



A Review: Impact of Corona Virus on Patient with Chronic Diseases

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ABSTRACT:

This study intends to offer proof of how the COVID-19 pandemic has affected the treatment of chronic diseases in many contexts around the world. To evaluate the pandemic's effects on global health, society, and the economy, cross-sectional surveys were carried out. This narrative review aimed to provide an update on the pandemic's effects on chronic disease patients, how they used healthcare services, and the prospects for better chronic disease management during the pandemic in settings with constrained resources. Additionally, by submitting the necessary recommendations for potential change and to scale up present intervention programmed, this evaluation may draw the attention of interested entities to the need to make decisions and take actions in the spirit of reducing the burden of chronic diseases.

KEYWORDS: COVID-19, Chronic disease, Healthcare, Pandemic.

Introduction:

Coronavirus disease 2019 (Covid-19) is an infection brought on by coronavirus-2, which causes severe acute respiratory syndrome (SARS-CoV-2). In terms of its pathogenesis, diagnosis, management, sequelae, and complications[1], there have been numerous turns and twists since the first case was discovered in Wuhan, China, in December 2019. It is a sizable family of viruses that have been discovered since 1965, and COVID-19 has recently been found to infect people. These viruses come in three different alpha, beta, and gamma genotypes. Since the virus was spread by animals and birds, it is known as a zoonotic disease [2]. The dread of the coronavirus has a significant negative influence on the mental health of the population and healthcare professionals in addition to the disease's higher mortality rates [3].

China implemented stringent lockdown measures in Wuhan and other places in reaction to the outbreak. A proactive, multi-pronged infection prevention strategy, comprising active monitoring, border inspections, contact tracking, and social distancing measures, was launched in Hong Kong in December 2019. In India, a general lockdown was implemented in March 2020. It was then prolonged through June and then to a specific containment zone[4]. Lockdowns and other social isolation measures were used to contain the diseases, which changed daily routines and led to decreased physical activity, unbalanced diets, disruptions in supply chains, etc.

Chronic illnesses that impair the immune system, such HIV, diabetes, and kidney failure, make people more susceptible to infections. Less likely to be cured are these COVID-19 patients. About 5% of cases of sudden heart failure are brought on by COVID-19, one of the main causes of heart disease. As a result, people with COVID19 who have a history of CVD have a significant death risk. [5,6].

Study environment The cross-sectional surveys that were carried out to evaluate the health, social, and economic effects of the COVID-19 pandemic in various locations within India, China, Hong Kong, Korea, and Vietnam are discussed here.

India:

A cross-sectional telephone survey was conducted between July 29 and September 12, 2020, among 1734 adults from the two sizable existing cohorts (the Center for Cardio-metabolic Risk Reduction in South Asia, CARRS, and a comprehensive diabetes and hypertension prevention and management programme in India-UDAY[7,8]) who had one or more chronic conditions (hypertension, diabetes mellitus, cardiovascular disease, or chronic kidney disease). About 600 people were invited to take part in the survey at each of the four sites in India (Delhi, Chennai, Haryana, and Vishakhapatnam) using a stratified random sampling of participants with chronic diseases by age and sex. Data on the participants' comorbidities, access to healthcare, financial and non-financial barriers to medication access (connected to COVID-19), demographics, socioeconomic position, and satisfaction with their treatment were gathered. We questioned participants if their diabetes symptoms got worse following confinement. A pretested questionnaire was also used to gather information on household income, work status, and self-monitoring of blood glucose levels[9]. By using a Commcare application, trained field personnel collected survey data.

China:

In 10 towns in Kunshan and Taicang, Jiangsu province, a cross-sectional survey of 309 people with diabetes was carried out. The face-to-face interviews were conducted by qualified community health station physicians between July and August 2020, when the COVID-19 epidemic in China was being controlled, and data were gathered using the Qualtrics programme. In addition, 394 people with chronic illnesses were the subjects of a cross-sectional survey that was conducted across three locations in Shanghai, China. The team chose one community health service facility for each of the three administrative regions it had arbitrarily chosen. Between July and November 2020, a convenience sampling survey was conducted among the outpatients at these locations. The study recruited participants who could use smart phones and did not have serious disabilities.

Hong Kong:

In Hong Kong, 30 cross-sectional bi weekly telephone surveys were conducted among adults 2020, with a 1:1 ratio of random digit dialling to landline and mobile numbers. 15 of these surveys on the topic of chronic illness have information available. beginning on alternate weeks and continuing until December 30, Data on the socioeconomic status of respondents, comprising household, household size, occupation, and age Income was gathered. Calls were placed both within and outside of business hours to prevent an excessive non-working groups with each participant being a fresh recruit survey phase. respondents were over the age of 18, and able to communicate in either English or Cantonese. thorough examination approaches have already been mentioned.

Republic of Korea:

In January 2021, a cross-sectional online survey of 910 participants was undertaken to collect data on professions, other sociodemographic factors, and access to healthcare services both before and after the COVID19 pandemic. Given that online surveys tend to draw a younger demographic, the survey used quota sampling to limit the proportion of participants under the age of 40. Additionally, participants were only invited to complete the full survey if they self-reported having been diagnosed with either diabetes mellitus or hypertension at least two years prior to January 2021. This study investigated how the COVID-19 epidemic affected working-age, primarily urban Korean citizens' access to and health.

