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Original Research Article

PROGNOSTIC SIGNIFICANCE OF COMORBIDITIES IN COVID 19 PATIENTS

Dr. Shubham Patidar[1], Dr. Dinesh Mahor[2], Dr. Anudeep Dubey[3], Dr. Vimlesh Patidar[4] & Dr. Himanshu Jain[5]

Resident Doctor, Department Medicine, R. D. Gardi Medical College Ujjain[1]
Resident Doctor, Department Medicine, R. D. Gardi Medical College Ujjain[2]
Resident Doctor, Department Medicine, R. D. Gardi Medical College Ujjain[3]
Professor, Department Medicine, R. D. Gardi Medical College[4]
Resident Doctor, Department Medicine, R. D. Gardi Medical College Ujjain[5]

Corresponding Author: Dr. Himanshu Jain

Introduction: The need for intensive care, the complications associated with severe disease, and the vulnerability of older adults and individuals with underlying medical conditions are highlighted. The significance of prevention and the absence of a precise treatment for COVID-19 are emphasized. The introduction also mentions the objective of studying the latest clinical profile of admitted patients at a specific hospital.
Material and Methods: This section describes the study conducted at R.D G.M.C. Tertiary Care Hospital in Ujjain, M.P. The procedure involved obtaining approval from the institutional review board and enrolling patients aged 25 years and above who met the specified criteria. Information was collected through a preformed proforma, and the enrolled patients underwent detailed history and clinical examination.
Results: The study included 274 patients with a mean age of 48.8 years. The majority of cases were male. The prevalence of comorbidities such as diabetes, hypertension, COPD, asthma, and tuberculosis was documented. Disease severity was categorized as mild, moderate, or severe, and pneumonia and complications were noted. The duration of hospital stay varied among the patients. Associations between comorbidities, disease severity, and outcomes were analyzed. The results showed significant associations between certain comorbidities and disease severity and between chest X-ray findings, complications, and disease severity. Age and symptoms such as fever, cough, breathlessness, loss of smell, loss of taste, and weakness were found to be significantly associated with patient outcomes.
Conclusion: The mortality rate among the patients was determined, and the distribution of disease severity was highlighted. The importance of urgent public health interventions for susceptible groups and the need for regular follow-up for early stratification of cases is emphasized. The abstract acknowledges the ongoing research and studies aimed at addressing the knowledge gaps related to COVID-19.

1. INTRODUCTION

The 2019 novel coronavirus (2019-nCoV) or COVID-19 as it is now called is rapidly spreading worldwide from its place of origin in Wuhan City of Hubei Province of China.[1] The WHO declared Covid-19 a global pandemic on 11thMarch 2020.[2] Illness ranges in

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severity from asymptomatic or mild to severe; a significant proportion of patients with clinically evident infection develop severe disease.

The clinical features of COVID-19 are varied, ranging from asymptomatic state to acute respiratory distress syndrome and multi organ dysfunction. The common clinical features include fever (not in all), cough, sore throat, headache, fatigue, headache, myalgia, loss of taste and breathlessness. Conjunctivitis has also been described. Thus, they are indistinguishable from other respiratory infections.

The need for intensive care admission was in 25–30% of affected patients in published series. Complications witnessed included acute lung injury, ARDS, shock and acute kidney injury. Recovery started in the 2nd or 3rd wk. The median duration of hospital stay in those who recovered was 10 days. The overall case fatality rate is estimated to range between 2 and 3%.[3]

As the novel coronavirus continues to evolve, there are still many limitations to our knowledge of who exactly this virus would impact critically. Older adults and people of any age who have underlying medical conditions, such as hypertension and diabetes, have shown worse prognosis. Diabetic patients have increased morbidity and mortality rates and have been linked to more hospitalization andintensive care unit (ICU) admissions.[4] People with chronic obstructive pulmonary disease (COPD) or any respiratory illnesses are also at higher risk for severe illness from COVID-19.[5] The risk of contracting COVID-19 in patients with COPD is found to be 4-fold higher than patients without COPD.[6]

Since there is no precise treatment for this disease, prevention is critical. In India two COVID-19 vaccine candidates — Covaxin, and the N Zydus Cadila — had recently got the nod for human clinical trials from the Drug Controller General of India. Both have been approved for Phase II, III trials. New observations are continuously noticed so that no universally fixed pattern is emerging. Day by day new patterns are emerging, keeping this continuously changing scenario in mind we have plannedto study the latest clinical profile in admitted patients of our facility.

2. MATERIAL AND METHODS

This is a prospective study conducted on Patients with COVID-19 undergoing treatment at R.D G.M.C.Tertiary care Hospital, Ujjain, M.P. **Inclusion Criteria: 1.** cases of 25 to 80 years of age. 2. Confirmed COVID-19 positive patient. **Exclusion Criteria: 1.** Cases with negative RTPCR report.

