



ORIGINAL ARTICLE



Clinical outcomes of Patients infected with Novel Corona virus COVID- 19 at Covid Center in Dehradun, Uttarakhand

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Abstract

Novel Corona virus, COVID – 19, virus is highly contagious, and has become pandemic globally in a very short period. This virus in human can cause illness ranging from common cold to severe respiratory tract symptoms as MERS, SARS. In the present study we report the clinical outcome of patients infected with COVID-19, in Covid Center, GDMC, Dehradun, Uttarakhand. **Material and Methods-** All the patients infected with COVID- 19 in Garhwal region Uttarakhand, were admitted in Covid center, GDMC, Dehradun. We collected and analyzed the Data of laboratory confirmed COVID – 19 infection by RT- PCR. We also communicated with the patients and their family members regarding disease symptoms. Clinical outcome was compared and documented. The study protocol was approved by Ethical committee of GDMC, Dehradun, Uttarakhand. **Results-** About 4/5th patients were males, most of the patients were aged between 21-30 years. Most of the patients (84.1%) were residents of Dehradun and all patient were Indian. Mortality rate was 1% in this study. Females had more complaint of pain abdomen while males had more complaint of chills (p-value <0.05). **Conclusion-** An outbreak of novel Coronavirus, COVID–19 disease has affected worldwide and continue to represent a serious public health issue affecting all ages. Complications and mortality were higher in elderly and comorbid patients. Clinical presentation of the disease was less severe in Dehradun, Uttarakhand and mortality rate is much lower than the other parts of the world.

Keywords: Clinical outcome, COVID – 19, Covid Center, GDMC, Dehradun

1 | INTRODUCTION

In the last twenty years, viral diseases continue to emerge as a serious health issue. The present

epidemic of cases with lower respiratory tract infection, was first detected in Wuhan, the largest metropolitan city in China. It was first reported to the WHO office in China on 31st December 2019.

The etiology of this illness is now attributed to a novel virus of Corona virus (CoV) family, the Novel Corona virus, COVID – 19. This new virus is highly contagious, and has become pandemic globally in a very short period. This virus in human can cause illness ranging from common cold to severe respiratory tract symptoms as MERS, SARS. Globally it is continuing its spread across the world and approximately more than 4.8 million confirmed cases of corona virus disease in more than 188 countries have been reported. More than 300,000 people have lost their lives till May 2020. By far the largest number of cases have been reported in US, which is about five times as many as any other country. According to John Hopkins University, more than 90,000 fatalities have been reported in US, which is also the world's highest death rate till now.

The World Health Organization declared the COVID – 19 outbreak a Pandemic on March 11, 2020.^[1] The first case of COVID – 19 Pandemic in India was reported on 30/1/2020.^[2] The Ministry of Health and Family Welfare has confirmed a total number of 106,750 cases and 3,303 deaths in India till 20 May 2020.^[2] In India as of 20 May 2020, a total of 42,298 recoveries have been noted. There have been 93 confirmed cases, 52 cured and 1 death has occurred due to COVID 19 Pandemic in Uttarakhand till 19 May 2020.^[2]

Clinically the presentation may vary from mild upper respiratory symptoms to pneumonia, MODS and finally death, where Respiratory rate > 30/min, SpO₂ < 93%, lung infiltrate > 50% within 24 to 48 hrs. Critical manifestation may land up to respiratory failure, septic shock or multiple organ failure.^[3]

Corona virus are enveloped, positive stranded RNA virus. The envelop promotes viral assembly and release and thus has a critical role in viral pathogenic-

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ity. They are spiked glycoproteins, made up of two subunits (S1 and S2). On the viral surface the spikes are made up of homotrimers of S proteins, which guide the link to the host receptors.^[4] This spike mutation probably leads to jumping to humans, which occurred in late November 2019. This viral mutation cause potential disease relapses.^[5] The viral infection produces an excessive immune reaction in the host called cytokines storms, leading to extensive tissue damage. The activated leukocyte produces IL-6, acting on large number of cells and tissues. The IL-6, proinflammatory, also has anti-inflammatory effects. It increases during inflammatory diseases, infections, autoimmunedisorders, cardiovascular diseases and some cancers. It also causes cytokine release syndrome (CRS), acute systemic inflammatory syndrome characterized by fever and multiple organ dysfunction.

In the present study we report the clinical outcome of patients infected with COVID- 19, in Covid Center, GDMC, Dehradun, Uttarakhand.

