

Study of association of COVID 19 disease cases outcome with relation to sociodemographic factors in tertiary care centre in Mumbai, Maharashtra, India

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Abstract

Background: In India uptill now total corona cases are 31,144,229 and death were 4,14,141 and recovered from COVID are 30,308,456. The study was carried out in tertiary care centre in Mumbai area. Patients was admitted in hospital after COVID 19 infection. The study was carried out to see the association between COVID 19 patients; there outcome after admission whether discharged or death with their sociodemographic factor like sex, age and residential address. As the disease is deadly and research is still going on in many areas like treatment, vaccination. This study has given a small idea, the proportion of cases there outcome and association with sociodemographic factors. **Methods:** The present study is record based Hospital study. In six months period total COVID patients admitted in ward are taken for the study. The collected data was analysed using SPSS 15.0. Chi square test of significance was applied. $P < 0.05$ was considered as statistically significant. **Results:** A total of 100 patients were in this study. Total patients after COVID infection out of which 50 were discharged and 50 succumbed death (Selective sampling). The association of outcome (Death and discharged) is highly significant with age factor but association is not found significant with sex and residential address i.e. resident of Mumbai or out of Mumbai. **Conclusion:** The present study shows the pattern discharged patients and death among the admitted patients. As age advances death among the patients are on higher side but no association with sex or residential address, they don't be contributing factors in outcome of the disease.

Keywords: Socio-demographic, COVID, chi square test.

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INTRODUCTION

World has facing large fatality in all age groups due to COVID 19, The country like India faced loss not only in

terms of economy but also in human lives. The presentation of patients with COVID-19 requiring hospitalisation differs considerably. Severe acute respiratory syndrome corona virus is likely to have a higher potential for respiratory pathogenicity, leading to more respiratory complications and to higher mortality, in-hospital mortality is higher; however, low patient numbers limit this finding. These findings highlight the importance of appropriate preventive measures for COVID-19, as well as the need for a specific vaccine and treatment. Another potential explanation for the higher mortality of COVID-19 is that the sudden influx of patients over a short period of time created medical structural constraints, and care teams were led to prioritise patients based on clinical status

and prognosis.¹ The most common symptoms of COVID-19 are fever, cough and difficulty in breathing. Some patients may have aches and pains, nasal congestion, runny nose, sore throat or diarrhea. These symptoms are usually mild and begin gradually. Some people become infected but don't develop any symptoms and don't feel unwell. Most people (about 80%) recover from the disease without needing special treatment. With cases rising steadily, all sections of our society must play a role if we are to stop the spread of this disease and the frontline health worker has the responsibility, the reach and the influence within the community. In January 2020 the World Health Organization (WHO) declared the outbreak of a new corona virus disease. India has seen its first COVID-19 case in Kerala on 30th January 2020.² In India uptill now total corona cases are 31,144,229 and death were 4,14,141 and recovered from COVID are 30,308,456. Mumbai is the second most populous city in India after Delhi and the seventh most populous city in the world with a population of 19.98 million. As per Indian government population census of 2011, Mumbai was the most populous city in India with an estimated city proper population of 12.5 million living under Municipal Corporation of Greater Mumbai. Mumbai is the centre of the Mumbai Metropolitan Region, the sixth most populous metropolitan area in the world with a population of over 23.64 million.³ Mumbai's population density is of 20,634 people per square kilometres (sq. km.) provides a happy hunting ground for communicable diseases such as COVID-19. In Mumbai more than 60% of COVID19 cases are from most dense wards.⁴⁻⁶ The study was carried out to see the association between COVID 19 patients; there outcome after admission. As the disease is deadly and research is still going on in many areas like treatment, vaccination. This study has given a small idea, the proportion of cases there outcome and association with sociodemographic factors.