Procedure: After obtaining approval and clearance from the institutional review board, only those patients aged 25 years & above meeting the inclusion and exclusion criteria was enrolled for the study. Information was collected through preformed proforma for each patient. Qualifying patients were undergoing detailed history and clinical examination.

3. OBSERVATION AND RESULT

In the present study we included 274 patients with mean age of 48.8 years. Out of 274 cases majority of cases were 153(55.80%) males and 121(44.20%) were females. In the present study fever was seen in 115(56.6%) cases, cough in 139(50.70%), breathlessness in 139(50.70%), loss of smell in 69(25.20%), Loss of taste in 69(25.20%), diarrhoea in 2(0.70%) and weakness in 114(41.60%) cases.

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Table 1: Distribution of comorbidities.

		N	%
DM	YES	39	14.20%
	NO	235	85.80%
HTN	YES	47	17.20%
	NO	227	82.80%
COPD	YES	7	2.60%
	NO	267	97.40%
ASTHMA	YES	7	2.60%
	NO	267	97.40%
TB	YES	11	4.00%
	NO	263	96.00%

In figure 1, Out of 274 cases 39(14.20%) had DM, 47(17.20%) had HTN, 7(2.60%) had COPD, 7(2.60%) had asthma and 11(4.00%)had TB.
In the present study 157(57.30%) had moderate disease,83(30.30%) had severe disease and 34(12.40%) had mild disease. Out of 274 cases pneumonia was seen in 181(66.10%) and complication were developed in 143(52.20%). In our study majority of cases 100(36.50%) had 6-10 days duration of stay, 69(25.20%) had 11-15 days duration of stay, 58(21.20%) had2-5 days duration of stay, 21(7.70%) had less than equals to one day duration of stay and 10(3.60%) had more than 20 days duration of stay.

Figure 2: **Association between classification of disease andcomorbidities**

		Classification of disease						
		Mild		**Moderate**		**Severe**		
		N	**%**	**N**	**%**	**N**	**%**	**p**
DM	YES	2	5.90%	12	7.60%	25	30.10%	0
	NO	32	94.10%	145	92.40%	58	69.90%	
HTN	YES	3	8.80%	20	12.70%	24	28.90%	0.003
	NO	31	91.20%	137	87.30%	59	71.10%	
COPD	YES	0	0.00%	3	1.90%	4	4.80%	0.239
	NO	34	100.00%	154	98.10%	79	95.20%	
ASTHMA	YES	0	0.00%	4	2.50%	3	3.60%	0.531
	NO	34	100.00%	153	97.50%	80	96.40%	
TB	YES	0	0.00%	0	0.00%	11	13.30%	0
	NO	34	100.00%	157	100.00%	72	86.70%	

In figure 2, we showed significant (<0.05) association between DM, HTN and TB comorbidities of the cases and disease severity of the cases. Hence among cases with DM, HTN and TB had more severe disease 25(30.10%), 24(28.90% and 11(13.30%) respectively.
Figure 3: **Association between classification of disease and chestX-ray and complication.**

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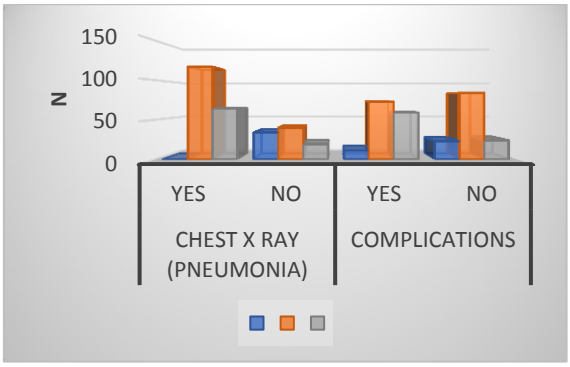

In figure 3, we showed significant (<0.05) association between chest X-ray, complications of the cases and disease severity of the cases. Hence pneumonia and complication percentage were higher in severe cases as compare mild/moderate cases 64 (77.10%) and 59(71.10%) respectively.

Figure 3: **Association between outcome and age groups.**

Age Groups	Outcome				p-value
	Alive		Death		
	N	%	N	%	
< = 30	41	20.40%	4	5.50%	0.011
31 - 40	43	21.40%	12	16.40%	
41 - 50	26	12.90%	16	21.90%	
51 - 60	51	25.40%	17	23.30%	
61 - 70	28	13.90%	18	24.70%	
> 70 Years	12	6.00%	6	8.20%	
Total	201	100.00%	73	100.00%	

We observed significant (<0.05) association between age groups of the cases and outcome of the cases. Number of the patient which are above 70 years of age are less so the mortality in this age group is less.