Vietnam:

A cross-sectional survey of 497 diabetic patients was done at the outpatient clinic in a Thai Nguyen provincial hospital between June and July 2020. Adults with diabetes and those registered at the hospital before January 2020 were invited to participate in the survey using a convenience sampling technique. At the Thai Nguyen University of Medicine and Pharmacy, trained medical students and professors personally conducted the survey form[10].

Global burden of chronic conditions:

Most chronic conditions are silent killers. According to the WHO study from 2018 [11], chronic diseases such heart disease, diabetes, cancer, and respiratory disease were responsible for 63% of deaths. The global mortality rate from noncommunicable diseases (NCDs) is still too high. Three-quarters of all fatalities worldwide will be attributable to NCDs by 2030 [12].

In low-income nations, the effect of these chronic diseases is also growing. LMICs account for about 90% of fatalities from chronic obstructive pulmonary disease, over 80% of deaths from heart disease, and over 80% of deaths from diabetes. According to estimates, more than 17.3 million people worldwide die from heart disease each year [13]. According to the WHO, out of the 38 million chronic disease-related deaths reported annually, 14 million deaths occurred in adults between the ages of 30 and 70, with developing nations accounting for 85% of these deaths.

According to estimates, 20% to 51% of COVID-19 patients have at least one comorbidity, and this percentage rises to 50% to 80% in patients with severe disorders [14,15,16]. Patients with COVID-19 who had diabetes, hypertension, or coronary heart disease were more likely to advance to severe symptoms [17,18]. Cardiovascular diseases (CVDs) are linked to a greater risk of death in COVID-19 individuals [19]. The hardest part of the epidemic is providing routine treatment for chronic illnesses. Chronic illnesses that impair the immune system, such HIV, diabetes, and kidney failure, make people more susceptible to infections. Less likelihood exists for these COVID-19 patients to recover [20,21]. About 5% of cases of sudden heart failure are brought on by COVID-19, one of the main causes of heart disease. As a result, patients with COVID19 who have a history of CVD have a significant death rate [22].

Patients with COPD and asthma are at a higher risk of developing severe COVID-19, which may be connected to altered ACE2 receptor activation. Patients with chronic diseases need to have timely access to effective care in order to improve outcomes and monitoring [23]. Additionally, people with chronic illnesses need ongoing care to control their condition [24].

Psychological impacts of COVID-19:

The fear of COVID-19, often known as "coronaphobia," is a growing problem among various populations and healthcare professionals [25]. Anxiety, worry, and depression were all frequent effects of the COVID-19 epidemic on mental health. According to estimates, the mental health of 80% of the patients was impacted by the pandemic [26]. The virus's lack of effective remedies has also made people more anxious. The majority of patients do not meet the diagnostic criteria for a DSM-5 diagnosis with these anxiety symptoms [27].

Long-term effects of anxiety, fear, uncertainty, and stressors in a community can include a decline in social networks, stigma, a potential increase in emotional state, and other undesirable outcomes [28,29,30]. Additionally, COVID-19 may worsen phobias, panic attacks, mood disorders, sleep disturbances, and psychosis [31,32].

In one study, patients with chronic diseases who had COVID-19 had a 22.8% (95% CI: 18.6-27.1) aberrant psychological impact. In contrast to individuals who had strong social support, those who were living alone and lacked social support were more likely to experience psychiatric issues. Behavioral treatment techniques including relaxation exercises, counselling, and entertainment are helpful in preventing the impact of COVID-19 on people who are living alone or without any social support [33].