METHODS

Study design: Record based Hospital study.⁷

Study setting: Tertiary care centre in Mumbai The present study is record based Hospital study. The record of patients admitted in COVID ward and their details were studied. In six months period total COVID patients admitted in ward are taken for the study. Their details were studied. Outcome like death, discharged and their association with sociodemographic characteristic like age, sex and residential address were studied. The collected data was analysed using SPSS 15.0. Chi square test of significance was applied. $P < 0.05$ was considered as statistically significant. Contribution to above factor and risk is estimated with odd ratio and relative risk.

Study sampling: The primary data of COVID19 is collected from Ministry of Health and Family Welfare⁸, COVID19 INDIA,⁹ and local administrative sites. The collected data is cleaned and processed into spreadsheets and arranged in the required manner. The study population is of patient admitted in ward. Selective purposive sampling is taken. Total 100 patients admitted in ward and there outcome is studied, out of 100, 50 patients were discharged and 50 succumbed death. No randomization was undertaken. Outcome assessment was undertaken as part of routine health care, therefore no blinding of any sort was attempted. However, study investigators had no involvement in outcome assessment.

Study period: Six months.

Tools: Their sociodemographic characters were studied and outcome. Association of outcome with sociodemographic character is studied and how it affects the outcome of patients is studied with help of likelihood ratios and risk ratios.

Procedure: Information studied on the basis of records of patients on Hospital record.

Data analysis: Data was entered in Microsoft excel 2007 and analysed using SPSS 15 software. Chi square test was used for statistical analysis. $P < 0.05$ was considered statistically significant.

RESULTS

A total of 100 patients were studied in this study. The proportion of Discharged is 50 (i.e.50%) and Died patients were 50(i.e.50%). Age group of patients were from less than ten to less than 90. Mean age group of Died patients is from 40 to 80 years. Discharged patients were mainly from younger age group i.e.10 to 40 years. The association of age group with the outcome of disease is statistically significant ($P < 0.05$).[Table no.1, 1(a)]. In the present study, proportion of male is more as compare to female i.e. 62%, but no association is found between sex of admitted patients and outcome of patients. ($P > 0.05$) There is lower odds of association between sex and outcome of disease. [Table no.2, 2(a), 2(b)]. The patients in this mostly from residents of Mumbai i.e. 83% and non residents were 17% , it may be because of the locality of hospital; which is centrally located in Mumbai region. Their is no significant association is found between residents of patients and their outcome of the disease. (The chi-square statistic is 3.4727. The p-value is .062389, at $p < .05$). [Table no.3, 3(a)]. There are lower odds of association between residents of patients and outcome of disease; overall value is less than one. For both the groups i.e. outcome of the disease value is less than one (upper limit 0.114 and lower limit 1.088) and for residence also value less than 1 (upper limit 0.705and lower limit 1.012) [Table no.3, 3(b)]

Table 1: Association of Age Group (years) with the outcome of disease(i.e. Discharged or Death)

		Group		Total
		1)Died	2)Discharged	
Age (years)	1)< 10	Count	0	4
		% within Group	0.00%	8.00%
3)20 to 29		Count	2	14
		% within Group	4.00%	24.00%
4)30 to 39		Count	1	9
		% within Group	2.00%	16.00%
5)40 to 49		Count	6	15
		% within Group	12.00%	18.00%
6)50 to 59		Count	7	13
		% within Group	14.00%	12.00%
7)60 to 69		Count	20	27
		% within Group	40.00%	14.00%
8)70 to 79		Count	13	16
		% within Group	26.00%	6.00%
9)80 to 89		Count	1	2
		% within Group	2.00%	2.00%
Total		Count	50	50
		% within Group	100.00%	100.00%

Table (b): Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	29.773(a)	7	0.000104
Likelihood Ratio	33.614	7	0
N of Valid Cases	100		

a 6 cells (37.5%) have expected count less than 5. The minimum expected count is 1.00.

