
**“TO STUDY THE CLINICAL PROFILE,
INFLAMMATORY BIOMARKERS AND CLINICAL
OUTCOMES IN PATIENTS OF COVID-19 WITH TYPE
2 DIABETES MELLITUS: A ONE YEAR CROSS-
SECTIONAL STUDY AT A TERTIARY CARE
HOSPITAL”**

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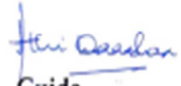



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ABSTRACT

Background: Diabetes in COVID-19 patients is associated with unfavorable outcome. Association between risk factors and COVID-19-related mortality among people with diabetes is uncertain. Hence, this study aims to evaluate the clinical profile, laboratory parameters and clinical outcomes to identify the risk factors for COVID-19- related mortality in patients with diabetes.

Study design: A tertiary hospital-based cross-sectional study.

Materials and Methods: All consecutive patients with COVID-19 with diabetes admitted to our tertiary care center from July 2020 to January 2021, were included in this cross-sectional study. Data including clinical, laboratory, respiratory, inflammatory biomarkers and radiological parameters were collected and compared between non-survivors and survivors.

Statistical Analysis Used: Computerized data entry was done using “Microsoft Excel[®] 2019” and was subjected to the statistical analysis using the “R Statistical Software version 4.0.2”. Statistical tests such as *t*-test, Mann-Whitney *U*- test, and Welch’s *t*-test were used for comparison of the mean/ distributions over groups. Kaplan-Meier survival analysis was performed to create a survival plot to evaluate the proportionality of hazard with respect to the type of steroid used. The fully adjusted cox proportional hazard model was used to check the association of the various parameters to the COVID-19 related mortality in T2DM patients.

Results: A total of 263 patients with COVID-19 were included. Of those, 85.17% of patients survived and 14.83% of patients didn’t survive. Demographic, Laboratory, inflammatory and pulmonary parameters were significantly differed between the survivors and non-survivors ($P < 0.05$ for all). Time to hospitalization from symptom

onset in non-survivors was 7 days and in survivors was 4 days ($P=0.0001$). CT severity scores were higher in non-survivors than survivors ($P=0.0001$). HbA1c values were significantly elevated in non-survivors than survivors ($P=0.0001$). The hospital stay was prolonged in non-survivors ($P<0.0001$). Adjusted cox-proportional hazard model showed elevated neutrophil count and ICU hospitalization were found to be the independent factors associated with COVID-19-related mortality in diabetic patients.

Conclusion: Our study findings suggested that COVID-19 patients with diabetes had poor outcomes. Compared to survivors, COVID-19-related mortality in T2DM patients had multiple negative outcomes in terms of laboratory, inflammatory and pulmonary findings. Elevated neutrophil count and ICU hospitalization were independently associated with mortality in COVID-19 patients with diabetes.

Keywords: COVID-19; Type 2 Diabetes Mellitus; Mortality; Cross-sectional studies; COVID-19 prognosis.

ABBREVIATIONS

ABBREVIATION	FULL FORM
2019-n-CoV	2019-novel-Corona virus
SARS- CoV-2	Severe Acute Respiratory Syndrome- Corona Virus- 2
WHO	World Health Organization
COVID-19	Corona Virus Disease- 2019
PHEIC	Public Health Emergency of International Concern
DM	Diabetes Mellitus
SARS-CoV	Severe Acute Respiratory Syndrome- Corona Virus
MERS-CoV	Middle East Respiratory Syndrome- Corona Virus
T1DM	Type 1 Diabetes Mellitus
T2DM	Type 2 Diabetes Mellitus
IL-6	Interleukin- 6
TNF	Tumor necrosis factor
IL-1 β	Interleukin-1 beta
β	beta
H1N1	Influenza A subtype H1N1 virus
ACE	Angiotensin Converting Enzyme
ARB	Angiotensin Receptor Blockers
NSAID	Non-Steroidal Anti-Inflammatory Drug

CO-RADs	COVID-19 Reporting and Data System
ADA	American Diabetes Association
ICU	Intensive Care Unit
PPE	Personal Protective Equipment
CBC	Complete Blood Count
RBS	Random Blood Sugar
LFT	Liver Function Tests
SGOT	Serum Glutamic-Oxaloacetic Transaminase
SGPT	Serum Glutamic Pyruvic Transferase
ALP	Alkaline Phosphatase
RFT	Renal Function Tests
LDH	Lactic Acid Dehydrogenase
Hs-CRP	High Sensitivity C- Reactive Protein
HRCT	High Resolution Computed Tomography
SPO ₂	Saturation of Peripheral Oxygen
O ₂ Sat	Oxygen Saturation
FiO ₂	Fraction of Inspired Oxygen
PO ₂	Partial pressure of oxygen
HbA1c	Hemoglobin A1c (Glycated Hemoglobin)
RT-PCR	Real Time- Polymerase Chain Reaction
RAT	Rapid Antigen Test

WBC	White blood cell
ATP	Adenosine Triphosphate
SD	Standard Deviation
HR	Hazard Ratio
LMWH	Low Molecular Weight Heparin
Steroid D	Dexamethasone
Steroid M	Methylprednisolone
CI	Confidence Interval
OR	Odds Ratio
RR	Risk ratio
FPG	Fasting Plasma Glucose

TABLE OF CONTENTS

SL NO	CONTENT	PAGE NO
1	INTRODUCTION	1-4
2	OBJECTIVES OF THE STUDY	5
3	REVIEW OF LITERATURE	6-15
4	MATERIALS AND METHODS	16-21
5	RESULTS	22-41
6	DISCUSSION	42-47
7	CONCLUSION & LIMITATIONS AND FUTURE SCOPE OF THE STUDY	48-49
8	SUMMARY	50
9	BIBLIOGRAPHY	51-69
10	ANNEXURES	70-79
	ANNEXURE-I- CONSENT FORM	70-74
	ANNEXURE-II- SELF DESIGNED PROFORMA	75-79
	ANNEXURE-III- MASTER CHART	-

LIST OF TABLES

SL NO	TABLE DESCRIPTION	PAGE NO
01	Age wise distribution of patients	22
02	Gender wise distribution of patients	23
03	Distribution of patients based on symptoms	24
04	Distribution of patients based on oxygen modality (during admission)	26
05	Distribution of patients based on co-morbidity	27
06	Distribution of patients based on oxygen modality (on 12th day)	28
07	Distribution of patients based on steroid administered	29
08	Distribution of patients based on the event of mortality	30
09	Distribution of patients based on ICU admission	31
10	Clinical and therapeutic characteristics of patients with type 2 Diabetes mellitus hospitalized for COVID-19	32-33
11	Comparison of demographic characteristics between non-survivors and survivors among COVID-19 patients with Type 2 Diabetes Mellitus	34
12	Comparison of clinical, laboratory, and therapeutic characteristics between non-survivors and survivors among COVID-19 patients with Type 2 diabetes mellitus	35-37
13	Comparison of median survival time for different steroids	38
14	Comparison of variables over admission and 12th day	40

LIST OF FIGURES

SL NO	FIGURE DESCRIPTION	PAGE NO
1	Age wise distribution of patients	22
2	Gender wise distribution of patients	23
3	Distribution of patients based on symptoms	24
4	Distribution of patients based on oxygen modality (during admission)	26
5	Distribution of patients based on co-morbidity	27
6	Distribution of patients based on oxygen modality (on 12th day)	28
7	Distribution of patients based on steroid administered	29
8	Distribution of patients based on the event of mortality	30
9	Distribution of patients based on ICU admission	31
10	Kaplan-Meier Curve for the comparison of steroid use in COVID-19 patients with Type 2 diabetes mellitus	39

INTRODUCTION

On 31st December 2019, there was an outbreak of 27 acute infectious pneumonia cases of unknown etiology in Wuhan city of Hubei, China¹. Soon after the novel corona virus was isolated from the respiratory tract swabs of infected patients, that was named as 2019-novel-Corona-virus (2019-n-CoV) by the World Health Organization (WHO), initially. Later, it was renamed as “*Severe Acute Respiratory Syndrome Corona Virus- 2 (SARS-CoV-2)*” by the Corona Virus Study Group and the disease caused by it was termed as Corona Virus Disease 2019 (COVID-19)². Eventually in a short span of time the viral disease had spread to almost all countries at an alarming rate, becoming one of the deadliest global pandemics and health emergency the world had witnessed.²

After a careful surveillance of the epidemiology of the COVID-19 globally, WHO declared the SARS-CoV-2/ Corona Virus Disease 2019 (COVID-19) as a *Public Health Emergency of International Concern (PHEIC)* or a **pandemic** on 30th January 2020³. Globally, 2019-n-CoV has infected around 591, 683, 619 individuals causing 6,443,306 deaths as on 19th August 2022⁴. The high rate of transmission, fatality and unsatisfactory antiviral therapies have drawn attention to this pandemic situation⁵.

Patients having COVID-19 present with symptoms of fever, fatigue, cough, dyspnea, and chest tightness^{6,7}. The symptoms ranged between a mild acute respiratory illness to severe pneumonia with respiratory failure, septic shock, acute respiratory distress syndrome (ARDS) and multiple organ dysfunction syndrome (MODS)^{8,9}. Severe symptoms occur primarily in adults of advanced age and in patients with underlying systemic comorbidities including diabetes mellitus,

hypertension, chronic respiratory disease, cardiovascular disease, cancer, and chronic renal disease¹⁰.

Diabetes Mellitus (DM) is one of the conditions that has the propensity to increase the incidence of morbidity and mortality of other diseases in the same individual, and subsequently showing a high relevance with disease progression in COVID-19 infection^{5,11}. People with T2DM are at increased risk of developing infections. Poor pulmonary function in diabetic patients with COVID-19 increases the risk of need for mechanical ventilation and poor prognosis.

A study conducted in 2003 involving 115 patients with SARS-CoV infection in Hongkong reported that, preexisting Diabetes was independently associated with increased risk of mortality^{12,13}. In a systematic review of 637 patients with Middle East Respiratory Syndrome- Corona Virus (MERS-CoV), it was found that diabetes was the commonest comorbidity affecting about 50 % of the cases¹⁴. Diabetes patients had increased risk of complications during the 2009 Influenza A (H1N1) pandemic (swine flu) as well¹⁵.

The prevalence rate of diabetes in COVID-19 patients was 7.4 % out of 1099 patients in a multicenter study from China¹⁰. Additionally, a meta-analysis including 7 studies done in Chinese population reported that, among all cases of SARS COV-2 infection, Diabetes was the second most common comorbidity with a prevalence rate of 9.7 %¹⁶. Similar finding was reported by yet another meta-analysis involving 21 studies predominantly from China, in which hypertension and diabetes were the commonly prevalent comorbidities in 47,344 COVID-19 patients with a prevalence rate of 15.6 % and 7.7 %, respectively¹⁷. It is found that the incidence of diabetes was higher by 2-fold, in severe cases of COVID-19¹⁸.

A systematic review and meta-analysis from Italy showed that, amongst the COVID-19 non- survivors, more than two-thirds of patients had diabetes¹⁹. Both diabetes and COVID-19 are inter-related to cause acute or chronic inflammation and the synergistic effect of both can affect disease progression and clinical outcomes²⁰.

COVID-19 infection is usually associated with increased expression of pro-inflammatory cytokines like Interleukin-6 (IL-6), tumor necrosis factor (TNF), and Interleukin-1 β (IL-1 β), etc., that is referred to as “**cytokine storm**”. This has a correlation with vascular hyperpermeability, lung damage, multiple organ failure and hence the COVID-19 infection severity^{21,22}. Increased inflammation and cytokine production intern results in insulin resistance and has an impact on β -cell activity, which results in a further decrease in insulin secretion in this manner creating a vicious circle²³. The resultant hyperglycemia may elevate the virulence of SARS-CoV-2, thereby reducing the phagocytosis and recruitment of polymorphonuclear neutrophils^{24,25}. Well controlled T2DM ($\leq 180\text{mg/dl}$) has significantly better clinical outcomes than the poorly controlled T2DM ($> 180\text{mg/dl}$) showing reduced mortality rate²⁶.

Angiotensin converting enzyme-2 (ACE2) receptor is the receptor for entry of SARS-CoV-2 into host cells²⁷. ACE2 expression is reported to increase in early T2DM and decrease in advanced T2DM^{28,29,30}. High and abnormally glycosylated ACE2 in uncontrolled T2DM may alter the binding of the SARS-CoV-2 to ACE2 receptors, resulting in the higher susceptibility to COVID-19 infection and increased severity of the disease³¹.

T2DM patients with COVID-19 infection have a significantly higher levels of D-dimer than those without T2DM, leading to higher risk of developing

microvascular thrombosis¹¹. Endothelial injury and coagulopathy may act as central mediators for lung damage in SARS-CoV-2 infection^{32,33,34}.

Therefore, it is important to assess parameters like random blood sugar (RBS), HbA1c, inflammatory biomarkers, HRCT and other laboratory markers which play a pivotal role in predicting the disease severity, progression and outcomes. There are limited data available regarding the effect of COVID-19 infection in diabetic patients. Hence, this study aims to study the clinical profile, respiratory parameters, radiographic indicators, inflammatory biomarkers, and clinical outcomes in patients of COVID-19 with T2DM in North Karnataka. This study also aims to compare and correlate the findings between survivors and non-survivors.

OBJECTIVES OF THE STUDY

To study the clinical profile, inflammatory biomarkers and prognosis of type 2 diabetes patients hospitalised with COVID-19 infection.

REVIEW OF LITERATURE

Diabetes mellitus is a known risk factor for COVID-19 and its worse clinical prognosis. But the association between both the entities is bidirectional³⁵. The current pandemic has significantly affected the patients with uncontrolled T2DM leading to increased susceptibility to COVID-19 infection. The effects caused by the metabolic changes can be either direct or indirect. Direct effects are those directly linked to the viral infection, whereas indirect effects are those that affect the glucose control due to the pandemic situation as well as due to the therapeutic drugs for the infection that affect glucose homeostasis.

In direct effect, the COVID-19 has made significant alteration in the glucose metabolism of diabetic patients leading to increased blood glucose level. This is linked to the increased production of cytokines and mediators of inflammation that lead to increased insulin resistance and associated high blood glucose levels³⁶. Additionally, it may also cause new onset diabetes mellitus by targeting the ACE2 receptors present in the islets of Langerhans causing pancreatic injury³⁷. Many treatment modalities got repurposed for the management of COVID-19. One among them is the use of glucocorticoids which shows reduced mortality in critically ill COVID-19 patients³⁸. On the contrary, it also affects the glucose homeostasis causing increased gluconeogenesis and increased insulin resistance³⁹. This review of literature aims to review the existing data for the relationship between diabetes mellitus and COVID-19 and the clinical, radiological, laboratory characteristics along with therapy and clinical outcome in a diabetic patient with COVID-19.

COVID-19 INFECTION AND ASSOCIATED CO-MORBIDITIES:

The pathophysiological mechanisms of COVID-19 remain unclear still, however, the most severe and fatal form of the disease is observed in the elderly patients or in those with other known co-morbidities including cardiovascular diseases, T2DM, hypertension, long standing pulmonary disorders, chronic kidney disease and malignancy^{10,16,42,43}. A meta-analysis done by Li BO et al., in the year 2020, A total of 1527 COVID-19 patients were enrolled in the study ,it was found that the diabetic or hypertensive patients had a two folds increased risk for ICU hospitalization⁸.A study done by Huang C et al., in the year 2020 in Italy ,a total of 41 patients were enrolled in the study. Most of the patients were men (30 [73%] of 41); amongst them 13 [32%] patients had underlying comorbidities, eight [20%] patient had diabetes, six [15%] patient had hypertension and six [15%] patients had cardiovascular disease.⁴⁵ Hence, it is recommended to treat the co-morbidities with due care, especially in elderly patients with previously underlying comorbidities.

COVID-19 AND DIABETES MELLITUS:

Diabetes- a predisposing factor for infections: Globally, diabetes mellitus is recognized as a major contributor to morbidity and mortality. It is linked to numerous macrovascular and microvascular complications that jeopardize the patient's overall survival.⁴⁷ The association between diabetes and infection is well recognized⁴⁸. Infection, especially influenza and pneumonia are more common in the elderly population with T2DM⁴⁹. However, it is still a controversy that whether diabetes mellitus itself predisposes and increases the impact from infections or it is the cardiovascular and renal co-morbidities commonly associated with diabetes involved as a main factors⁵⁰.

Diabetes and high blood sugar levels have been found in the literature as substantial risk factors for mortality and severity in a range of viral diseases, which include 2009 h1n1 influenza A (H1N1) pandemic⁵¹, MERS-CoV⁵³ and SARS-CoV⁵². A few studies, however, found no relationship between diabetes and illness severity.^{54,55} Other research, however, found that older people with long standing conditions, such as T2DM, were more likely to die from the severe form of COVID-19^{10,42,44}.

COVID-19 most likely increases the production of glucocorticoids and catecholamines in response to increased stress, resulting in a rise in levels of blood glucose and dysregulated glucose metabolism.⁵⁶ A retrospective research from Wuhan found that 10% of COVID-19 diabetic patients had at least one episode of hypoglycemia (70mg/dl)⁵⁷. It is documented that hypoglycemia mobilizes proinflammatory monocytes to increased platelet activity leading to higher chance of cardiovascular deaths in diabetic patients⁵⁸.

Diabetic mellitus being a chronic inflammatory state, that might alter the immune system's response to pathogens⁵⁰. High plasma glucose levels and insulin resistance stimulate the formation of glycosylation end products, cytokines and reactive oxygen species in order to modulate inflammation in the tissues⁵⁰. They also promote the formation of adhesion molecules. This inflammatory process reveals the underlying mechanism that causes diabetic individuals to be more susceptible to infections and have a worse prognosis⁵⁰. Abnormal type IV hypersensitivity response and dysfunctional complement activation is also seen in diabetic patients^{60,61}. Laboratory studies have revealed that exposing lung epithelial cells to high glucose concentration dramatically increases the severity of influenza virus infection, indicating that hyperglycemia enhances viral replication in vivo⁶².