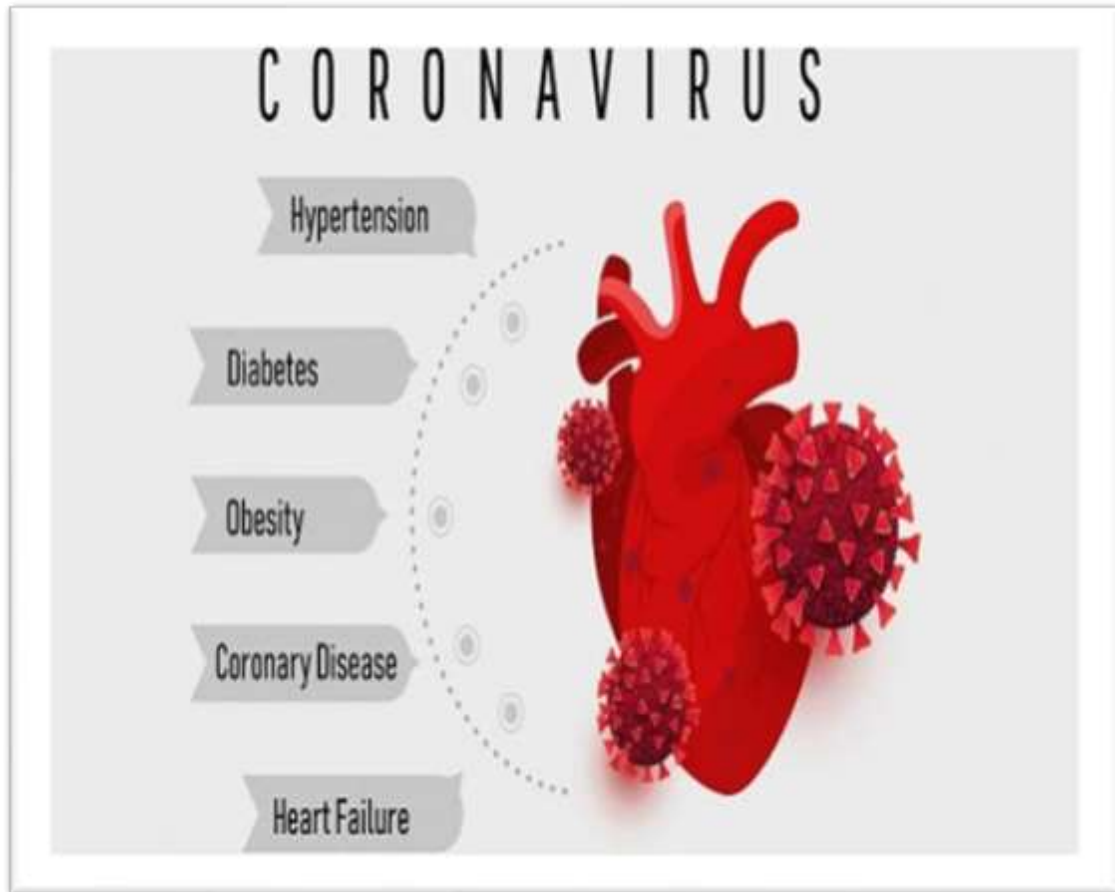


Figure No:1

METHODS:

Study plan:

To learn more about how the COVID-19 epidemic has affected the health, social, and economic well-being of people with chronic diseases, we performed an exploratory qualitative study. Given the evidence that the pandemic differentially affects populations based on demographic factors like race, age, gender, and socioeconomic status, syndemic theory provided a framework to examine how mutually enhancing health issues, such as COVID-19 and pre-existing epidemics of chronic disease, operate within the context of social inequality (SES). In order to characterise and compare the contextual difficulties and opportunities brought on by the COVID-19 pandemic in India, we conducted semi-structured interviews with patients who were dealing with chronic illnesses in various regions of the country. We concentrated on the main difficulties encountered and the solutions/lessons discovered during the COVID-19-related lockdowns. In order to elicit a variety of perspectives regarding differences according to age group, sex, comorbidities, and COVID-19 diagnosis, we purposively sampled participants. We did this in order to recognise that socioecological and biological factors contribute to vulnerability to COVID-19 infection among people with chronic conditions.

Study environment:

A diverse group of 41 study participants who are currently enrolled in two longitudinal cohort studies (Centre for Cardiometabolic Risk Reduction in South-Asia (CARRS)-Surveillance Study and UDAY (A Comprehensive Diabetes and Hypertension Prevention and Management Program in I)) and

who have chronic illnesses such as hypertension, diabetes, stroke, coronary artery disease, and chronic kidney disease. Invited to take part in an in-depth phone interview. Invited to take part in an in-depth phone interview, Haryana, Vizag, and Chennai declined.

Data collection:

Between August and September 2020, we performed semi-structured phone interviews using a guide designed especially for people with chronic diseases (see online supplemental file 1 for the interview topic guide). To standardise data collection, the interview topic guide underwent pilot testing, and the interviewers received the proper centralised training. The COVID-19 pandemic's obstacles and how they affected participants' access to healthcare, lifestyle, mental health, job, and self-care behaviours were the two main areas of attention in the interview topic guide. the pandemic-related preventive health measures implemented, the lessons learned from this experience, and any good or negative adjustments. Participants were questioned during the in-depth interviews about the length of time it took to diagnose and/or treat their chronic condition(s), the difficulties they encountered during the pandemic, their access to healthcare facilities, the availability of medications, whether they experienced any fear, anxiety, or stigma when seeking COVID-19 testing and treatment, the effect the pandemic had on their employment and income, and any important lessons they had learned.

Data analysis:

Because it allowed for comparisons among participant data while keeping the contextual information inside individual narratives that affected their experiences, our research used the framework technique to qualitatively analyse the interview data. All of the in-depth interviews were audio recorded, verbatim transcribed, translated, anonymized, and fact-checked. Based on the interview guide, the first author and two additional researchers (MG and APM) created a codebook, adding and coding for new concepts that appeared during successive rounds of data collecting and analysis. Two qualitative researchers read and coded a subset of the transcribed interviews, then discussed the code definitions with the co-authors to get to an agreement. The analysis's identified subthemes held true consistently. We used MAXQDA software to code interview data, compare coded segments across interviewees, and identify trends. During the COVID-19 pandemic, our qualitative studies were focused on identifying the context, obstacles, and potential for improving the management of chronic illnesses within the current healthcare system. Illustrative, non-attributable quotations were employed by us [46,47,48].

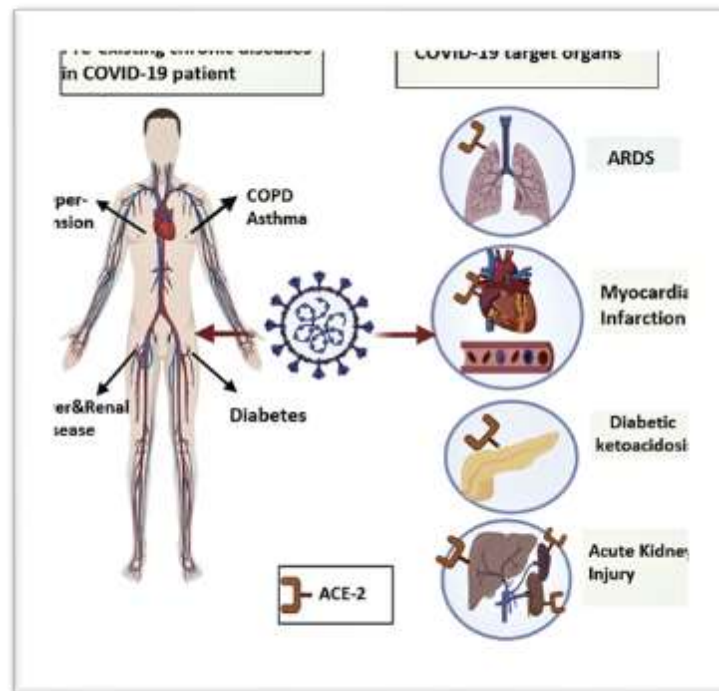


Figure No:2

Underlying Conditions and Risk of Severe COVID-19:

Regardless of a person's age, some airway and lung diseases can set the stage for a more severe coronavirus infection because of scarring, inflammation or lung damage. These include;

- ✓ **Heart Disease**
- ✓ **Cancer**
- ✓ **Pregnancy**
- ✓ **Diabetic**

- ✓ **Chronic obstructive pulmonary disease (COPD), such as emphysema**
- ✓ **Heart Disease and COVID-19:**

The heart pumps blood to deliver oxygen to the body's tissues even while COVID-19 more frequently affects the lungs and airways. The heart has to work harder when the lungs are stressed out by illness, which presents difficulties for patients who already have illnesses like heart failure, coronary artery disease, or cardiomyopathies.

According to the American Heart Association, viral infections like COVID-19 can increase a person's chance of having a heart attack if they have a build-up of plaque in their blood vessels. According to research, a viral infection can increase the risk that a portion of the plaque lining the veins could break off and obstruct blood flow to the heart.

Can COVID-19 damage the heart?

es, the heart can be affected by COVID-19, despite the fact that it is largely a respiratory or lung condition.

The following factors may cause temporary or permanent harm to cardiac tissue.

Lack of oxygen:

Less oxygen can enter the circulation as the virus causes inflammation and fluid to fill the air sacs in the lungs. Blood pumping through the body requires more effort from the heart, which can be problematic for those who already have heart disease. Overworked hearts can stop working, and other organs, including the heart, can suffer from cell death and tissue damage from a lack of oxygen.

Myocarditis: inflammation of the heart:

Like other viral illnesses, such as some flu strains, the coronavirus may directly infect and harm the heart's muscular tissue. The body's immune system's response could also indirectly harm and inflame the heart.

The inner surfaces of veins and arteries can become infected by the coronavirus, which can then lead to blood clots, very minor blood vessel damage, and inflammation of surrounding blood vessels, all of which can impair blood flow to the heart and other organs. According to Post, severe COVID-19 is a condition that affects endothelial cells, which line blood arteries.

Stress cardiomyopathy:

Cardiomyopathy, a condition of the heart muscle that impairs the heart's ability to adequately pump blood, can be brought on by viral infections. The stress caused by a viral infection causes the body to release an excess of catecholamines, which can stop the heart. The stressor will end once the infection is treated, allowing the heart to heal[34].

Treatment Recommendations:

Despite the lack of a proven cure for COVID-19-related cardiac damage, current therapies focus on lowering viral replication and controlling the inflammatory response of the host. The degree of the sickness and hemodynamic impairment should inform the therapy option.

A. Avoid Non-Steroidal Anti-Inflammatory Drugs (NSAIDs):

NSAIDs are frequently used to treat myocarditis. Thoughts have been raised that they might raise ACE-2 levels. Acute kidney damage (AKI) is another risk factor that NSAIDs may raise. Therefore, we advise against using NSAIDs in any patients who have COVID-19, whether it is suspected or known.

Several anti-viral therapies -are under investigation:

Early results with hydroxychloroquine from France and China, with or without azithromycin, in COVID-19 patients with mild symptoms were encouraging, but a later larger research in individuals with severe COVID-19 has not demonstrated any appreciable therapeutic advantages. A recent large-scale international registry and meta-analysis also failed to find any clinical benefits of HCQ. Azithromycin with hydroxychloroquine should only be taken cautiously and under constant telemetry monitoring due to the risk of QT prolongation and life-threatening arrhythmias.

Remdesivir was related with clinical improvement in 84% of patients in a compassionate use, open-label single-arm study of 53 patients with severe COVID-19 (64% requiring invasive ventilation). Remdesivir had a higher chance of helping patients who needed non-invasive ventilation and were younger (70 years old). Remdesivir has been given an emergency use licence by the US Food and Drug Administration for the treatment of hospitalised patients with severe COVID-19. Although there is little evidence, such drugs may be taken into consideration for patients who are very unwell despite supportive care after consulting with infectious disease specialists[39,40].

Cancer, Cancer Treatment and COVID-19 Risk:

Anyone of any age who has recently had cancer or is undergoing treatment for it is at risk for developing severe COVID-19 if they contract the coronavirus. This is particularly true for people who have blood malignancies like leukaemia.

Your immune system may become weakened as a result of cancer treatment, such as chemotherapy or stem cell or bone marrow transplant, making it simpler to contract infectious disorders like COVID-19.

If you are receiving any of these treatments, talk to your oncologist about when you should have the COVID-19 vaccine and whether you need an additional dose. Treatments that weaken your immune system may influence how well the vaccines protect you.

One of the main therapy options for advanced malignancies is immune checkpoint inhibitors (ICIs). The foundation of these therapies is an effort to strengthen the immune system to combat cancer cells. However, it is unclear how immune modulation would affect COVID-19 infection and potential treatments. Immune modulation may aid in the fight against COVID-19 disease since it strengthens the immune response, or it may just strengthen the cytokine storm that can have devastating effects such as severe pneumonitis and respiratory failure.

