

COVID-19 in adult patients with pre-existing chronic cardiac, respiratory and metabolic disease: a critical literature review with clinical recommendations



Patients with diabetes should be encouraged to engage in exercise and maintain good glycemic control during the pandemic. Persons with obesity should be motivationally counselled to restrict caloric intake and engage in physical activity to counteract the obesogenic environment of pandemic lockdown.

Background Facts:

The COVID-19 pandemic has prompted countries to enact sweeping public health measures, including lockdowns, that have interrupted provision of regular allied health, primary care, surgical, and addiction counselling services. Lockdown also creates an obesogenic home environment. Chronic underlying medical conditions are associated with poor COVID-19 outcomes.

Study Title:

COVID-19 in adult patients with pre-existing chronic cardiac, respiratory and metabolic disease: a critical literature review with clinical recommendations

Hypothesis /Objectives:

Narrative review article that analyzes the many health issues encountered by individuals with pre-existing health conditions during the COVID-19 pandemic.

Study Design:

Review of English-language literature and authoritative guidelines published between December 31, 2019 and June 4, 2020.

Inclusion of primary literature reporting on COVID-19 outcomes in patients with at least one predetermined chronic pre-existing condition including diabetes, hypertension, coronary artery disease, or respiratory disease.

Outcome Measures:

Prevalence of chronic co-morbidities in observational cohorts of SARS-CoV-2-infected patients, with stratification by COVID-19 severity.

Summary of Findings:

- Of 17,845 articles published, 130 were deemed of relevance to COVID-19 and pre-existing cardiometabolic and respiratory co-morbidities
- Older patients are more likely to develop severe COVID-19 disease requiring intensive care unit (ICU) admission.
- Patients with preexisting cardiovascular disease, particularly hypertension and coronary artery disease, are at greatly increased risk of progressing to severe and fatal COVID-19 disease
- Patients with diabetes are estimated to have a 50% greater likelihood of fatal COVID-19 than non-diabetic SARS-CoV-2-infected patients
- Obese COVID-19 patients are more likely to require complex ICU management
- In one reviewed study, patients with a history of cancer had a higher risk of requiring ICU-based mechanical ventilation or dying from COVID-19, though the number of cancer patients included was small
- Patients with mental health disorders are especially vulnerable to social isolation,

which has been compounded by the interruption of non-urgent or emergent care in ambulatory and hospital settings during the pandemic

- The impact of suspended smoking cessation support services on patients with COPD and COVID-19 remains unclear
- The impact of suspended bariatric surgery on patients with obesity remains unclear

Conclusions:

1. The global COVID-19 pandemic has disproportionately affected patients living with chronic medical illness in a negative manner
2. Negative impacts relate to both outcome severity bias in those with COVID-19 and underlying chronic medical conditions, as well as potential adverse outcomes stemming from limited access to or cessation of allied health, ambulatory support, and surgical services during the pandemic

Implications for LM Practice:

Ambulatory patients with diabetes should be counselled regarding optimal glycemic control during the pandemic, and should be encouraged to engage in moderate-

to-intense physical activity. Caloric restriction and mild-to-moderate intensity exercise should be encouraged for obese patients to prevent progression of obesity during lockdown. Motivational interviewing via telemedicine should be offered for obese patients during lockdown until routine ambulatory health services resume.

Study Limitations:

- Non-systematic review and literature appraisal of studies published in English only
- Rapid rate of change of published literature limits the durability of the authors conclusions
- Heterogeneity of included primary literature by geography, level of care, definitions of disease states and categorization of risk strata, duration of follow-up, and baseline health of catchment populations
- Small sample sizes of patients with specific co-morbidities like previous cancer included in primary studies of cohorts and other observational data

Single Overriding Communication Objective:

Chronic pre-existing conditions such as diabetes, obesity, hypertension, and coronary artery disease, have been demonstrated to confer both elevated risk of severe and fatal outcomes in COVID-19, and to be negatively impacted by the sweeping public health control measures instituted to contain the pandemic, including lockdown and suspension of ambulatory care services.

Associated Indicators

In 130 published reports of COVID-19 disease in patients with underlying medical conditions:

- Advanced age, diabetes, hypertension, and coronary artery disease repeatedly emerged as risk factors for severe and fatal outcome
- COVID-19 patients with obesity have been repeatedly demonstrated to require complex ICU-based medical management
- Short- and long-term impacts of interruption of counseling and surgical services due to the pandemic remain unclear

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