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Mapping the landscape of mental health and long COVID: a protocol for scoping review

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ABSTRACT

Introduction Mental health concerns are prevalent among adult patients with long COVID (LC), but the current state of knowledge regarding mental health in the context of LC is not fully understood. The objective of this scoping review is to map and summarise the existing research on mental health conditions among LC patients and highlight the knowledge gaps. This review aims to provide a comprehensive overview of the evolving landscape of research in the area.

Methods and analysis The concept of interest is mental health in adult LC patients. This scoping review will be guided by the Joanna Briggs Institute Manual for Evidence Synthesis and reported according to the recommendations in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Review guidelines. Using predefined search parameters, a comprehensive search of two electronic databases (Medline and APA PsycINFO) and grey literature sources identified 3104 potentially eligible articles published from 1 January 2020 to 4 April 2024. Following the removal of duplicates, 2767 articles were imported for screening in Covidence. The study selection process involves screening titles, abstracts and full text of potentially relevant articles, which will then be analysed using thematic analysis. Data will be extracted using a predefined extraction form.

Ethics and dissemination Ethical approval is not required because this study does not involve human participants or primary data collection. The findings from this review will be disseminated through a peer-reviewed publication, conference presentations and professional networks. In addition, a summary of the results will be shared with patient partners and other relevant stakeholders.

Public health implications The findings from this scoping review will contribute to a better understanding of mental health issues arising in LC patients and inform future research directions and public health interventions in this area.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ The protocol follows well-established guidelines for scoping reviews and ensures a systematic and rigorous approach to the study.
⇒ The involvement of a patient partner with long COVID experience and collaboration with stakeholders will ensure that findings resonate with real-world experience and needs.
⇒ The review is limited to studies published in English language, potentially excluding relevant studies in other languages.
⇒ The multifaceted nature of mental health conditions may complicate the synthesis of findings.

INTRODUCTION

The COVID-19 pandemic has had a profound global impact since its outbreak in 2019. As of October 2023, more than 700 million people have been infected with COVID-19, resulting in over 6 million deaths worldwide.[1] Although previous studies have emphasised the acute respiratory symptoms of COVID-19, there is increasing evidence that some people are more prone to developing chronic conditions known as long COVID or post-COVID condition, after the acute infection.[2] According to the World Health Organization (WHO), long COVID is defined as a multisystemic condition that encompasses respiratory, gastrointestinal, metabolic, cardiovascular and neurological symptoms that affect people who have had COVID-19 and continue to experience symptoms 3 months after the initial acute infection, with symptoms lasting for at least 2 months with no other explanation.[3 4]

The persistence of long COVID symptoms continues to raise concerns among stakeholders due to its long-term implications on healthcare services and economic impact.[5–8] Currently, the pathogenesis of long COVID is unknown, making its diagnosis and treatment challenging.[9] It is often hard to tell if the postacute sequelae are due to COVID-19 or other causes, such as pre-existing medical conditions. In addition, there is increasing evidence that the occurrence of long COVID is influenced by social determinants of health.[10] Notably, it is more prevalent among older individuals, women, people with premorbid conditions, racialised groups, unvaccinated

individuals and those with low socioeconomic status.[10–13] While the exact burden of long COVID is still unknown, the WHO estimates that 10–20% of COVID-19 survivors experience long-term consequences such as physical, cognitive and psychological problems.[4]

Mental health disorders are some of the prevalent complications associated with long COVID. To date, several reviews have been conducted to determine the prevalence and risk factors associated with mental health conditions among patients with long COVID. Common conditions included post-traumatic stress disorder (PTSD), anxiety and depression.[14–18] Now, while the majority of reviews indicated that people experiencing long COVID have a higher risk for anxiety, depression, insomnia and PTSD as compared with the general population,[17 18] a systematic review by Bourmistrova *et al* found no definite evidence of increased occurrence of anxiety or depression among survivors of long COVID.[16] This means that despite growing evidence linking long COVID to the increasing prevalence and/or incidence of mental health conditions, we still cannot definitively conclude that long COVID is the cause. However, a recent systematic review conducted by van der Feltz-Cornelis *et al*[19] found that the likelihood of being diagnosed with brain fog and other mental health conditions increases over time, especially when validated instruments or cognitive tests were used. Generally, the mental health sequelae of long COVID have been hypothetically linked to the direct effects of COVID-19 on the brain such as the activation of immune response and promotion of blood clotting[20 21] and the indirect effects of COVID-19 resulting in poor quality of life, fatigue, disability, social isolation and stigma.[22 23]