2 | MATERIAL AND METHODS

All the patients infected with COVID- 19 in Garhwal region Uttarakhand, were admitted in Covid Center, GDMC, Dehradun. We collected and analyzed the data of laboratory confirmed COVID – 19 infection by RT-PCR. The data collection was done for a period of 2 months, from April 2020 to May 2020. The data was collected using semi structured questionnaire. The questionnaire contained 3 parts, part A captured sociodemographic details, part b captured detail history of disease and part c captured course in hospital of patient. Purposive sampling technique was used for data collection. All the cases admitted with Covid 19 disease were enrolled in the study after obtaining informed consent. We also communicated with the patients and their family members regarding disease symptoms. Clinical outcome was compared and documented in Microsoft Excel software. Data was analyzed using SPSS version 23 software. The study protocol was approved by Ethical committee of GDMC, Dehradun, Uttarakhand. Quantitative data were expressed in mean and standard deviation. Categorical data were expressed in proportion and per-

centages. Chi square and Fisher's exact test was used to establish association between variable. P-value <0.05 was considered to be statistically significant.

3 | OBSERVATION AND RESULT

By May 31st 2020 189 patients have been identified as laboratory confirmed COVID – 19 infection. In our study we found that most of the patients were male (79.3%). The disease has affected almost all the age group but the most commonly it has affected 21-30 years age group. Most of the patients (84.1%) were residents of Dehradun and all patients were Indian. (Table 1)

The most common symptom by which patients were affected with was sore throat (53.9%). Other symptoms and underlying conditions like Fever, chill, nausea vomiting, weakness, headache, breathlessness, cough, diarrhea, confusion, running nose, chest pain, abdominal pain, muscular pain, joint pain, temperature, stridor, coma, tachypnea, seizure, red eye, abnormal chest sound, hypertension, DM, TB, HIV, COPD, Neurological disease, heart disease, bronchitis, malignancy, liver disease, pregnancy and post-partum period were recorded from each patient. It was observed that fever, chills, sore throat, nausea/ vomiting, weakness and breathlessness were also common complaints. Presence of abdominal pain and chills was found to have significant association with gender of patient with more female predisposition for abdominal pain and more male predisposition to chills. (p-value <0.05). (Table 2)

Maximum number of patients presented with 2 symptoms, followed by 1 symptom and asymptomatic patients. (Figure 1)

Males presented with more spectrum of symptoms as compared to females. (Figure 2)

4 | DISCUSSION

Corona virus belong to the family Corona Viridae. They are enveloped and non-segmented positive sense RNA viruses and are broadly distributed in

mammals and humans. [6]

In the past two decades, the two beta corona virus caused extensive mortality (SARS-COV). Severe acute respiratory syndrome corona virus [7],[8],[9] and MERS-(COV) middle east respiratory syndrome coronavirus (MERS-CoV) [10],[11] as mortality rate of 10% for SARS-CoV and 37% for MERS-CoV. [12],[13] respectively. A series of pneumonia in Dec, 2019 emerged in Wuhan, China. Lower respiratory tract samples showed a novel corona virus, named as 2019 novel corona virus or (nCoV-2019) [14].

In our study, we report laboratory confirmed, COVID-19 infected cohort of 189 patients. Many studies suggest that the outbreak was associated with exposure in seafood market in Wuhan [15]. Many case series of COVID -19, suggest that older people > 65 years old are most likely to present with severe type of clinical presentations [16],[17],[18] that are more susceptible for respiratory distress, SPO2 (<90%) or respiratory failure and need to require mechanical ventilation or shock or MODS [19]

In our study most of the patient were middle aged, male, who were positive for COVID -19 with mean age of 34.3 years. There is no significant difference in the median age between two groups of male and female. There were only 13 cases who belonged to pediatric age group (<14 years), all survived and discharged satisfactorily.

The mean age of presentation was lower in female (32.3 years) in women vs (38. Years) in men. Like other studies, in our studies also number of patients affected were more of male gender and they had elevated WBC, neutrophils and serum creatinine level [18]. Fisher exact test suggested that clinical presentation of COVID -19 was similar in men and in women [20] (P value 0.37)

The reason for this gender inequality may be because of circulating ACE2 level which is higher in men than in women which is also true for patients having co morbidities like diabetes mellitus and cardiovascular diseases. [21] Globally, clinical presentations were similar to SARS-CoV [22]. In most of the parts of the world, the most common symptoms are mild to moderate like fever, cough cold headache, myalgias, sore throat, fatigue, general body weakness, complicated dyspnea and pneumonia [23]. Other symptoms

