



## Risk Factors and Recurrence of COVID 19: A Meta Analysis

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### ABSTRACT

The ongoing outbreak of COVID 19 emerged in the epicenter of Wuhan, China has established a public health emergency of International concern. A number of nations were forced to establish a strict full lock down to control the spread of emerging COVID-19 and as an extreme measure to cope up with the world pandemic COVID 19 infection. In this study, we aimed to determine the risk factors and recurrence of COVID 19 among patients recovered from COVID 19 who was strictly isolated and followed proper home quarantine. A systematic review and meta-analysis was done involving PubMed, Google Scholar and MedRxiv as a search engine for apt data. In this study we included all the descriptive studies, meta-analysis and systematic review which bestow with the risk and recurrence of SARS-COV-2 after recuperation. We extracted data following predefined hierarchy. In these studies, we assessed the risk factors and recurrence of COVID 19 among the patients recovered from COVID 19 who were firmly isolated and followed proper quarantine. We identified 15 studies, involving 2682 individuals who has been recovered from COVID 19 and met the discharge criteria such as absence of fever for at least three days, substantial improvement in both lungs in chest CT, clinical remission of respiratory symptoms, and two throat-swab samples negative for SARS-CoV-2 RNA obtained at least 24 hr apart. We collected data from the studies published from December 2019 - September 2020. This study identified that the recurrence of SARS-COV-2 is mostly common in younger age group less than 16 years and patients who are suffering from long term illness like heart disease, coronary artery disease, cardiomyopathy, chronic obstructive pulmonary disorder (COPD), obesity are more likely prone to get the recurrence of SARS-COV-2 even after strict isolation and home quarantine. Whereas patients with low lymphocyte count and diabetes are less likely to occur.

The study found that there is the incidence of recurrence among the patients recovered from COVID 19 but do infect the family members or close contact members. This study insist that strict self isolation protocols and extended follow up periods must be indicated might be needed for patients recovered from COVID 19.

**KEYWORDS:** Risk factors, COVID, Reoccurrence and morbidity

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### I. INTRODUCTION

Severe Acute Respiratory Syndrome - Corona Virus -2 (2019) emerged with the etiologic agent of Corona virus (COVID -19). It was affirmed as World Pandemic Disease by The World Health Organization in 2020. The inception of the virus is anonymous. However it was chiefly due to food pattern allied with Wuhan seafood wholesale market were people can procure animals. This virus was then later named as SARS-COV-2. [1] To have power over the outspread of SARS-COV-2 China implemented lockdown in Wuhan city and its in close proximity cities ever since January 2020 to trim down the incidence of cases. The incidence of cases progressed to rise in Wuhan to 70,000 cases by the end of January. [2]

The risk factors of SARS-COV-2 as per WHO is, being in close contact with the individual tainted with COVID 19 a ways off of 2 meters who is being coughing or sneezing. As indicated by research, COVID 19 is basically transmitted through respiratory droplet and close contact with the tainted individuals. The transmission can ensue through either undeviating or circuitous contact with the tainted individual. Airborne transmission is that of unique in relation to droplet transmission as airborne transmission happens however endotracheal suctioning, bronchoscopy, open suctioning, manual ventilation before intubation, and hence forth there are less probability of transmission of COVID 19 in the course of fecal-oral transmission. The signs and

manifestations of COVID 19 show up amid 2-14 days after exposure. It incorporates fever, chills, cough, sluggishness, chest torment, headache, running nose, loss of taste and smell, diarrhoea and vomiting. [3]

Recurrence happens uniformly among both genders. The danger of recurrence of COVID 19 is essentially connected with advancing age and co-morbid illness condition. Patients under 16 years old and individuals with long haul sickness like Coronary Illness, Coronary Artery Disease, Cardiomyopathy, Chronic Obstructive Pulmonary Disorder (COPD), Obesity are at a high danger of recurrence of COVID-19 though patients with diabetes and low lymphocyte tally are more averse to happen .[4] RT-PCR based examination was formerly used to spot the positive SARS-COV-2. ELISA units for detection of IgM and IgG antibodies against N and other SARS-COV-2 proteins are additionally been documented. [5]