Non-urgent bone marrow transplants (BMT), such as those performed on patients with multiple myeloma, should be postponed as much as feasible. Due to travel limitations or donor infection, access to bone marrow donors may be hampered by the COVID-19 virus's widespread distribution. Therefore, before starting conditioning treatment, we advise having a frozen stem cell product or a different donor on hand as a backup. Although COVID-19 is typically found in blood, there have been no reports of the disease spreading through blood transfusions or cellular therapy as of yet. Any donor who has been given the COVID-19 diagnosis must be barred from donation and delayed for at least three months. In light of the current situation with patients in need of urgent transplants, earlier collection from COVID-19 negative donors should be taken into consideration. Donors should be kept away for at least 28 days and their COVID-19 infection should be closely monitored in cases where they had close contact with COVID-19 patients or travelled to high risk areas. Patients who have just undergone BMT should exercise extreme caution to limit their exposure to COVID-19, maintain adequate hygiene, and receive patient family counselling regarding stringent preventative measures to reduce the risk of infection[35].

Post-pandemic, 30% More Cancer Patients Treated At Premier Mumbai Institute:



Figure No:3

A top official revealed on Saturday that a city-based top cancer institute has seen 30% more patients since the coronavirus outbreak, many of them in severe stages. Doctors at the Tata Memorial Centre (TMC) said that the dread of going to hospitals during the pandemic may be the cause.

According to TMC Director Dr. Rajendra Badwe, the facility saw 60% of its normal patient load during the coronavirus pandemic. Patients are coming back for treatment once more as the number of COVID-19 cases has drastically decreased. According to him, the hospital is keeping track of cases like this to gauge the extent of disease growth.

According to Dr. Badwe, waiting for two to three months might not make a difference, but waiting for a year or two would. Other health services than those connected to coronavirus were negatively impacted by the pandemic as a result of the country's and the world's hospital infrastructure being overwhelmed by the patient influx. Every year, 80,000 new patients and 5,50,000 follow-up patients come to the TMC. It runs nine cancer hospitals, including Mumbai's prestigious Tata Memorial Hospital.

Pregnancy and COVID-19:

When pregnant or recently delivered women get COVID-19, they are more likely to experience severe sickness, problems, and even death. Additionally, COVID-19 has been associated with an increased incidence of stillbirth and early birth, which could have harmful effects on pregnant women. The risk to the mother and the foetus can also be increased by underlying illnesses including heart disease and lung disease. In addition to causing immune system changes, pregnancy can increase your susceptibility to respiratory viruses. The COVID-19 vaccine is risk-free, reliable, and strongly advised for expectant mothers.

Treatment of COVID-19 in Pregnant Women:

COVID-19-positive pregnant women should be admitted to the quarantine ward. Even though the majority of reported cases were modest and had a good recovery, self-care at home is not advised.



Figure No:4

General Treatment:

Pregnant women and the general population received similar general treatment. Patients should get enough rest and a healthy diet. Monitoring of vital signs, symptoms, complete blood count (CBC), liver and renal function, C-reactive protein (CRP), FiO₂ levels, and chest x-rays is necessary. Oxygen therapy using nasal catheter or mask is essential[36].

Special Treatment for Pregnant Women According to Gestational Age:

For patients within 28 weeks of gestation, the major treatment was supportive and antiviral medication. Gestation weeks should be prolonged as much as feasible, if the maternal and foetal circumstances are stable. Dexamethasone should be used for maturation in those with gestational ages greater than 28 weeks, and the status of the foetus should be continuously checked. When the infection tends to be out of control or when there are obstetrical indications, a pregnancy may be terminated[37].

Antiviral Therapy:

There was little information about antiviral medicines in pregnant women because drug studies on pregnant women were almost universally excluded. We have examined pertinent literature and gathered data that may be useful to patients who are pregnant.

In a global study on Remdesivir, 68% of participants showed improvements, while 13% deteriorated and eventually passed away. Several cases demonstrated that remdesivir might be efficacious and safe for the treatment of severe COVID-19 in pregnancy.

Several antiviral medications have been shown to be both safe and effective during pregnancy. Studies have shown that clinically significant oseltamivir doses in pregnant women do not have the potential to negatively impact foetal development during the H1N1 pandemic influenza infection. According to the scenario at hand, the American College of Obstetricians and Gynecologists (ACOG) recommended in October 2018 that pregnant women with influenza who have been diagnosed or are likely to become pregnant take antiviral medication (oseltamivir or zanamivir). These agents are potentially useful and further clinical investigations are required.

However, due to the lack of data, pregnant women should use these medications with caution. Clinicians should monitor patients for adverse effects and the potential toxicity to decrease the risk of sudden cardiac death or other complications[38].

Corona vaccine: How safe is it for pregnant women and nursing mothers to take corona vaccine?

Immunization of everyone above 18 years of age in India is starting from today (May 1, 2021). However, pregnant women and lactating mothers are excluded from this. When will they get the vaccine? Everyone has this question. BBC Marathi has tried to find the answer to this question. Vaccination is the only effective option to break the chain of transmission of the Covid-19 virus. It is clear from the research that the chance of infection spreading in the house is reduced due to the vaccine.

Experts say that taking the vaccine will reduce the severity of the disease and reduce the death rate. More than 15 crore people have been vaccinated in India. Vaccination was opened for 18 to 44 age group.

Why is there a risk of heart attack after covid?