COVID-19 PATHOGENESIS AND MAJOR IMPLICATIONS FOR COVID-19 MANAGEMENT IN DIABETES MELLITUS PATIENTS:

On admission, COVID-19 patients more often have lymphopenia, thrombocytopenia (lesser extent) and leukopenia¹⁰. Elevated levels of CRP, IL-6 and D-dimer had been linked to severe form of disease^{10,43}. T2DM patients have an imbalance between fibrinolysis and coagulation, in addition to the apparent inflammatory response. Insulin resistance and T2DM are also connected to endothelial dysfunction, increased aggregation and platelet activation, leading to a hypercoagulable state⁶³. Other chronic conditions like hypertension and cardiovascular diseases shows atherosclerosis, endothelial dysfunction, and vascular inflammation as a part of their pathogenesis⁶⁴. As a result, T2DM, either by itself or in combination with hypertension or cardiovascular disease, may contribute to the ineffective control of SARS-CoV-2 replication and increased inflammatory response, which have a negative impact on clinical outcome⁴³.

All Corona viruses employ a spike protein to bind to cells with particular receptors after being delivered into the host. The host-cell protease splits the spike after attaching to the target cells, permitting the virus to enter and reproduce⁶⁵. The receptor for SARS-CoV and SARS-CoV-2 has been identified as ACE2, which is widely expressed in many different human organs, including the intestines, kidneys, heart, respiratory tract, brain neurons and endothelium⁶⁵.

A study done by Henry C et al., in the year 2018, shown that the reduction in mortality and need for mechanical ventilation was seen in patients with viral pneumonia who were administered ACE2 inhibitors and Angiotensin receptor blockers (ARBs)^{68,69}. These medications are thought to have marked

immunomodulatory effects⁷⁰, reducing the systemic and pulmonary inflammatory responses by inhibiting cytokines^{68,69}.

Chloroquine, which is used to treat malaria, autoimmune diseases and it has a broad-spectrum antiviral function, it was a potential therapeutic option for COVID-19. A study done by Wang M et al., in the year 2020, had proven the effectiveness of chloroquine in treatment of COVID-19, in an invitro setting. Hydroxychloroquine elevates endosomal pH, which disrupts the glycosylation of COVID-19 cellular receptors and inhibits viral replication in addition to its anti-inflammatory and immunomodulatory effects^{81,82,83}.

A study done by Russell CD et al., found that histopathological evaluations revealed lung inflammation and diffuse pulmonary damage in SARS-CoV-2 and MERS-CoV infection⁸⁶. In these individuals, the available evidence did not indicate any benefits from corticosteroids, but rather a delayed viral RNA clearance and increased mortality⁸⁶. Because of this, the use of corticosteroids in the management of COVID-19 patients should be administered cautiously and under close supervision. Corticosteroids administration was required in the majority of the patients indicating a faster progression of COVID-19 in diabetic patients, which indicated a need for advanced therapy. COVID-19 patients who required corticosteroids, were monitored with caution throughout the hospital stay⁸⁶.

Data on the best care for diabetic patients with COVID-19 are not yet available. Monitoring blood glucose levels carefully and being cautious about drug interactions may help to avoid worsening of symptoms and adverse outcomes.

ARTICLES RELATED TO COVID-19 AND DIABETES MELLITUS:

1. A meta-analysis done by Kumar A *et al.*,⁹¹ in the year 2020, including 33 case-control studies with 16,003 patients, where the prevalence of diabetes was compared between survivors and non survivors. This study found that, there is a two-fold rise in mortality and severity of the disease in diabetic patients than non-diabetic individuals. The authors recommended further studies to evaluate the pathologic mechanisms of COVID-19 infection⁹¹.
2. In 2021, N Govender *et al.*,⁹² conducted a narrative review to look into the effect of insulin resistance in COVID-19 patients with diabetes. The results showed that COVID-19 individuals with T2DM are vulnerable to SARS-Cov-2 infection and had a greater mortality risk than non-diabetic individuals. The infection also decreases the expression of ACE2 causing exaggerated Angiotensin II activity followed by insulin resistance, heightened immune response and severe COVID-19⁹².
3. Shang J *et al.*,⁹³ performed a retrospective analysis in 2020, to determine the connection between T2DM and COVID-19. This study made use of 584 computerized case records that included demographics, clinical presentation, laboratory parameters, treatment, and clinical outcomes, complications. This data was compared between diabetic (n = 84) and non-diabetic (n = 500) groups. The findings revealed that the diabetes group had significantly reduced levels of albumin and lymphocyte but had a higher values of CRP, D-dimer, neutrophils and procalcitonin, when compared to non-diabetics. The incidence rate of bilateral pneumonia in diabetic patients was 86.9 %. Diabetic patients had significantly higher complications and poor clinical outcomes, like acute cardiac injury (47.4 %, p< 0.01), respiratory failure (36.9 %, p= 0.022), and

mortality (20.2 %, $p= 0.001$), than non-diabetes individuals. Kaplan-Meier survival curve depicted a lesser overall survival time and Multivariate Cox analysis showed that, diabetes was an independent risk factor in the prognosis of COVID-19 (hazards ratio- 2.180, $p= 0.031$). This study emphasized on optimal glycemic control for better prognosis in diabetic patients with COVID-19 infection⁹³.

4. A retrospective study was conducted in Iran by Raoufi M et al., in the year 2020, to compare the radiographic findings and the clinical outcomes amongst diabetic individuals with COVID-19⁹⁴. A total of 117 diabetic patients were enrolled in the study, there were no female patients in this study and the median age of the patients was 66 years (55 to 75years). These patients were divided into two groups based on HbA1C values. This study showed that, 73.5 % of patients had uncontrolled T2DM and 20.5 % of patients had well controlled T2DM, respectively.⁹⁴
5. A retrospective study by Wu J *et al.*,⁹⁶ in the year 2020, evaluated the influence of diabetes mellitus on the severity and fatality of COVID-19 infection. The medical records of 66 admitted COVID-19 patients were collected to classify into non-severe cases (mild and moderate) and severe cases (critical). Out of 66 patients enrolled in this study, 22 patients were diabetic and 44 patients were non-diabetics. In the diabetes group, seven (31.8%) patients were categorized as severe cases, which was considerably more than in the non-diabetics group ($p=0.033$). With an OR of 5.29, diabetes demonstrated a strong correlation with COVID-19 severity. With a pooled OR of 2.58, the meta-analysis supported this conclusion by demonstrating that, COVID-19 individuals with type 2 DM had a 2.95 times greater risk of mortality than those without the disease. This

- study recommended close monitoring of diabetes with optimal glycemic control and use of antibiotics in the management of COVID-19 with diabetes⁹⁶.
6. In the year 2022, Cariou B et al.,⁹⁷ performed a multicentric cohort research among French citizens, to determine if DM is a potential risk factor for COVID-19 infection. This study involved 2210 individuals of both diabetics and non-diabetics with COVID-19 infection, who were sex and age matched prior to the inclusion. Mortality and need for invasive mechanical ventilation (IMV) in combination or individually were considered as the predefined endpoint, which was monitored on the 7th and 28th day of admission. Multivariate analysis was done to compare the clinical outcomes between diabetic and non-diabetic patients. The results showed the mean age to be 69.4 ± 13.2 (diabetes) and 69.5 ± 13.2 (non-diabetes) years⁹⁷.
 7. A single center cohort study done by Cai *et al.*,⁹⁸ in the year 2020, at Renmin Hospital of Wuhan, to evaluate the role of fasting blood glucose (FBG) level in the COVID-19 prognosis. Clinical and laboratory information of the patients were collected to analyze it. In order to investigate the connection between additional risk variables, a multivariate cox regression analysis was used to examine the relationship between diabetes and/or FBG levels and mortality. The research included 941 COVID-19 subjects who were hospitalized. The study found a positive association between diabetes and COVID-19 related mortality (76 of 818- 9.3 %, $p= 0.012$). The fasting blood glucose level greater than 126mg/dl was an independent risk factor for mortality irrespective of the history of diabetes (HR- 2.20, $p= 0.010$). This was the first study to report that, FBG level $>126\text{mg/dl}$ predicted the worse prognosis for COVID-19 and can be considered as an effective method to evaluate the prognosis⁹⁸.

8. A meta-analysis and systematic review were performed by Huang I *et al.*,⁷ in the year 2020, to investigate the association between diabetes mellitus and the poor outcome in COVID-19 pneumonia .The results revealed that, diabetes mellitus had a composite poor outcome (RR- 2.38, $p < 0.001$) , high mortality rate (RR 2.12, $p < 0.001$), severe disease (RR- 2.45, $p < 0.001$), acute respiratory distress syndrome (ARDS) (RR- 4.64, $p = 0.001$), and disease progression (RR- 3.31, $p = 0.04$).⁷
9. A meta-analysis and systematic review done by Wu *et al.*,⁹⁹ in the year 2020, to prove relationship between T2DM and COVID-19 infection. This study demonstrated a strong link between T2DM and mortality in COVID-19 patients, with an OR of 1.75 ($p = 0.0002$).⁹⁹
10. A retrospective study done by Akbariqomi *et al.*, in the year 2020, to study the clinical characteristics and clinical outcomes of hospitalized COVID-19 patients with or without T2DM¹⁰⁰. A total of 595 COVID-19 patients were enrolled in the study. Out of 595 patients, there were 401 male subjects (67.3%) and their median age was 55 years. A total of 148 (24.8 %) patients were diabetics in this study.¹⁰⁰The most common symptoms were dyspnea (363, 61%), dry cough (368, 61.8%) and fever (419, 70.4%). Mortality rate was significantly higher in diabetics group 17.8% when compared to non-diabetic group 8.7 %($p = 0.003$)¹⁰⁰.
11. A systematic review was done by Pal R and Bhadada SK *et al.*, in the year 2020, to review the 2-way interaction between T2DM and COVID-19¹⁰². It was found that, diabetic patients with COVID-19 had a compromised innate immunity, elevated pro-inflammatory cytokines and increased ACE2 receptor expression leading to poor prognosis.

12. A study done by Mahrooz A et al., in the year 2021, to emphasize the relevance of long-term consequences and pleiotropic alterations in glucose metabolism following COVID-19 infection. COVID-19 shifts cellular metabolism from oxidative phosphorylation to glycolysis, which leads to a decrease in ATP generation. Together with metabolic imbalance, the impaired immune system increases the susceptibility of patients with diabetes to this deadly virus. COVID-19 induced metabolic alterations in immune cells can result in hyperinflammation and a cytokine storm. This study also showed evidences of new onset diabetes mellitus during the COVID-19 infection²⁷.

MATERIALS AND METHODS

STUDY DESIGN: A tertiary hospital-based cross-sectional study.

DURATION OF STUDY: One year (from July 2020 to June 2021).

SOURCE OF DATA: Patients who got admitted to the COVID -19 isolation wards and intensive care units (ICUs) at KLE'S Dr. Prabhakar Kore Hospital and Medical Research Centre, Belagavi along with newly diagnosed T2DM or a with history of T2DM.

INCLUSION CRITERIA: The patients who met the following inclusion criteria were enrolled in the study.

1. Patients who are 18 years of age or above and willing to participate in the study.
2. Patients who are tested positive for COVID-19 by Real-time Polymerase Chain Reaction (RT-PCR) or Rapid Antigen Test (RAT) along with newly diagnosed or history of T2DM, according to American Diabetes Association (ADA) Criteria.
3. Steroid naïve cases of COVID-19.

American Diabetes Association (ADA) criteria for diagnosis of T2DM:

1. A fasting plasma glucose level of 126 mg/dl or higher.
2. A 2-hr plasma glucose level of 200 mg/dl or higher.
3. Random plasma glucose of 200 mg/dl or higher in a patient with classic symptoms of hyperglycemia.
4. HbA1C > 6.5%.

EXCLUSION CRITERIA: However, the patients with the following exclusion criteria were excluded from the study.

1. Patients who are not willing to participate in the study.
2. Patients of COVID-19 infection with T1DM.

SAMPLE SIZE ESTIMATION: The sample size was calculated based on the prevalence rate using the formula given below:

$$\text{Sample size (n)} = \frac{(z^2) P(100-P)}{d^2}$$

where ‘n’ is the sample size, ‘P’ is the expected prevalence, ‘d’ is the maximum allowable error, and ‘z’ denotes the standard score for the level of confidence.

An assumed prevalence rate of 20 % death among patients of COVID-19 with T2DM along with a 20 % error was used to calculate the sample size.

Hence, with P = 20 %, d = 20 %, z = 1.96, CI (confidence interval) = 95 %, and p-value (level of significance) ≤ 0.05, the sample size was calculated to be 246 (n) patients.

Sample size (n) = 246 patients.

SAMPLING METHOD: The participants were recruited by universal sampling method considering the inclusion and exclusion criteria.

ARMAMENTARIUM:

1. Consent form
2. Self-designed proforma

For clinical examination:

1. Personal Protective Equipment (PPE) kit
2. Torch
3. Thermometer
4. Stethoscope
5. Sphygmomanometer

For radiographic examination: (Chest X-ray Radiograph- High resolution computed tomography)

1. Chest X-ray- Siemens Helio Phos D, RF X-ray RAD system Polydoros LX
2. CT- GE Revolution EVO(128 Slice).

For determination of respiratory parameters: (Respiratory rate, SPO₂, O₂ Saturation, FiO₂, and PO₂ levels)

1. ECG- GEMAC 2000

For blood investigations: Complete blood count(CBC), random blood sugar (RBS), liver function tests (LFT), Renal Function test(RFT) and Inflammatory biomarkers namely IL-6,D-dimer,LDH,hsCRP,Ferritin levels.

1. Sterile cotton/ gauze.
2. Sterile Alcohol wipes.

3. Sterile Disposable syringes.
4. Torniquet.
5. Evacuated collection tubes.
6. Gauze sponges.
7. Sterile gloves.
8. CBC- Mindray CAL 300, Mindray SC 120.
9. LFT- COBAS 6000 analyzer.
10. D-dimer- ACL TOP 550 CTS.
11. hsCRP- COBAS INTEGRA.
12. IL-6- ELECY5 IL-6 Immunoassay.
13. LDH- COBAS INTEGRA.

METHODOLOGY:

The present study was approved by the Jawaharlal Nehru Medical College Ethics Committee with the ethical clearance certificate reference no: (MDC/DOME/19 dated 25/01/21). Informed and written consent was obtained from the patients and the patient's relatives before the recruitment in the study. This study was carried out following the ethical standards of the responsible committee on human experimentation and with the Helsinki Declaration of 1964 and its later versions.

A universal sample size of 900 COVID-19 adult patients who were admitted to the isolation wards/ ICUs during the study period was considered for inclusion in the study. The patients were included/ excluded in the study based on the previously mentioned inclusion and exclusion criteria by a single calibrated investigator.

The data including detailed history taking, documentation of demographic data, duration of hospital stay, underlying comorbidities, time to hospitalization and medications used for other co-morbidities prior to hospitalization, were recorded from the patients. The requirement for oxygen support was also assessed.

The following routine biochemical and radiographic investigations were performed.

Biochemical investigations:

1. Complete blood count (CBC)
2. Random blood sugar (RBS), HbA1C.
3. Liver function tests (LFT).
4. Renal function tests (RFT).
5. Inflammatory biomarkers including serum ferritin, High Sensitivity C-Reactive Protein (Hs-CRP), D- dimer, Lactic Acid Dehydrogenase (LDH), and Interleukin-6 (IL-6).

Radiographic investigation:

1. Chest X-ray.
2. High Resolution Computed Tomography (HRCT).

Respiratory parameters such as respiratory rate, SPO₂, O₂ Saturation, FiO₂ and PO₂ levels were also recorded. All the above said parameters and investigations were assessed/ done on the day of admission before the start of steroid therapy. A predesigned proforma was used to abstract the required data and the same was evaluated carefully by a team of experienced general physicians.

Data collected were compared and correlated between the survivors and non-survivors. Further, the outcomes such as in-hospital death of COVID-19 patients with diabetes, associated risk factors, and survival probability based on the type of steroid administered, were evaluated.

STATISTICAL ANALYSIS:

Computerized data entry was done using “Microsoft Excel® 2019” and was subjected to the statistical analysis using the “R Statistical Software version 4.0.2” - {“R Core Team (2020). R: A Language and Environment for Statistical Computing. R Foundation for Statistical Computing, Vienna, Austria.”}. Continuous variables were represented in terms of Mean \pm Standard Deviation (SD) and Median (range), whereas the categorical variables were represented as frequency. Statistical tests such as Mann-Whitney *U*- test, *t*-test, and Welch’s *t*-test were used for comparison of the mean/ distributions over groups. The hazard ratio (HR) associated with interleukin- 6 (IL-6), duration of admission, neutrophil count, ICU admission, Low molecular weight heparin (LMWH) was calculated in diabetic patients. Kaplan-Meier survival analysis was performed to create a survival plot to evaluate the proportionality of hazard with respect to the type of steroid used. The fully adjusted cox proportional hazard model was used to check the association of the various parameters to the COVID-19 related mortality in T2DM patients.

RESULTS

A total of 263 COVID-19 patients with T2DM were included in the present study based on the inclusion and exclusion criteria.