TABLE 1: Demographic and baseline characteristics of patients infected with COVID -19

Char-	All patient	Mean (S.D)	Requirement of ICU care		End result	
			Yes No. (%)	No No. (%)	Duration of hospital stay Mean (S.D)	Expired No. (%)
Gender	5	2	0	5 (100)	10.6(2.4)	0
Age 11-20	22	1.5(1.7)	1(4.5)	21(95.5)	11.9(2.1)	1(4.5)
Age 21-30	66	2.5(1.8)	0	66(100)	11.8(2.9)	0
Age 31-40	41	2.4(1.9)	1(2.4)	40(97.6)	11.6(2.9)	0
Age 41-50	28	6.8(7.8)	0	28(100)	12.4(2.7)	0
Age 51-60	13	5.2(3.2)	0	13(100)	12.7(3.2)	0
Age >60	14	4	0	14(100)	11.5(3.5)	1(7.1)
Sex M	150	3.7(4.2)	1(0.7)	149(99.3)	12.2(2.9)	1(0.7)
Sex F	39	1.5(2.1)	1(2.6)	38(97.4)	10.7(2.4)	1(2.6)
Exposure yes	17	0	1(5.8)	16(94.2)	12.4(3.72)	0
Exposure no	172	3.6(4.1)	1(0.5)	171(99.5)	11.8(3.6)	2(1.1)
Recovery yes	159	3.6(4.2)	2(1.2)	157(98.3)	11.8(2.7)	1(0.6)
Recovery no	30	4(2.7)	0(0)	30(100)	12.4(3.7)	1((3.3)

Dehradun

past 14 days were runny nose, hemoptysis, diarrhea and phlegm producing cough. [24],[25]. Patients with severe respiratory failure due to alveolar damage along with MODS leads to death, while mild symptoms usually recovered after one week. [26]. Death was more common in middle aged and elderly patients especially with preexisting co morbidities like hypertension, diabetes mellitus, coronary heart diseases, cirrhosis and malignancy. [26] COPD and dyspnea present as (9-10 %) globally [27],[28] but there was higher prevalence in our study 18%. Previous studies indicate that approximately 40% of patients land up to sepsis with community acquired pneumonia due to viral infection [29]. In our set up sepsis was present in 15% of cases. In our study also, most common presentation were mild symptoms which is consistent with other studies. But moderate to severe symptoms like respiratory failure, ARDS, heart failure, septic shock, secondary infections, VAP were higher in other parts of the world (31%) as compared to our studies. Death rate due to COVID -19 infections was also lower in our study than other parts of the world.

Death rate in Italy is approximately 12.72 %, 3.4 % of US, 12 % of UK, 9.73 % of Spain and approximately 5.98 % globally [29]. But in our studies death rate was much lower than other parts of the world which is about 1%. The reason for low death rate in our study may be because of young population, early strict lockdown. Due to excessive microbial load, exposure to variety of pathogens, bacteria, parasites, viruses, there is broad based immunity in Indian population, which helps to attack foreign invaders due to already existing broad-spectrum specific memory T - cell in the immune system. Some benefits may also be provided for lower cases and severity of disease because there has been widespread use of BCG vaccination, for tuberculosis and resistance to many other diseases like malaria for some years. Some other possible factors might have helped us to fight from disease may be hot and humid Indian environment, food habits, spices used in the food which help in augmenting immunity. One of the authors from AIIMS New Delhi has revealed that the presence of several novel HLA genes and their

TABLE 2: Clinical presentation of patients infected with COVID -19 according to gender

Clinical features on presentation	Female No. (%)	Male No. (%)	Odd's ratio (F/M)	p-value
Fever	6(15.4)	41(27.3)	0.48	0.14
Chills	9(23.1)	70(46.7)	0.34	0.01
Sore throat	21(53.8)	81(54)	0.49	0.9
Nausea/ vomiting	4(10.3)	28(18.7)	0.49	0.33
Weakness	11(28.2)	58(38.7)	0.62	0.26
Breathlessness	7(17.9)	29(9.3)	0.91	0.9
Headache	2(5.1)	8(5.3)	0.95	0.9
Cough	6(15.4)	32(21.3)	0.67	0.4
Diarrhea, HTN, Renal Disease, Asthma, Bronchitis, Red eye	0	1(0.7)	1	0.9
Confusion	1(2.6)	2(1.3)	1.9	0.5
Running nose	0	7(4.7)	1	0.34
Muscular pain	0	4(2.7)	1	0.58
Chest pain	0	2(1.3)	1	0.9
Abdominal pain	3(7.7)	1(0.7)	12.4	0.02
Joint pain	1(2.6)	0	0.97	0.2
Stridor	0	2(1.3)	1	0.9
Tachypnoea	2(5.1)	2(1.3)	4	0.18
DM	0	5(3.3)	1	0.58
Coma, Seizures, Abnormal chest auscultation, Neurological disease, Heart disease, Liver disease, TB, HIV, Malignancy, Postpartum	0	0		

alleles in Indian population could help to fight from several viral diseases, most of which do not occur in other ethnic group.

