

Original Research Article:

Covid 19- with co- morbidities in a tertiary care hospital

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ABSTRACT:

INTRODUCTION: "Comorbidities are the presence of two or more diseases in the same person. Co morbidities are associated with worse health outcomes, more complex clinical management, and increased health care costs, especially in presence of covid -19" The Centers for Disease Control and Prevention (CDC) provides a list of comorbid conditions in COVID-19 patients, which includes cancer, chronic kidney disease, chronic lung disease, heart disease, Down syndrome, obesity, pregnancy, and type 1 and 2 diabetes mellitus.

AIM OF STUDY: The present study aimed to estimate the association of chronic co-morbidities in covid 19 in a tertiary care medical college hospital in Coimbatore Tamilnadu, India.

MATERIALS AND METHODS: All patients admitted in GOVERNMENT MEDICAL COLLEGE AND ESI HOSPITAL, COIMBATORE, TAMILNADU, INDIA are taken for study between 1st March 2020 to 31st August 2021, Age wise Sex wise Co-morbid data collected. The patients with co-morbidities are analyzed and treated for covid-19 as well as for underlying co-morbid conditions. special care has been taken to avoid poly pharmacy and drug interactions.

RESULTS: A total number of 24,639 patients with RTPCR POSITIVE COVID-19 were included in the study. details of co-morbidity collected by a questionnaire and confirmed by clinical assessment as well as laboratory methods. Obesity is the number one co-morbidity with 6894 (male 4435 female 2459) patients, other Co-morbidities, Diabetes: 5550 (male 3632, female 1918) systemic hypertension: 3589 (male 2467, female, 1122) CKD (male 49, female 6) CAHD 826 (male 673 female 153). COPD 2078 (male 1110, female 968) DM with SHT: 1755 (male 1112, female 643)

CONCLUSIONS: Patients with COVID-19 and uncontrolled co-morbidities are contributing to more morbidity requiring ICU admissions and mortality according to the findings of the present study, old age and 2 or more comorbidities are significantly impactful to COVID-19 outcomes in hospitalized patients in our study. "Patients with comorbidities should get vaccinated as early as possible to prevent morbidity and mortality" and must follow universal precautions

KEY WORDS: COVID-19, DM, SHT, COPD, OBESITY, CO MORBIDITIES

INTRODUCTION

The term comorbidity was first documented in the 1970's by the renowned doctor and epidemiologist A.R. Feinstein, who used the term when referring to people who suffered from rheumatic fever and multiple other diseases.

Nearly 70% of People Hospitalized for COVID-19 Have Underlying Conditions, Says CDC. Epidemiologic evidence suggests that patients with co-morbidities and COVID-19 infection may have poor survival outcomes. However, the risk of these coexisting medical conditions in severe and non-severe cases has not been systematically reported from this part of country

The Centers for Disease Control and Prevention currently lists 10 different conditions and risk factors that can increase an individual's chance of developing severe COVID-19 and complications of covid- most of which are respiratory illnesses (like asthma and chronic lung disease) or conditions that can compromise a person's immune system (like diabetes and liver disease)

Severe obesity reportedly increases the risk of a majority of COVID-19 patients develop acute respiratory distress syndrome (ARDS), and can cause difficulties with respiratory support, like prone position and intubation difficulties for mechanical ventilation.

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RESULTS:

Table 1) Age distribution:

Age	Numbers
< 14	1,159
15 – 30	3,136
31 – 45	5,421
46 – 60	7,912
>,60	7,011
Total	24,639

Table 2) Sex distribution:

Sex	Number
Male	13235
Female	10222
Male child	547
Female child	629
Transgender	06
TOTAL	24,639

Table 3) Comorbidity distribution

Sl. No	Co morbidity	Male	Female	total	% total	Icu admi	death	x2 value	P Value
1	DM	3632	1918	5550	36	2341	234	213.7	<0.001
2	OBESITY	4435	2459	6894	28	3211	211	674.9	<0.001
3	SHT	2467	1122	3589	14	829	89	222.4	<0.001
4	CAHD	673	153	826	3.3	118	87	148	<0.001
5	COPD	1110	968	2078	8.4	617	109	18.76	<0.001
6	PREG	-	336	336	1.3	32	-		
7	CRF	49	6	55	0.04	23	3	16.61	<0.001
8	DM&SHT	1112	643	1755	7	98	8	679.9	<0.001
9	O,DM,SHT CAD	112	11	123	0.4	58	5	211.4	<0.001
10	O,DM,SHT CAD ,CRF	148	14	162	0.6	134	16		
11	O,DM,SHT,	1463	516	1979	8	379	37		
12	O,COPD,	911	618	1529	6	311	29		
13	O,HT,COPD,CAD	168	112	280	1.1	115	2		
14	O,HYPOTHYROID	19	26	45	0.18	1	-		
15	O,CVA	11	2	13	0.05	13	2		
16	PREG,SHT/ECLAM	NA	41	41	0.16	49	-		
17	PREG,ABORTION	NA	19	19	0.07	42	-		
18	PREG DM,	NA	56	56	0.22	6	-		