Table 1: Age wise distribution of patients

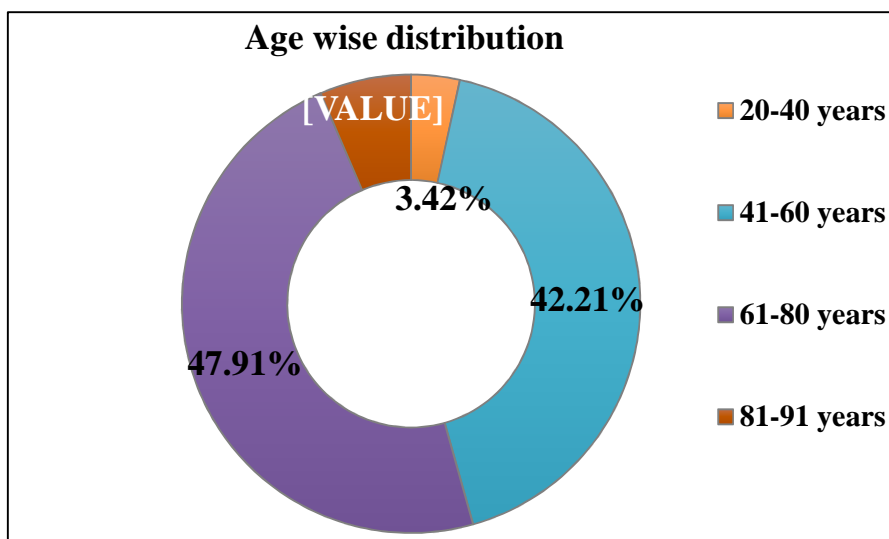
Age Groups (Age in years)	Number of Patients (%)
20-40	9 (3.42%)
41-60	111 (42.21%)
61-80	126 (47.91%)
81-91	17 (6.46%)

All values are expressed as frequency with percentage (in parentheses)

All values are expressed in years of age

Mean ± SD	Minimum	Maximum
61.74 ± 12.15	25	91

Figure 1: Age wise distribution of patients



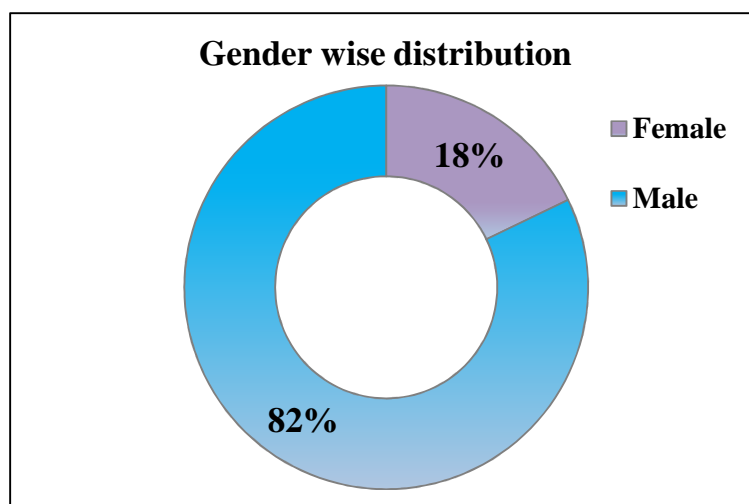
The mean age of the participants was 61.74 ± 12.15 years (Mean \pm SD) and were ranging from 25 years to 91 years. The majority of the patients were in the age group 61-80 years ($n= 126, 47.91\%$) and the least were in the age group 20-40 years. The age wise distribution of the participants is given in Table 1 and Figure 1.

Table 2: Gender wise distribution of patients

Gender	Number of Patients (%)
Female	47 (17.87%)
Male	216 (82.13%)
Total	263 (100%)

All values are expressed as frequency with percentage (in parenthesis)

Figure 2: Gender wise distribution of patients

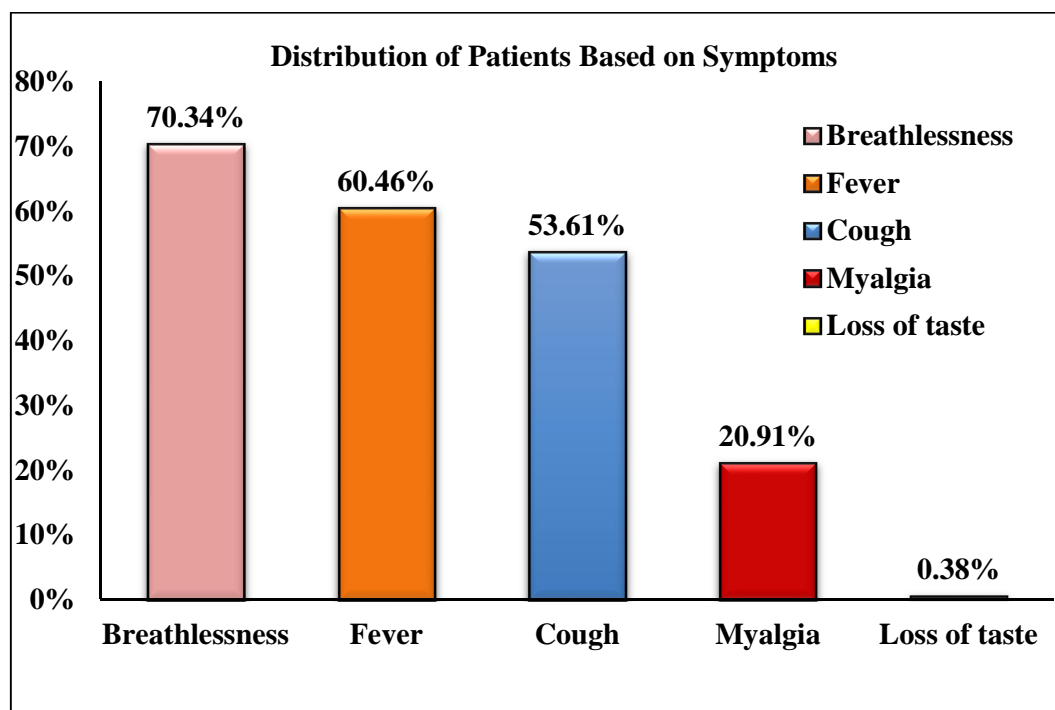


Out of the total 263 participants, there were 216 male subjects (82.13 %) and 47 female subjects (17.87 %). The gender wise distribution of the patients is given in Table 2 and Figure 3.

Table 3: Distribution of patients based on symptoms

Symptom	*Number of Patients (%)
Breathlessness	185 (70.34%)
Cough	141 (53.61%)
Fever	159 (60.46%)
Myalgia	55 (20.91%)
Loss of smell	0 (0%)
Loss of taste	1 (0.38%)

**Some subjects had more than one symptom; All values are expressed as frequency with percentage (in parentheses)*

Figure 3: Distribution of patients based on symptoms

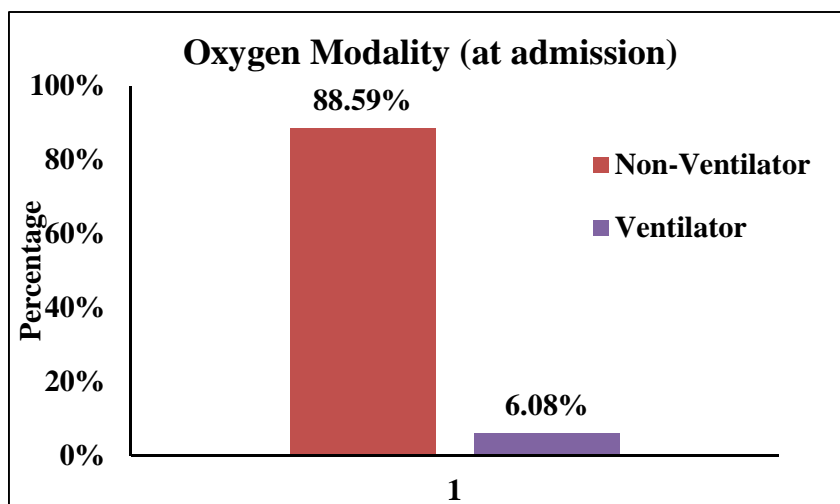
Patients presented with a wide range of symptoms namely breathlessness, cough, fever, myalgia, loss of smell, and loss of taste. A majority of the patients had breathlessness (n= 185, 70.34 %) followed by fever (n= 159, 60.46 %) and cough (n= 141, 53.61 %). A few patients reported myalgia (n= 55, 20.91 %) and loss of taste was the least reported symptom (n= 1, 0.38 %). However, none of them had symptom of anosmia (loss of smell). Some patients had more than one symptom. The distribution of the patients based on symptoms is depicted in Table 3 and Figure 3.

Table 4: Distribution of patients based on oxygen modality (during admission)

Oxygen Modality (at admission)	Number of Patients (%)
Non-Ventilator	233 (88.59%)
Ventilator	16 (6.08%)

All values are expressed as frequency with percentage (in parentheses)

Figure 4: Distribution of patients based on oxygen modality (during admission)

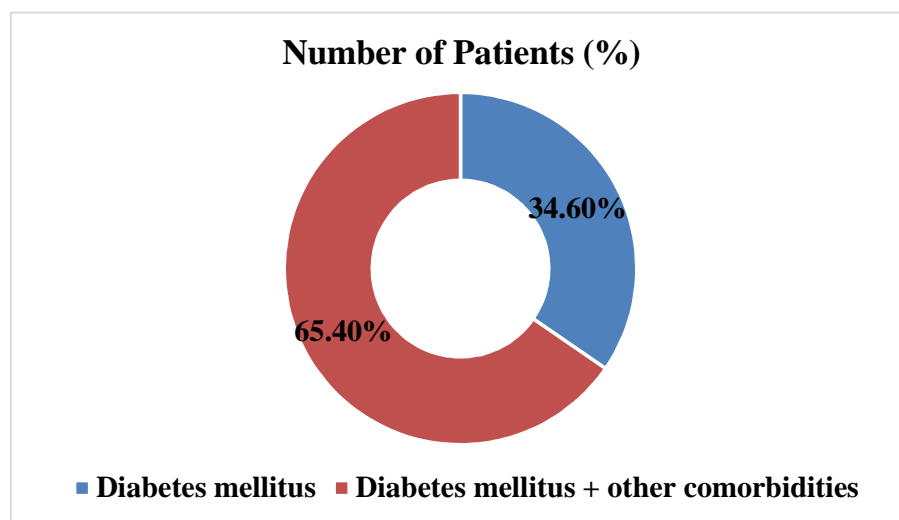


During hospital admission, majority of the patients did not require ventilator support (n= 233, 83.59 %). However, 16 patients (6.08 %) required ventilator support. The distribution of patients based on need for ventilator support at admission is represented in Table 4 and Figure 4.

Table 5: Distribution of patients based on co-morbidity

Co morbidity	Number of Patients (%)
Diabetes mellitus	91 (34.6%)
Diabetes mellitus + other comorbidities	172 (65.4%)
Total	263 (100%)

All values are expressed in frequency with percentage (in parentheses)

Figure 5: Distribution of patients based on co-morbidity

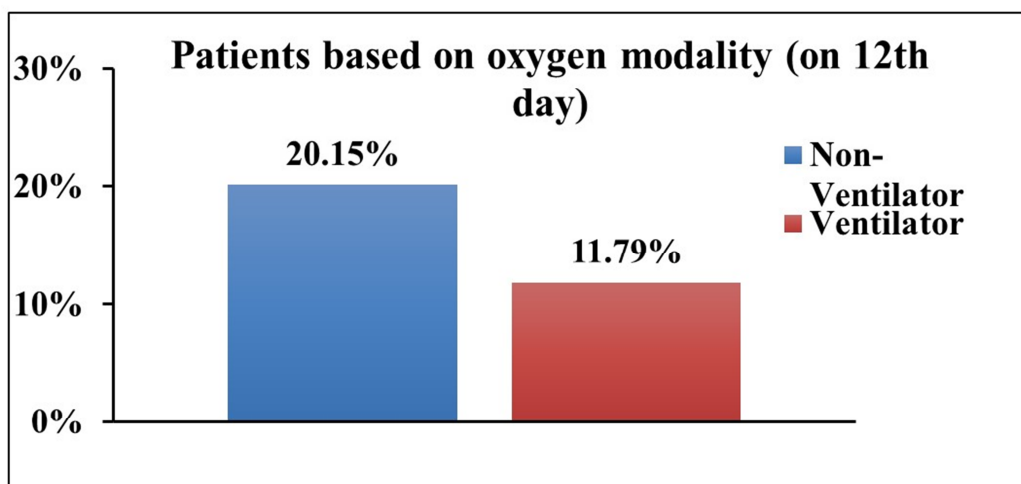
Majority of the patients (n= 172, 65.4 %) had other co-morbidities along with T2DM. 91patients (34.6 %) had T2DM without any other co-morbidities. The distribution of patients based on the presence of co-morbidities is showed in Table 5 and Figure 5.

Table 6: Distribution of patients based on oxygen modality (on 12th day)

Oxygen Modality (on 12th day)	Number of Patients (%)
Non-Ventilator	53 (20.15%)
Ventilator	31 (11.79%)

All values are expressed in frequency with percentage (in parentheses)

Figure 6: Distribution of patients based on oxygen modality (on 12th day)

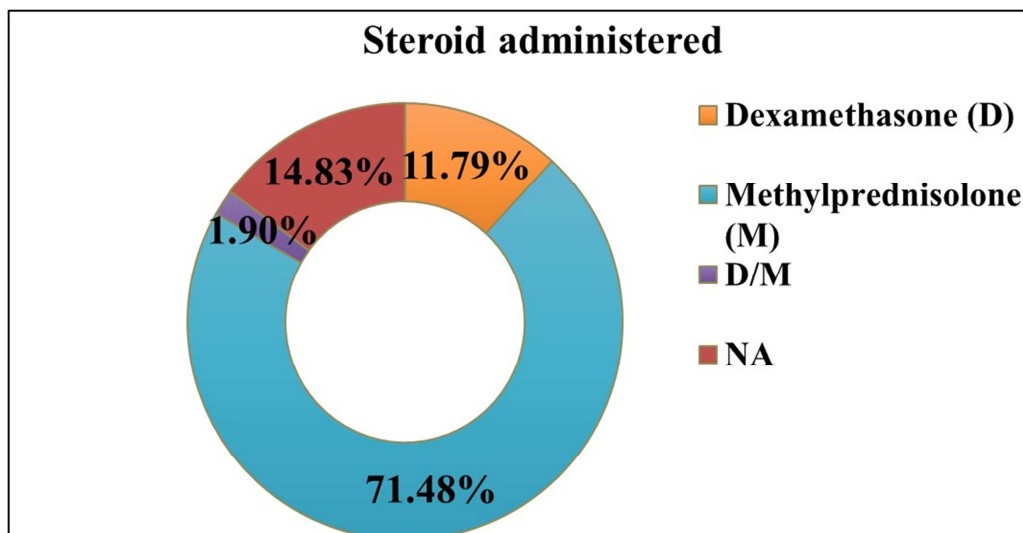


On 12th day of admission, the need for ventilator support was seen in 31 patients (11.79 %). 53 patients (20.15 %) did not require ventilator support and they received supplemental oxygen by means of oxygen mask (17%) and high flow nasal oxygen (HFNO) therapy (3.15%). The distribution of patients based on Oxygen modality on 12th day is represented in Table 6 and Figure 6.

Table 7. Distribution of patients based on steroid administered

Steroid given	Number of Patients (%)
Dexamethasone (D)	31 (11.79%)
Methylprednisolone (M)	188 (71.48%)
Dexamethasone + Methylprednisolone	5 (1.9%)
NA	39 (14.83%)
Total	263 (100%)

All values are expressed in frequency with percentage (in parentheses)

Figure 7. Distribution of patients based on steroid administered

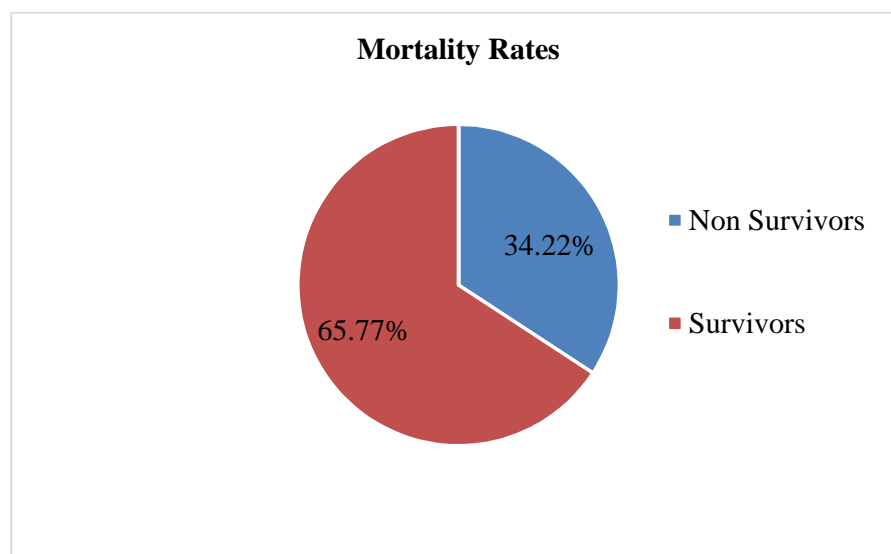
Dexamethasone and methylprednisolone were the steroid drug of choice used in this study. Out of 263 patients (100 %), 31 patients (11.79 %) were treated with dexamethasone (D), 188 patients (71.48 %) were treated with methylprednisolone (M), and 5 patients (1.9 %) were treated with both. However, 39 patients (14.83 %) did not require the administration of steroids. The distribution of patients based on the steroid administered is depicted in Table 7 and Figure 7.

Table 8: Distribution of patients based on the event of mortality

Mortality	Number of Patients (%)
Non-survivors	90 (34.22%)
Survivors	173 (65.77%)
Total	263 (100%)

All values are expressed in frequency with percentage (in parentheses)

Figure 8: Distribution of patients based on the event of mortality

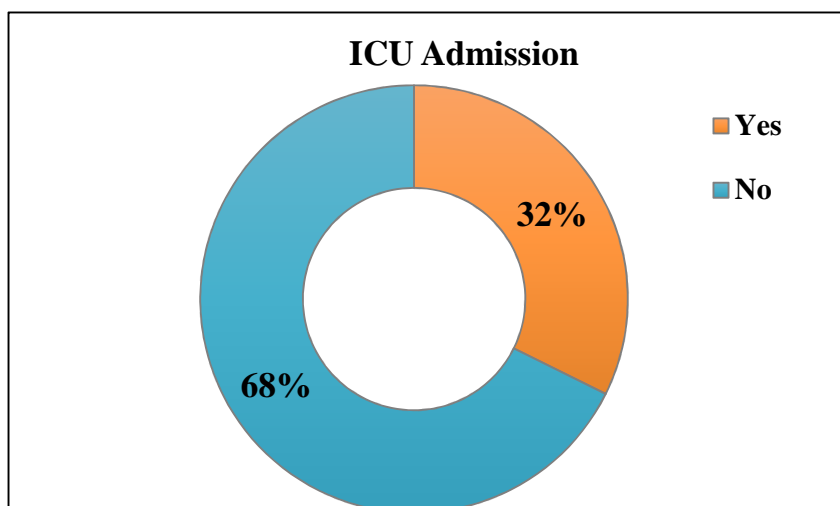


In the present study, mortality was seen in 90 patients (34.22 %). 173 patients (65.77 %) were treated successfully. The distribution of patients based on the event of mortality is presented in Table 8 and Figure 8.

