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A Systematic Review on Post Covid-19 Complications and Risk Factors

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Abstract: ***That should be because the COVID-19 pandemic has been very crucial to society, global health, and the lives of all human beings, underscoring the feature of a viral germ leading to infirmities of a serious nature that still affect several sick people even beyond the acute phase of infection. This review is intended to be a lighthouse regarding the risk factors and possibly associated outcomes of several post-COVID-19 issues affecting recovered patients. Respiratory system— Persistent cough, chronic respiratory insufficiency, and pulmonary fibrosis are examples of post-COVID-19 consequences that can impair long-term respiratory function. The current research also identifies a significant association between COVID-19 and deleterious cardiovascular effects, including myocarditis, heart failure, and thromboembolic events that are also studied as part of the cardiovascular consequences. The neurological manifestations of encephalopathy, stroke, persistent cognitive impairment, and mental health concerns deserve broad consideration. The more long-term effects on brain function going forward are pointed out. For the assessment of the immediate and long-term impacts of COVID-19, research into its after-effects becomes almost imperative. It aims to identify and assess the diverse health issues that people can encounter even when they have apparently recovered from acute illness. Research into these problems can help healthcare. Research into the after-effects of COVID-19 is also critical to public health planning and resource allocation. Other than an estimation of the potential cost of treatment and care for people suffering from sequelae, this research helps project health needs for affected persons and communities. In other words, research into COVID-19-related issues is the way to conduct public health initiatives, treat patients more comprehensively, and advance science to mitigate and prevent the long-lasting consequences of such a global health crisis.***

Keywords: Covid-19, corona, complications , covid-19 syndrome, late complications of covid-19 long covid , post-acute sequelae of SARS-CoV2 infection , risk factors, symptoms , recovery, health.

I. INTRODUCTION

COVID-19 is a brand new disease caused by infection with a novel coronavirus, severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2). COVID-19 emerged early in December 2019 and has been a significant public health concern. Long-term respiratory complications of COVID-19 are known to follow because its acute phase impacts the respiratory system. Common manifestations in recovering patients include cough, shortness of breath, decreased respiratory functions, a need for oxygen support, and radiologic evidence of chronic lung inflammation. The severe acute respiratory syndrome coronavirus 2, responsible for coronavirus disease 2019, also known as SARS-CoV-2 and COVID-19, respectively, has spread virally around the world. Despite vaccination efforts, SARS-CoV-2 has infected more than 1.1 million people only within the United States, with a new wave of cases on the rise, partly by way of novel variants of the virus, for example the Delta variant, which are more easily transmissible. Following the COVID-19 pandemic, many complications remain. This review is anchored on the different complications post-COVID-19, underpinning the connected risk factors; such knowledge will help individuals get appropriate preparations and physicians provide targeted care. The SARS-CoV-2 virus is an infectious agent that leads to Corona virus illness, branded as COVID-19. The farthest majority of individuals infected with the virus will recover from a mild to moderate respiratory infection without additional care. Knowledge of the disease and the mode of transmission of the virus is the best protection against the virus and can help in decreasing the number of people infected by the virus. Social distancing by maintaining a distance of at least one meter apart, wearing a completely covering mask, and hand washing and sanitizing regularly. It is spread by a family of related RNA viruses to those who are the cause of illnesses in both birds and mammals and is known as coronaviruses. They are able to cause fatal and mild respiratory tract infections in humans as well as birds. In addition to the more lethal viruses causing SARS, MERS, and COVID-19, suspected of causing the actual pandemic, there are milder human infections contributed by some of the flu viruses.

