



“IMPACT ON CLINICAL OUTCOME AND TOTAL HOSPITAL STAY DURATION OF VACCINATED RTPCR POSITIVE PATIENTS ATTENDING TERTIARY CARE CENTRE”

General Medicine

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ABSTRACT

Back ground: India responded swiftly to the global pandemic - COVID 19 , by starting administration of vaccines to its people from January 2021. At end of an year after starting vaccine drive, there was a need of ground reality assessment to check its impact on people. **Aims & Objective:** The aim is to study the impact on clinical outcome and hospital stay duration of the COVID 19 vaccine status among RTPCR positive patients attending tertiary care centre. The objectives are to estimate mean hospital stay duration and number of death and discharges among RTPCR positive unvaccinated, partially and fully vaccinated patients. **Materials And Methods:** A total of 57 patients were included in study and at admission level, they were grouped into A, B, C as unvaccinated, partially vaccinated, fully vaccinated respectively. They were followed throughout their disease course and clinical outcomes were measured as either death or discharge and number of days of hospital stay. The clinical outcomes were compared in each group and checked for any statistical significance. **Results:** The mean hospital duration in days are 8,7,5 and discharges are 3,7,33 and deaths are 6,7,1 in group A,B,C respectively ($p < 0.05$). **Conclusion:** Thus vaccinated have lower hospital stay duration , lower death rates and higher discharge rates than partially vaccinated than unvaccinated ones.

KEYWORDS

vaccination, clinical outcome, RTPCR positive

INTRODUCTION:

Outbreak of Corona virus disease 2019 (COVID-19) started in mid of December 2019 and spread very rapidly across the globe within a month of its outbreak¹. The World Health Organization (WHO) on March 11, 2020, has declared the novel coronavirus (COVID-19) outbreak a global pandemic². Majority of patients are asymptomatics, and in symptomatics most have milder disease manifestation as URTI, and severe ones have various grades of pneumonia and ARDS or any thrombotic events³. As on 20/2/22 world is getting around 17lakh cases/day and India is getting 13000 cases per day⁴ & Karnataka is getting around 670 cases per day and Gadag getting cases in single digit range per day . As on January 2022, Current positivity rate in Karnataka is 1.29%⁵.

Global pandemic shattered the peace of all nations, and all nations started looking for possible solutions. With fruitful efforts of our scientists, India started vaccinating its people with its own ' Make in India' vaccines from Jan16, 2021. While administering vaccines India followed the principle of vaccinating the high risk patients then to low risk , so in various phases , vaccines are released serving their target group. Vaccines are administered in two doses with a gap of 4weeks to 12 weeks depending on the type of vaccine. As a part of it from May 1, 2021, all people older than 18 years are eligible in phase 4 of the vaccination drive⁶. Till January 2022 India has vaccinated more than 1.5billion jabs⁷. This study aims at studying impact on clinical outcome of covid 19 vaccination status among RTPCR positive patients attending tertiary care centre at the end of 1 year of vaccination drive.

MATERIALS AND METHODS:

This is a both retrospective and prospective observational follow up study of 57 patients of both gender admitted in COVID wards of GIMS GADAG from January to April 2022. The data needed for retrospective analysis is taken from the hospital records for the month of january and from the february month prospective study was done. The sample size contains all the patients admitted during the study period satisfying admission criteria.

Inclusion criteria includes all RTPCR positive patients above 18years admitted in covid wards in GIMS GADAG satisfying the admission criteria as per guidelines during study period. Admission criteria⁸ is either temperature >37.5 celcius or $SpO_2 < 94\%$ or asymptomatic patients with either one of the comorbidities. The comorbidities enlists as follows: age ≥ 50 years , Diabetes mellitus, hypertension, coronary artery disease , chronic and acute kidney disease, pulmonary tuberculosis, cancer, cerebrovascular accident, hyper/hypothyroidism, people living with HIV, patients who are

immunocompromised like on steroids or others on immunosuppressants , pregnant women and lactating mothers. The patients who gets referred in the course of their illness are **excluded** from the study, due to technical difficulty in following up patient for their end clinical outcome.