Table 9: Distribution of patients based on ICU admission

ICU Admission	Number of Patients (%)
Yes	85 (32.32%)
No	178 (67.68%)
Total	263 (100%)

ICU- Intensive Care Unit; All values are expressed in frequency with percentage (in parentheses)

Figure 9: Distribution of patients based on ICU admission

ICU- Intensive Care Unit

Out of 263 patients (100 %), 85 patients (32.32 %) were admitted in ICU and 178 patients (67.68 %) did not require admission in ICU. The distribution of patients based at admission in ICU is presented in Table 9 and Figure 9.

Table 10: The clinical and therapeutic characteristics of the patients with Type 2 Diabetes Mellitus hospitalized with COVID-19 is given in Table 10.

Sl. No.	Variables	Mean \pm SD (N = 263)
1	Time to hospital from symptom onset (Days)	4.92 \pm 2.64
2	Respiratory Rate(cycles/min)	23.46 \pm 5.3
3	SPO ₂ (at admission)	71.4 \pm 37.16
4	O ₂ (at admission in L/min)	13.23 \pm 14.07
5	FiO ₂ (at admission)	85.19 \pm 25.32
6	PO ₂ (at admission)	78.31 \pm 41.92
7	CT severity	16.4 \pm 5.97
8	Hemoglobin(mg/dl)	12.53 \pm 2.22
9	Total Leukocyte Count (10 ³ /microliter)	578.66 \pm 2602.79
10	Neutrophils(10 ³ /microliter)	79.28 \pm 12.68
11	Lymphocyte(10 ³ /microliter)	14.27 \pm 10.09
12	Platelets(10 ³ /microliter)	2.35 \pm 1
13	Glycated Hemoglobin (HbA1c) %	8.45 \pm 1.73
14	Random blood sugar(mg/dl)	230.58 \pm 105.14
15	Urea(mg/dl)	54.89 \pm 46.88
16	Creatinine(mg/dl)	1.67 \pm 1.95
17	Serum-Glutamic-Oxaloacetic Transaminase(U/L)	80.59 \pm 520.23

18	Serum Glutamic Pyruvic Transaminase(U/L)	59.01±371.96
19	Alkaline phosphatase(U/L)	87.71±48.01
20	Ferritin(ng/ml)	658.64±791.86
21	hs-CRP (mg/L)	112.73±141.7
22	D- dimer(ng/ml)	975.74±1204.76
23	Interleukin-6 (pg/ml)	217.95±679.12
24	LDH(U/L)	455.79±335.02
25	Hospital Stay (In Days)	11.22±9.97
26	SPO ₂ (on 12 th day)	93.87±4.08
27	O ₂ (12 th day)	17.38±18.76
28	FiO ₂ (12 th day)	72.86±24.28
29	Remdesivir (No. of doses)	4.86±2.71
30	Tocilizumab (No. of doses)	1.6±1.15
31	LMWH (No. of doses)	66.47±21.54

CT: Computed Tomography; LDH: Lactic Acid Dehydrogenase; hsCRP; High-sensitivity C-reactive protein; ICU: Intensive care unit; LMWH: Low-molecular-weight heparin; FiO₂: Fraction of inspired oxygen; O₂: Oxygen; SPO₂: Oxygen saturation

Table 11. Comparison of demographic characteristics between non-survivors and survivors among COVID-19 patients with Type 2 Diabetes Mellitus

Sl. No.	Demographic characteristics	Non-survivors (n = 90)	Survivors (n = 173)	p-value
1	Age (in years)	65.79 ± 9.8	59.63 ± 12.73	<0.0001* ^a
2	Gender	Female	10 (11.11%)	37 (21.39%)
3		Male	80 (88.89%)	136 (78.61%)

Continuous variables were represented by mean ± S.D/Median (range) and categorical variables represented by frequency. ^aUnpaired *t*-test was used to compare mean/distributions over groups; ^bChi-square test was used to check the association between categorical variables. Level of significance: * $p \leq 0.05$ is considered statistically significant.

The mean age of the included patients was 65.79±9.8 years and 59.63±12.73 years in survivors and non-survivors, respectively. Unpaired *t* test for age (in years) between non-survivors and survivors revealed a highly statistically significant difference ($p < 0.0001$). Chi-square test showed a statistically significant difference for the gender distribution between the non-survivors and survivors.

Table 12. Comparison of clinical, laboratory, and therapeutic characteristics between non-survivors and survivors among COVID-19 patients with Type 2 diabetes mellitus

Sl. No.	Clinical, laboratory, and therapeutic characteristics		Non-survivors (n = 90)	Survivors (n = 173)	p-value
1	Time to hospitalization from symptom onset (Days)		7 (5, 22)	4 (1, 7)	<0.0001* ^γ
2	Respiratory Rate		26 (12, 42)	20 (16, 40)	<0.0001* ^γ
3	SPO ₂ (at admission)		89 (31, 100)	92 (0.65, 100)	0.98 ^γ
4	Oxygen Modality (at admission)	Non-Ventilator	77 (85.56%)	156 (90.17%)	0.0007* ^α
		Ventilator	12 (13.33%)	4 (2.31%)	
		NA	1 (1.11%)	13 (7.51%)	
5	O ₂ (at admission)		15 (2, 100)	5.5 (2, 40)	0.0002* ^γ
6	Fi (at admission)		90 (1, 100)	100 (82, 100)	0.56 ^γ
7	PO ₂ (at admission)		60.03±16.17	111.83±53.66	0.003* ^β
8	Co-morbidity	Only DM	25 (27.78%)	66 (38.15%)	0.09 ^α
		Other	65 (72.22%)	107 (61.85%)	
9	CT severity		21 (18, 24)	11 (5, 19)	<0.0001* ^γ
10	Hemoglobin (mg/dl)		12.81±2.2	12.39±2.23	0.1 ^β
11	Neutrophil(10 ³ /microliter)		89 (63, 98)	77 (42, 96)	<0.0001* ^γ
12	Lymphocyte(10 ³ /microliter)		6 (2, 27)	16.5 (0, 46)	<0.0001* ^γ
13	Platelets(10 ³ /microliter)		2.17±0.92	2.43±1.03	0.03* ^β
14	Glycated hemoglobin (HbA1c) %		9.44±0.71	8.14±1.83	<0.0001* ^β
15	Random Blood Sugar (mg/dl)		275.16±141.61	213.73±82.15	0.004* ^β
16	Serum urea(mg/dl)		55.5 (13, 265)	34 (0.66, 229)	<0.0001* ^γ

17	Serum creatinine(mg/dl)		1.27 (0.6, 11.2)	1 (0.16, 10.3)	<0.0001* ^γ
18	SGOT(U/L)		41 (12, 7437)	28 (9, 148)	<0.0001* ^γ
19	SGPT(U/L)		31 (10, 5318)	23 (1.8, 127)	0.0010* ^γ
20	Alkaline phosphatase(U/L)		95.5 (33, 498)	68 (22, 189)	<0.0001* ^γ
21	Total Protein(g/dl)		6.4±0.72	6.74±0.74	0.001* ^β
22	Serum Albumin(g/dl)		3.4 (2, 4.2)	3.8 (1.7, 4.7)	<0.0001* ^γ
23	Ferritin(ng/ml)		586.6 (46.52, 4030)	248.15 (6.84, 4526)	<0.0001* ^γ
24	hsCRP (mg/L)		150.9 (31.2, 772)	35.75 (1.71, 376)	<0.0001* ^γ
25	D- dimer(ng/ml)		891 (84.6, 7673)	455(1.5, 5000)	<0.0001* ^γ
26	Interleukin-6(pg/ml)		115 (1.5, 5000)	27.555 (1, 2162)	<0.0001* ^γ
27	Lactate dehydrogenase(U/L)		581 (243, 3650)	306.5 (6.6, 820)	<0.0001* ^γ
28	Hospital Stay(In Days)		13 (1, 69)	7 (1, 31)	<0.0001* ^γ
29	PO₂ (12th day)		90 (84, 99)	96 (86, 100)	<0.0001* ^γ
30	Oxygen Modality (12th day)	Non-Ventilator	12 (13.33%)	41 (23.7%)	<0.0001* ^α
		Ventilator	24 (26.67%)	7 (4.05%)	
		NA	54 (60%)	125 (72.25%)	
31	O₂ (12th day)		40 (15, 60)	5 (0, 30)	0.0004* ^γ
32	FiO₂ (12th day)		80 (40, 100)	40 (35, 90)	0.01* ^γ
33	SPO₂/FiO₂ ratio (12th day)		1.02 (0, 2.25)	2.48 (0.96, 2.74)	0.009* ^γ
34	Remdesivir		4 (1, 12)	5 (1, 12)	0.01* ^γ

35	Tocilizumab		1 (1, 6)	1 (1, 2)	0.38 ^γ
36	LMWH		80 (40, 120)	80 (40, 120)	0.45 ^γ
37	Steroid given	Dexamethasone (D)	7 (7.78%)	24 (13.87%)	0.35 ^α
		D/M	2 (2.22%)	3 (1.73%)	
		Methylprednisolone (M)	68 (75.56%)	120 (69.36%)	
		NA	13 (14.44%)	26 (15.03%)	
38	Worsened	No	38 (42.22%)	1 (0.58%)	<0.0001* ^α
		Yes	52 (57.78%)	172 (99.42%)	
39	Shifted to ICU	No	20 (22.22%)	158 (91.33%)	<0.0001* ^α
		Yes	70 (77.78%)	15 (8.67%)	

hsCRP; High-sensitivity C-reactive protein; LMWH: Low-molecular-weight heparin; CT: Computed Tomography; LDH: Lactic Acid Dehydrogenase; ICU: Intensive care unit; FiO₂: Fraction of inspired oxygen; O₂: Oxygen; PiO₂: Inspired O₂ tension; PO₂: Partial Pressure of Oxygen; SPO₂: Oxygen saturation; SGOT, Serum Glutamic-Oxaloacetic Transaminase; SGPT, Serum Glutamic Pyruvic Transaminase.

*Continuous variables were represented by mean ± S.D/Median (range) and categorical variables represented by frequency(percentage). ^α Chi-square test was used to check the association between categorical variables. ^β Unpaired t-test/^γ Mann-Whitney U test was used to compare mean/distributions over groups; Level of significance: * p ≤ 0.05 is considered statistically significant.*

The comparison of clinical, laboratory, and therapeutic characteristics between non-survivors and survivors by the statistical tests including Chi-square, Unpaired *t* test, and Mann-Whitney *U* test revealed a statistically significant difference ($p < 0.05$) for all the parameters except for SPO₂ (at admission), Fio₂ (at admission), Hemoglobin level, therapeutic drugs used- Tocilizumab, Low molecular weight heparin (LMWH), and steroid administered ($p > 0.05$). The detailed description of the statistical tests used and comparison of clinical, laboratory and therapeutic characteristics between non-survivors and survivors among COVID-19 patients with Type 2 diabetes mellitus is depicted in Table 12.

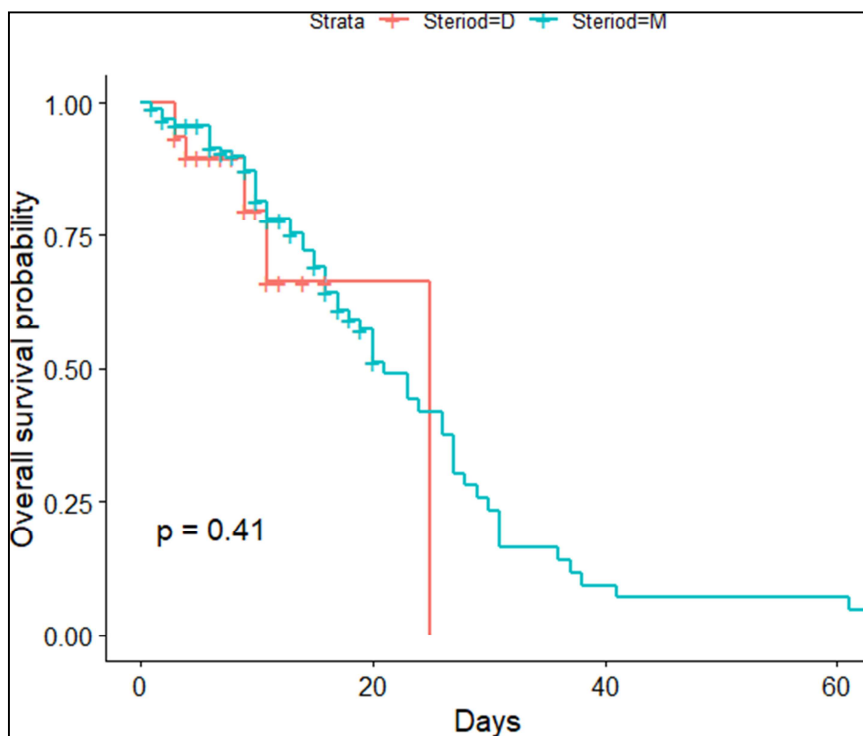
Table 13. Comparison of median survival time for different steroids

Steroid	Number of subjects	Events	Median Survival time (in days)	<i>p</i>-value
Dexamethasone	31	7	25	0.41 ^L
Methylprednisolone	188	68	21	

L: Log-rank test *p*-value; variables are represented by Median; Level of significance: * $p \leq 0.05$ is considered statistically significant.

Among the patients who required steroid administration, 31 patients received dexamethasone and 188 patients received methylprednisolone. Mortality was observed in 7 patients who received dexamethasone and 68 patients who received methylprednisolone. Among those patients, the mean survival time was 25 days and 21 days in patients who were on dexamethasone and methylprednisolone, respectively. The log rank test revealed no statistically significant difference in the mean survival time amongst survivors and non-survivors, who received dexamethasone and methylprednisolone. This is represented in Table 13.

Figure 10: Kaplan-Meier Curve for the comparison of steroid use in COVID-19 patients with Type 2 diabetes mellitus



D- dexamethasone; M- methylprednisolone

The use of corticosteroids did not show any association with adverse outcome in COVID-19 patients with T2DM ($p = 0.41$). Dexamethasone was administered to 31 subjects which was less compared to 118 subjects who received methylprednisolone. Due to lesser number of patients in the dexamethasone group, Kaplan-Meier curve dropped rapidly. The Kaplan- Meier survival curve for the comparison of steroid use in COVID-19 patients with Type 2 diabetes mellitus is depicted in Figure 10.

Table 14. Comparison of variables over admission and 12th day

Variables	At admission	At 12th day	p-value
SPO₂	91 (0.65, 100)	95 (84, 100)	<0.001*
O₂	10 (2, 100)	6.5 (0, 60)	0.06
FiO₂	95 (1, 100)	80 (35, 100)	1

*Variables were represented by Median (range); Statistical test used: Chi-square test; Level of significance: * $p \leq 0.05$ is considered statistically significant.*

The comparison of SPO₂, O₂ and FiO₂ parameters at admission and on 12th day of admission using Chi-square test, revealed a statistically high significant difference only for SPO₂ ($p < 0.001$) and not for O₂ and FiO₂ ($p > 0.05$). The same is depicted in Table 14.

The fully adjusted cox-proportional hazard model showed that elevated neutrophil count and prolonged stay in ICU were independent factors associated with COVID-19-related mortality in patients with DM. As the unit increased in the neutrophil count, hazard increased by a factor of 1.1381 times. When compared to the patients who were not admitted to ICU, hazard ratio was 26.2351 times more for the subjects who were admitted to ICU. The Cox proportional hazard model revealed that the factors influencing mortality were Neutrophil count (HR=1.1381, CI: (1.0481 ,1.236)) and ICU hospitalization (HR=26.2351, CI: (6.2193 ,110.668)). The median SPO₂ levels was significantly increased in patients on 12th day, when compared to the levels at admission (Table 10). The Odds ratio (OR) amongst non-survivors was 6.0779 times more (CI: 1.8976-19.4667) for the patients who were put on ventilator support at admission, when

compared to those who were not on ventilator support. The odds ratio (OR) amongst non-survivors was 11.7143 times more (CI: 4.0603-36.7967) for the patients who were on ventilator support on day 12 of admission, when compared to those who were on ventilator support on admission.

DISCUSSION

It has been reported in literature that patients with diabetes mellitus have a higher rate of morbidity and mortality when infected with COVID-19^{10, 54,104}. Optimal glycemic control has immense value in the prognosis of COVID-19 infection with diabetes mellitus^{57,105,106}. However, there are only a few studies that have evaluated the same in the Indian setting, especially in North Karnataka. In the present study, the clinical characteristics, risk factors and disease outcome associated with COVID-19 related mortality were studied in patients with Type 2 diabetes mellitus, admitted to our tertiary care center from July 2020 to Jan 2021.

This cross-sectional study, conducted at a tertiary hospital involved a total of 263 COVID-19 individuals with T2DM. A majority of the study participants belonged to the elderly age group above 60 years (54.37%) and previous studies have reported aging as an important risk factor influencing the COVID-19 prognosis⁵³. Shang *et al*, found that the diabetic patients above 65 years of age had a shortened overall survival time, which was demonstrated by the Kaplan-Meier survival curve in their study (HR= 5.260, p <0.01)⁹³. The mean age of the non-survivors in our study was 65.79 ± 9.8 years, which is in conjunction with the above finding.

A male predilection pattern with an incidence of 82.13 % was observed in the current study. This is similar to the findings observed by Raoufi *et al.*,⁹⁴ and Zhu *et al.*,²⁶ who reported the percentages to be 56.4 % and 53.6 %, respectively. Most of the non-survivors were males between the ages of 61 and 80 years.