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The greater majority of humans who are infected with viruses will recover from a mild or moderate respiratory infection, needing no more than additional care. However, a small proportion will become very ill and require medical attention. Severe disease is more likely to occur in older people and those with comorbidities, such as diabetes, cancer, cardiovascular disease, or chronic respiratory diseases. Any person at any age can acquire COVID-19, become seriously ill, or die. But the best defense against the virus remains personal acumen about the disease and a way to lessen its transmission. Other ways to prevent infection personally and for others are keeping at least one meter between yourself and others, the proper use of a mask, and frequent washing of hands or frequent use of an alcohol-based rub. They provoke diarrhea in pigs and cows and hepatitis and encephalomyelitis in mice. At the beginning, COVID-19 started spreading through the air by coughing droplets, and it was first identified in the month of December 2019 in Wuhan, China. Total Corona cases of 702,690,536 are noted up to February 3,2024, among the 6,978,469 deaths, of which 673,565,917 were recovered. Common symptoms of COVID-19 disease include fever, cough, fatigue, shortness of breath, and sometimes vomiting; loss of the sense of taste or smell; or sometimes no signs of the disease. Some of the complications of COVID-19 disease are pneumonia, severe acute respiratory failure, sepsis, kidney failure, pulmonary fibrosis, etc. The COVID-19 infection was diagnosed using an RT-PCR test, a CT scan, and a rapid antigen test. In this pandemic period, our Indian laboratory, Bharat Biotech, invented COVAXIN within a very short time. Side effects caused by the vaccine include 7% nausea, 7% vomiting, 3% headaches, 3% fatigue, and 3% fever. For Covaxin, this is administered as a sterile suspension. Clinical trials of covaxin were done in 3 phases: phase 1 trials were conducted among 375 healthy human volunteers between the ages of 18 and 55; phase 2 clinical trials were done among 380 healthy human volunteers from the ages of 12 to 65; and phase 3 clinical trials were done among 180 healthy human volunteers below the age of the age of 18 years. The symptoms or complications post-Covid-19 are an enigma; they are not easy to predict or identify. It is the post-Covid symptom that the researchers are trying to study all the cases to study and report as the main complications of post-Covid complications.

The most of symptoms we are seen in post covi-19 are body pains ,joint pain or headache, high blood sugar (hyperglycemia), fever, feeling of tiredness or lack of energy, loss of taste or smell, shortness of breath or difficulty in breathing, coughing or chest pain, inability to focus or difficulty thinking or a lack of mental clarity (brain fog), rapid or fast heart beat (heart palpitations), anxiety disorder or depression, dizziness or lightheaded when you stand up from sitting or lying down, symptoms that get worse after mental or physical activities, red bumps or rash on a flat, red patch of skin, cerebro vascular accident, large vessel disease, encephalopathy, delirium, anoxia, arrhythmia, myocarditis, coagulopathy, thrombotic events, pneumonia, hypoxemic respiratory failure, ARDS, acute renal failure, rhabdomyolysis, diarrhea, acute liver injury, livedo reticularis, muculopapular or urticarial rash, neurocognitive, neurocognitive deficits, mood changes, sensory and motor deficits, chronic fatigue and sleep disruption, persistant dyspnea, chronic cough, palpitations, chest pain with discomfort, persistent liver dysfunction, muscle wasting, weakness, deconditioning of musculoskeletal system, hair loss ,venous thrombowmbolism, abdominal pain, kidney injury, diabetes mellitus, PFT abnormality, heart failure, myalgia, arthalgia, alopecia, urticaria, pulmonary fibrosis, impaired pulmonary function are observed based on individual. As soon as they become eligible, individuals should receive the vaccine. They should pay attention to and follow their local guidance on vaccination and COVID prevention. The COVID-19 vaccination provides robust protection with regard to severe illness, hospitalization, and death.

The long-term effects of COVID-19 are still difficult to predict, but researchers are trying hard to understand the reasons for the sustained symptoms in patients for a long time after recovery. Some common signs and symptoms observed after recovery include:

The goal is to enhance comprehension, avoid, and manage post-COVID-19 problems. This include investigating long-term impacts, creating rehabilitation plans, and offering assistance to individuals impacted. Vaccination campaigns are also being conducted in an effort to stop new cases and any complications. With relation to post-COVID-19 risk factors, the objective is to lessen their influence on people's health and wellbeing by:

1) Comprehending: Acquiring a thorough comprehension of the risk factors linked to difficulties resulting from COVID-19.
2) Prevention: Putting specific preventive measures in place, like vaccination drives, health education programs, and lifestyle .
3) Early identification and intervention
4) Helping vulnerable populations.
5) Promoting international cooperation and information exchange

These goals are to lessen the pandemic's long-term effects and increase the resilience of healthcare systems and communities around the globe. The following are the goals regarding post-COVID-19 risk factors: 1. Identification and assessment. 2. Preventive measures 3. Early detection. 4. Treatment optimization. 5. Health education and awareness. 6. Research and monitoring.

