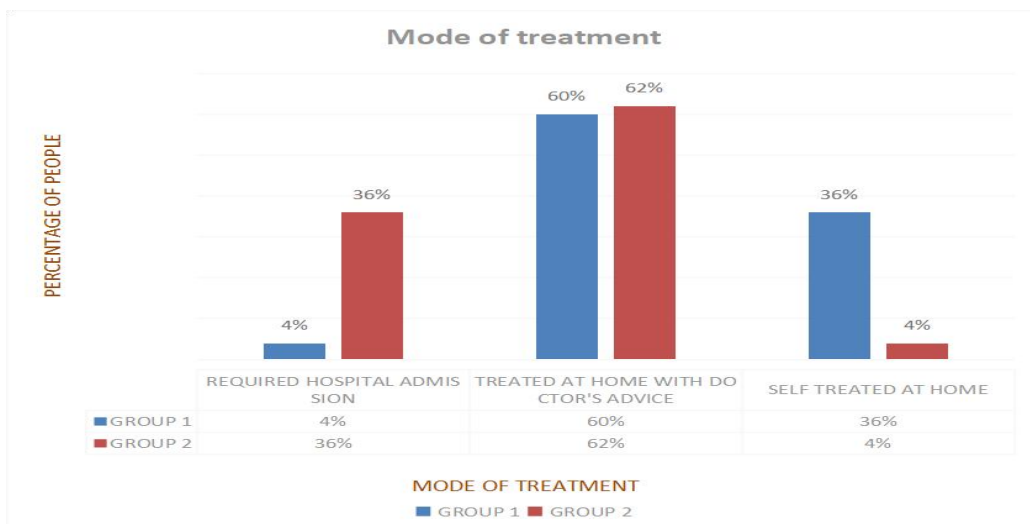
Graph 12: Symptoms that lasted for more than 10 days
Among group 1A (Partially vaccinated) patients, 1 had SOB for more than 10 days. Among
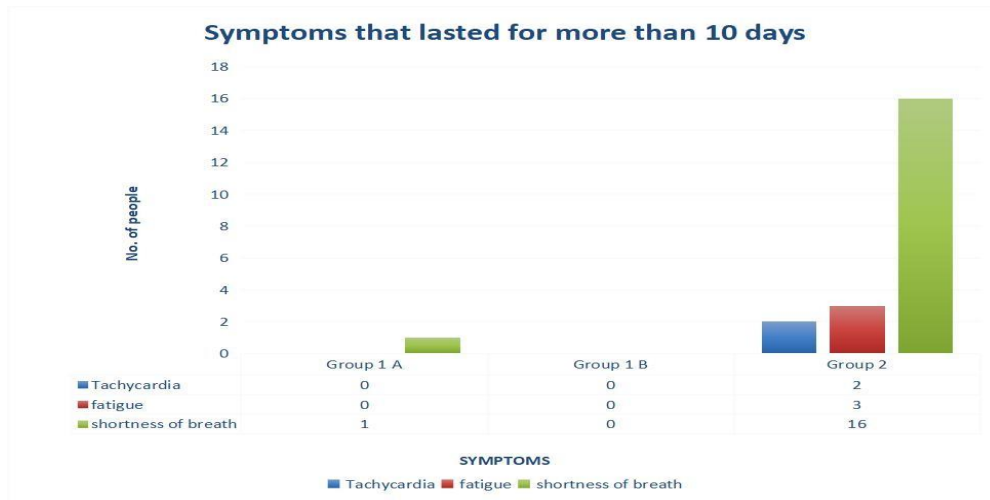
group 2 (Unvaccinated) patients, 2 had tachycardia, 3 had fatigue and 16 had SOBfor more than 10 days.

**Graph 13: Mode of treatment in both groups**

Among patients in group 1 (vaccinated), 4% required hospital admission, 60% were treated at home in consultation with doctor and 36% were self treated using traditional remedies.Among patients in group 2 (Unvaccinated), 36% required hospital admission, 60% were treated at home in consultation with doctor and 4% were self treated using traditional ways.