A study done by Hsia CC *et al.*, shows that male patients with history of smoking had a higher incidence of other comorbidities such as, coronary artery

disease, hypertension, and COPD. They observed a higher mortality amongst them¹⁰⁹. Patients in their later years are likely to have a compromised immune system, rendering them more susceptible to infection¹⁰⁹.

The most common symptoms that were prevalent among the patients in our study were, dyspnoea, cough, and fever which is consistent with the findings of previous studies^{110, 111}. On admission to the hospital, 6.08 % of the patients required ventilator support, which increased to 11.79 % on the 12th day of admission. In this study, it was found that a large percentage of the patients (68 %) required ICU admission. Previous studies have reported that, diabetic patients have a 2 to 3 fold increased risk for ICU hospitalization and mechanical ventilation^{8,10,43,76}.

In the present study, the mortality rate of COVID-19 patients with diabetes mellitus was 34.22 %. Similar findings were observed by Raoufi M *et al*,⁹⁴ and Bode B *et al*,¹¹² who reported it to be 22 % and 29 % respectively.

There are several theories on how hyperglycemia affects the development of viral respiratory infections. Elevated blood glucose levels can impair pulmonary function, immune system and increase the generation of inflammatory cytokines^{50,114-116}. Additionally, the pancreas expresses angiotensin-converting enzyme 2 (ACE2) receptors, one of the key SARS-CoV-2 receptors, which suggests that COVID-19 infection can directly affect the pancreatic islets cells⁶⁵. Nevertheless, further research is needed to fully elucidate the effect of hyperglycemia in the pathophysiology of COVID-19.

Zhu *et al.*, studied a large-scale population of 7337 patients with confirmed COVID-19. Amongst them, 952 patients were diabetics. Higher ACE2 receptor

expression is seen in pneumocytes of Asian males which has higher affinity to bind with SARS-CoV-2, which could be a contributing factor in male patients' morbidity and mortality^{117,118}.

In our study, out of the 900 COVID-19 enrolled patients, 263 patients were diabetics. Thus, the prevalence rate of diabetes mellitus in our study, was 29.22 %. However, other studies by Raoufi *et al.*,⁹⁴ Zhu *et al.*,²⁶ Fadini GP *et al.*,⁷⁶ and Esteghamati A *et al.*,¹¹⁹ reported it to be 8.6 %, 13 %, 8.9 %, and 11.4 % respectively. Differences in the age and ethnicity of the patients could be the reason behind the variability in the prevalence of T2DM⁷⁶.

In the present study, non-survivors had statistically significant findings in terms of lymphopenia, neutrophilia and thrombocytopenia as compared to the survivors. Lymphopenia is a usual finding among COVID-19 patients but thrombocytopenia and leukopenia are relatively rare.¹⁰ It was reported that, the dysregulated immune response caused by T2DM increases the disease severity in COVID-19 patients with a higher ratio of lymphopenia and elevated levels of neutrophils, serum CRP, and IL-6.¹²⁰ D-dimer, being a fibrin degradation product, is one of the important markers of coagulation activity¹²¹. In our study, non-survivors showed elevated levels of serum ferritin, hs-CRP, D-dimer, IL-6 and LDH levels as compared to survivors. Similar studies done by W.J Guan *et al.*, and Zhou F *et al.*, demonstrated that elevated levels of inflammatory biomarkers such as IL-6, CRP and procalcitonin which are closely related to poor outcome.^{10,43}

These findings are consistent with immunological dysregulation noted in other non-diabetic COVID-19 infected patients with pneumonia.¹²² A study done by Zhou *et al.*, found that only d-dimer levels > 1µg/mL, was an independent predictor of

mortality among the other coagulation parameters. Elevated levels of D-dimer in this study, indicates a hypercoagulable state in the COVID-19 patients with T2DM, which is in conjunction with the findings of Shang *et al.*⁹³ Furthermore, SARS-CoV-2 infection which dysregulates renin-angiotensin system (RAAS) by acting on ACE 2 (angiotensin-converting enzyme 2) receptors, may contribute to the increased adverse events in individuals with diabetes and COVID-19.^{124,126} Study done by Hsia CC *et al.*, found that hyperglycemia stimulates T-cell differentiation leading to cascades of immunological events leading to morbidity and mortality.^{109,126}

In our study, CT severity scores were higher in non-survivors than survivors (P=0.0001). A Study done by Wu C *et al.*, found that the CT severity score as one of the most significant independent risk factors for catastrophic events, which is consistent with the findings of this study.^{9,127}

HbA1c is a reliable test for determining blood glyceic levels across a three-month period. Study done by Alaa A *et al.*, found that acute viral respiratory tract infections have been linked to insulin resistance^{126,127}. In this study, non-survivors displayed a statistically significant higher mean FBS and HbA1c levels than the survivors, supporting the above statement. A study done by Cai *et al.*, found that fasting blood glucose level can be used as a simple and effective tool to assess the prognosis in COVID-19 patients⁹⁸.

A study done by Russell CD *et al.*, found that histopathological evaluations revealed lung inflammation and diffuse pulmonary damage in SARS-CoV-2 and MERS-CoV infection⁸⁶. In these individuals, the available evidence did not indicate any benefits from corticosteroids, but rather a delayed viral RNA clearance and increased mortality⁸⁶. Because of this, the use of corticosteroids in the management of

COVID-19 patients should be administered cautiously and under close supervision. Corticosteroids administration was required in the majority of the patients indicating a faster progression of COVID-19 in diabetic patients, which indicated a need for advanced therapy. COVID-19 patients who required corticosteroids, were monitored with caution throughout the hospital stay. The event of mortality occurred in 22.58 % of the individuals who received dexamethasone and in 36.1 % of the patients who received methyl prednisolone. Similar finding was observed in a study done by Fatima SA *et al.*, who reported a high mortality rate, in patients who received methylprednisolone when compared to those who received dexamethasone¹²⁸. In our study, the use of corticosteroids did not show any association with adverse outcome in COVID-19 patients with T2DM ($p = 0.41$). Dexamethasone was administered to 31 subjects which was less compared to 118 subjects who received methylprednisolone. Due to lesser number of patients in the dexamethasone group, Kaplan-Meier curve dropped rapidly. In our study, higher mortality rate was observed in patients whose hospitalization was delayed after the symptom onset, patients who required prolonged duration of ICU stay and among those who required mechanical ventilation.

A similar study by Wu *et al.*, reported that, amongst 67 patients who received mechanical ventilation, 44 patients (65.7%) succumbed⁹. A retrospective study by Alaa *et al.*, reported that, even a delay of 1 day between symptom onset and hospital admission, was associated with a 1% increase in mortality risk (HR 1.01; $p < 0.005$)¹³⁰. Hence, delayed admission to hospital after the symptom onset, prolonged duration of hospital stays and the need for mechanical ventilation might predict poor outcome in COVID-19 patients with T2DM. On the 12th day of admission, non-survivors had deteriorated pulmonary functioning as compared to survivors in our study. Hence,

SpO₂/FiO₂ could serve as a non-invasive independent prognostic marker, that could aid in early identification and prompt treatment modification to improve overall survival¹³².

In the ICU, individuals with severe COVID-19 have a mortality rate of 50–65%.¹³³⁻¹³⁵ Furthermore, the patients requiring mechanical ventilation, the mortality rates have been reported to be as high as 97%¹³⁶. Lei *et al.*, reported that COVID-19 patients with diabetes were more likely to be admitted to the ICU than non-diabetic patients¹³⁷. Cox proportional hazard model in our study showed that, ICU hospitalization as the significant factor for COVID-19 mortality in DM patients and there is no effect of other variables on the outcome of the study. Furthermore, in diabetic COVID-19 patients, elevated neutrophil count is an independent predictor of mortality. Hence, routine measurements of neutrophil count might be crucial in the further management of the disease. The assumption of the cox proportion model was verified before applying the model. It is evident from the above findings that, COVID-19 in T2DM patients is associated with a greater risk of progression of disease, severity and poor prognosis.

CONCLUSION

The findings of the current study suggested that COVID-19 infection in diabetic patients, had a poor clinical outcome. The significant findings of the study are listed below:

1. Non-survivors, when compared to the survivors, displayed multiple negative outcomes like deranged coagulation profile, prolonged duration of hospital stay and need for mechanical ventilation.
2. Elevated neutrophil count and ICU hospitalization were identified as individual risk factors, determining the worse clinical outcome.
3. Patients with poor diabetic control reflected by high HBA1C values, had higher chances of mortality.
4. Amongst the non-survivors there was no statistical difference observed in the mean survival time, amongst those who received either dexamethasone or methyl prednisolone.
5. The choice of corticosteroid did not show any association with the adverse outcomes in COVID-19 patients with T2DM.
6. Patients who required ventilator support had a higher risk of mortality due to COVID-19.

People with diabetes are at increased risk of disease progression and developing COVID-19 complications, such as ARDS, ICU hospitalization, mechanical ventilation and death. Diabetic patients demonstrate severe inflammatory response and are more prone to develop cytokine storm. Management of patients with diabetes and COVID-19 is challenging. Optimal glycaemic control is crucial for better prognosis. Prevention and optimum treatment strategies are required to decrease morbidity and mortality in this high-risk population.

LIMITATIONS AND FUTURE SCOPE OF THE STUDY

1. Though this study was the first of its kind in North Karnataka to assess the clinical outcomes of COVID-19 infection in diabetic patients, it had a short follow-up period of 12 days from admission. Hence, the findings of this study and the long-term complications of COVID-19 in diabetic patients should be confirmed by a longitudinal study with a long-term follow up.
2. The above-listed conclusions are based on the observations and findings from a single center-based evaluation, which need to be reevaluated in patients of different ethnic origins, from multiple centers, belonging to different countries.
3. Gender based equal distribution was not feasible in the present study. Further studies should involve age and gender-matched controls to understand the age and gender-based variations.

SUMMARY

- ✓ The present study was undertaken involving 263 T2DM patients with COVID-19 who were admitted to KLE's Dr. Prabhakar Kore Hospital and Research Centre, Belagavi during the period July 2020 to June 2021.
- ✓ In the present study, the demographic details, comorbidities, respiratory parameters, radiographic findings, inflammatory biomarkers, clinical outcomes were assessed, evaluated and compared between the survivors and non-survivors.
- ✓ Out of 263 patients, 85.17% survived and 14.83% were deceased.
- ✓ Demographic, laboratory, inflammatory and respiratory parameters significantly differed between the survivors and non-survivors ($P < 0.05$).
- ✓ Time to hospitalization from symptom onset in non-survivors was 7 days and survivors was 4 days ($P = 0.0001$).
- CT severity scores were higher in non-survivors than survivors ($P = 0.0001$).
- The hospital stay was prolonged in non-survivors ($P < 0.0001$).
- ✓ HbA1c can be considered as a reliable prognostic factor for disease severity in diabetic patients.
- ✓ Adjusted cox-proportional hazard model showed that, elevated neutrophil count and ICU hospitalization were found to be the independent factors for prediction of mortality in diabetic patients with COVID-19 infection.

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ANNEXURE - I
INFORMED CONSENT

Dear Mr./Mrs./Dr. _____, you are kindly requested to enroll yourself in a research study titled: **“TO STUDY THE CLINICAL PROFILE, INFLAMMATORY BIOMARKERS AND CLINICAL OUTCOMES IN PATIENTS OF COVID-19 WITH TYPE 2 DIABETES MELLITUS: A ONE YEAR CROSS-SECTIONAL STUDY AT A TERTIARY CARE HOSPITAL”** being conducted by **Dr.** _____, a post graduate student in M.D. General Medicine and the study will be carried out under the direct supervision and guidance of **Dr.** _____, MD, FICP, Professor, Department of General Medicine, Jawaharlal Nehru Medical College, Belgaum.

You have been requested to participate in this as you fit into the laid out criteria for a study ‘subject’/ participant. Your participation in study is voluntary. During the study you will be asked some questions and you are supposed to answer to the best of your knowledge. Your decision whether or not to participate in the study will not affect your treatment in any form. If you decide to participate you are free to withdraw at any time.

TITLE OF THE STUDY: “TO STUDY THE CLINICAL PROFILE, INFLAMMATORY BIOMARKERS AND CLINICAL OUTCOMES IN PATIENTS OF COVID-19 WITH TYPE 2 DIABETES MELLITUS: A ONE YEAR CROSS-SECTIONAL STUDY AT A TERTIARY CARE HOSPITAL”

PURPOSE OF THE STUDY: To Study clinical features and outcome of diabetic patients affected by COVID 19.

PROCEDURES INVOLVED: If you agree to enroll yourself in my study, you will be interviewed regarding your present, past and family history then you will be clinically examined in detail and investigated accordingly.

Then you will be subjected to a few blood investigations, namely complete blood count, random blood glucose, blood urea, Sr.electrolyte, liver function test, HbA1c(if patient is diabetic), urine routine and microscopy,D-dimer,LDH,Sr.ferritin,IL-6,hs-CRP.

RISKS AND BENEFITS: There are no potential risks involved in this study.

BENEFITS OF TAKING PART IN THIS RESEARCH: By taking part in this study, prognosis and risk of development of cirrhosis of liver can be detected with the help of non-invasive markers like platelet and aspartate aminotransferase

VOLUNTARY PARTICIPATION/WITHDRAWAL FROM THE STUDY: Taking part in the study is voluntary. You may choose not to enroll yourself in this study and may choose to leave the study anytime in between.

ALTERNATIVES: Your decision regarding participation in study will not change present or future health care services offered to you at **KLES Dr. Prabhakar Kore Hospital and Medical Research Centre, Belgaum.** You would simply be excluded from the study if you wish to, and all your details shall be kept confidential and you will get the routine line of management.

PRIVACY AND CONFIDENTIALITY: All data collected or disclosed by you during the course of participation of study, will be kept fully confidential. If however during the course it becomes necessary for the progress of the course to disclose the identity, it would be done so only after your informed & written consent. The only people to know that you are a research subject are members of the research team. No information about you will be disclosed to other without your written permission except:

In emergency to protect your rights AND welfare.

If required by law.

AUTHORIZATION TO PUBLISH RESULT: The results of the study may be used to publish an article. When the results of research published or discussed, in a conference, no information will be displayed that would disclose your identity. Any information obtained in connection with this study and that can be identified with you will remain confidential.

FINANCIAL INCENTIVES FOR PARTICIPATION: No additional costs shall be incurred upon you for the purpose of this study. It is purely being done with the idea of research and all the cost of study will be borne by the investigator.

COMPENSATION: In the event that you become injured as a result of taking part in this study, treatment will be offered to you at KLES Dr. Prabhakar Kore Hospital and Medical Research Centre, Belgaum, or you will be given information about where to receive medical care. However, no reimbursement, compensation or free medical care will be given.

QUESTIONS/CONTACT DETAILS: You shall be free to contact the below mentioned name & addresses anytime during the study period for any clarification or help as you may desire for.

PRINCIPAL INVESTIGATOR: Dr. _____, MD (Post Graduate Student), Department of General Medicine, Jawaharlal Nehru Medical College, Nehru Nagar, KLE Hospital Road, Belagavi 590010.

GUIDE: Dr. _____ MD (GEN. MEDICINE), FICP Professor, Head of Department of General Medicine, Jawaharlal Nehru Medical College, Nehru Nagar, KLE Hospital Road, Belagavi 590010.

If you have any questions about your rights as a study participant, you may contact **Dr. Harsha Hegde**, Chairman, Institutional Ethics Committee on Human Subjects' Research, J.N. Medical College, Belagavi -590010, Ph. No 0831-2473777, Extn 4052, 4057.

CONSENT FORM

I voluntarily agree to take part in this study by signing below. I may withdraw at any time. I am not giving up any of my legal rights by signing this form. My signature below indicates that I have read this consent form, or it has been read to me, this consent form and have had all the questions answered.

Signature / Left Thumb print of the Participant or legally authorized representative

Participant's name:.....

Signature / Left thumb impression: of the participant

Name of the legally authorized:..... representative / guardian

Signature / Left thumb impression :.....

Witness' name:.....

Signature / Left thumb impression:.....

Investigator's name and signature:.....