Did 'this' grandfather really give up his bed for a young patient?

How did 105-year-old grandfather and 95-year-old grandmother overcome Corona?

According to the Centre's advice, pregnant women and lactating mothers should not take the vaccine at this time. Therefore, gynecologists have tried to draw the attention of the government by demanding that these women should be given the vaccine.

The opinion of the association of gynecologists?

'Fogsi' (Federation of Obstetric and Gynecological Society of India) is the largest association of gynecologists in the country. 'Fogsy' has issued a pamphlet regarding vaccination of pregnant women and lactating mothers.

That sheet contains the following points –

Pregnant women, lactating mothers should be vaccinated. They should also get vaccine safety

Women should have the freedom to make their own decisions. Gynecologists should be allowed to administer vaccines. So that proper care can be taken

Clinical data on Covishield and Covaxin in pregnant and lactating women are not available. But according to animal research and scientific data, the vaccine does not adversely affect the fetus or the unborn baby

The vaccine does not have an adverse effect on the breastfed baby. Therefore, lactating mothers should get the vaccine.

This decision will affect 50 million people

President of Gynecologists' Association Fogsi Dr. Alpesh Gandhi says, "If we want to prevent a wave of corona, then vaccination is an effective and long-term solution. Therefore, pregnant women and lactating mothers should be protected by the vaccine."

"The benefits of vaccinating pregnant women, nursing mothers, outweigh the mild risks," said Dr. Gandhi continues.

Diabetes As a Risk Factor for COVID-19:

The coronavirus that causes COVID-19 increases the risk of severe illness in people with diabetes. Both type 1 and type 2 diabetes raise blood sugar levels. Poorly regulated blood sugar can make viral infections, particularly COVID-19, more deadly, presumably because greater blood sugar can produce an environment where viruses are prone to thrive.

Additionally, diabetes worsens the immune system and promotes inflammation, making it more difficult for diabetics to fend off illness in general.

People with diabetes should follow their medication regimes and make every effort to maintain healthy blood sugar levels. Your peace of mind may be increased by having an adequate supply of drugs and keeping in constant contact with your physician.

Potential Risk Factors Of COVID-19 Age and Gender:

Males and older people had higher rates of morbidity and mortality from COVID-19. Zheng et al. reported a higher risk of mortality and more comorbidities, such as hypertension and diabetes, which also significantly impacted the prognosis of the COVID-19, in a systematic literature review and meta-analysis of 13 studies involving a total of 3027 COVID-19 patients and aged patients over 65[41].

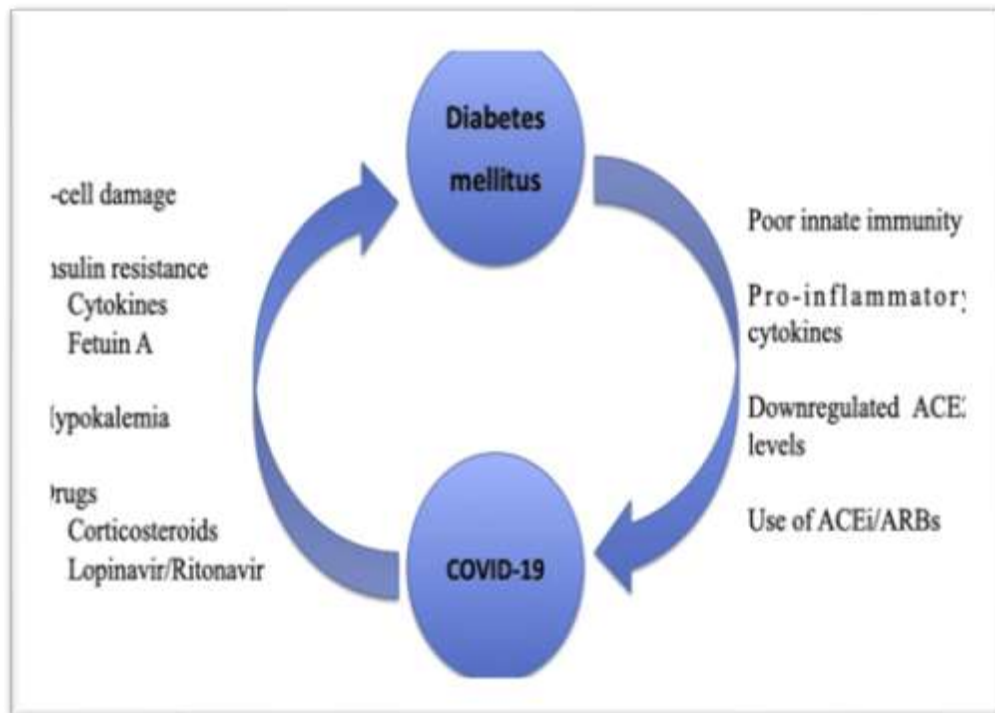


Figure No:5

High Blood Pressure:

In patients with severe COVID-19, high blood pressure (hypertension) is the most prevalent comorbidity. Angiotensin-converting enzyme 2 (ACE2) may directly attach to SARS-CoV-2, according to studies, allowing it to infiltrate target cells. ACE2 is widely expressed in the upper airways, lung, heart, liver, kidney, ileum, testis and brain and it plays an important role in anti-inflammatory reactions. Recent research has looked on the relationship between the severity of the disease and the medicinal treatment received by COVID-19 individuals with hypertension. Data from a clinical research with 3017 COVID-19 patients who were hospitalised revealed that 53% of them had hypertension. Additionally, compared to other anti-hypertensive medications, patients receiving treatment with angiotensin-converting enzyme inhibitors (ACEI) and angiotensin receptor blockers (ARBs) had lower mortality rates. However, some in vitro and animal research showed that ACEI and ARBs boosted the expression of ACE2, and such medications may make it easier to infect target organs and hasten the progression of COVID-19 disease. Furthermore, it is still unclear how exactly ACEI interacts with the human renin-angiotensin system (RAS)[42,43].