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II. MATERIALS AND METHODS

In June 2023, i conducted an epidemiology survey using questionnaires and a, which. In the month of October 2023, a follow-up . We gathered data on acute COVID-19 disease , age and sex demographics, and lifestyle (smoking) in June 2023

A. Research Example

Research about COVID-19 after effects often include a heterogeneous group of people who have just recovered from the infection. Hospitalized patients as well as those with mild to severe symptoms are frequently included in these samples. It is easier to evaluate how different demographic characteristics, such age, gender, and pre-existing medical issues, affect complications when they are included.

B. Information Gathering

Information was gathered from the out-patient case sheets of patients who visited the District post-COVID clinic during the study period. The study tool, a pretested semi-structured proforma, was used to gather data from patients through direct and telephone patient interviews as well as from their current case records at the District post-COVID clinic.

The following study variables were gathered: clinical categorization, history of hospitalization and treatment, history of comorbidities, addictions, past history of COVID-19 with its symptoms, sociodemography, relevant system-wise clinical examination findings, and relevant investigation results.

Post-COVID clinical manifestations, comorbidity worsening, and symptom persistence after six months were the outcome variables. And searched in Public health & sciences , Pubmed ,MDPI , Frontiers. In Rehabilitation Sciences, Naturomedicine, The Lancet Regional health-southeast asia , BMC Medicine open access articles ,Journal of psychosomatic Research wiley online library ,The international journal of clinical practice. open access journal.

III. DISCUSSION

The post covid-19 symptoms are effecting patient quality of life which may triggered and get healthy human being to easily sick . In order to stop COVID-19 from spreading Stay away from people, even if they don't seem ill, and stay out of crowds; If you feel ill, have been around sick people, are at high risk, or are in a location that is congested or has poor ventilation, wear a mask that fits adequately; Wash your hands often with soap and water or hand rubs containing alcohol;

When you cough or sneeze, cover your mouth and nose with a tissue or bent elbow;

Immediately discard used tissues and wash your hands; Spend at least 20 seconds washing your hands, especially before using the restroom, before eating, after wiping your nose, and after coming into contact with someone who is sick. As advised by the CDC, put on a multilayered cloth facemask that covers your mouth, nose, and chin and fits securely over your face.

Keep your hands off your mouth, nose, and eyes to stop the spread of diseases.

A. Pulmonary

Persistant dyspnea ,Chronic cough , Pulmonary fibrosis , Impaired pulmonary functioin Dyspnea , Oxygen dependence ,PFT abnormality

B. Cardiovascular

Chest pain ,Chest discomfort ,Palpitations ,Shortness of breath , Myocarditis ,Heart failure, Arrhythmia, Hypercholestreamia

C. Musculoskeletal

1) Muscle wasting
2) Weakness
3) Deconditioning of musculoskeletal system
4) Myalgia
5) Athalgia
6) Physical disability
7) Rhabdomylosis

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D. Neuropsychiatric

1) Mood changes
2) Neurocognitive deficits
3) Sensory deficits
4) Motor deficits
5) Brain fog
6) Anxiety
7) Depression
8) Chronic fatigue
9) Sleep disruption

E. Heamatologic, Vascular

1) Venous thromboembolism
2) Persistent thrombosis
3) Recurrent thrombosis
4) Anemia
5) Abnormal clotting time
6) Coagulopathy
7) Thrombotic events

