

INTRODUCTION

Post-acute COVID Syndrome (PACS), also known as long COVID, is clinically defined as typically occurring 3 months after the onset of acute COVID-19 infection and persisting for at least 2 months with symptoms that cannot be explained by an alternative diagnosis. ¹

AIMS

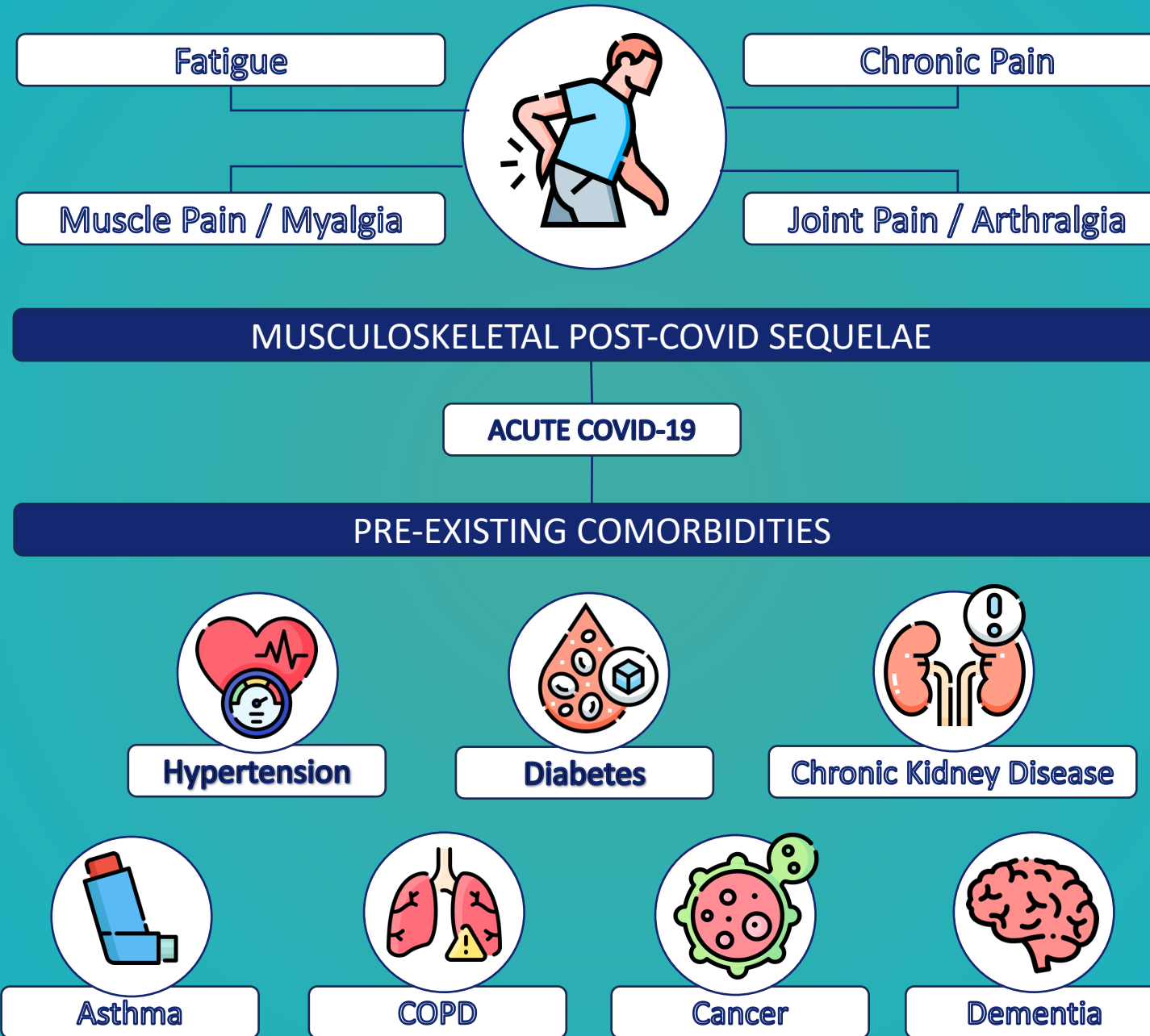
- I. To quantify the level of association between the incidence of musculoskeletal post-COVID sequelae and pre-existing comorbidities).
- II. To quantify the association between the incidence of musculoskeletal post-COVID sequelae and characteristics of acute COVID infection (i.e. severity and duration).
- III. To establish a timeframe for the observation of musculoskeletal symptoms following acute COVID-19 infection in patients.

METHODOLOGY

Participants and Data Source: The study will utilize clinical and administrative data from ICES on adult patients in Ontario with positive polymerase chain reaction (PCR) test results for COVID-19 within January 2020 – December 2021 .

Outcomes: Primary outcomes are incident musculoskeletal (MSK) post-acute COVID sequelae (myalgia, joint pain, fatigue/muscle weakness, chronic pain) at 6 months after acute COVID infection. Secondary outcomes are incident musculoskeletal post-acute COVID sequelae at 3 months after acute infection.

Covariates: Covariates include age, sex, presence of previous MSK symptoms, additional positive PCR tests through follow-up and presence of pre-existing comorbidities. Comorbidities to be assessed include hypertension, asthma, diabetes, chronic kidney disease, chronic obstructive pulmonary disease, dementia, and cancer.



STATISTICAL ANALYSIS

Multivariate logistic regression models adjusting for baseline covariates are being utilized to test associations between MSK symptoms and both the characteristics of acute COVID infection and pre-existing comorbidities. Additionally, a cumulative incidence curve will be used to depict time to the observation of MSK symptoms after acute infection.

PRELIMINARY FINDINGS

Research shows that greater severity of acute COVID symptoms (evidenced by oxygen or ventilation requirement) is linked to a greater likelihood and longer duration of experiencing post-COVID MSK symptoms. ^{2,3} Moreover, evidence indicates that symptoms may persist up to two years post acute COVID-19 infection, though some symptoms are more prevalent at 6-12 months after infection than 3-6 months after, however most symptoms subside after 1 year of follow-up. ⁴ Specifically, a meta-analysis found that the pooled prevalence of post-COVID myalgia was 5.65%, 10.3%, 18.1%, and 10.9% at 30 days, 60 days, 90 days, and ≥180 days after COVID onset respectively. Similarly, the prevalence of post-COVID arthralgia also appeared highest 2-3 months after COVID onset. ⁵ Furthermore, a previous study found that the presence of at least one pre-existing comorbidity is much more common among post- COVID patients, specifically those experiencing MSK symptoms than being 'healthy' prior. In particular, hypertension, and diabetes were some of the most common pre-existing conditions recorded among patients with post-COVID-19 symptoms. ³ In concurrence, another study found that a larger proportion of patients experiencing post-COVID fatigue or muscle and joint pain had high cholesterol, high blood pressure, or Diabetes-2 than they did other comorbidities. ⁶ These associations may be facilitated by chronic inflammation, tissue hypoxia, or connective tissue damage. ⁷

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