5 | CONCLUSION

An outbreak of novel Corona virus, COVID – 19 disease has affected worldwide and continue to represent a serious public health issue affecting all ages. Complications and mortality were higher in elderly and co morbid patients. Clinical presentation of the disease is less severe in Dehradun, Uttarakhand and mortality rate was much lower than the other parts of the world.

Declarations:

Conflict of interest: None

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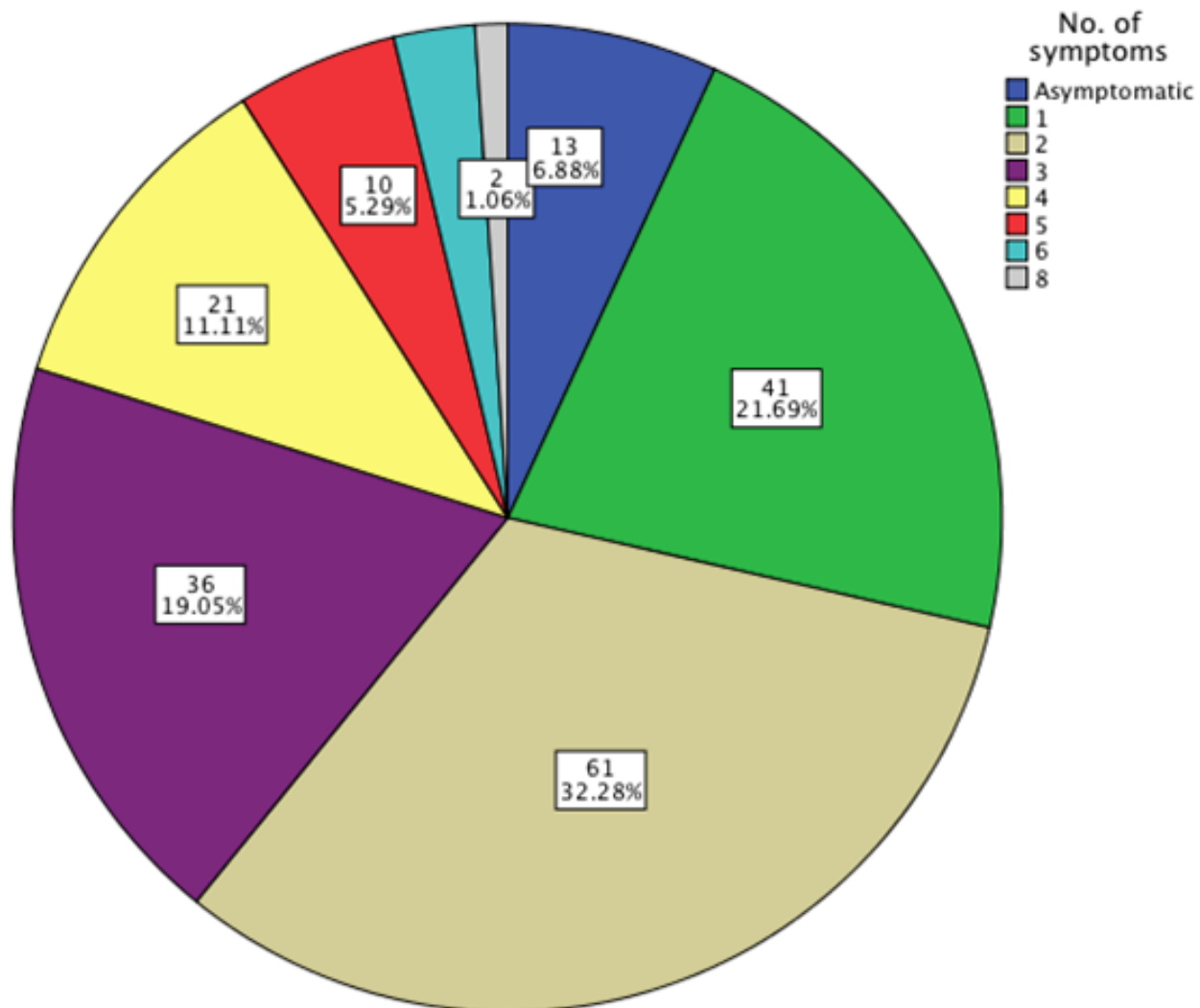


