Impact of Long COVID on health and quality of life

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Introduction

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) causes a broad spectrum of manifestations ranging from asymptomatic infection to fatal coronavirus disease 2019 (COVID-19). Following acute infection, a proportion of individuals experience prolonged symptoms which can significantly impact daily function, quality of life and cause disability, termed long COVID, post-COVID condition or post-acute sequelae of COVID-19 (PASC)[1]. Symptoms of PASC are broad ranging and include fatigue, headache, sleep disturbance as well as specific organ system manifestations such as cardiopulmonary, neurocognitive, and symptoms of anxiety and depression. PASC is reported to affect between 10 and 30% of mild-moderate community managed COVID-19 cases up to three months after infection[2,3].

In Ireland, as of January 2022, the Health Protection Surveillance Center (HPSC) have reported more than 1 million cases of SARS-CoV-2 infection over 6000 deaths reported. There is no published data on prevalence of PASC in the Irish setting and as yet no structured resourced healthcare strategy.

Objectives

The aim of this study was to measure the impact of PASC on quality of life, mental health, ability to work and return to baseline health within the Irish population.

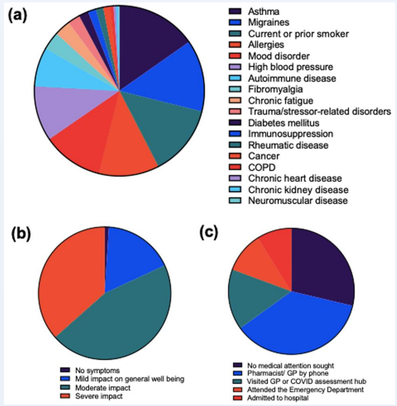
Methods

We conducted an online survey of people over 18 years of age living in Ireland with suspected and confirmed COVID-19 from September 28, 2021 to January 24, 2022. The survey was launched at a patient focused long COVID Webinar hosted by Alimentary Pharmabiotic Centre (APC) Microbiome Ireland and promoted by Irish COVID-19 support groups (e.g. long COVID Ireland Support group) and social media platforms (e.g. Twitter, Facebook, Instagram). We analysed responses from 988 participants with self-reported confirmed or suspected COVID-19 with symptoms lasting over 14 days. Prediction models were generated using decision tree classification algorithm.

Results

A total of 988 respondents completed the online survey. Missing data were excluded from analysis. The majority of survey respondents were female (88%), white (98%), with a median age of 43.0 (range 15 – 88 years old) and a median body mass index (BMI) of 26.0 (range 16 – 60). Patients' self-assessment of acute infection severity ranged from mild impact on general well-being (17%), moderate impact (45%) to severe impact (37%) (figure 1B). Using a classification algorithm decision tree, individual models were created for predicting patient's PASC symptoms based on their baseline characteristics and features associated with their acute phase of COVID-19 disease. The models with highest prediction accuracy were those predicting respiratory symptoms (63%) and musculoskeletal symptoms (61%), followed by cardiovascular symptoms (59%), gastrointestinal symptoms (59%),neuropsychiatric symptoms (54%) and systemic symptoms (49%). At the time of completing this survey, 89% of respondents reported that they have not returned to their pre-COVID-19 level of health. The median number of symptoms reported was 8 (range 0 to 33 symptoms), with a median duration of 12 months (range 1 to 20 months) since time of acute infection. A high proportion of PASC patients reported that they have a moderate or severe limitation in their ability to carry out their usual activities, 38% report their ability to work is severely limited and 33% report a moderate, or higher, level of anxiety or depression.

Figure 1: Baseline characteristics



Results

Figure 2: Prediction model for return to pre-COVID-19 level of health

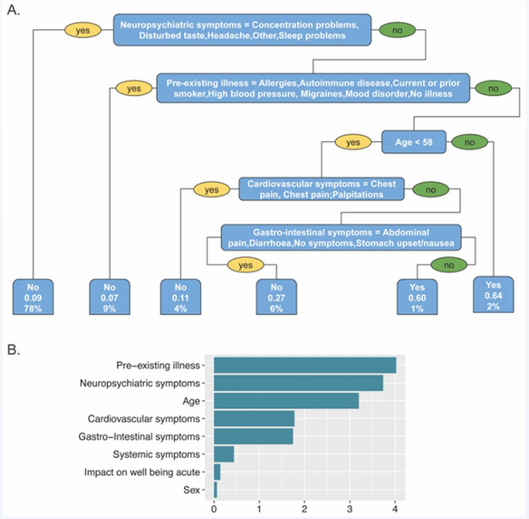
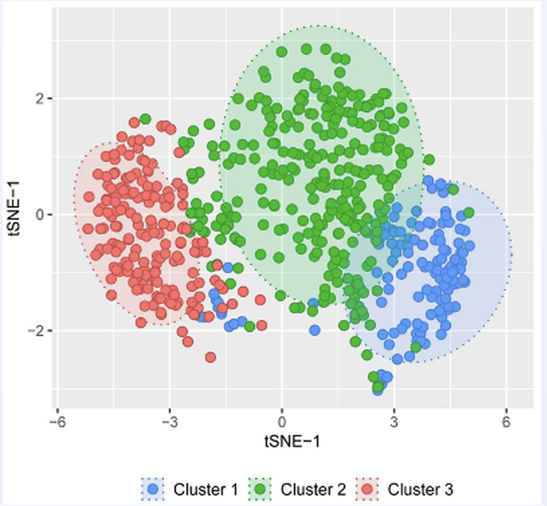


Figure 3: Cluster analysis of responses to Chalder Fatigue Scale



Conclusion

The results of this survey of an Irish cohort with PASC are in line with reports from other settings, and we confirm that patients with PASC reported prolonged, multisystem symptoms which can significantly impact quality of life, affect ability to work and cause significant disability.

Interestingly, pre-existing comorbidities and neuropsychiatric symptoms during acute disease were the most important features of the model predicting a lack of return to pre-COVID level of health, which showed the highest predictive accuracy (86%) (Figure 2). Three distinct clusters were observed for patient responses to the Chalder fatigue questionnaire (Figure 3).

Given the diversity of multisystem symptoms, treatment of patients with PASC requires a multidisciplinary cross specialty approach including evaluation, symptomatic treatment, and treatment of underlying problems, physiotherapy, occupational therapy and mental health supports.

References

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Acknowledgements

We would like to thank Dr. Susan Rafferty-McArdle, Tina Darb, Marc McCarthy and Michelle Nugent for their invaluable support to this project.