



Clinical Outcomes in Young Adults Hospitalised with Covid-19

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ABSTRACT

Background: Stormy course has been reported among hospitalised adults with COVID-19 in high- and middle-income countries. To assess clinical outcomes in consecutively hospitalised patients with mild covid-19 in India we performed a study. Older age has consistently been associated with higher mortality in patients with coronavirus disease 2019(COVID-19). Un-fortunately, as shown by the results in this study, COVID-19 also does not spare young people. Mortality was higher among those who had obesity, hypertension, and male sex, as has been noted in general adult populations. Combined with what we know about the greater risk of older persons, what does this study tell us about COVID-19 and young adults. First, while young adults are much less likely than older persons to become seriously ill, if they reach the point of hospitalization, their risks are substantial. Second, obesity, hypertension, and male sex put patients of all ages at greater risk. As hypertension is preventable and treatable condition, reducing the risk of serious COVID 19 illness should be added to the already long list of reasons to increase medical and public health efforts in young adults to promote healthful diets and increased exercise.

Objective: This study was undertaken to evaluate the Young patient's outcome in covid-19 patients.

Methods: We developed a case registry of successive patients of 18-45 years age admitted with suspected covid-19 infection to our hospital (n=56). Covid-19 was diagnosed using re-verse transcriptase polymerase chain reaction (RT-PCR). Demographic, clinical, investigations details and outcomes were recorded. Descriptive statistics are presented. Information concerning Age, Oxygen support, Maximum Oxygen requirement, ICU admission, NIV support, Comorbidities was extracted from medical records for evaluation, interpretation, and association among Young adults.

Results: Among 56 adults discharged between April 1st 2021 and mid-June 2021 had the ICD-10 code for COVID-19. The mean age of this population was 36.571 years and SD was 6.8140 in which 39 were male and 17 were females. Overall, 6 had diabetes, 3 had hyper-tension, and 3 had hypothyroidism. During hospitalization, 28(50%) patients required O2 support, 6(10.7%) required intensive care, 11 (19.6%) required ventilator/NIV, and 7 (12.5%) died. No radiological and electrocardiographic abnormality was observed. All these were isolated or quarantined in the hospital and observed. Conversion to virus negative status was in 8.2±4.4 days and was significantly lower in age <35y compared to 35-45years.

Conclusion: Young adults aged 18 to 45 years hospitalised with COVID-19 experienced substantial rates of adverse outcomes 10.7% required intensive care, 19.6% required mechanical ventilation, and 12.5% died.

Keywords: SARS-CoV-2 infection, COVID-19, Hypertension

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INTRODUCTION

Covid-19 (SARS-CoV-2 infection) that was initially detected towards the end of December 2019 is now a worldwide pandemic. Coronavirus disease 2019 (COVID-19) is increasing rapidly among young adults. Often described as a disease affecting older adults, to our knowledge, few studies have included younger patients to better understand their anticipated clinical trajectory. Clinical burden of covid-19 has presently shifted to lesser developed states in India and is present

in younger population [1,2]. Dread of this disease is widespread globally and especially in lower-middle income countries where social media has generated an information epidemic destroying livelihoods. The clinical course of covid-19 ranges from asymptomatic carrier stage to a fulminant course characterized by high grade fever, cough, sore throat, loose stools, vomiting's, generalized tiredness.. A severe disease could be associated with fatal complications such as pneumonia, Acute Respiratory Distress Syndrome (ARDS), multi organ failure, septic shock, disseminated intravascular coagulation, and ultimately leading to death .We investigated the clinical profile and outcomes of 56 young adults (defined by the INDIAN Census as age 18-45 years) who required hospitalization for COVID-19 in the study hospital.

MATERIALS AND METHODS

This study conducted on 56 COVID-19 patients who discharged from April 2021 to June 2021, in covid ward and ICU of SREE BALAJI MEDICAL COLLEGE AND HOSPITAL, based on age group (18-45) table 1. Information concerning Age, Oxygen support, Maximum Oxygen requirement, ICU admission, NIV support, Comorbidities was extracted from medical records for evaluation, interpretation, and association among Young adults [3-5]. Comorbidities and outcomes during COVID-19 hospitalization were defined using diagnosis, procedure, or billing ICD-10 codes. Intensive care utilisation was defined by a billing code for intensive care unit room or daily ventilator management. Independent factors associated with the composite outcome of mechanical ventilation or death was identified by multivariable logistic regression.

Statistical Analysis

The descriptive statistics for quantitative data was expressed as mean and standard deviation and qualitative data was expressed as proportions. The parameters were compared among different groups using chi-square for significant differences. The level of significance was as-signed at $P < 0.01$ [6].

RESULTS

Among 56 adults discharged between April 1st 2021,

Table 1: COVID-19 patients based on the age group.

Age	Frequency	Percent
18 - 20 yrs	1	1.8
21 - 30 yrs	11	19.6
31 - 40 yrs	24	42.9
Above 40 yrs	20	35.7
Total	56	100

Table 2: COVID-19 patient's percentage between male and female.