After taking proper written consent from the patients under study , a details history of vaccination status was taken and based on that they were grouped into 3 groups. The type of vaccine , covaxin or covishield is not considered in the study. The 3 groups were Group A containing unvaccinated patients, Group B containing partially vaccinated ones with only one dose , Group C containing fully vaccinated patients with both the doses. All the patients are treated as per guidelines released by ICMR protocol and followed throughout their treatment course.

Clinical outcome was measured among each group as either death or discharge⁹ as per criteria along with duration of hospital stay. Comparison of these parameters were done in each group and checked for any statistically significant correlation .

RESULTS:

Under two headings results were tabulated

1. Mean duration of hospital stay.
2. Clinical out come as either death or discharge

For statistical comparison purposes , the duration of hospital stay of each patient in each group is averaged , and mean duration of hospital stay in each group is calculated. It is 8,7,5 in group A,B,C respectively. It is tabulated as below.

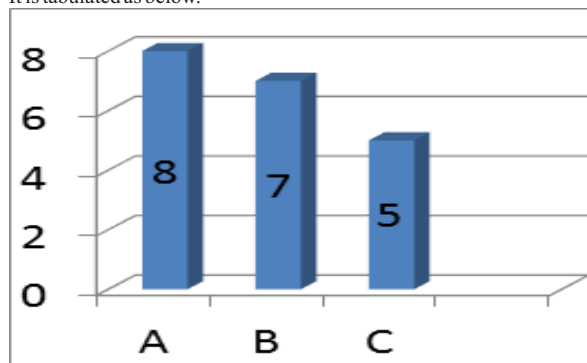


Figure 01: Bar graph comparing mean hospital stay duration among each group

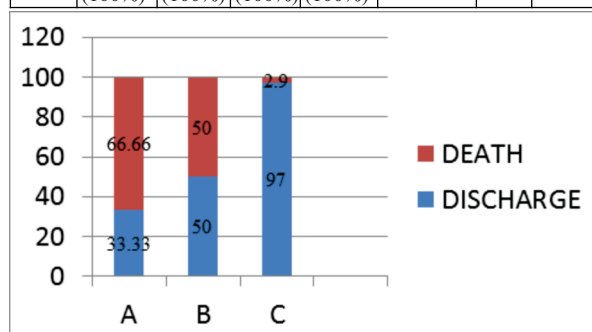
Table 01: Table Comparing Mean Hospital Stay Duration Among Each Groups

	A	B	C	Pearson ChiSquare	P-value	Result
Total mean hospital stay duration	8	7	5	28.85 ^a	0.025	significant

Another measure of clinical outcome is number of death or discharge in each group. Total death is 14(24.5%) and total discharge is 43(75.4%). The number of death in group A,B,C is 6(66.6%),7(50%), 1(2.9%). And the number of discharges in Group A,B,C is 3(33.3%), 7(50%),33(97%). It is tabulated as below.

Table 02: Table Showing Death And Discharge Among Each Groups

	A	B	C	Total	Pearson Chi Square	p-value	Result
Discharge	3 (33.3%)	7 (50%)	33 (97%)	43 (75.4%)	22.08 ^a	0.000	significant
Death	6 (66.6%)	7 (50%)	1 (2.9%)	14 (24.5%)			
Total	9 (100%)	14 (100%)	34 (100%)	57 (100%)			

**Table 02: Bar graph comparing death and discharge among each group**

DISCUSSION:

COVID 19 disease shook the mankind and gave a big jolt to global economy while adopting stringent measures to contain its spread which made eye one's ray of hope upon scientific research both in treatment protocol and preventive vaccination strategy. As a part of it covid vaccines were made by fast tracking of all scientific procedures and clinical trials required to prove its efficacy and safety. At the end of 1 year of mega vaccine drive in the largest democratic country by indigenous vaccines, there was a need to testify the impact of vaccination at ground level. Thus our present study was conducted to see the ground reality at our tertiary care centre.