F. Dermatologic

1) Skin rash
2) Alopecia
3) Urticaria
4) Livedo reticularis
5) Maculopapular rash
6) Hair loss
7) Urticarial rash

G. Renal

1) Acute kidney injury
2) Chronic kidney disease

H. Hepatobiliary

1) Persistant liver dysfunction
2) Acute liver injury

I. Gastrointestinal

1) Diarrhea
2) Nausea
3) Abdominal pain
4) Vomiting
5) Bloating
6) Physical weakness
7) Heart burn
8) Difficulty or pain in swallowing

IV. RISK FACTORS

The probability of contracting COVID-19 or experiencing severe symptoms might be raised by a number of risk factors. Among these risk factors are:

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1) *Age:* The risk of serious disease and mortality from COVID-19 is increased in older persons, particularly those over 60.
2) *Underlying Medical Diseases:* Individuals who have specific underlying medical disorders, such as immune system impairment, diabetes, obesity, hypertension, chronic lung disease, or cardiovascular disease, are more susceptible to developing a serious sickness in the event that they come into contact with the virus.
3) *Gender:* Although COVID-19 can afflict anyone, a number of studies have revealed that men may be more susceptible to severe symptoms and a greater death rate than women.
4) *Living Circumstances and Occupation:* Individuals employed in high-risk professions, such as emergency medical personnel and healthcare workers, are more likely to contract the virus. Furthermore, residents in long-term care facilities or congested areas are more vulnerable to the virus's transmission.
5) *Ethnicity:* It has been noted that a higher risk of severe COVID-19 results may exist for several ethnic groups. Socioeconomic variables, access to healthcare, and underlying medical disorders that are common in particular populations might all be contributors in this difference.
6) *Travel History:* People who have been in close proximity to someone who tested positive or who have visited regions with high COVID-19 transmission rates are more likely to have the virus.
7) *Advanced Age:* People over 65 years old, in particular, are more likely to experience severe COVID-19 symptoms and consequences.
8) *Underlying Medical Issues:* Individuals who already have heart disease, diabetes, obesity, impaired immune systems, chronic respiratory disorders (such asthma or COPD), or other medical conditions are more likely to experience severe illness from COVID-19.
9) *Immunocompromised People:* Those whose immune systems have been damaged by certain diseases (like cancer, HIV/AIDS) or medical interventions (like chemotherapy or organ transplantation) are more vulnerable to serious COVID-19 sickness.
10) *Living or Working Conditions:* Individuals who reside or are employed in close-knit environments, such as jails.
11) Socioeconomic factors: People with lower socioeconomic status may have fewer access to resources, healthcare services, and preventive measures, which increases their risk of exposure and the development of severe COVID-19 symptoms.
12) *Ethnicity and Race:* Because of healthcare inequalities and socioeconomic determinants of health, several racial and ethnic groups—such as Black, Native American, and Hispanic communities—have been disproportionately impacted by COVID-19.
13) *Frequent Outbreaks and Community Transmission:* The risk of exposure is increased by living in or traveling to areas with high COVID-19 case and community transmission rates.

