

Clinico-demographic Profile and patient outcomes in vaccinated covid 19 patients at a tertiary care hospital in Western Maharashtra.

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How to citation this article: Dr. Lagdir Gaikwad, Dr. Gajanan Jatti, Dr. Trupti Chormale, “Clinico-demographic Profile and patient outcomes in vaccinated covid 19 patients at a tertiary care hospital in Western Maharashtra”, IJMACR-September - 2023, Volume – 6, Issue - 5, P. No. 29 – 36.

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Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Introduction: The pandemic caused by severe acute respiratory syndrome corona virus d2 (SARS-CoV-2) strain, also known globally now as the “COVID-19 pandemic,” has affected all the nations across the globe. Till March 2023, there have been at least 760 million cases of COVID-19 cases confirmed globally, which led to more than 6.8 million deaths and 44 million cases of COVID-19 cases confirmed found in India, which causes 0.5 million deaths. As of November 2021, India had three vaccines approved against COVID-19 - (Covishield [ChAdOx1 nCoV-19; Oxforde AstraZeneca; manufactured by Serum Institute of India], Covaxin [BBV152; Bharat Biotech], and Sputnik V [Gam-

COVID-Vac; Gamaleya Research Institute of Epidemiology and Microbiology]) approved for emergency utilization. India has led to more than 116 crores of COVID-19 vaccination doses being administered across India as of November 21, 2021, the highest number compared to any nation in the world. Hence, the present study was conducted to determine the clinico-social characteristics and outcome of COVID-19 among vaccinated patients admitted to a designated COVID hospital in Solapur in Western India.

Materials and Methods: The present record-based cross-sectional, descriptive study was conducted at a 730-bedded Shri Chhatrapati Shivaji Maharaj Sarvopchar Rughalaya, Government tertiary care

hospital, Solapur, Maharashtra. Institutional ethical clearance was obtained.

Study Population: Patients who received at least one dose of covid 19 vaccine and admitted for management of covid 19 during 1st May 2021 to 30th September 2021. and also having RTPCR confirmed SARS-CoV-2 infection laboratory report.

Sample Size: 220

Results: Total 220 covid 19 vaccinated patients were admitted in Hospital having mean age 51. 7± 19.4years. There was male preponderance having Male: Female ratio 1.89:1. Patients from rural and urban area were 124 (56.4%) and 96 (43.6%) respectively. Majority of patients were vaccinated by Covishield vaccine 192 (87.3%) and remaining were vaccinated by Covaxin 28 (12.7%). Fever (72.4%) was the commonest symptom observed followed by breathlessness (50.2%), cough (39.6%) and loss of taste (6.3%). The commonest morbidity observed was Hypertension 62 (28.2%) patients followed by Diabetes 51 (23.2%) patients. All-cause mortality was 10.5% in hospitalized vaccinated covid 19 patients. Association of Outcome of patients (discharged /died) with vaccination status and co morbidities in patients were highly significant (p value < 0.01).

Conclusion: There was male preponderance and marginally higher covid 19 vaccinated patients from urban residence. Majority patients were vaccinated by Covishield. Mainly Co- morbid conditions as Hypertension followed by Diabetes were found. Mortality was significantly associated with vaccination status and presence of co -morbidity, as age advances mortality increased.

Keywords: Admitted, Covid 19, Vaccinated, Outcome.

Introduction

The pandemic caused by severe acute respiratory syndrome corona virus d2 (SARS-CoV-2) strain, also known globally now as the “COVID-19 pandemic,” has affected all the nations across the globe. Till March 2023, there have been at least 760 million cases of COVID-19 cases confirmed globally, which led to more than 6.8 million deaths and 44 million cases of COVID-19 cases confirmed found in India, which causes 0.5 million deaths.¹