FIGURE 1: Overall clinical presentation of disease

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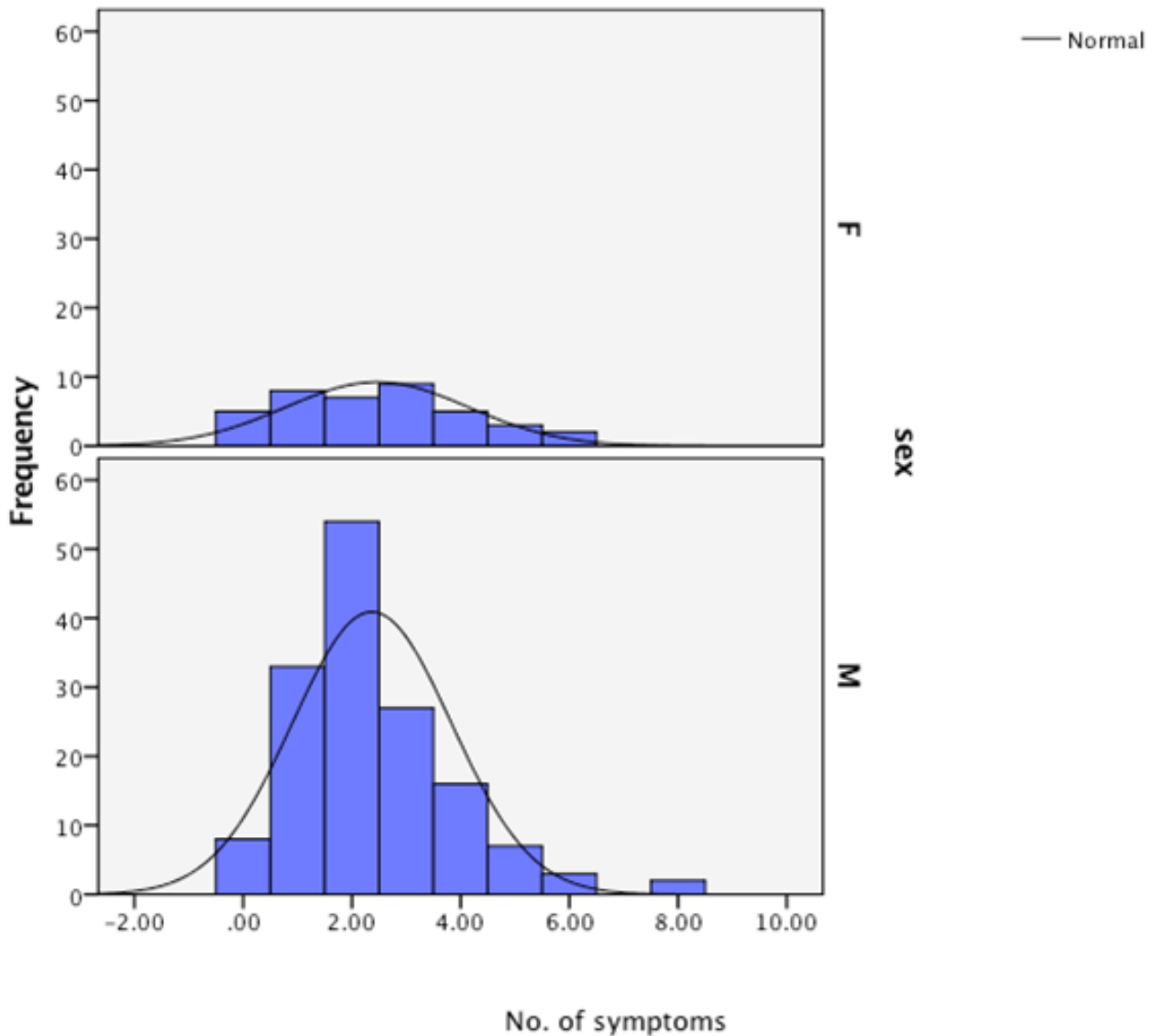


FIGURE 2: Severity of disease in different sex

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