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DISCUSSION:

The CDC adds that severe obesity is also linked to multiple serious chronic diseases and underlying health conditions, which can also resulting in more ICU admissions and poor outcome. According to researchers, hospital admission for COVID-19 was primarily dependent on age (those with ages more than 65 and above are most likely to be admitted), followed by obesity (defined by study authors as a BMI of over 30), and a history of , Diabetes mellitus , COPD, and heart failure "obesity is more important for hospitalization than whether a patient have high blood pressure or diabetes, though these often go together, and it's more important than coronary disease or cancer or kidney disease, or even pulmonary disease."COVID-19 does not discriminate based on BMI alone, but associated

diseases like diabetes and COPD, or SHT makes the patient with covid-19 **Three times** higher rate of ICU admissions, requiring mechanical ventilation with increased morbidity and mortality.

, "Comorbidity is associated with worse health outcomes, more complex clinical management, and increased health care costs."

CANCER patients having cancer with COVID-19 will have more complications. Treatments for many types of cancer can weaken body's immunity. based on available studies, having a history of cancer increases the morbidity and mortality.

People with blood cancers are at higher risk of prolonged infection and death from COVID-19 than people with solid tumors. That is because patients with blood cancers often have abnormal or depleted levels of immune cells that produce antibodies against viruses.

They are also more prone for coagulation disorders as covid-19 causes severe coagulation in small vessels, resulting in pulmonary embolism, CVA and CAHD and peripheral arterial occlusions

People with certain cancers and those who are receiving treatment that suppresses the immune system may have a weaker response to COVID-19 vaccines than people whose immune systems are not compromised.

Patients who are currently receiving treatment for solid tumors or blood cancers

Or had an organ transplant and are taking medicine to suppress the immune system, taking high-dose corticosteroids or other drugs that may suppress the immune system, have a moderate or severe primary immunodeficiency syndrome have advanced or untreated HIV infection are all have poor outcome

CHRONIC KIDNEY DISEASE

Having chronic kidney disease of any stage can make the patient more likely to get COVID-19 complications. COVID-19 patients are having significant risk of developing Acute kidney injury or acute renal failure, which can lead to serious illness, dialysis, and even death.. AKI appears to be a marker of COVID-19 infection severity and the mortality rate is higher for these patients. acute tubular necrosis with septic shock, micro inflammation, increased blood clotting, and probable direct infection of the kidney. Most patients with COVID-19-related AKI who recover continue to have low kidney function after discharge from the hospital, may have Long term implications of acute kidney injury.

.CHRONIC LUNG DISEASE:

Having a chronic lung disease can make patients more likely to get very sick from COVID-19. Which include:Asthma, if it's moderate to severe,Bronchiectasis ,Chronic obstructive pulmonary disease (COPD), including emphysema and chronic bronchitis, interstitial lung disease ,Pulmonary embolism ,Pulmonary hypertension ,Tuberculosis. smokers are more likely to develop more complications

HEART DISESE

Though it is primarily a covid pneumonia , infected people without underlying complications who are developing deadly arrhythmias from infection and inflammation that damage heart (carditis)and this may further illustrate a critical relationship between COVID-19 and the cardiovascular system

Having heart conditions such as heart failure, coronary artery disease, cardiomyopathies, and possibly uncontrolled hypertension can make covid 19 patients landed up in ICU.

Having mood disorders, including depression, and schizophrenia spectrum disorders can make COVID-19 treatment more complicated due to non co operation for treatment, suicidal tendencies, and self neglect

In July 2021 a study conducted by the CDC involving more than 500,000 patients hospitalized with COVID-19 from March 2020 to March 2021 identified several risk factors for death. The strongest were obesity, anxiety and fear-related disorders, and diabetes with complications. It also found that risk increases with the number of comorbidities.

PHYSICAL INACTIVITY

People who do little or no physical activity are more likely to get very sick from COVID-19 than those who are physically active. Being physically active is important to being healthy. respiratory exercises and yoga, meditation, aerobic and anaerobic exercises are very useful during pandemic

PREGNANCY

Pregnant and recently pregnant people (for at least 42 days following end of pregnancy) are more likely to get admissions and complications from COVID-19 compared with non-pregnant people.

Severe illness includes illness that may require admission to an intensive care unit (ICU), ventilation People who have COVID-19 during pregnancy are also at increased risk for complications that can affect their pregnancy and developing baby. For example, COVID-19 during pregnancy increases the risk of delivering a preterm (earlier than 37 weeks) and/or a stillborn infant.