Date:

Place:

ANNEXURE - II

PROFORMA

CASE NO:

NAME:

AGE/SEX:

IP NO.:

ADDRESS:

OCCUPATION:

COMPLAINTS AT PRESENTATION:

SYMPTOMS	DURATION	SYMPTOMS	DURATION
1.FEVER		7.LOSS OF TASTE	
2.SORE THROAT		8.HEADACHE	
3.DRY COUGH		9.DIARRHOEA	
4. COUGH WITH EXPECTORATION		10. MYALGIA	
5.BREATHLESSNESS		11.OTHERS	
6.LOSS OF SMELL			

Past history:

Co-morbidities

DM		HTN		IHD		CKD		CLD		CVA		Malignancy	
Others													

Drug history:

Personal history:

Family history:

PHYSICAL EXAMINATION:

GENERAL CONDITION:

PALLOR		CLUBBING	
ICTERUS		PEDAL EDEMA	
CYANOSIS		LYMPHADENOPATHY	

VITALS:

TEMPERATURE		R. R	
P. R		B. P	

At admission:

1. SPO₂ (Oxygen saturation in percentage):
2. Mode of oxygen delivery:
(NRBM/RBM/HFO/BIPAP/CPAP/NIPPV/Endotracheal intubation)
3. 3. Oxygen flow rate (Litres/minute) :

SYSTEMIC EXAMINATION:

R. S:

C.V.S:

C.N.S:

P.A:

LAB PARAMETERS AT ADMISSION:

COMPLETE BLOOD COUNT				RENAL FUNCTION TESTS	
Hemoglobin				Blood Urea	
TLC				S. Creatinine	
DLC					
Neutrophils		HbA ₁ C		S. Sodium	
Lymphocytes		RBS		S. Potassium	
Eosinophils				S. Bicarbonate	
Monocytes				S. Chloride	
Basophils					
Platelet count					

LIVER FUNCTION TESTS		INFLAMMATORY MARKERS	
Total Bilirubin		S. Ferritin	
Direct Bilirubin		Hs- CRP	
SGOT		D-dimer	
SGPT		IL-6	
ALP		LDH	
Total Protein			
S. Albumin			

RADIOLOGICAL EXAMINATION:

1. HRCT:

CT Severity score (Out of 25)	
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TREATMENT GIVEN:

MEDICATION	DOSAGE AND DURATION OF TREATMENT
Remdesivir	
Tocilizumab	
LMWH	
Unfractionated heparin	
Type of steroid used (Methyl prednisolone/Dexamethasone)	
Convalescent Plasma therapy	

Others	
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Clinical outcome will be assessed on 12th day of admission:

- 1. Duration of hospital stay : YES/NO
- 2. Need for oxygen therapy : YES/NO
- 3. Need for ICU admission : YES/NO
- 4. Recovered : YES/NO
- 5. Improved : YES/NO
- 6. Death : YES/NO

	At admission	12 th day of admission
1.SPO2(Oxygen saturation in percentage)		
2.Mode of oxygen delivery (NRBM/RBM/HFO/BIPAP/CPAP/NIPPV/Endotracheal intubation)		
3.Oxygen flow rate(Litres/minute)		

DEMOGRAPHY				CLINICAL PARAMETERS AT Admission										LAB PARAMETER										OXYGEN AT 12TH DAY		OUTCOME AT 12 DAY OF ADMISSION												
Sl. No.	IP No	Age	Sex	Symptoms (C=cough; F=Fever; B=breathlessness; M=Myalgia, Loss of smell=LS; Loss of taste=L-T)	Time to hospital from symptom onset (Days)	Admission SPO2 in %	Admission O2 modality (RBM,HFO, NIV, Ventilator)	Admission O2 rate (L/min)	Admission FiO2	Admission PO2 (Look at first ABG)	Co-morbidities	CT severity score(=~/25)	Hb	TLC	NEUTROPHIL %	Lymphocyte %	Platelets	HbA1c	RBS	Creatinine	T.Bilirubin	D.bilirubin	Ferritin	hsCRP	d-Dimer	IL-6	Duration of stay	spo2 @ 12th day	mode of O2 at 12 day	po2,ABG/D12	Type of Steroid used (Methylpred(M) or dexam(D))	Improved(Yes)/Worsened	Died	Duration of stay	ICU STAY YES(Y) OR			
1	1021625	74	M	F,B	7	96	RBM	10L		52.3	DM	12	17.5	20.4	89	7	1.27		114	1.94	1.91	1	1349		948	3950	1				M			YES	1	Y		
2	1019721	64	M	C,F,M,B	10	95	HFO	40L		92.5	DM		12.1	12.6	91	7	1.52		287	1.13		1.1	421			627.8	12	90%	NIV	72.1	D/M			YES	12	Y		
3	1021469	85	M	B	3	94	RA				DM/HTN		11.8		94	2	2.55	6.8	175	1.67	0.43	0.09					27				M	WORSENER			YES	27	Y	
4	1022318	66	F	F,M,B,L,T	7	94	RBM	8L			DM, HTN	18	11.5	12	89	6	3.07		118	1.01	0.53	0.19	915	1346	1935	21					M	WORSENER			YES	21	Y	
5	1022362	58	M	F,B		92	RBM	15L			DM	8	11.1	11	91	6	3.15	9.1	100	0.6	0.3	0.17	106		400	28.9	15	93%	HFO	166	M	WORSENER			YES	15	Y	
6	1019598	60	M	c,f,b		90	RA				DM		12.6		83	13	1.82	10.1	433	0.88	0.39	0.17	441.6	210	284	42.89	28				NIV			YES	28	Y		
7	1020782	82	M	C,F,M	5	93	RA				HTN/DM		11.4	13	80	16	1.66			0.94			78.79	326.7	725	286.2	28	96%	NIV		M	WORSENER			YES	28	Y	
8	1021922	58	F	B,F	2	90	NIV		100	48	DM, HTN		10.4	12	94	5	2.98				0.07	156	71	723	49.3	17				M	WORSENER			YES	17	Y		
9	1020039	73	M	C,B	3	80	NIV		100		DM/HTN/OBESITY/OSA		13.9	23.5	72	18	0.95					0.72					11				D			YES	11	Y		
10	1021923	65	M	F,B	7	90	RBM	15L			DM	15								9.29							29						WORSENER			YES	29	Y
11	1020750	64	M	C,F	5	100	NIV	15L	100		DM,HTN,IHD		13.2		93	4	1.8			0.88	0.98	0.64	1014		5000	16.24	18	92	NIV		M	WORSENER			YES	18	Y	
12	1020523	71	M	C,F,B	2	88	RBM	15L			DM,HTN		13.6	5.5	82	13	1.47	10.7	305	1.45	0.57	0.27	344	88.5	290	32.18	3				D			YES	3	Y		
13	1021629	73	F	C,F,B	3	87	RBM	15L			DM,HTN		11.3	6.3	74	21	1.64	9.8	161	1.74	0.6	0.34	80.2		360		23	84	NIV		M	WORSENER			YES	23	Y	
14	1023926	72	M	F,B	7	94	RBM	15L		77	DM,HTN		12.5	12.4	90	8	2.14			1.25	0.5	0.28	3669		419		31	89	NIV	82.8	M	WORSENER			YES	31	Y	
15	1023965	70	M	C,F,B		64	RA				DM, HTN		16.1	8.1	86	11				1.71	0.74	0.37	1434	169	644	8.48	6	95	NIV	34.2	M	WORSENER			YES	6	Y	
16	1022916	50	M	C,B	3	93	NRBM	15L			DM	22	12.4				2.38		352	1.01	1.06	0.74	308	649.8	1392	347.1	17	90	HFO		M	WORSENER			YES	17	Y	
17	1022462	51	M			93	RBM	15L			DM,AKI	13	13.4	20	94	3	0.69		276			0.6	0.28	2318		1349	113	6				M	WORSENER			YES	6	Y
18	1022738	63	M	C,F,M,B		95	NIV		100		DM		12.5	10300	89	9	4.59		509			0.3	0.1	413		1482	26.6	9				M	WORSENER			YES	9	Y
19	1019602	68	M	C,F,B	3	87	RBM	15L	70	57.8	DM		8.5	19	90	5	1.83	9.6	498	1.55	0.2	0.1	737.9		5000	97.51	6				M	WORSENER			YES	6	Y	
20	1020598	49	M	F,M	8	86	RBM	10L			DM		14.1	4.7	81	16	1.77		158	1.01		0.15	1349		937		27	95	NIV		M	WORSENER			YES	27	Y	
21	1022740	74	M	B	1	99	NIV		70	90	DM,HTN		12.8	16.7	97	2	2.32			3.52		0.2	499		>5000		36	86	NIV	97	M	WORSENER			YES	36	Y	
22	5783029	73	M	C,F,B	4	76	RBM	10L			DM,HTN		10.8		89	6	1.84				0.43	0.26		46			10					M	WORSENER			YES	10	Y
23	1023296	66	M	C,F,B	7	96	RBM	5L		52.6	DM,HTN		14.3	2.6	75	20	1.69	8.2	188	0.78		0.6	847.6		573	222	11				59.7	M	WORSENER			YES	11	Y
24	1021459	56	M	M		84	RBM	15L			DM	1	13		88	9	2.34				0.32	7	923		765		20	92	NIV		M	WORSENER			YES	20	Y	
25	1021081	66	F	C,F,B	2	94	RBM	10L			DM		12	9.7	86	11	2.61			0.85	0.33		82.91		328	164	2					M	WORSENER			YES	2	Y
26	1021843	84	M	B	11	96	RA				DM,HTN,IHD		13.3	13	90	4	2.36			1.06	1.03	0.34	385.3		898		16	92	NIV		M	WORSENER			YES	16	Y	
27	1022051	65	M	C,F,B		56	RA				DM,HTN	22	10.1	17	93	5	1.07		352	10.8	0.39		2000		346	768	5					M	WORSENER			YES	5	Y
28	1020930	68	M	F,B		82	RBM	10L			HTN,DM	22	14.7	15.8	86	6	1.9	339	1.17	1.06	0.2	632.4				14	88	HFO		M	WORSENER			YES	14	Y		
29	1020766	56	M	B,M		90	RBM	2L			DM,HTN,IHD		11.8	6.4	73	22	1.79			1.15	0.7		229		187	102.8	3				D			YES	3	Y		
30	1020760	56	M	B		96	RA				DM,HTN, c/c pancreatitis		8.7	23.1	89	5	3.6	4.6				0.59	0.48			1858		2				M	WORSENER			YES	2	Y
31	1021514	65	F	C,B		77	RBM	15L			DM, HTN	20	11.8	13	90	6	2.57	10.1	300	0.81	0.44	0.18	432		1528		15	86	NIV		M	WORSENER			YES	15	Y	
32	1021972	69	M	C,B	5	83	RA				DM,HTN,CKD		9.3	4.3	93	6	2.03		367	11.2	0.4	0.11	904		509		11					M	WORSENER			YES	11	Y
33	1020855	81	M	C,F,B		82	RA				DM,HTN	21							471	1.32	0.46	0.12	46.52				9				D			YES	9	Y		
34	1021636	61	M	C,F,B		82	RA				DM		15.2	9.4	87	10	2.03		145	0.91			1341		350		16	89	NIV		M	WORSENER			YES	16	Y	
35	1021999	50	M	C,B	5	83	RBM	15L		70.5	DM		15	11.7	93	5					1.3		505		770	175	10	97			85.3	M	WORSENER			YES	10	Y
36	1021950	58	M	C,F,B	3	98	NIV		100	38.4	DM,HTN		11.7	8.6	92	4	2.48			1.03	0.71	0.55	529		1327						M	WORSENER			YES		Y	
37	1020115	78	M	B		93	RBM	10L			DM,HTN,IHD	5															5								YES	5	Y	
38	1019681	75	M	C,F,B	3	87	RBM	15L			DM,HTN,IHD	5								1.46			1.6	2924		1456	23.18	4				D			YES	4	Y	
39	1022988	60	M	F,B	5	31	RA				DM	17	13.9	14.6	97	2	2.2	8.4	249	1.05	0.79		615		1193	110	3					M	WORSENER			YES	3	Y
40	1020910	59	M	C,F,B	6	95	RBM	10L		56.9	DM		15.3	7.8	84	12	2.2			0.91	0.8	0.4					13	90	NIV		M	WORSENER			YES	13	Y	
41	1021528	70	M	C,F,B	3	78	NIV		90		DM,HTN		13.4	9.8	98	2	1.39			2.4	0.8		2574		968	49.4	20	93	RBM	46.7	M	WORSENER			YES	20	Y	
42	1023093	70	M	C, F		93	RA				DM		10.3				4.02			7.28	8.26	6.07					29	92	HFO		M	WORSENER			YES	29	Y	
43	1019888	62	M	C,M,F,B		92	HFNO	60L	90	53.8	DM,HTN,IHD,CKD		12.9	10.9	80	12	3.22	144		1.04	0.87				59.3		1.5	25	88	HFO		D	WORSENER			YES	25	Y
44	1021494	81	M	M,F,B	3	97	RBM	5L			DM		13.7	3.9	74	21	1.31	8.1		0.95	0.62	0.99	513	57.9		80.4	37	94	NIV		M	WORSENER			YES	37	Y	
45	1021238	74	M	M,B	7	86	RBM	15L			DM,HTN,IHD																2								YES	2	Y	
46	1023059	77	M	M,B		94	RBM	15L		40.3	DM, IHD	24	12.6	15,600	84	8	4.64	10	220	0.7	0.62	0.23	387		999	62.9	31	92	NIV		M	WORSENER			YES	31	Y	
47	1020214	74	M	F,B	3	83	RBM	15L		66.8	DM,HTN,CVA	16	12.7	14000	82	12	3.47	6.1			1.53	0.6	305		517		10				76.8	M	WORSENER			YES	10	Y
48	1020695	70	M	C,B	2	74	RBM	15L		74	DM,HTN	20	11.9	13.1	91	5	2.78	8.3	210	0.96	1.1	0																

Sl. No.	IP No	Age	Sex	Symptoms (C=cough; F=fever; B=breathlessness; M=Myalgia, Loss of smell=L;S; Loss of taste=LT)	Time to hospital from symptom onset (Days)	Admission SPO2 in %	Admission O2 modality (RBM,HFO, NIV, Ventilator)	Admission O2 rate (L/min)	Admission FIO2	Admission PO2 (Look at first ABG)	Co-morbidities	CT severity score(-/25)	Hb	TLC	NEUTROPHIL %	Lymphocyte %	Platelets	HbA1c	RBS	Creatinine	T. Bilirubin	D.bilirubin	Ferritin	hsCRP	d-Dimer	IL-6	Duration of stay	spo2 @ 12th day	mode of O2 at 12 day	po2(ABG)D12	Type of Steroid used (Methylpred(M) or dexam(D))	improved(Yes)/worsened	Died	Duration of stay	or ICU STAY YES(Y) OR	
50	1024925	85	M	B		96	RA				DM,HTN,IHD,Asthma	4	14.7	27.1	91	2	3.1		111	2.23		0.27	1576	56.1	635	187.7	31				M	WORSENER		31		
51	1024541	80	M	B		85	RBM	15L			DM		15.8	6800	95	3	0.78		234	2.69		0.81			>5000	1.52	6				M			YES	6	Y
52	1024729	80	F	C,B		92	RBM	3L			DM,HTN	13	11.8	7.8	77	13	2.02	6.8	140	1.37	0.61	0.1	161	772	655	72.89	9			71	M			YES	9	Y
53	1024059	79	M	C,F,B,M		92	RBM	10L		60	DM	18	15.4	11.8	90	6	3.48					0.36					8							YES	8	Y
54	1019824	58	M	C,F,B		85	RA				DM		13.6	10.3				8.8	287	1.18	0.49	0.33	2254		1237	161.5	7				M		YES	7	Y	
55	1021994	70	M	C,M		85	RBM	15L			DM		12.3	12	93	4	2.35		110	1.01	1.22	0.12	1243		884	261	20	90	NIV		M	WORSENER		20	Y	
56	1023084	48	M	C,B		75	RA				IHD, DM,HTN		14.9				1.38			1.09		0.89	383		1004		16	86	NIV		M	WORSENER		16	Y	
57	1024640	53	M	C,B		86	RBM	15L			DM,Hypothyroidism		9.4		83	13	1.92	7.4			0.52	0.33	448.4	99.2	1541	105.9	26				M	WORSENER		26		
58	1025352	75	M	C,B			NIV	70L	100%		DM,HTN																10				M		YES	10	Y	
59	1019820	72	M	C,F,B	2	89	RBM	5L			DM,HTN,IHD																				D	WORSENER				
60	1024217	50	M	C,B	2	86	RBM	15L			DM,HTN	14	9.5	10.6			4.16			1.9	1.47	1.31	134.1	366.9	646	305.6	64	92	HFO		M	WORSENER		64		
61	1022477	68	M			85	RBM	15L			DM,HTN,Parkinsons	19	13	25.1	88	3					0.47	0.1	121	295.7		76.62	10				M	WORSENER		10	Y	
62	1022029	40	M	C,F,B	6	86	RBM	15L			DM							176			1.01	0.62	864	74.3	760	115	3				M		YES	3	Y	
63	1024348	70	M	M,B	1	89	NIV		100	54	DM,HTN,CKD	15	9.4		87	8	1.51	262	6	0.75	0.39	540	209		251				60			WORSENER				
64	1023808	56	M	C,F,B	2	60	RA				DM,HTN,Asthma		13.4	11.1	92	4	1.4			1.39	0.71	0.3	1941	218.7	571		6				M		YES	6	Y	
65	1023934	55	M	C,F,B	7	96	RBM	4L			DM,HTN		11.9	4.8	85	11	1.21	9.2		1.1	0.33	0.17	1988	200		38	9			54.5	M		YES	9	Y	
66	1022661	83	M	C,M,B	3	93	RBM	5L			DM,HTN		13.9	5.4	63	27	1.85		252		1.93	0.23			1331						M	WORSENER				
67	1021552	65	M	C,F,B	4	60	RA				DM,HTN,IHD		14	6.4	89	7				1.06		0.38	320.1		1307	583.91	19	86	CPAP		M	WORSENER		19	Y	
68	1020443	67	F	C,M,F,B	7	85	RBM	5L			DM,HTN		9.9	8.5	91	5	1.81				0.27	0.15			1307	227	1				M		YES	1	Y	
69	1021989	58	M	F,B	4	92	RA				DM,HTN											0.6					27				M	WORSENER		27		
70	1019622	73	M	B	22	89	RBM	15L			DM,HTN		10.8		89	6	1.84	12.3				0.26	2593	46	552		23	90	HFO		M	WORSENER		23	Y	
71	1022057	65	M	C,F,B		56	RA				DM,HTN	22	10.1	17	93	5	1.07		352	10.86	0.39		2000		346	768.8	38						WORSENER		38	
72	1024601	60	M	C,B	7	84	RBM	15L			DM,HTN,CKD	13	13	20	97	2	2.82			4.83	0.38	0.29					41	88	CPAP		M	WORSENER		41		
73	1015945	56	M	C,F,B	7	90	NIV		70	61.2	DM,HTN		13.5	4.8	86	12	1.07	8.5	224	0.74	1.88	0.55					8				M		YES	8	Y	
74	1020510	65	M	M,F,B	5	82	NIV		90		DM,HTN		14.1	9.4	90	4	2.56			1.17	1.13					17.4	61	88	HFO		M	WORSENER		61		
75	1025672	72	M	F,B	5	93	RBM	15L		19.8	DM	15	20.2	15.8	93	2	2.63	7.1	486	0.7	1.15	0.19	773.8		4439	57	69				M	WORSENER		69		
76	1019111	55	M	B		87	RA				DM,HTN,IHD		14.6	11.4	86	6	1.53		551	1.61	1.08		2442		819		5						YES	5	Y	
77	1021563	69	M	F,B	3	98	RBM	10L			DM,HTN,CKD	8	6.4	6.4	74	16	1.42	5.8			0.33	0.16	500	31.2	84.6		2						YES	2	Y	
78	1022785	69	M	C,F,B	6	90	RBM	10L			DM,HTN		12.3				1.97	6.6	149	2.47	0.4	0.28		204.2	1000	260.3	2				M		YES	2	Y	
79	1022551	65	M	C,F	2	95	RA		60.6		DM	3	13.7	9.9	79	14	2.63		624		0.88	0.32	108.8		1335		32	90	NIV		M/D	WORSENER		32		
80	1023584	62	M	F	2	90	RA				DM		16.7	5.5	81	9	0.46		84	2.74	3.53	3.14	4030	330.9	>5000	5000	1						YES	1	Y	
81	1021982	82	M	B	2	76	RBM	15L			DM,IHD		15.4		87	7	1.13		411	1.97	0.9		1470	188.4	678	120	6				M		YES	6	Y	
82	1020934	48	M	B	2	93	RBM	8L			DM											0.6					11				M	WORSENER		11	Y	
83	1024657	60	M	F,B	2	99	NIV	100			DM,HTN,PD		11.5	13.5			2.33	8		2.8	0.28	0.1	1468		419	11.34	38	92	NIV		M	WORSENER		38		
84	1024119	61	F	B	1				63.7		DM,HTN,Asthma		13.2	17.8	82	13	3.32	8.3		1.41	0.24	0.1	532		1510	118.3	36			94			WORSENER		36	
85	1023280	68	F	C,B	4	83	RBM	15L		63.5	DM,HTN,Asthma	12	13.3	23.4	92	4	4.24	8.1	212	0.65	0.65		481.8	62.1	595		10				M		YES	10	Y	
86	1024344	55	M		2	97	RA				DM,HTN		13.5	17.2	95	2	2.72	6.9	156	1.56	6.53	1.76			132.8		26	90	RBM		M	WORSENER		26		
87	1026018	59	M		2	81	RBM	15L			DM		14	18.7	94	4	0.99	11.6	290	3.95	1.07		2731		7673	5000	24	92	HFO		M	WORSENER		24	Y	
88	1025663	74	M	C	7	94	RBM	4L		66.9	DM,CKD	13	12.3	19.2	92	3	1.73		220	10.48				89	806	786	2				M		YES	2	Y	
89	1020566	56	M	C,M,F,B	5	89	RA				DM		17	6.5	81	13	1.74			0.83	0.49		586.6		1225	184.7	14	88	CPAP		M	WORSENER		14	Y	
90	1025810	63	F	B	2	84	RA				DM,HTN	2	12.4	24.6	91	7	2.49			1.29	0.21	0.1					2						YES	2		