In the present study we observed significant (<0.05) association was observed between fever, cough, breathlessness, loss of smell, loss of taste, weakness and outcome of the cases. Among death cases fever, cough, breathlessness, loss of smell, loss of taste, weakness were significantly higher as compare to alive cases 56(76.7%) vs 99(49.3%), 47(64.40%) vs 92(45.80%), 56(76.70%) vs 83(41.30%), 43(58.90%) vs 26(12.90%), 42(57.50%) vs 27(13.40%) and 23(31.50%) vs 91(45.30%) respectively.

4. DISCUSSION

The present study was conducted among 274 patients with COVID- 19, undergoing treatment at R.D G.M.C. Tertiary care Hospital, Ujjain, M.P. In our study out of 274 cases 157(57.30%) had moderate disease, 83(30.30%) had severe disease and 34(12.40%) had mild disease and mortality rate was 26.60%. **Huang et al (2020)**[7] out of 66 patient's mortality rate was 15% and in **Richardson et al (2020)**[8] out of 5700, mortality rate was 21%.

In the present study mean age of the cases was 48.81±15.13 years. **Sudhir Bhandari et al. (2020)**[9] showed that mean age of the cases was 50.40 years. **Diallo ID et al. (2022)**[10]

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showed that median age in this series was 59 years with extremes ranging from 20 to 90 years.

In our study no significant (>0.05) association was observed between age groups of the cases and disease severity of the cases with p>0.05. **Perhimpunan D et al(2020)[11]** revealed that the highest mortality rate occurred in the age group ≥60 years (35; 51.47%).

In our study out of 274 cases majority of cases were 153(55.80%) males and 121(44.20%) were females. **Sudhir Bhandari et al. (2020)[9]** showed that females' patients (41%) were lesser than male patients (59%). **Diallo ID et al. (2022)[10]** showed that there was a male predominance 65% and female 35%. **Yang X et al. (2020)[12]** observed that the higher risk of severe illness and fatality among men due to the disease was explained by multiple theories.

In our study out of 274 cases fever was seen in 115(56.6%) cases, cough in 139(50.70%), breathlessness in 139(50.70%), loss of smellin 69(25.20%), Loss of taste in 69(25.20%), diarrhoea in 2(0.70%) and weakness in 114(41.60%) cases. **Lechien JR et al. (2020)[13]** COVID‑19 can present as asymptomatic to severe disease with varied clinical features. In a study from India by **Dosi et al.[14]** reported fever as the major symptom among symptomatic patients though majority were asymptomatic. **Wang, J et al. (2020) and Zang et al (2020)[15]** revealed that cough, dyspnoea, fatigue, and fever were the main symptoms of severe COVID-19.

In the present study out of 274 cases 39(14.20%) had DM, 47(17.20%) had HTN, 7(2.60%) had COPD, 7(2.60%) had asthma and 11(4.00%) had TB. **Sanyaolu A et al(2020)[16]** showed that out of total of 5700 patients were included, the most common comorbidities were hypertension (3026, 56.6%), obesity (1737, 41.7%), and diabetes (1808, 33.8%).

In our study out of 274 cases 118(43.10%) presented with crepts. Respiratory system examination revealed abnormal chest finding in the form of crepitation more likely suggestive of pneumonia. A few studies have examined the value of CXR to predict COVID-19 outcomes. In early May 2020, **Borghesi et al[17]** introduced the Brixia score, an experimental CXR scoring system for quantifying lung abnormalities in COVID-19 pneumonia. High Brixia score values have been found to predict in-hospital mortality for COVID-19.

In the Present study majority of cases 100(36.50%) had 6-10 days duration of stay, 69(25.20%) had 11-15 days duration of stay, 58(21.20%) had2-5 days duration of stay, 21(7.70%) had less than equals to one day duration of stay and 10(3.60%) had more than 20 days duration of stay. **VrindaVijayakumari et al. (2020)[18]** showed that the mean duration of hospital stay in patients with COVID-19 in our study was 8.04 ± 4.59 days. **Rees et al. (2020)[19]** reported in September 2020 meta-analysis that mean hospital stay duration in China ranged from 4 to 53 days whereas it ranged from 4 to 21 days outside China.

In our study out of 274 cases 157(57.30%) had moderate disease, 83(30.30%) had severe disease and 34(12.40%) had mild disease. Out of 274 cases mortality rate was 26.60%. Similar results also observed in the studies done by **F. Zhouet al.(2020), K.H. Hong et al.[20](2020) and S.H. Alfaraj (2020)[21]** revealed that the elderly and severity of disease were considered an important independent predictors of mortality to be associated with mortality in patients with COVID-19 which was also confirmed in current study.

5. CONCLUSION

The spectrum of COVID Illness ranges from mild to severe illness, and at time severe illness continues to have significant mortality and morbidity. Urgent public health interventions should be carefully implemented on those susceptible groups to reduce the risk of mortality

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in patients with COVID-19. An intensive and regular follow-up is required for early stratification of cases. Various research and study are still undergoing to know better about gaps in the knowledge regarding COVID 19.

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