A analysis published, compared cases in pregnant women with cases in non pregnant women aged 15-44 reported from January 1, 2020, to December 25, 2021. Compared with non pregnant women, pregnant women pregnancy with hypertension including pregnancy induced hypertension, pregnancy with diabetes pregnancy with heart disease had, 5 times the risk of admission to an ICU; and a 76% increased risk of invasive ventilation

TYPE 1 DIABETES MELLITUS

In general, people with diabetes are more likely to have more severe symptoms and complications when infected with any virus. Risk of getting very sick from COVID-19 is likely to be lower if diabetes is well-controlled. Viral infections can also increase inflammation, due to increased, LEUCOCYTES, NEUTROPHILS, IL6, CRP, PROCALCITONIN, FERRITIN TNF ALPHA, in people with diabetes. mainly due to CYTOKINE STORM. This can also be cause VERY HIGH BLOOD SUGAR, DKA, HONK. and that inflammation could contribute to more severe complications. The steroids given to minimize inflammation will increase blood sugar and resulting in a vicious cycle. people with type 1 or gestational diabetes might be at an increased risk for COVID-19 and its complications..

People who already have diabetes-related health problems are likely to have worse outcomes if they contract COVID-19 than people with diabetes who are otherwise healthy, New onset of hyperglycemia in non diabetic patients (with normal HbA1c and blood sugar more than 200 mg/dl) getting admitted in ICU with covid 19 with higher morbidity and mortality

DISABILITIES:

People with any type of disability that makes it more difficult to do certain activities or interact with the world around them, including people who need help with self-care or daily activities, People with attention-

deficit/hyperactivity disorder (ADHD), People with cerebral palsy, People with birth defects, People with intellectual and developmental disabilities, People with learning disabilities, People with spinal cord injuries, People with Down syndrome

Older adults, more than 65 years of age and above are at highest risk of getting admissions in ICU COVID-19. More than 81% of COVID-19 deaths occur in people over age 65. The number of deaths among people over age 65 is 11 times higher than the number of deaths among people ages 18-29 years.

CHRONIC LIVER DISEASE

Having chronic liver disease can worsen COVID-19 complications. Chronic liver disease can include alcohol-related liver disease, non-alcoholic fatty liver disease, autoimmune hepatitis, and cirrhosis. Having hemoglobin blood disorders like sickle cell disease or thalassemia (inherited red blood cell disorders), Having cerebrovascular disease, such as having a stroke which affects blood flow to the brain, Having a substance use disorder (such as alcohol, opioid, or cocaine use disorder) with COVID-19 may land up with more complications.

Continue medications and preventive care

- Continue your medicines and do not change your treatment plan without talking to your healthcare provider.
- Have at least a 30-day supply of prescription and non-prescription medicines. Talk to a healthcare provider, insurer, or pharmacist about getting an extra supply (i.e., more than 30 days) of prescription medicines, if possible, to reduce your trips to the pharmacy.
- Follow your current treatment plan (e.g., Asthma Action Plan, dialysis schedule, blood sugar testing, nutrition, and exercise recommendations) to keep your medical condition(s) under control.
- When possible, keep appointments (e.g., vaccinations and blood pressure checks) with healthcare provider. Check with healthcare provider about safety precautions for office visits and ask about telemedicine or virtual healthcare appointment options.
- Learn about stress and coping. You may feel increased stress during this pandemic. Fear and anxiety can be overwhelming and cause strong emotions. It can be helpful to talk with a professional like a counselor, therapist, psychologist, or psychiatrist. Ask your primary care provider if you would like to speak with a professional. Getting regular exercise and being physically active is also a great way to reduce stress.

CONCLUSION:

Out of the 24,639 patients admitted 15,276(62%) required non oxygen beds. 8377(34%) required ICU oxygen beds on admission total deaths 832 (3.3%) with co morbid and 197 (0.8 %) without co-morbid conditions. Current evidence suggests that children with medical complexity, with genetic, neurologic, or metabolic conditions, or with congenital heart disease can be at increased risk for getting very sick from COVID-19. Like adults, children with obesity, diabetes, asthma or chronic lung disease, sickle cell disease, or who are immuno compromised can also be at increased risk for getting very sick from COVID-19. It is important to protect by taking preventive measures against COVID-19: Stay up to date with COVID-19 vaccines booster doses, Wearing a well-fitting mask, Avoiding crowds and poorly ventilated spaces Testing early if there are symptoms and isolation to prevent the spread to

others frequent Washing of hands, following coughs and sneezes etiquette meticulously ,Monitoring health daily, consuming, nutritious, healthy diet with fresh vegetables and fruits.

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