As of November 2021, India had three vaccines approved against COVID-19 -(Covishield [ChAdOx1 nCoV-19;Oxforde AstraZeneca; manufactured by Serum Institute of India], Covaxin [BBV152; Bharat Biotech], and Sputnik V [Gam-COVID-Vac; Gamaleya Research Institute of Epidemiology and Microbiology]) approved for emergency utilization.² India’s vaccination drive picked up well from early 2021, mainly after the “second wave” of the pandemic in the country. India was hit by two major surges of COVID-19 cases, and the so-called “second wave” occurred from April to May 2021, wreaking havoc on the nation. As of early May 2021, the rolling average of COVID-19 cases per day was more than a staggering 3,50,000 per day.³

After this surge, the vaccination drive gained momentum, and even the vaccine hesitancy among the public decreased. This has led to more than 116 crores of COVID-19 vaccination doses being administered across India as of November 21, 2021, the highest number compared to any nation in the world.⁴

The majority of COVID-19 symptoms were much less common in vaccinated patients compared to unvaccinated patients.⁵ In addition, most patients in the vaccinated groups (single dose or double dose) are

completely asymptomatic and experience infection-associated severity very minimally.⁶

Mortality due to COVID-19 has been reported to be relatively high in aged (60 years and above) patients⁷, and in particular, those individuals with comorbidities such as diabetes, hypertension, cardiovascular disease, cancer, etc.⁸ Therefore, such individuals were categorized as high-risk groups and were administered vaccines on priority. This group was followed by individuals between 45 years to 59 years of age and subsequently by the younger group. Despite the high level of vaccine efficacy, a small percentage of fully vaccinated patients were infected with SARS-CoV-2 and exhibited symptomatic COVID-19 features, and in very few cases that are associated with comorbidities succumbed to death.⁹ Hence, the present study was conducted to determine the clinic social characteristics and outcome of COVID-19 among vaccinated patients admitted to a designated COVID hospital in Solapur in Western India.

Materials and Methods

The present record-based cross-sectional, descriptive study was conducted at a 730-bedded Shri Chhatrapati Shivaji Maharaj Sarvopchar Rughalaya, Government tertiary care hospital, Solapur, Maharashtra. Institutional ethical clearance was obtained.

Study Population: Patients who received at least one dose of covid 19 vaccine and admitted for management of covid 19 during 1st May 2021 to 30th September 2021 and also having RTPCR confirmed SARS-CoV-2 infection laboratory report.

Sample Size: 220

Data regarding age, sex (male, female), area of living (Urban, rural), chief complains of patients at the time of

admission. Clinically patients were classified as mild, moderate and severe disease.¹⁰

Statistical analysis- Data was compiled in a rectangular format on spreadsheet. Continuous variables were expressed as mean \pm standard deviation (SD) and categorical variables as percentages. Odds ratios (OR) (with 95% CI) were estimated to determine the association of vaccination status, age, sex, and the presence of comorbidities with mortality. Logistic regression was done to adjust for confounding variables and OR obtained. Statistical analysis was performed on Stata Corp. 2019. (Stata Statistical Software: Release 16. College Station, TX: Stata Corp LLC.)

Results - Total 220 covid 19 vaccinated patients were admitted in Hospital having mean age 51.7 ± 19.4 years. There was male preponderance having Male: Female ratio 1.89:1. Patients from rural and urban area were 124 (56.4%) and 96 (43.6%) respectively. Majority of patients were vaccinated by Covishield vaccine 192 (87.3%) and remaining were vaccinated by Covaxin 28 (12.7%) However 100 patients (45.4%) were vaccinated with a single dose. Fever (72.4%) was the commonest symptom observed followed by breathlessness (50.2%), cough (39.6%), loss of taste (6.3%) and others like sore throat, fatigue, muscle ache, loss of smell, diarrhea were less commonly reported.

In our study 60 patients (27.2%) had mild disease, 71 (32.4%) had moderate disease and 89 (40.4%) had Severe disease at admission. The commonest morbidity observed was Hypertension 62 (28.2%) patients followed by Diabetes 51 (23.2%) patients. 34% patients had no any comorbidity [Table 1].

All-cause mortality was 10.5% (23/220). Two deaths were noted in patients who had received doses of Covaxin.

