Risk Factors, Death Rate And Recovery Rate of COVID-19 Effected Patients In India: An Informative Study

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Abstract- *Corona virus is now considered as a deadly virus that is spreading all over the world with R0 factor of approximately 2.3- 3.5 range ,considering recent global data. As it is a new virus in the market , it has got no standard treatment and management situations to tackle the problem . Sources mention that the virus is of Wuhan origin , the primary transmitters are secondary carriers . Social distancing is the major route to break the chain of transmission. Sources also say that the air-droplets consisting of virus may travel upto 9 hours in air . In India the regions mostly effected are of diversified cultured and more tourist attractive regions .So primarily these states were affected more in number compared to other small states . The goal of this study is to assess the age groups that have been affected till mentioned date , recovery rate and deceased rate in various regions within the limited data.*

Keywords- Corona virus, social distancing, age groups, recovery, deceased ,air-droplets

I. INTRODUCTION

Covid-19 is one of the large family of viruses that are zoonotic in nature ,common in both humans and animals. It is thought to be transmitted from bats. In February 2020, WHO designated as COVID-19, which stands for corona virus disease 2019[1]. The Corona virus strains are divided in to seven different categories[15].

(i). 229E (alpha corona virus)
(ii). NL63 (alpha corona virus)
(iii). HKU1 (beta corona virus)
(iv). OC43 (beta corona virus)
(v). MERS-CoV (beta corona virus ; causes Middle East respiratory syndrome or MERS)
(vi). SARS-CoV (beta corona virus; causes severe acute respiratory syndrome or SARS)
(vii). SARS-CoV- 2 (novel corona virus ; causes corona disease in 2019 or COVID-19).

SARS- Cov-2 is a beta corona virus which is similar in structure and genetic sequence with both Severe acute respiratory syndrome coronavirus (SARS-Cov ; 70% similarity) and Middle east respiratory syndrome corona virus (MERS-Cov ; 40% similarity) . A possible explanation for this serious deterioration is “Cytokine storm” or “Cytokine release syndrome” which leads damage of the tissues of lungs , heart and kidney.[16]

II. TRANSMISSION

Mode of transmission is not known completely till date . In an epidemiological study , it is identified that a sea food market had an initial association where most of the effected people were working or visited[2] . The initial prediction was that the virus was originated from snakes but later proved to be more similar to the bats. Also, for the outbreak “Person to Person (P2P) ” transmission through formites and droplets is the primary mode of transmission. More than animal to human contact , P2P is the major route which was responsible to spread the disease through secondary carriers in the whole 201 effected countries by COVID-19 infection.

These secondary carriers are the patients or patients about to be , who host the virus inside them and transmit to others before any symptoms appear in them[3-5]. This period of 3-24 days (on an average – 14 days)[8-10] was observed as Incubation period . When symptomatic condition infected ones are thought to be most contagious.[6]

III. CLINICAL PRESENTATION

In a study conducted in Wuhan with Corona virus effected patients , the common clinical symptoms observed are

1. Fever
2. Dry cough
3. Dyspnoea
4. Myalgias

5. Fatigue
6. Decreased appetite
7. Sore throat
8. Rhinorrhoea
9. Gastrointestinal symptoms.

Major manifestation is severe pneumonia[11] , where difficulty in breathing (SOB) has been developed after a median of five days. About 80% of the COVID-19 cases belong to the category of mild to moderate and about approximately 13% are with severe disease . Critical illness like septic shock , multiple organ dysfunctions , respiratory failure are of 6% patients.

IV. DIAGNOSTIC TESTS

Laboratory findings considered are :

- White blood cell count (Leukopenia, Leukocytosis and Lymphopenia{ more common : more than 80%), Mild thrombocytopenia.
- Inflammatory markers (Serum Procalcitonin, C-reactive protein)
- COVID-19 rapid tests (Detects IgG and IgM antibodies to SARS-Cov-2)
- Bronchoscopy
- Chest Radiography (CXR)
- Computerised Tomography (CT Chest)
- Lung Ultrasound (USG)
- Pulmonary function tests (PFT)

V. METHODOLOGY

This survey data is obtained from various databases maintained by the volunteers and obtained from the press , government official websites of India. The data was collected from the date of 30/01/2020 to 27/03/20.Sample size of the study is 730 COVID-19 patients.Some of the data of these 730 COVID-19 patients was missing, so we have done our study based on the data available only.

VI. RESULTS AND DISCUSSION

State wise estimation of death rate ofCOVID-19 patients (> 5%) was found to be higher in West Bengal (10%), Jammu and Kashmir (7.14%) and Gujarat (6.81%).The states with zero deaths reported are Kerala, Telangana, Uttar Pradesh, Rajasthan, Haryana , Ladakh, Andhra Pradesh.