The results were discussed in two categories. The first one is mean duration of hospital stay, which is 8,7,5 in Group A, B,C respectively with statistically significant correlation ($p < 0.05$). Thus the hospital stay duration is more in unvaccinated (group A) more than partially vaccinated (group B) ones than fully vaccinated ones (group C).

Another set of results are number of death and discharge in each group. The number of death in group A, B, C is 6(66.6%),7(50%), 1(2.9%). And the number of discharges in Group A,B,C is 3(33.3%), 7(50%),33(97%) with statistically significant correlation ($p < 0.05$). Thus deaths are more in unvaccinated (group A) than partially vaccinated (group B) than fully vaccinated (group C) ones. Similarly discharge rates are better in fully vaccinated (group C) than partially vaccinated (group B) than unvaccinated (group A) ones.

The results testifies better clinical outcome and shorter hospital duration among fully vaccinated than partially vaccinated ones than unvaccinated patients.

One of the study done in the initial period of the vaccine drive when vaccine drive was open only for high risk individuals, i.e by Jaiswal and etal COVID-19 vaccine effectiveness in preventing deaths among high-risk groups in Tamil Nadu, India. In this study 1,17,524 police personnel working with Department of Police in Tamil Nadu were taken into study between february 1, 2021 and May 14, 2021. 32,792

received one dose, 67,673 received two-doses while the 17,059 did not receive any vaccine dose. Thirty-one COVID-19 deaths were reported among these police of which four had taken two doses of the vaccine, seven had taken one dose and the rest 20 were unvaccinated. In conclusion, they indicated COVID-19 vaccination, even with single dose, was effective in preventing deaths. It is necessary to increase coverage of COVID-19 vaccines, regardless of the type of vaccines, to reduce mortality in current as well as future waves of COVID-19 epidemic⁹.

Macchia and etal in his study evaluation of a COVID-19 Vaccine Campaign and SARS-CoV-2 Infection and Mortality Among Adults Aged 60 Years And Older in a Middle-Income Country; 663 602 residents of the city of Buenos Aires included in the study, 5,40,792 were vaccinated with at least 1 dose and 83,726 receiving 2 doses, A 2-dose vaccination schedule was associated with an 88.1% (95% CI, 86.8%-89.2%) reduction in documented infection, 96.6% (95% CI, 95.3%-97.5%) reduction in all-cause death, and 98.3% (95% CI, 95.3%-99.4%) reduction in COVID-19-related death. A single dose was associated with a 47.2% (95% CI, 44.2%-50.1%) reduction in documented infection, 65.8% (95% CI, 61.7%-69.5%) reduction in all-cause death, and 74.5% (95% CI, 66%-80.8%) reduction in COVID-19-related death. In his study found that within the first 5 months after the start of the vaccination campaign, vaccination was associated with a significant reduction in COVID-19 infection as well as a reduction in mortality¹⁰.

The above study results were in consistent with the results of our study, i.e vaccines are effective in reducing mortality and lower the hospital stay duration. Hence an effective vaccine is proving again and again since history is the only effective measure to end the disease and reducing its severity.

The present study was conducted nearly an year after India started vaccine drive, by the time already 1.5 billion jabs⁷ had reached the target. This study once again testifies the impact of vaccination at ground level and proves its effect in reducing severity and improving clinical outcome. Finally these results justifies government efforts in accelerating vaccine drive.

In our study we haven't considered type of vaccine administered, gene sequencing of different covid strains were not done and the duration between vaccination and disease if the duration is sufficient to produce immunogenic response against disease is not considered. The patients comorbid conditions which can significantly alter the disease progression and mortality were not considered and compared among group. The study sample is small, these can be some of the limitations of our study.

CONCLUSION:

Our study concluded vaccines are effective against disease in lowering hospital stay duration and reducing death rates and increasing discharge rates than unvaccinated patients and thus have positive impact on clinical outcome and total hospital stay duration of vaccinated RTPCR positive patients attending Tertiary care centre.

CONFLICTS OF INTEREST:

There are no conflicts of interest.

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