Therapeutics-Treatment Specific To Patients Having Both COVID-19 And Diabetes:

Medical staff should ensure that COVID-19 patients with diabetes have adequate glycemic control. This necessitates careful assessment of any potential negative effects that the treatments that will be administered on those patients may produce. Both kinds of diabetes are generally treated with insulin. Although this treatment has been suggested for severe COVID-19 patients with diabetes, it should be determined based on the severity of the condition, and such patients should be closely followed. According to one study, people using insulin had worse clinical results than those receiving metformin.

Metformin should be stopped using if a patient has respiratory distress, renal dysfunction, or cardiac failure as a result of acidosis, despite better outcomes being documented in diabetic individuals with COVID-19 who are taking it. In the CORONADO study, Cariou et al. reported that the use of metformin was lower in patients who died and other therapies such as insulin treatment, renin-angiotensin-aldosterone system (RAAS) blockers, β -blockers and loop diuretics were associated with death on day 7. The underlying comorbidities and diabetic complications in those who died, as well as the fact that these patients received more frequent treatment, such as insulin and other multiple medications, were thought to be the cause of this discovery.

In a recent study, patients with COVID-19 who underwent continuous glucose monitoring had considerably larger postprandial glycemic swings and exposure to hyperglycemia. As a result, ongoing blood glucose monitoring should be part of the therapeutic procedure. Additionally, sodium-glucose transporter 2 inhibitors should be used with caution due to their negative side effects, which include ketoacidosis and a reduced ability to metabolise fat. Additionally, since glucagon-like receptor-1 (GLP-1R) analogues have the potential to produce headaches, nausea, vomiting, and diarrhoea, caution

should be exercised when using them. Sitagliptin, an oral and highly selective dipeptidyl peptidase 4 (DPP4) inhibitor, was utilised as an add-on medication to the standard of care in patients with type 2 diabetes and COVID-19 in a recent multicenter, case control, retrospective, and observational trial.

In this trial, sitagliptin therapy was linked to a lower death rate, a better clinical result, and more hospital discharges. The common disease pathophysiology between type 2 diabetes and coronavirus infections may be the cause of these favourable results. Two important coronavirus receptor proteins, DPP4 and ACE2, are recognised as metabolic signal transducers that control inflammatory response, cardiorenal physiology, and glucose homeostasis. Furthermore, it is known that some immunomodulatory substrates' biological activities are altered by the use of glucose-lowering medications, such as the DPP4 inhibitors, which are frequently prescribed to type 2 diabetes patients[44,45].

COPD And Covid-19 Risk:

As of June 2020, there were more than 3 million confirmed cases of the COVID-19 pandemic being caused by the coronavirus SARS-CoV-2. Caregiving for people with COVID-19 and underlying COPD presents unique challenges in these remarkable times. There is speculation that certain COPD treatments, such as nebulized bronchodilators and non-invasive ventilation (NIV), may enhance the risk of virus transmission by aerosols. The respiratory and intensive care communities are debating whether or not to employ systemic steroids. Additionally, clinicians deal with decisions every day about which life-sustaining treatments to begin, when to begin them, and even whether to begin them.

Are patients with COPD at an increased risk for COVID-19?

Since COPD is frequently a disease of the elderly and patients with COPD are susceptible to viral respiratory tract infections, many had anticipated that COPD patients would have a much higher chance of contracting COVID-19. The prevalence of COPD in China ranges from 5% to 13%, according to studies, although only 2% of patients treated to hospitals with COVID-19 infection in China had underlying COPD. The most often reported comorbidity among patients with COVID-19 was not, in fact, COPD. Although the low incidence shows that COPD is not a risk factor for contracting COVID-19, the extent of the pandemic will nonetheless have a significant impact on many COPD patients.

What is the medical treatment of a patient with COPD and COVID-19?

Physicians must address the underlying COPD while treating COVID-19 in COPD even if it may not be a typical AECOPD. Additionally, a diagnosis of COVID-19 in a COPD patient does not rule out the presence of concurrent AECOPD and the requirement for therapy for this condition. Bronchodilators are required, NIV has positive effects, and antibiotics are frequently required when treating individuals with COPD. There have been questions over whether and how to provide these medicines to COPD patients during the pandemic.

Antibiotics:

Outside of COVID-19, not all AECOPDs should receive antibiotic treatment, and current recommendations advise saving antibiotics for AECOPDs that need hospitalisation or ventilator support. In general, COVID-19 patients seldom develop bacterial coinfections; according to a recent meta-analysis, just 8% of patients did. A cohort research on risk factors for in-hospital death from COVID-19 indicated that 31% of ventilatory-associated pneumonia cases and secondary infections were seen in non-survivors, suggesting that the likelihood of coinfections rises as COVID-19 becomes more severe. Due to the potential difficulty in differentiating SARS-CoV-2 infections from bacterial pneumonia and the possibility of bacterial (super)infections in patients with COPD.