In the present study, the hospital database for vaccinated COVID-19 patients were analyzed, and the data of 220 patients were evaluated. The majority of cases were males, and the age range of patients was varied (20- 92 years). The reason for the higher number of males in the study is probably due to a greater proportion of males getting jabbed compared to females, based on media reports and COWIN portal data.¹² There was a near-equal

distribution of partially vaccinated (45.4%) and fully vaccinated patients (55.6%).

All-cause mortality was 10.5% in hospitalized vaccinated covid 19 patients. Association of Outcome of patients (discharged /died) with vaccination status and co morbidities in patients were highly significant (p value < 0.01) [Table 1]. But clinical symptoms of patients and outcome were not significantly associated (P value > 0.05) [Table 1].

Table 1: Demographic and clinical characteristic of patients included in the study

	Patients characteristics	Numbers	Discharged	Died		
1	Total patients	220	197(89.5%)	23(10.5%)		
2	Gender	Male	144	128(88.9%)	16(11.1%)	p=0.66
		Female	76	69(90.1%)	7 (10.9%)	
3	Age in years, Mean±SD	51.7±19.4	47.9± 18.5	67.7±22.7		
4	Residence	Urban	96	88(91.7%)	8(8.3%)	p=0.36
		Rural	124	109 (87.9%)	15 (12.1%)	
5	Vaccination status	Partially vaccinated	100	82(82.0%)	18(18.0%)	p=0.0008
		Fully vaccinated	120	115(95.9%)	5(4.1%)	
6	Clinical symptoms	Fever	159	137 (86.2%)	22(13.8%)	p=0.06
		Cough	87	72(82.8%)	15(17.2%)	
		Breathlessness	110	87(79.1%)	23(20.9%)	
		Loss of taste	14	12(85.7%)	2(14.2%)	
		others	84	79(94.1%)	5 (5.9%)	
7	Comorbidity	Hypertension	62	41(66.1%)	21(33.9%)	p=0.0000
		diabetes	51	31(60.8%)	20(39.2%)	
		Respiratory diseases	19	9(42.1%)	11(57.9%)	
		Chronic kidney disease	18	7(38.9%)	11(61.1%)	
		Cirrhosis	27	19(70.4%)	8(29.6%)	
		Immunosuppression	14	10(71.5%)	4(28.5%)	
		No comorbidity	75	73(97.3%)	2(2.7%)	

Age wise distribution of death is shown in fig.1. The elderly (> 60 years), comprising 36% of admitted patients but accounted for 70% of deaths while those under 40 years of age (31%) contributed to only 0.5%. It was found that as age advances deaths were increased.