State wise estimation of recovery rate of COVID-19 patients (> 5%) was found to be higher in Haryana (34.37%) and Uttar Pradesh (26.19 %).The recovery rates of other states are as follows Delhi (16.66%), Andhra Pradesh (9.01 %), Jammu and Kashmir (7.14%), Rajasthan (6.66%), Karnataka (5.45%).The states with zero recovery rate reported are Gujarat, Punjab, Ladakh, West Bengal, Chhattisgarh.

Age wise distribution of COVID-19 patients (n=354 patients) shows that age group of 21-40 (50.28%) and 41-60 (29.66%) are more susceptible to COVID-19 infection.

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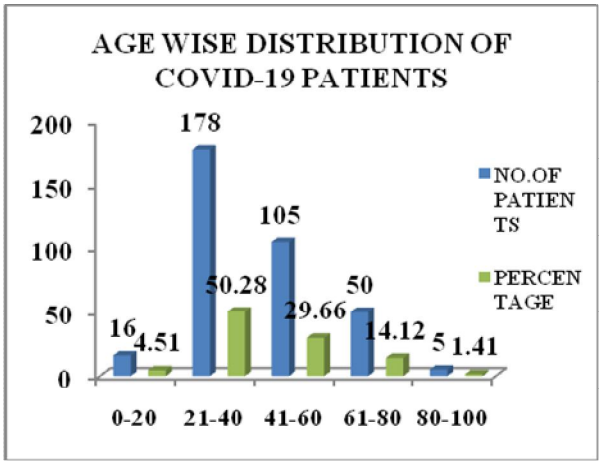
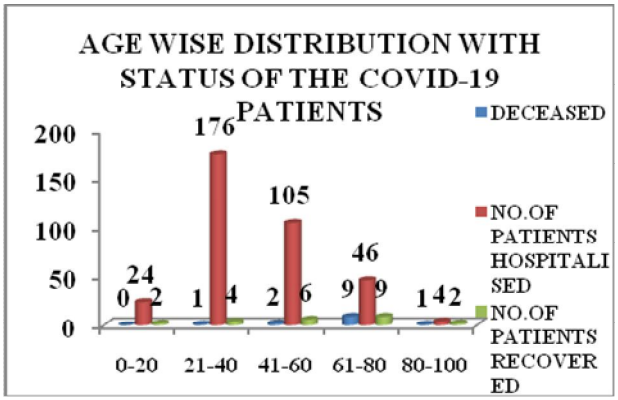
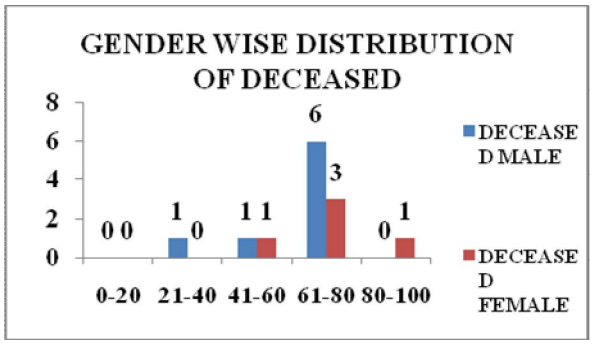


Gender wise distribution of COVID-19 patients (n=417 patients) shows that males and females are 270 (64.7%) and 147 (35.2%) respectively. This shows that males are more susceptible to COVID-19 infection.

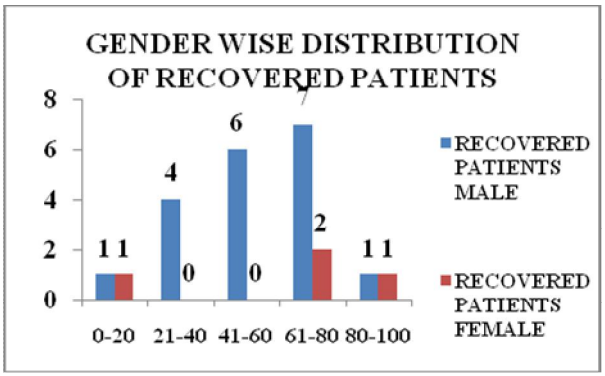
Age wise distribution of COVID-19 patients with status of the patients shows that hospitalized patients were higher in the age groups of 21-40 and 41-60 years. The death rate and recovery rate were reported higher in the age group of 61-80 years.



Gender wise distribution of COVID-19 deceased patients was found to be higher in males (6 males) and females (3 females) of age group 61-80 years.



Gender wise distribution of COVID-19 recovered patients was found to be higher in males (7 males) and females (2 females) of age group 61-80 years.



The rate of transmission of COVID-19 positive patients with a travel history were found to be 381 patients and the patients who found positive due to lack of social distancing were 235 patients.

VII. CONCLUSION

The age groups of 21-40 and 41-60 years , male gender are more prone to COVID-19 infection. Lack of social distancing is the major risk factor of COVID-19 infection.

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