In world statistics, (69,240,196) are Confirmed cases, (19,669,114) are active cases, (47,995,269) are recovered, (1,575,813) are deceased. In India, statistics of COVID 19: (9,767,371) are Confirmed cases, (372,293) are Active Cases,(9,253,306) are Recovered, (141,772) are Deceased.[6]

According to Centre for disease control and Prevention, adults of any age who are affected with any severe long term illness will have recurrence of SARS-COV-2. Children with severe illness like obesity, sickle cell disease, congenital heart disease, chronic kidney disease, asthma, chronic lung disease are highly prone to get recurrence of SARS-COV-2. [7] According to ICMR, SARS-COV-2 (COVID 19) testing status is (15, 07, 59,726) cumulative total samples tested up to December 09, 2020. (9, 22,959) No of samples tested on 09, 2020. [8] The time interval between inceptions of the disease to recurrence was estimated to be 35.4 days. The longest interval was reported to be 50 days [9]. The time interval between last negative PCR test results to positivity of recurrence was reported to be between 14-20 days. [10].

The purpose of this study is to assess the risk factors and recurrence of COVID 19 among patients recovered from COVID 19.

## II. METHODS

A systematic review and meta-analysis was done involving PubMed, Google Scholar and MedRxiv as a search engine for apt data. In this study we included all the descriptive studies, meta-analysis and systematic review which bestow with the risk and recurrence of SARS-COV-2 after recuperation. We extracted data following predefined hierarchy. The rate of incidence of risk factors and recurrence of SARS-COV-2 (redetectable positive) infection tend to occur more common in young age group below 16 years of age and patients with long term illness. Strict isolation was to be followed for at least 14 days from the time of discharge after patients meeting the discharge criteria absence of fever for at least three days, substantial improvement in both lungs in chest CT, clinical remission of respiratory symptoms, and two throat-swab samples negative for SARS-CoV-2 RNA obtained at least 24 hr apart. In these studies, we assessed the risk factors and recurrence of COVID 19 among the patients recovered from COVID 19 who were firmly isolated and followed proper quarantine.

## III. RESULTS

In this meta-analysis, according to 15 studies involving 2682 individuals, this is the systemic review on recurrent SARS-COV-2 positivity individuals among individuals who have recovered from COVID-19. The estimate of the incidence of recurrent SARS-COV-19 positivity was more, confirming that recurrent positivity among patients who have recovered and been discharged is relatively common. No studies have provided evidence of new infections in the family members or close contacts of the recovered patients that experienced recovered positivity. Several studies reported that there were no new cases infected from the patients with recurrent positivity.

According to Chen Jie, et.al, studies reveals that, in this cohort involving 1067 COVID-19 patients discharged from the hospital, 81 (7.6%) patients found to develop a repeat positive SARS-Cov-2 RNA result. For patients with recurrent RT-PCR positivity, the median duration from illness onset to onset of complete RNA negative was 3.30 days, while that from illness onset to recurrence was 50.0 days. Risk factors associated with recurrence of positive SARS-Cov-2 RNA included elevated IL-6 levels, increased lymphocyte count and CT imaging features of lung consolidation during hospitalization.

According to LanLan ,et.al, this study suggest that at least proportion of recovered patients still may be virus carriers. Although no family members were infected, all reported patients were medical professionals who followed strict quarantine at home with safe protocols. This study reveals that the patients who discharged after recovery, again infected with SARS-COV-2 as a recurrence after 5-13 days of discharge. This study suggests that the current criteria for hospital discharge and discontinuation of quarantine and continued patient management need to be re-evaluated.

#### IV. CONCLUSION

The study concludes that there are possible chances of recurrence of SARS-COV-2 among individuals who are recovered from SARS-COV-2 even after following strict self isolation protocols and home quarantine for 14 days.

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