Sl. No.	IP No	Age	Sex	CLINICAL PARAMETERS AT Admission				Admission SPO2	Admission O2 modality (O2 mask, RBM,HFO, NIV, Ventilator)	Admission O2 rate (L/min)	Admission PO2 (Look at first ABG)	Co-morbidities	CT severity score(=25)	Hb	TLC	NEUTROPHIL %	Lymphocyte %	Platelets	HbA1c	RBS	Creatinine	total Bilirubin	direct bilirubin	Ferritin	hsCRP (value)	d-Dimer	IL-6	LDH	12th day of admission SPO2	MODE OF O2 AT 12th day of admission	O2 FLOW L/MIN	12TH DAY Y PO2	Type of Steroid used (Methyl prednisolone/dexamethasone)	(12TH DAY OF A	Improved(YES)/WORSENED	Died	DURATION OF HOSPITAL- STAY	Need for ICU STAY
				Symptoms (C=cough; F=Fever; B=breathlessness; M=Myalgia, Loss of smell; L=L; Loss of taste=LT)	Time to hospital from symptom onset (Days)																																	
1	1024283	72	M	FB	1	99%	RA				DM	5	14.3	9	73	18	2.74	6.8	144	0.76													METHYLPRED	yes	10			
2	1017707	45	Male	Fever,myalgia,breathlessness	7	88%	O2		67		DM		13.5	10	84	10	2.59	6.9	222	1.41	0.61	0.34	316.4	5.4	1.5	10.6							METHYLPRED	YES	3			
3	1023711	71	Female	Cough,breathlessness	5	86%	RBM	2L			IHD	6	13.8	6.7	74	18	1.78	6.2	199	1.11	0.41	0.22	608.1		338								METHYLPRED	YES	12			
4	1021836	59	Male	Cough,fever,breathlessness		93%	RBM	15L			DM,HTN		12.1	16.1	92	4	2.22	7	188		1.06	0.8	542		1532		674						METHYLPRED	YES	11			
5	1021845	52	Male	Breathlessness	15	95%	RBM	15L			DM	5	13.8	20.4	90	5	1.83	6	117	0.83			210.7	11.5	>5000	33.51	660						METHYLPRED	YES	18			
6	1023488	64	Male	Cough,fever,breathlessness		98%	RA		101		DM,HTN,CKD	15	10	9.8	91	4	1.64	6.2	156				2000		775	218	433						METHYLPRED	YES	8			
7	1020455	60	Male	C,F,B	2	96%	RA	4L			DM, HTN		11.1	5.1	75	20	2.19	9.7	225	0.73			264		282	46.19		99%	RBM	6L			WORSENED	13				
8	1019426	65	Male	C, F	5	92%	RA				DM, HTN		14.1	7.2	70	25	1.61	6.4	129		0.51	0.32	429		746	32.45							DEXA	YES	8			
9	1023326	85	Male	F	2	96%	RA				DM, HTN		10.11	11.4	74	19	2.03	7.1	245	2.32	0.25	0.11	61.46		661		251						METHYLPRED	YES	4			
10	1022906	78	Male	C, B	5	94%	RBM	15L			DM		12.8	6.6	88	9	1.87	7.2	317	0.87	0.5	0.3					89%	HFO	20L	50			METHYLPRED	WORSENED	20	YES		
11	1025516	82	Male	B	1	95%	RBM	5L			DM, HTN, IHD	16	9.5	10.8	95	2	1.56	6.8	285	1	0.5	0.3	192.8		864	136.1	368						METHYLPRED	YES	3			
12	1020680	70	Male	C, B	3	92%	RA				DM, HTN		12.7	7.2	77	17	2.6	6.7	185		0.22	0.12					98%	RBM	5L				DEXA	YES	14			
13	1023878	72	Female	F, B	2	96%	O2 MASK	12L	139		DM, HTN, Parkinsonism	13	15.5	8.1	89	7	2.78	7.4	380		1.32	1.02	532		1451		504	96%	RBM	7L			METHYLPRED	YES	6			
14	1021397	56	Male	B	5	82%	RBM	12L			COPD	19	15.4	251	93	5	2.17	6.9	251	0.9		0.39			1519	1.54	397						METHYLPRED	YES	13			
15	1019423	70	Male	F, B	10	92%	RA				DM, HTN	14	14.1	7.2				126	0.79	0.51			644.9				673						METHYLPRED	YES	5			
16	1023858	66	Male	C, F, M, B	4	95%	O2 MASK	2L	84.7		DM, HTN	16	14.7	7.9	75	19	2.03	193		0.66	0.3	661		588									METHYLPRED	YES	6			
17	1024081	70	Male	F, B	3	100%	RA				DM, HTN, IHD	20	18.3		80	13	3.11	12.9	218	1.05			640.1		1617	6.77	457						METHYLPRED	YES	3			
18	1022372	70	male	F	2	99%	O2	10L			DM, HTN	10.2	6	63	23	2.36		114	1.27	1	0.48					316.5	266							METHYLPRED	YES	3		
19	1023275	75	male	Fever		90%	RA				DM, HTN	11	6.6	58	32	2.24	6.6	174	0.96	0.54	0.38	107.8		>5000	269								METHYLPRED	YES	6			
20	1021522	40	M	C	10	98%	RA				DM	7	14.7	15.3	84	5	4.74	12.2	232	0.8	0.43	0.15	275	11.7	1406	18.3	280	98%	RA				METHYLPRED	YES	6			
21	1021710	41	M	CBM	3	99%	RA				DM, HTN		15	6.7	88	13	2.29	9.8	169		0.49	0.18	45	35.3	630		342						METHYLPRED	YES	6			
22	1023957	47	M	CF	5	97%	RA				HTN, HYPOTHYROIDISM		10.4	5.7			2.86		178	6.02	0.32	0.17	135.5	2.6	1483		507						METHYLPRED	YES	5			
23	1018040	60	M	F	2	98%	RA				DM, HTN		10.5	3.4	89	6	1.3	112	1.72	0.68	0.46																	
24	1022903	54	F	CB		92%	RA		50		DM, HTN		10.1	6.6	92	6		9.5	340	0.7	0.34	0.35	278	209		37.2	612	99%	CPAP				METHYLPRED	WORSENED	11	YES		
25	1018872	67	M	F		94%	RA				DM, HTN, BRONCHIECTASIS		13	8.5	55	37	2.63		290	1.12															METHYLPRED	YES	8	
26	1020778	51	M	B	5	93%	RA				DM, HTN		14.4	3	79	14	1.29		168	0.85		0.48			455	164.7	424						METHYLPRED	WORSENED	15	YES		
27	1025257	45	F		2	98%	RA				DM, HTN, IHD		11.7	16.3	74	16	3.45	10.1	210	1.11															METHYLPRED	YES	2	
28	1023565	47	M	F		98%	RA				DM		13.3	8.5	90	9	3.48			0.91	0.41	0.15	189.6		214	1.5	280						DEXA	YES	6			
29	1021329	67	M	C,M, B	3	65%	RA				DM, HTN		14.8	4.9	49	42	2.29	7.4	432	0.88	0.6		80		996		358						METHYLPRED	YES	2			
30	1021013	25	M	C, F	3	96%	RBM	5L			CLD		14.8				2.29		312	0.88	0.45	0.2	80		6.04	358							METHYLPRED	YES	4			
31	1022559	49	M	C, B	3	99%	RA				DM		14.8	4.9			2.45	10.7	423	0.88	0.15	80			6.04	358								METHYLPRED	YES	9		
32	1019948	70	M	F, M		94%	RA				DM, HTN, IHD						10	110																	METHYL PRED	YES	10	
33	1025257	46	F		2	98	RA				DM, HTN, IHD		11.7	16.3	74	16	3.45	10.1	236	1.11															METHYLPRED	YES	2	
34	1018961	70	M	F							DM,IHD		10.8	7100	75	15	2.34		98	1.04		0.22	126.3		413	419	201						METHYLPRED	YES	12			
35	1019545	52	M	M,B		89	ROOM AIR		72.6		DM		12.7	5.9	77	20	1.87	8	242	1.03	0.61	0.42	247		725	94.6		96	RBM	5L				DEXA	YES	12		
36	1023311	91	M	C,F	7	95	ROOM AIR				DM, HTN		10.6	4.3	70	1	2.35	8.2	258	1.13	0.24	0.7	352	108		149	280						METHYL PRED	YES	8			
37	1021872	56	M	F	1	94	ROOM AIR				DM,HTN,IHD		11.8	9.1	64	28	3.08	7	206				214.6	2.3	614	10								METHYL PRED	YES	6		
38	1021062	56	M	C,M,F	3	93	ROOM AIR				DM		14.6	6.7	62	30	2.36	11.7	180		0.84	0.36	425		276	54	312						DEXA	YES	3			
39	1025502	82	M	C,B	5	95	RBM	5L			DM,HTN	12	13.2	7.9	73	17	2.12		238	0.96	0.96	1.5	257	116.6		291							METHYL PRED	YES	9			
40	1021445	63	F	C,M,F	7	97	ROOM AIR				DM,IHD		9.9	5.8		0	6.2	210	0.97	5.69	3.43				442	42.67	187							METHYL PRED	YES	4		
41	1024419	72	F	C,F,B	4	60	ROOM AIR				DM,HTN	12	9.2	8	79	17	1.96	6.7	197	0.79	0.38		114		291	86.29	444							METHYL PRED	WORSENED	19	YES	
42	1024543	41	M	F,B	9	84	NIV				DM	5	14.4	18.3	87	8	3.69	10.1	220	1.11				99.7	1218									METHYL PRED	YES	17	YES	
43	1024783	38	F	F,B	5	97	ROOM AIR				DM	17	10.8	5.7	66	26	2.77	7.2	210	0.65	1.04		246	8	482	1.5	345						METHYL PRED	YES	2			
44	1022841	65	M	F,M	8	94	ROOM AIR				DM,HTN	11	14.5	4.3	87	10	2.12		281	1.25	0.66	0.27	481		432		356						METHYL PRED	YES	5			
45	1024828	54	M	F	3	97	ROOM AIR				DM, IHD, AKI		10.5	16.8	91	4	2.99	8.2	227																DEXA	YES	3	
46	1024861	75	M	F	4	98	ROOM AIR				DM,HTN,IHD, UMBILICAL HERNIA		11.9		58	29	2.36	9.3	251	0.61															METHYL PRED	YES	2	
47	1023291	51	M	C,F	3	95	ROOM AIR				HTN		15.1	7.4	58	32	2.52		95	1.09	0.42	0.21	514	41.7	206	37.2	257						METHYL PRED	YES	5			
48	1019782	57	M	C,F,B	5	88	ROOM AIR				DM, HTN		10.7		92	5	3.84		109	1.13							35.5								DEXA	YES	11	
49	1021087	61	M	C,F,B	5	95	ROOM AIR																															