Bronchodilators and nebulisation:

Hospitalized COPD patients typically receive bronchodilators via nebulizer. The British Thoracic Society (BTS) guideline on treating COPD and COVID-19 patients supports the use of nebulizers, asserting that there is no evidence to suggest an increased risk of viral transmission and, second, that the aerosols surrounding the nebulizer originate from the nebuliser and not from patients. However, there are some methodological issues with the meta-analysis that suggests nebulizers do not promote viral transmission. It is based on three studies: one with a relatively small sample size, one looking at different therapies, and one where infections started before exposure to nebulization.

The BTS recommendation was also based on a methodological investigation that demonstrated that nebulizers primarily produce aerosols rather than droplets, which was also used to imply that nebulization was safe. Since viral transmission was not the focus of this study and since it is still debatable whether droplets or aerosols may harbour SARS-CoV-2, we do not believe that these findings should be interpreted as indicating that there is no risk of transmission.

There are other methods of inhalation, such as pressurised metered-dose inhalers (pMDI) used in conjunction with a spacer. pMDIs are not less effective than nebulizers in AECOPD. Dual bronchodilators with a lengthy half-life may be preferred; some also have a quick beginning of action and are more potent with a longer half-life. Currently, there are two long-acting pMDI combos that can be used with the spacer.

Nebulized short-acting bronchodilators don't have a maximum dosage listed, and AECOPD frequently requires very large doses. In order to reflect the large dosages of short-acting bronchodilators frequently used in clinical practise, we propose doubling the maximum maintenance dose of long-acting bronchodilators. We advise bronchodilators administered by pMDI and spacer over the use of nebulizer treatment in symptomatic individuals with COPD

and COVID-19 because the safety of nebulizers is debatable and because there is an appropriate alternative. Nebulized treatment should only be used when pMDI with spacer is not an option, such as when treating patients with severe, life-threatening conditions or those who are unable to utilise a pMDI.

Systemic corticosteroids:

It is acknowledged that not all AECOPDs require systemic corticosteroids for treatment. The use of this approach in individuals with COPD and COVID-19 has not been tested, despite the fact that it has been recommended for stable COPD and AECOPD. Although a cohort research revealed that steroids might enhance clinical outcome in COVID-19 patients, the effectiveness of corticosteroids in general for treating COVID-19 has just recently become clear. Dexamethasone reduces mortality in COVID-19 patients who require respiratory assistance, according to recent preliminary findings from the Randomized Evaluation of COVID-19 Therapy (RECOVERY) trial. The WHO traditionally advised against using steroids¹⁰, but is currently revising treatment recommendations to include dexamethasone or other corticosteroids^[49].

Which ventilatory support should be provided to patients with COPD with respiratory failure?

Controlled oxygen therapy should be administered to patients with hypoxemic COPD and COVID-19 as a first step. High-flow nasal cannulas (HFNC) or CPAP with high oxygen flow should be taken into consideration if hypoxaemia cannot be sufficiently controlled with maximum oxygen supplementation. Recently, the therapy of COVID-19 patients with acute hypoxaemic respiratory failure with HFNC has been proposed. In patients with COPD and COVID-19, HFNC may also reduce hypercapnia and reduce work of breathing. HFNC cannot be filtered because it is an open system and expiratory. To prevent the transmission of aerosols, a surgical mask can be positioned over the nasal cannula. To treat hypoxaemic respiratory failure in addition to HFNC, CPAP with a high fraction of inspired oxygen (FiO₂) may be an alternative. Positive end-expiratory pressure is something that CPAP offers, and it may be a helpful addition to oxygen therapy. Additionally, CPAP allows for expiration filtering, which reduces virus transmission.

NIV should be taken into consideration in COPD patients who have acute (or chronic) hypercapnic respiratory failure. Since there is no evidence that HFNC is similar, we advise utilising NIV first line in this population. By wearing a non-vented mask and having the exhaled air pass through a bacterial/viral filter before entering the room, virus transmission can be prevented. In order to get a greater FiO₂, it is also possible to employ an expiration system with an active valve and link the oxygen supply close to the mask^[50].

Covid-19 and COPD patients:

Influenza, usually referred to as the flu, is a viral infection that affects people's respiratory systems. It is a highly contagious illness that spreads from person to person through coughing, sneezing, and direct contact with those who have it. The influenza A and B viruses are the most prevalent. Patients with Chronic Obstructive Pulmonary Disease (COPD) may experience the seasonal flu at a higher rate than the general population. Patients with COPD, who are the most susceptible population to this new virus, are now suffering more because of the global Covid-19 outbreak.

Coronavirus disease (COVID-19) is an infectious illness brought on by a brand-new virus that hasn't been seen in humans before. Despite having its origins in China, the virus currently has the entire world under its control. The small lung airways are compromised in COPD, a chronic lung illness that makes it difficult for the patient to breathe. These individuals also frequently develop recurring lung infections and generate more mucus (sputum). Emphysema, chronic bronchitis, and asthma are the main conditions included by COPD. These patients may experience a severe worsening of their underlying problems because they are more susceptible to flu episodes.

Conclusion:

The COVID-19 pandemic is linked to significant variations in the difficulty of accessing health care and worsening of Diabetes symptoms have a disproportionately negative influence on Asia's rural and marginalized communities. The scope of the pandemic Population has been negatively impacted by social and economic factors. Health far beyond those who are specifically impacted by COVID-19, with the consequent missed and delayed care having unknown longer-term repercussions. Reducing unwanted negative effects the COVID-19 pandemic's effects on chronic illness care is still a top priority for global health.

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