Graph 14: Side effects after vaccination
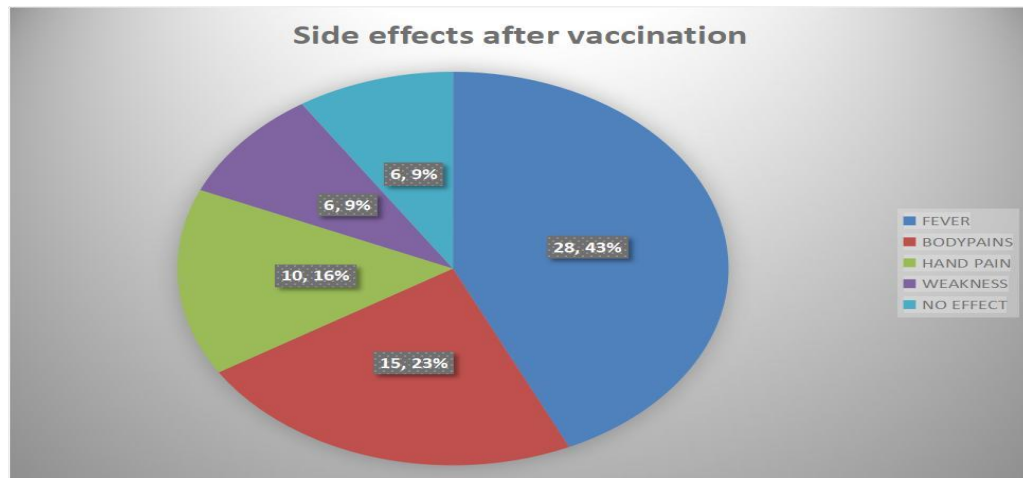
Among 100 patients, 43% suffered from side effects of fever, 23% suffered from body pains, 16% suffered from hand pain, 9% suffered from weakness and 9% had no side effects. No other serious events were reported.

Graph 15: Complications in group 2
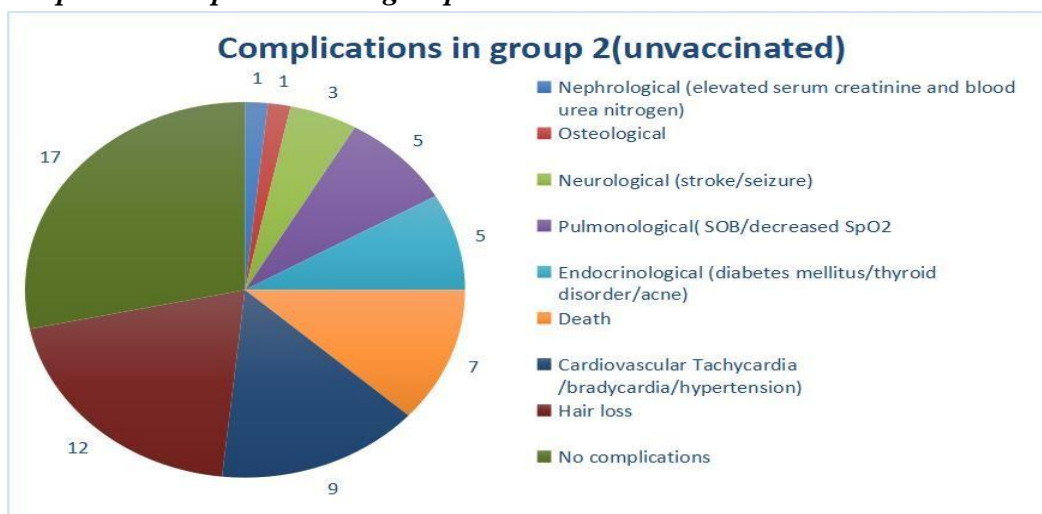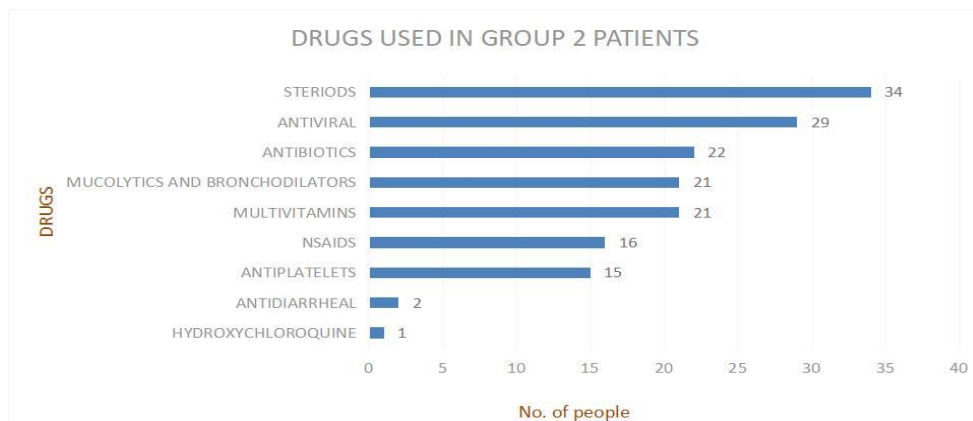