Sl. No.	IP No	Age	Sex	Symptoms (C=cough; F=fever; B=breathlessness; M=Myalgia, Loss of smell=LS; Loss of taste=LT)	Time to hospital from symptom onset (Days)	Admission SPO2	Admission O2 modality (O2 mask, RBM,HFO, NIV, Ventilator)	Admission O2 rate (L/min)	Admission PO2 (Look at first ABG)	Co-morbidities	CT severity score(≤/25)	Hb	TLC	NEUTROPHIL %	Lymphocyte %	Platelets	HbA1c	RBS	Creatinine	total Bilirubin	direct bilirubin	Ferritin	hsCRP (value)	d-Dimer	IL-6	LDH	12th day of admission SpO2	MODE OF O2 AT 12th day of admission	O2 FLOW L/MIN	12TH DAY PO2	Type of Steroid used (Methyl prednisolone/dexamethasone)	Improved(YES)/WORSENED	Died	DURATION OF HOSPITAL STAY	Need for ICU STAY			
60	1022192	54	M	M,B	2	98	RA			DM																					METHYL PRED	YES		20				
61	1022198	67	F	B		94	RA			DM,HTN		13.1	15.8	90	5	3.62			0.73	0.92	0.61	897.7	8.2	2464	5.31	461					METHYL PRED	YES		7				
62	1023288	73	M	F,B		96	RA			DM	14/25	14.8			1.94			1.2	1.6	1.21											METHYL PRED	YES		8				
63	1022046	69	M	F,B	3	38	RA			DM, HTN		12.9	10.5	94	4	2.32	6	116	1.48	0.36	0.21		311	474	2162	804	94%	NIV			METHYL PRED	YES		8	YES			
64	1024654	61	M	B	5	94	RA			DM,HTN						7.1	167					87.3		1487	183	166					METHYL PRED	YES		5				
65	1021775	80	M	C,F,B	2	93	RA			DM		11.6		55	35	2.81				0.41	0.23										METHYL PRED	YES		12				
66	1021009	53	M	C,M,B	3	89	RA			DM		13.4				5.15			1.28	0.4	0.2	25		688	25.8	746					METHYL PRED	YES		6	YES			
67	1026090	84	M	B,M	1					DM,HTN, RHEUMATOID ARTHRITIS		10.6	8.4	78	13	2.06	6.2		1.96	0.54	0.41	35.02	3.8	191	9.06	212					METHYL PRED	YES		9				
68	1021752	62	M	F,B	4	86	RA			DM, HTN		13	3.3	85	12	2.44				0.6	0.4	3243		763	2.49	436	98%	RA			METHYL PRED	YES		10				
69	1023279	39	M	C,B	1	99	RA			HTN, IHD		15.1	9.1	79	14	2.56				2.76	1.78	170.4		396	1.5		97%	RA			METHYL PRED	YES		8				
70	1019044	46	F	C,F,B		94	RA			DM,HTN,CKD		9.2	6.7	72	21	1.43											98%	RA			METHYL PRED	YES		2				
71	1020485	65	M	F,B	5	97	RA			DM		13.6	7	81	14	3.03	7.6			0.71	0.64				496	201	390				METHYL PRED	YES		12				
72	1020991	55	M	C,B	2	92	RA			DM		12.7	8.1	66	24	2.05	7.2	298	0.7	0.4	0.2	603		1029		239					METHYL PRED	YES		3				
73	1021918	72	M	F,B	1	92	NIV			DM, HTN		7.1	5.3	77	18	1.59	6.9	87.6	1.98	1.48	1.24	800			87.9						METHYL PRED	YES						
74	1020115	60	M	C	2	95	RA			DM		12.9	10.8			1.6			1.28	2.11	0.7	665		348	5.71	479					METHYL PRED	YES		8				
75	1023102	42	M	C,B,M		95	RA			DM		15.4	7.1	74	18	2.75	7.2	179		1.08	0.75		1.71	886	113	357					METHYL PRED	YES		18				
76	1022267	82	M	M		93%	RA			DM, HTN		12.1		79	11	2.42		230		0.74	0.45	378			163						METHYL PRED	YES		7				
77	1026260	61	M	B	5	98%	RBM	10L		DM,HTN	9	12.9	5.8			1.99	310	3.91							41.7						METHYL PRED	YES		5				
78	1025147	75	M	C,B	5	98%	HFO	40L		DM,HTN,IHD		9.3				1.92			0.84	0.7	0.43	155.1	134.6	4225	360	301					METHYL PRED	YES		3	YES			
79	1021466	59	M	F,B	10	96%	RA			DM,HTN		12.2				4.66	10.6	350	0.51												METHYL PRED	YES		10				
80	1023182	58	M	C,F,B	3					DM		13.1	3.9	62	30	2.63	9	193	1.2	0.42	0.23										METHYL PRED	YES		9				
81	1023186	42	M	F		96%	RA			DM		14.1	3.4	86	10	1.47	8.2	192	1.13	0.53	0.21	68.1		179	9.62	185					METHYL PRED	YES		4				
82	1020850	50	M	CFB		92%	RA			DM	10	11.8	7.2	78	15	2.82	9.9	379	0.89	0.45	0.26	83.64		174	9.01	181					METHYL PRED	YES		7				
83	1020897	70	M	CFM		97%	RA			DM HTN		9.7	10.3	70	20	0.46	9.8			0.75	0.4	0.3	38.8		121						METHYL PRED	YES		5				
84	1020936	68	F	CFB	7	95%	RA			DM		12.6	8.5	78	6	2.77				0.5	0.3	306.1		524	80.11	265					DEXA	YES		6				
85	1020845	45	F	FB	10	94%	RA			DM		14.2	8.9	92	4			366	0.76	0.76	0.49	673.2		1033		308					DEXA	YES		20				
86	1020676	37	M	FBC		90%	RA			DM		12.2	7.3	61	30	2.62	9.8	191	0.67	0.41	0.19			239		301					DEXA	YES		7				
87	1021012	62	M	CFB	5	96%	RA			DM HTN		11.1	5.2			1.53			1.39	0.57	0.36	44.1		306		221					DEXA	YES		7				
88	1020643	71	M	CFB	8	69%	RA			DM HTN		12	5.6	85	8	1.58				0.65	0.42				1374	90.55					DEXA	YES		9				
89	1023853	40	M	FBM	6	98	NRBM	2L		HTN,DM,IHD	8	15.2	6.2	67	25	2.15	11.3	316	0.71			154	11.3	125		467					METHYLPRED	YES		6				
90	1020450	56	M	CFB		56	RA			DM		14	7.5	82	14	1.73	7.5	255	1.04			1128			6.61	95	CPAP				METHYLPRED	YES		17				
91	1020799	55	M	CFB		94	RA			DM		17.1	5.15			1.52	8.4	151	1.02	0.63	0.45	455			305	94					METHYLPRED	YES		12				
92	1020867	73	M	CFB		95	RA			DM, HTN		13.2	4	76	15	2.26				0.56	0.42	289		565		253					DEXA	YES		4				
93	1020448	64	M	CB		65	RBM	10L		DM, HTN		12.6	9.6	77	16	2.07	6.5	109	1.18	0.69	0.43	872		1399		432	97	RBM	5L		METHYLPRED	YES		12				
94	1020928	72	M	CB	5	95	RA			DM, HTN, IHD		15.2	8.6	60	32	1.7			0.85	0.61	0.4	1182		260		381	95	RA			METHYLPRED	YES		5				
95	1020485	65	M	FB	5	93	RA			DM		13.6		81	14	3.03	7.6		0.73	0.71	0.61	2647		692	201.8	653	99	RBM	4L		METHYLPRED	YES		12				
96	1024075	50	M	CFB	3	98	RBM	5L		DM		15.6	15100	83	11	1.83	6.8	138	0.92			110.1		212.3							METHYL PRED	YES		11				
97	1019921	49	F	FB	3	91	NRBM	10L		DM and HTN		13.3	7.8	74	18	0.44	7.4		0.58	0.47	0.27	180		460	1	280			NRBM	10L		DEXA	yes		10			
98	1022963	56	F	CMB	2					DM HTN		9.4	4.2	74%	23	2.93	6.9	136	6.76	0.36	0.21			333	84.45	406	97	NRBM	2L		METHYLPRED	yes		5				
99	1021549	65	M	CF	5	90%	NRBM			DM		11.5	5.1	70	26	2.59	6.7	167	0.84	0.34	0.21	199.1		357	29.25	150					DEXA	yes		3				
100	1019857	55	F	MFB	4	93	RA		180.8	DM		12.1	6.2	80	17	1.62	7.6	272	0.52	1.1	0.7	650.2		111	4.72	200					METHYLPRED	yes		6				
101	1022918	61	M	CB	3	74%	NRBM	5L		DM HTN		12.9	6.2	77	15	2.51		181	1.11	0.24	0.13	36.24	46	387	5.55	300	98	NRBM	5L		METHYLPRED	Yes		11				
102	1022043	64	M	B	2	92				DM HTN IHD		13.1	5.2	59	31	2.84		210	0.79	0.35	0.24	155.8		193	69.42	316					RBM	6L		METHYLPRED	Yes		10	
103	1019604	51	M	CB	5	92	NRBM	6L		DM HTN		12.6	10	85	11	3.1		260	0.93	1.02	0.78	214		455	11.99	230	92	NRBM	1L		METHYLPRED	yes		13				
104	1022942	61	F	C		96	RA			DM HTN		9.7	115	64	30	8.53		182	0.8	0.84	0.76	15.56		120	1.86	314	97	RA			METHYLPRED	yes		5				
105	1019238	61	M	CB	3	94	RA			DM		13.6		86	7	2.1		350	1.86			860		400	19	820	95	RA			METHYLPRED	Yes		15				
106	1022919	60	F	CB	4	84	RA			DM HTN IHD		11	5.1	56	24	2.16		216	0.9	0.89	0.76	85.2		475	9.95	95	RBM	15L			METHYLPRED	yes		11				
107	1022577	45	M	CB	2	93	RBM	2L o2		DM		13	7	64	27	3.31		182	1.27	0.91	0.63	31.24		301	25.86	400	99	RBM	6L		METHYLPRED	Yes		9				
108	1020458	66	M	CF	10	98	RBM	15L		DM HTN IHD		10.4	10.6	89	7	2.24		242	1.02	1.01	0.9	667		1267	518	250	95	RBM			METHYLPRED/DEXA	Yes		14				
109	1020384	58	F	B	3	89				DM		12.4		88	10	4.18	9.4	350	0.97	0.94	0.82	888.6		303	5.19	450	96	NRBM	2L		METHYLPRED	Yes		7				
110	1022114	56	f	MB		89%				DM		10.3	5.9																									

Sl. No.	IP No	Age	Sex	Symptoms (C=cough; F=fever; B=breathlessness; M=Myalgia, Loss of smell=LS; Loss of taste=LT)	Time to hospital from symptom onset (Days)	Admission SPO2	Admission O2 modality (O2 mask, RBM,HFO, NIV, Ventilator)	Admission O2 rate (L/min)	Admission PO2 (Look at first ABG)	Co-morbidities	CT severity score(=25)	Hb	TLC	NEUTROPHIL %	Lymphocyte %	Platelets	HbA1c	RBS	Creatinine	total Bilirubin	direct bilirubin	Ferritin	hsCRP (value)	d-Dimer	IL-6	LDH	12th day of admission SpO2	MODE OF O2 AT 12th day of admission	O2 FLOW L/MIN	12TH DAY PO2	Type of Steroid used (Methyl prednisolone/dexamethasone)	Improved(YES)/WORSENE D	Died	DURATION OF HOSPITAL STAY	Need for ICU STAY							
120	1021278	52	M	CFB	8	98	RA			DM HTN		10.6	7.3	72	18	3.81	7.4	250	1.3	0.61	0.42	222	20	289	33.5	236				METHYLPRED	yes		6									
121	1021278	55	F	FB	4	97	NRBM	4L o2		DM		12.8	5.2	76	14	2.89	8.6	358	0.45	0.36	0.26	243	3.33	247	243	494	96	RBM	6L			METHYLPRED	Yes		13							
122	1021918	72	F	FB	1	86	RA		120.8	DM HTN		7.1	5.3	77	15	1.59	7.4	222	1.98	0.71	0.51	800	49		591	86	NIV				METHYLPRED	WORSENE D		7	YES							
123	1021484	58	M	CMF	7	96	RA			HTN DM		12.6	3.7	43	46	1.96	6.9	124	0.61	0.3	0.21	2647	2.4	175	5.83	188	96	RBM	8L			METHYLPRED	Yes		12							
124	1019497	56	F	FMB		98	RA			DM, HTN,IHD		12.6	6.3	62	23	4.35	6.4	125	0.79			849		372	274							DEXA	yes		5							
125	1020928	72	M	B		95	RA			DM,HTN		15.2	8.6	60	32	1.7	6.8	151	0.85	0.61	0.5	1182		260	381							METHYLPRED	yes		6							
126	1020506	54	F	MFB		95	RA			DM,HTN		12.6	7	52	35	4.31	7.2	272	0.42			240.9				99	RBM	2L				DEXA	yes		7							
127	1020432	47	M	F		95	RA			DM		13.9				1.97	7.7					437.1		400	62.04	293								yes		8						
128	1020300	62	M	CF						DM		12				1.65			0.68							209								yes		9						
129	1022722	55	M	F,M		97	RA			HTN, DM		14.5	7000	63	34	1.71	6.6	186	1			236	35.5	193	96.39	282							METHYLPRED	Yes		4						
130	1022117	30	M	C,F	4	94	RA			DM,HTN		12.9	5.9	80	13	1.51	7.7		1.35			138.4	9.2	358	50.3	312								METHYLPRED	YES		10					
131	1021419	69	M	F,M	1	92	RBM	5	233	DM		9.7	29.1	75	5	3.15			3.46			312		1399	54.5		100	NIV		100			METHYLPRED	YES		9	YES					
132	1023043	64	M	B		91	RA			DM,HTN	8	12.6	8.8	57	38	1.98				0.59	0.53	126.9		597	23.99	271								METHYLPRED	YES		10					
133	1021724	60	M	B	2	84	RBM	15		HTN,DM		14.3		92	5	1.65	7.6	373	0.96	1.04	0.98	1459		5000	297.1	796									METHYLPRED	YES		6				
134	1022117	71	M	M		97	RA			DM		12.9				1.51			1.35			138.4	9.2		50.32	312									METHYLPRED	YES		10				
135	1024235	72	M	F,B		98	RA			DM,HTN		12.7	16.1			4.78			10.3			425		1030	11.86											YES		17				
136	1023083	40	M	B	10	90	RA			DM		14.9	14.2	78	16	1.54	12.1	153	0.75	1.16	0.6	559.3	5.7	861	310										METHYLPRED	YES						
137	1023561	88	M	M		96	RA			DM,HTN,IHD,CA PROSTATE		11		59	34	1.98				0.45	0.21	1183		294	46	230										METHYL PRED	YES		6			
138	1023817	65	M	C,M,F		98	RA			DM,HTN,IHD		9.9	15.3	87	7	3.42	8.4	94	1.52	0.75	0.51	266.2		273	6.49	233	95	RBM	5L					METHYLPRED	YES		3					
139	1021510	67	M	C,B	3	99	RA			DM			9100	72	22	2.25			1.53	0.21	0.11		72.3	1355											DEXA	YES		6				
140	1020527	43	M	C,F,B	3	94	RBM	2		DM		15	5.7	70	27	1.67	13.1		0.67			808													METHYLPRED	YES		10				
141	1024649	49	M	C,F	2	98	RA			DM,HTN		6.5	3.5	68	26	1.54			0.97	0.81	0.6	17.64	40.5	331	65.17	247									METHYLPRED	YES		10				
142	1021295	57	M	C,B	4	96	RBM	10		DM,HTN	14	11.5	21.8	96	1	2.21		182	0.41	0.51	0.31				14.73											METHYL PRED	YES		17			
143	1015136	42	M	C		97	NIV			DM		10.2	14.8	95	0	3.82	7.6	156	0.16	0.42	0.31	95.15		952												METHYL PRED	YES		2			
144	1019566	69	M	C,F	7	96	RA			DM		12		93	5	2.51	11.3	341		0.29	0.2		113		15.4	99										METHYL PRED	YES		10			
145	1021988	69	M	99		RBM	10			DM,HTN,IHD		9.7	27.1	96	2	1.14		314	3.34																	METHYL PRED	YES		10			
146	1020036	49	M	F,B		83	RA			DM,HTN		12.3	6			2.13	12.8	176	1.28	0.65	0.45			328		561											METHYL PRED	YES		10		
147	1026262	76	M	B	5	93	RA			DM,HTN,CKD		8.8	19400	91	3	2.54			4.06	0.44	0.25	548.1	122.7	1298	487.81	470										DEXA	YES		6			
148	1025578	55	F	M,F		99	RBM			DM, THYROID		11.1	20.4	92	4	2.64			1.02	0.3	0.18						100									METHYL PRED	YES		5			
149	1022364	53	F	B,F		94	RA			DM		11.3	5.8	78	17	1.78	6.9		0.54	0.34	0.3	238	127.1	499	64.4	281	100										METHYL PRED	YES		8		
150	1023190	35	M	C,M		97	RA			DM,HTN,ASTHMA		10.6	4.5	47	41	2.54	9.1	98	0.7	0.23	0.2	6.84	1.8	165	1.83	176										METHYL PRED	YES		3			
151	1020038	75	M	C,F		90	RA			DM		9.6	15.2	89	8	3.6	8	142	1.15	0.53	0.32	637	376	243	442											DEXA	YES		16			
152	1020702	62	M	M,F	4	95	RA			DM,HTN		12				1.87			0.85	0.42	0.11	512		279	23.16												DEXA	YES		5		
153	1022005	36	M	C	5	94	RA			DM,HTN		15	5400	56	34	1.98		209	0.9	0.8	0.6	185.4		170	9.62	205											METHYL PRED	YES		4		
154	1021569	58	M	C,B	2					DM,HTN,CKD		9.4	9.2	83	11	2.38			1.07	0.93		4526		1252	1169	384	90	RA								DEXA	YES		5			
155	1019892	58	M	C,B	5	100	RBM	4		DM	12	11	14.6	87	6	1.27	9.6		1.04	0.64	0.42																METHYL PRED	YES		8		
156	1019496	34	M	C,F,B	2	96	RA			DM		14.8	4.6	58	37	1.52	7.2	95	0.8	0.66	0.42		36				98	RA								DEXA	Yes		7			
157	1018929	58	F	C,F	5	97	RA			DM		11.5	6.3	65	27	2.83	6.6	73	0.65	0.72	0.5	41.2	60	210	1.2	216	95	RA								Yes		6				
158	1019878	75	M	C,F,B		92	RA			DM,HTN		11.3	4.5			1			1.2	0.97	0.61	667			249	97	RA										Yes		4			
159	1017909	71	F	C,B		96	RA			DM		14.8		42	32	1.98		136	0.56	0.38	0.21																Yes		4			
160	1019223	57	F	C,M	3	96	RA			DM		14.9	4.4	42	32	1.62	6.8	136	0.4	0.8	0.6	112		400	2.1		96	RA								DEXA	Yes		4			
161	1020036	49	F	F,B	4	83	RA			DM,HTN		12.3	6	69	21	2.13	13.3	176	1.28	0.65		928.6	42	328	20.6	561	98	RA									METHY PRED	Yes		10		
162	1023615	52	F	F	2	94	RA			DM, Bronchial asthma		12.9	6.9			3.01						81.61	8.6	195	10.2	217												METHY PRED	Yes		5	
163	1023713	59	F	F,B	7					DM		13.1	9.4	74	19	3.9		213	0.71	0.35	0.32	334			16.35	284												METHY PRED	Yes		8	
164	1020988	44	F	F	7	94	RA			DM		11.4	4.5	46		2.27				0.24	0.14				7.19	269	96	RA										METHY PRED	Yes		7	
165	1020163	55	F	C,F		98	RA			DM									1	0.45	0.32	249.3		308	48.98	317	96	RA									Yes		12			
166	1020374	82	M	C,F	5	95	RA			DM,HTN		16	4.5			3.92			0.84	0.39	0.21			131	12													WORSENE D		31	YES	
167	1027075	55	F		20	70	CPAP			DM		8.6		85	14	0.54	</																									

Mortality Data

Total	90	
Males	80	88.89%
Females	10	11.11%
Total	90	

162

Age Distribution

Less than 20 years	0	0.00%
20 to 30 years	0	0.00%
31 to 40 years	1	1.11%
41 to 50 years	6	6.67%
51 to 60 years	23	25.56%
61 to 70 years	32	35.56%
71 to 80 years	20	22.22%
81 to 90 years	8	8.89%
More than 90 years	0	0.00%
	90	

Symptoms Distribution

Fever	51	56.67%
Cough	51	56.67%
Breathlessness	77	85.56%
Loss of Taste	1	1.11%
Myalgia	18	20.00%
Vomiting	#REF!	#REF!
Loose stools	#REF!	#REF!
Weakness	#REF!	#REF!
Abdominal Pain	#REF!	#REF!
Abdominal distn	#REF!	#REF!
Jaundice	#REF!	#REF!
Hematuria	#REF!	#REF!
Loss of App	#REF!	#REF!
Sore Throat	#REF!	#REF!
Chest pain	#REF!	#REF!
Altered Sensorium	#REF!	#REF!
Edema	#REF!	#REF!
Decreased Urine	#REF!	#REF!
Limb Weakness	#REF!	#REF!
Hemoptysis	#REF!	#REF!

Time to Hospitalization from symptom onset

Data Available	61	67.78%
hospitalization (Days)	4.52	

Admission respiratory Rate

Data Available	0	0.00%
Average RR	#REF!	
StdDev	#REF!	

Admission SpO2

Data Available	88	97.78%
Average SpO2	86.19	
StdDev	11.99	

Admission Oxygen modality

Data Available	89	98.89%
On Room Air	25	28.09%
Rebreathing Mask	49	55.06%
HFO	2	2.25%
NIV	12	13.48%
O2 Mask	0	0.00%
Mech Vent	0	0
	88	

Admission PaO2

Data Available	22	24.44%
Average paO2	60.03	
Std dev	16.17	

Blood Group

Data Available	#REF!
Positive	#REF!
Negative	#REF!
A+ve	#REF!
A-ve	#REF!
B+ve	#REF!
B-ve	#REF!
O+ve	#REF!
O-ve	#REF!
AB+ve	#REF!
AB-ve	#REF!
	#REF!

Comorbidities

Comorbidities Present	90
Diabetes	90
Hypertension	57
IHD	14
Obesity	1
Asthma	4
CLD	0
AKI	1
Hypothyroidism	1
Pancreatitis	1
Tuberculosis	0
CVA	1
DCM	0

CT severity score at admission

Data Available	32
Average CT severity	14.00
SD	6.56













2
1
2
1

1

1.4

0.547722558

0.547722558