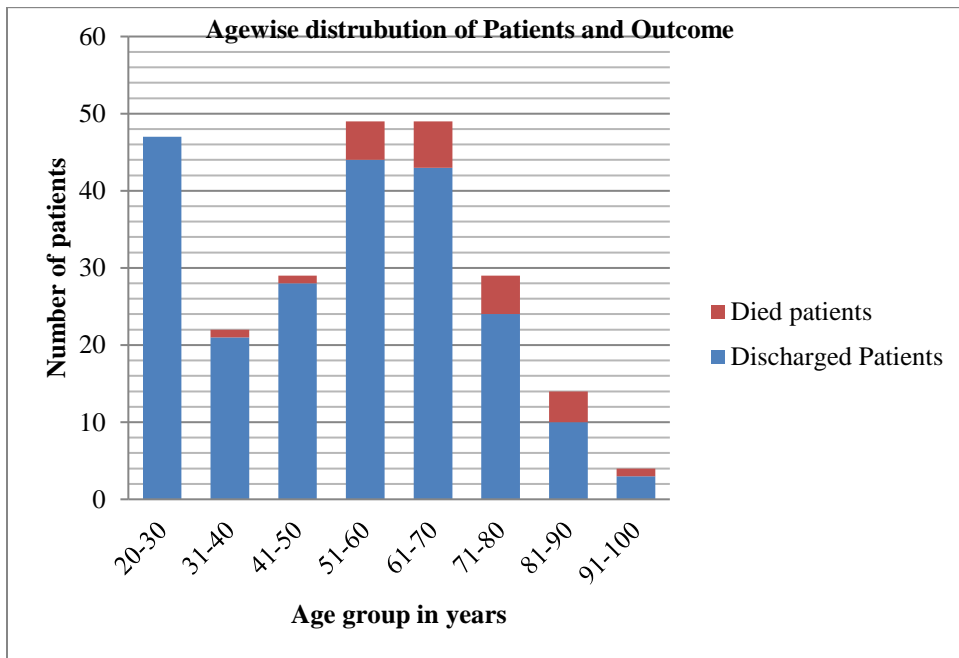


Fig.1 Age wise distribution of Patients and Outcome

Logistic regression was done for of age, co-morbidities and vaccination status. In logistic regression analysis in the age groups in years (20-39, 40-59, 60-79, 80-99), age was significantly associated with mortality and odd ratio 69.15 (95% CI 5.35-893.93, p=0.001) for 60-79 years age group. The odds ratio for fully vaccinated vs partially vaccinated was 4.2 (95% CI 1.11-15.94, p = 0.03) (Table 2).

Table. 2 Factors associated with mortality in Covid 19.

	OR	95% CI	Multivariable logistic regression analysis p-value
Age (years)			
20-39	Reference		
40-59	42.86	3.70 – 496.05	0.003
60-79	69.15	5.35 – 893.93	0.001
80-99	10.56	1.92 – 58.21	0.007
Co-morbidities			
No Co-morbidity	Reference		
HTN	2.0	0.45 – 8.85	0.36
DM	0.99	0.25 – 3.93	0.99
CKD	42.84	1.93 – 950.64	0.02

Status of vaccination			
Fully vaccinated	Reference		
Partially vaccination	4.21	1.11 – 15.94	0.03

Discussion

In this study, Mean age of covid 19 vaccinated admitted patients was 51.7± 19.4years and male : female ratio was 1.89: 1. A similar study done by Shahapur P R et al in Vijayapura found that mean age of covid 19 admitted patients was 46.2±17.7years and male : female ratio was 1.64: 1. ¹³

In Present study 87.2% admitted patients jabbed with Covishield while 12.7% with Covaxin whereas Study conducted by Viskakh C Keri et al in Northern India found that 44.8%) had received Covishield/ ChAdOx1 nCoV-19 and 58 (55.2%) had received Covaxin/BBV152.¹⁵ In this study Fever (72.4%)was the commonest symptom observed followed by breathlessness (50.2%), cough (39.6%) , loss of taste (6.3%) similarly Study done by Gunjan Kumar et al in ICMR New Delhi learned that Fever (71.7%)was the commonest symptom followed by breathlessness (48.6%), cough (39.8%) , loss of taste (6.3%).¹¹ and The commonest morbidity observed in present study was Hypertension 62 (28.2%) and Diabetes51 (23.2%) where as 34% patients had no any comorbidity. Similar comorbidities were encountered in various studies. ^{11, 15, 16}

In this study mortality was 10.5% in hospitalized vaccinated covid 19 patients. Outcome of patients with vaccination status and co morbidities were significantly associated where as in study of kumar et al mortality in second wave was 13.2 % and age > 60 years was significantly associated with mortality.¹¹and 1.99% mortality was noted by Manu chopra et al in Indian

Hospital and severity of Pneumonia was significantly associated with Vaccination status.¹⁷

Conclusion

There was male prepondance and marginally higher covid 19 vaccinated patients from Urban residence. Majority patients were vaccinated by Covishield having symptomology of fever, cough, breathlessness and ageusia decendingly. Higher number of patients had severe disease at the time of admission. Mainly Co-morbid conditions as Hypertension followed by Diabetes were found. Mortality was significantly associated with vaccination status and presence of co morbidity, as age advances mortality increased.

Limitations- Data was record based and obtained from a tertiary care hospital so we cannot generalize the result of the study.

Ethical consideration

Institutional ethical approval was taken before conducting study.

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