Among patients in group 2(unvaccinated), 1 had elevated Sr. Creatinine and BUN, 1 suffered from joint pains, 3 suffered from stroke/seizure, 5 suffered from SOB and decreased SpO2, 5 suffered from diabetes mellitus, 9 suffered from tachycardia, 12 suffered from hair loss, 17 had no complications and 7 death cases were reported. No complications were reported in group 1(vaccinated)

Graph 16: Drugs used in group 1 (vaccinated)
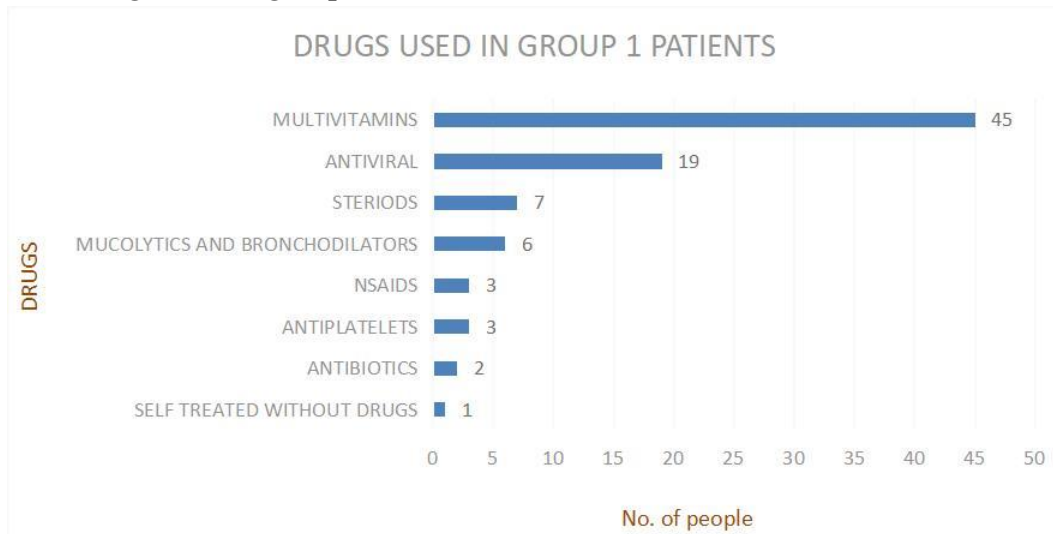
Among patients in group 1(vaccinated), 45 received multivitamins, 19 received antiviral, 7 received steroids, 6 received mucolytics and bronchodilators, 3 received NSAIDS, 3 received antiplatelets, 3 received antibiotics and 1 was self treated.

Graph 17: Drugs used in group 2 (unvaccinated)

Among patients in group 2 (unvaccinated), 21 received multivitamins, 29 received antiviral, 34 received steroids, 21 received mucolytics and bronchodilators, 16 received NSAIDS, 15 received antiplatelets, 22 received antibiotics, 2 received antidiarrheal and 1 received hydroxychloroquine.

Table 1 : The severity of symptoms among the patients of the two Groups are as follows

SEVERITY	GROUP 1	GROUP 2
ASYMPTOMATIC	4%	-
MILD	58%	34%

MODERATE	32%	28%
SEVERE	6%	38%
Of 100 cases, 8 reinfection cases and 7 death cases were found		

Table 2: Mode of treatment among the patients of the two Groups are as follows

MODE OF TREATMENT	GROUP 1	GROUP 2
HOSPITALISATION	4%	36%
TREATED AT HOME BY CONSULTING DOCTOR	60%	62%
TREATED USING HOME REMEDIES	36%	4%