Table 2: Association of sex with outcome of the disease in study

		Group		Total
		1)Died	2)Discharged	
Sex	Female	Count	16	22
		% within Group	32.00%	44.00%
	Male	Count	34	28
		% within Group	68.00%	56.00%
Total		Count	50	50
		% within Group	100.00%	100.00%

Table 2 (a): Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.528(b)	1	0.216		
Continuity Correction(a)	1.061	1	0.303		
Likelihood Ratio	1.533	1	0.216		
Fisher's Exact Test				0.303	0.151
N of Valid Cases	100				

a Computed only for a 2x2 table

b 0 cells (.0%) have expected count less than 5. The minimum expected count is 19.00.

Table 2 (b): Risk Estimate

	Value	95% Confidence Interval	
		Lower	Upper
Odds Ratio for Group (1)Died / 2)Discharged)	0.599	0.265	1.354
For cohort Sex = Female	0.727	0.436	1.212

For cohort Sex = Male	1.214	0.89	1.657
N of Valid Cases	100		

Table 3: Association of residents of patients with outcome of disease:

Is patient resident of Mumbai			Group (Outcome of disease)		Total
			1)Died	2)Discharged	
1)Yes	Count		38	45	83
	% within Group		76.00%	90.00%	83.00%
	Count		12	5	17
	% within Group		24.00%	10.00%	17.00%
Total	Count		50	50	100
	% within Group		100.00%	100.00%	100.00%

Table 3 (a): Chi-Square Test

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	3.473(b)	1	0.062		
Continuity Correction(a)	2.551	1	0.11		
Likelihood Ratio	3.561	1	0.059		
Fisher's Exact Test				0.108	0.054
N of Valid Cases	100				

a Computed only for a 2x2 table
 b 0 cells (.0%) have expected count less than 5. The minimum expected count is 8.50.

Table 3 (b): Risk Estimate

	Value	95% Confidence Interval	
		Lower	Upper
Odds Ratio for Group (1)Died / 2)Discharged)	0.352	0.114	1.088
For cohort Is patient resident of Mumbai = 1)Yes	0.844	0.705	1.012
For cohort Is patient resident of Mumbai = 2)No	2.4	0.913	6.311
N of Valid Cases	100		

DISCUSSION

In a study done in US county level, by Monita Karmakar *et al.*,¹⁰ significant association has found between sociodemographic factors and incidence and mortality of COVID 19 cases since COVID 19 outbreak. In present study like Monita Karmakar study association found with age, which is highly significant. In study done in Brazil, done by I. T. Peres *et al.*¹¹; like our present study this study also showing independent association with high in-hospital mortality after adjusting for sex, age, level of education, region of residence. (odds ratio = 1.15; 95% confidence interval = 1.09–1.22). This study period coincides with present study i.e. Feb 2020 to August 2020. In the present study proportion of Male is more affected in terms of outcome of study same findings were observed in the study done by the Nikunj Kansara, Ashok B. Nandapurkar *et al.*¹²; the results showed that male gender has a 1.6 times higher risk of mortality than females even after adjusting for age, symptoms, and co morbidities, male gender was associated with an increased risk of mortality from COVID-19 after adjusting for age and co morbidities.

Study has done between the period of April 2020- July 2020 coincides with our present study. Another retrospective case series including 238 patients who hospitalized for COVID-19 at Hospital Universitario Clínico San Cecilio (Granada, Spain) either death or discharged; done by Mario Rivera-Izquierdo, Mari'a del Carmen Valero-Ubierna *et al.*¹³ showed that affected patients were males (55.0%, n = 131). The age range was 24 to 97 years with a mean of 64.7. Most patients (60.5%) were 60 years old or more, and the largest age stratum was 70 to 79 years; findings were to the present study were males were more affected than female.

CONCLUSION

The present study shows the pattern of discharged patients and death among the admitted patients. As age advances death among the patients are on higher side, they are significantly associated with outcome of disease; But no association with sex or residential address, they were not be contributing factors in outcome of the disease. Further studies need to be carried out to assess the impact of

Sociodemographic factors on outcome of diseases among the different regions. Health education, vaccination are the key factors uptill now to combat the COVID 19 pandemic.

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