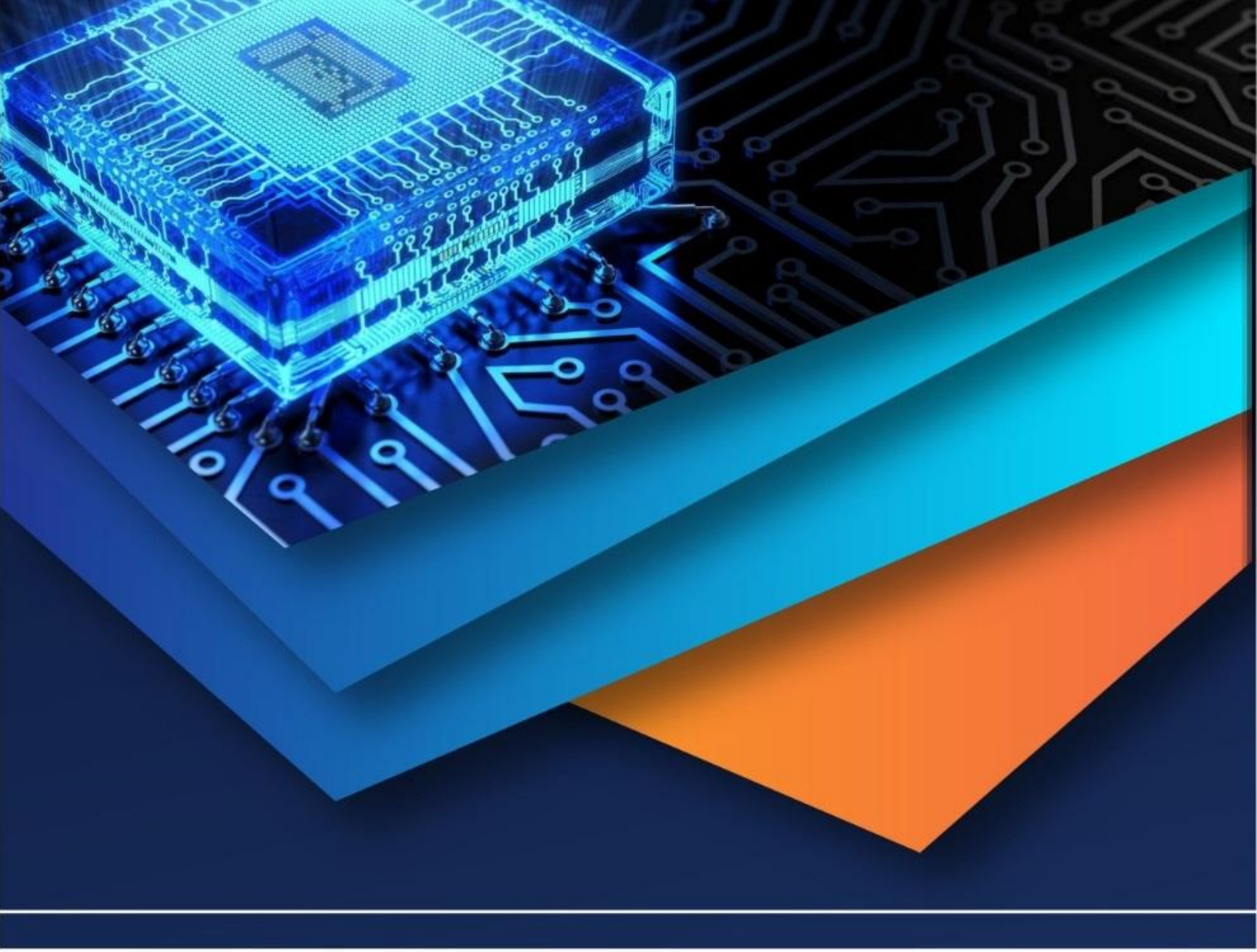
V. CONCLUSION

Age, sex, ethnicity, fever, dyspnea, gastrointestinal symptoms, pre-existing hypertension and diabetes, obesity, COPD, ILD, tumor, immunodeficiency, pregnancy, history of thromboembolism, coagulation disorders, leukocytosis, lymphopenia, eosinopenia, and an increased level of each of the following in serum have been identified as the major risk factors for the severe clinical course and outcomes of patients infected with COVID-19. cTnI, CRP, PCT, IL-6, IL-1β, KL-6, ferritin, increased CT pneumonia score, a large number of affected pulmonary lobes, smoking, D-dimmer, LDH, AST and ALT, BUN, and creatinine. All these studies can be compared to a simplified and concise idea about the long-term symptoms, complications, and risk factors of COVID-19 that could begin with the above-mentioned information through a clear and concise declaration. The most common side effects of COVID-19 are exhaustion, dyspnea, cognitive impairment, myopathy, and anxiety or depression. For many, these symptoms can be a very poor quality-of-life derivation—existing for weeks and sometimes even months after the primary infection has gone. It is important that those with such symptoms avail themselves of support and medical attention.

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