Clinical assessment score for group 1: Among 50 patients in group 1, 1 person scored 1, 17 persons scored 2, 30 persons scored 3, 2 persons scored 4
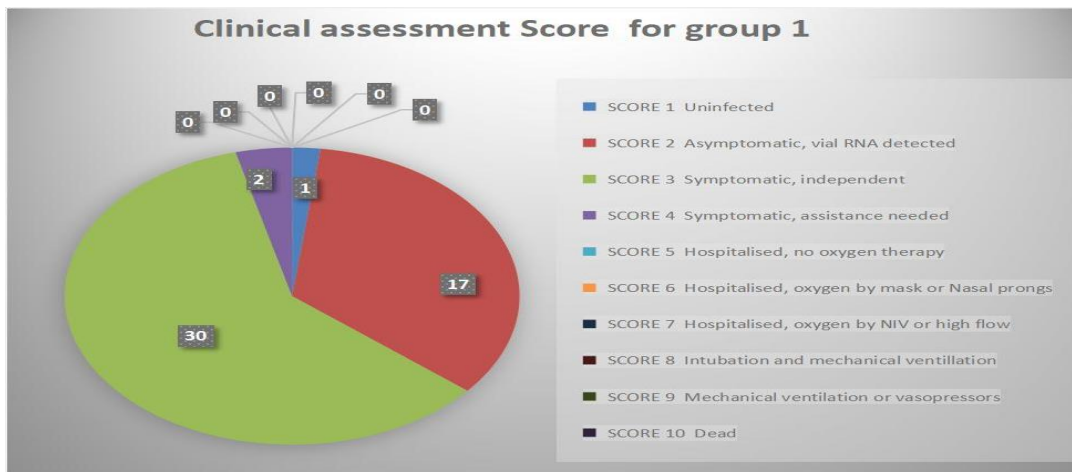
Graph 18: Clinical assessment Score for group 1 (vaccinated)
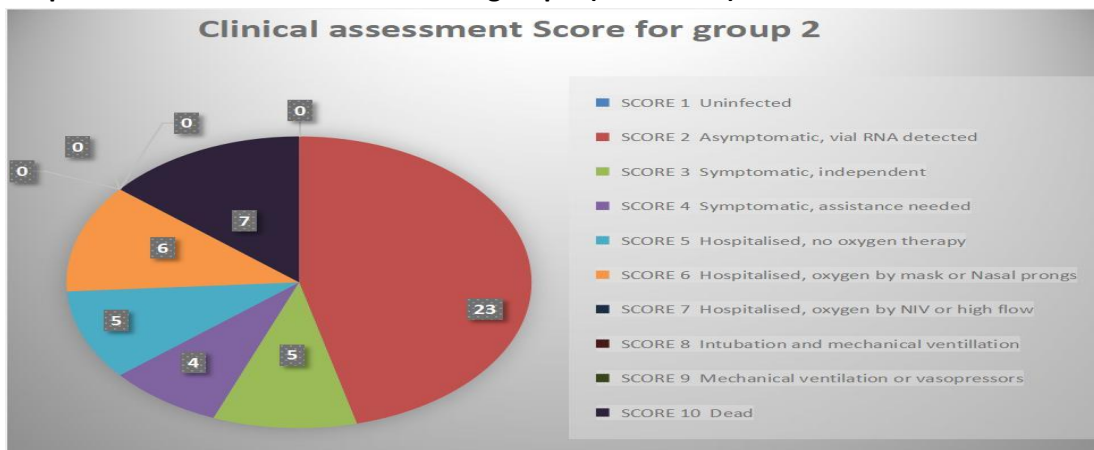
Graph 19: Clinical assessment Score for group 2 (unvaccinated)

Among 50 patients in group 2, 23 persons scored 2, 5 persons scored 3, 4 persons scored 4,5 persons scored 5, 6 persons scored 6, 7 persons scored 10. People who took two doses of vaccines, early supportive, symptomatic management, and a rich, nutritious diet had milder symptoms and reported fewer complications. People who were partially or un-vaccinated with delayed management had severe symptoms that required hospitalization. Among 100 people with SARS-CoV-2, 50 were vaccinated and 50 were un-vaccinated. Among vaccinated people, only 6% had severe infections, whereas among un-vaccinated people, 38% had severe infections and required hospitalisation. However, there are limitations, like emerging variants with genetic mutations and no standard management for COVID-19 is available till date. For this, more data is required to standardise the management.

CONCLUSION

This study enables a description of the nature, severity, epidemiology, causality, symptomatology, and recovery in patients (with fewer exceptions, i.e., death) due to this infectious outbreak. The study also includes data on the effects of available COVID-19 vaccines, showing reduced severity of the infection in the vaccinated patients and also in re-infected patients. Among the patients who received the COVID-19 vaccine, there was reduced severity. Because vaccines do not multiply, they are unlikely to cause side effects. The symptoms were mild-moderate with reduced hospitalisation in patients who were infected with COVID-19 after vaccination because vaccines contain a dead virus that is incapable of infecting individuals but can nevertheless teach the immune system to create an anti-infection defense. In contrast, in the unvaccinated patients who were infected with COVID-19, the symptoms were severe and even required hospitalization. According to the Times Of India, The Indian Express, Hindustan Times, Times Now, people restricted themselves from getting immunised and made fake vaccination certificates. In rural parts of Telangana, Karnataka, and Andhra Pradesh and other regions, there are misunderstandings regarding COVID-19 vaccination, including risks associated with its effectiveness and efficacy.

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