Sex	Frequency	Percent
Female	17	30.4
Male	39	69.6
Total	56	100

mid-June 2021 had ICD-10 code for COVID-19. The mean age of this population was 36.571 years and SD was 6.8140 in which 39 were male and 17 were females. Overall, 6 had diabetes, 3 had hypertension, and 3 had hypothyroidism.

During hospitalization, 8(50%) patients required O2 support, 6(10.7%) required intensive care, 11(19.6%) required ventilator/NIV, and 7(12.5%) died. The median length of stay was 5 days (interquartile range, 2-9 days).

Hypertension (LR= 0.825; PEARSON CHI SQUARE 0.453a; $P = 1$) were common Odds of death or mechanical ventilation did not vary significantly with gender. Diabetes was associated with increased risk of this outcome in invariable analysis (LR=1.702, PEARSON CHI SQUARE 0.96a; CONTINUITY CORRECTION 0.107; $P = 1$) but did not reach statistical significance. All these were isolated or quarantined in the hospital and observed. Conversion to virus negative status was in 8.2 ± 4.4 days and was significantly lower in age $< 35y$ compared to 35-45years [7,8].

DISCUSSION

Globally, as of 7 June 2021, there have been 172,956,039 confirmed cases of COVID-19, including 3,726,466 deaths. In India, from 3 January 2020 to 7 June 2021, there have been 28,909,975 confirmed cases of COVID-19 with 349,186 deaths, whereas in Tamil Nadu 2,274,704 confirmed with 27765 deaths has been reported to WHO. The most common initial symptoms are cough, fever, fatigue, headache, myalgia, and diarrhea. Approximately 1 week after the onset of symptoms severe illness presentation occurs.

Though they are less likely to be hospitalised because of COVID-19 or to die from it, people in their 20s, 30s and 40s can catch the virus, and some develop severe and lasting symptoms, particularly if they are living with obesity, diabetes or high blood pressure (hypertension).

Older age has consistently been associated with higher mortality in patients with coronavirus disease 2019 (COVID-19). Unfortunately, as shown by the results in this study, COVID-19 also does not spare young people. Young adults aged 18 to 45 years hospitalised with COVID-19 experienced substantial rates of adverse outcomes: 10.7% required intensive care, 19.6% required mechanical ventilation, and 12.5% died. This in-hospital mortality rate is lower than that reported for older adults with COVID-19, but approximately doubles that of young adults with acute myocardial infarction. Hypertension and diabetes were common and associated with greater risks of adverse events. Young adults with more than 1 of these conditions faced risks comparable with those observed in middle-aged adults without them. Limitations of this study included defining COVID-19 infection and comorbidities by ICD-10 codes, which may be subject to misclassification, and variable reporting of race and ethnicity across hospitals. The definition of COVID-19 infection did not require microbiological

confirmation. Given the sharply rising rates of COVID-19 infection in young adults, these findings underscore the importance of infection prevention measures in this age group.

This case series of asymptomatic and mildly symptomatic young patients in India shows low rates of covid-19 complications. Young adults who died without a major comorbidity were relatively rare, representing only 3.8% of those admitted. The most prevalent major comorbidities within our population in this study were found to be pulmonary (19%), DM (17.2%), renal (4.8%), and cardiac (4.3%) and were shown to have increased risk in respect to mortality. A further notable finding in our analysis of young adults admitted with COVID-19 also suggests that elevated blood glucose on admission and elevated HbA1c tests are associated with increased mortality risk. These outcomes may also be used to support other standard methods in use to define mortality risk based upon common data developed for COVID-19 patients, such as logistic regression, t-testing and chi squared analyses. Such analysis is useful to identify important indicators in defining high risk COVID-19 patients, such as with age and medical history. Our temporal and survival analysis define four comorbidity risks that currently demonstrate a statistically significant link to COVID-19-related mortality in young adults.

Recent findings suggest currently there may be a shift in transmission rates in Indian cases to younger individuals. As the pandemic continues, there is a need for additional investigations into COVID-19 morbidity and mortality reports and findings specific to young adults. This report, which we believe to be specific analysis of hospitalised young adults in Sree Balaji Medical College to date, provides insight into this age group hospitalised with COVID-19. There were several limitations in our study that might create bias. Additional data from multiple health care systems may be better to assess the total scope of COVID-19 in this age group. This study demonstrates that existing co-morbidities and disparities in the populations such as in the hospital as well as those in public health are important factors

to consider in the pandemic. This report describes the burden of young adults with COVID-19 infection in Tamil Nadu health system and confirms that severe illness in young adults is significant but far less frequent than older aged individuals. Prehospital comorbidities appear to be an important factor in young adults. Additionally, these findings suggest the need for larger and more extensive studies of young adults with COVID-19 infection as well as those with severe disease in the absence of known comorbidities.

CONCLUSION

Young adults aged 18 to 45 years hospitalised with COVID-19 experienced substantial rates of adverse outcomes: 10.7% required intensive care, 19.6% required mechanical ventilation, and 12.5% died.

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