Nonetheless, it is well established that long COVID symptoms adversely impact the quality of life, social functioning and work productivity of the sufferers due to the persistent physical and cognitive symptoms that significantly limit their capability to engage in daily activities and fulfil responsibilities at work.[24] Moreover, the uncertainty and unpredictability of long COVID symptoms often create significant additional emotional and mental strain for individuals, further impacting their overall health and well-being. Taken together, it is reasonable to presume that the clinical presentation of long COVID could not only contribute to poor mental well-being in its sufferers but also exacerbate pre-existing mental health conditions. This is further evidenced by reports in the literature that some patients with long COVID were found to have developed new mental health symptoms such as psychosis, cognitive failure and suicidal ideation.[25]

Despite the growing concerns about the impact of long COVID, there is still a paucity of evidence on how to screen for the health condition, whom to screen, which reliable screening tools are needed, and what treatment and prevention strategies are available.[26] A systematic review of interventions to improve the mental health, cognition and psychological well-being of patients with long COVID revealed an array of psychological, pharmacological, herbal/nutritional and neurorehabilitation interventions;[27] however, this study is limited because the effectiveness of the interventions was not assessed. It is, therefore, difficult to develop clinical guidelines for long COVID symptom treatment and management strategies with current emerging evidence given the novelty of this condition.

Also, our collective knowledge on the psychological impact of long COVID and its management is still limited and fragmented. Although there is a growing body of literature on mental health conditions among patients with long COVID, to date, no known attempt has been made to collate and understand the current gap in the literature. This scoping review is, therefore, needed to summarise and provide up-to-date knowledge regarding mental health conditions due to long COVID. This review will systematically identify and quantify the nature of the available literature on mental health and long COVID. It will also provide insights into the overall state of the literature on mental health among patients with long COVID by mapping existing research literature and findings. This review will shed light on the extant knowledge and research gaps, laying a foundation for future research directions and informing public health interventions.

The objectives of this scoping review are to identify the scope and nature of existing research on mental health conditions in patients with long COVID and highlight the knowledge gap regarding long COVID and mental health.

METHODS

The review methods will be guided by the Joanna Briggs Institute (JBI) Manual for Evidence Synthesis (Chapter 11: scoping review).[28] The study findings will be reported as per the recommendations given in Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR).[29] The protocol has been registered in the Open Science Framework.[30]

Stage 1: identifying the review questions

The scoping review aims to map and understand the research landscape of mental health and long COVID. The specific review questions are as follows:

1. What is the scope and nature of the existing research on mental health conditions in patients with long COVID?
2. What are the key findings and current state of knowledge on mental health conditions among patients with long COVID?
3. What are the identified knowledge gaps and future directions for research regarding mental health and long COVID?

Stage 2: identifying relevant studies

The eligibility criteria for this scoping review are based on the participants, concept and context framework as defined by the JBI.

Study participants

The study participants are adults with mental health conditions and long COVID.

Concept

The concept of interest for this review is mental health in patients with long COVID. This review will include studies on adults who developed mental health conditions as a result of long COVID and those with pre-existing mental health conditions whose symptoms may have been exacerbated by long COVID. Long COVID is defined as persistence or occurrence of symptoms after 3 months of acute COVID-19 infection (laboratory-confirmed or clinically diagnosed). Mental health conditions include but is not limited to anxiety, depression, PTSD, substance use and other neuropsychiatric conditions. Studies that focus on burden, risk factors, clinical features, diagnosis and management, and the outcomes of these mental health conditions among patients with long COVID will be included.

Context

The context of interest was studies conducted in hospital or non-hospital settings, regardless of the country of study. This includes studies conducted within hospitals, clinics and communities. We will include published articles in peer-reviewed journals or reports from credible organisations such as non-governmental organisations and professional, governmental and international agencies such as the WHO, Mental Health Europe, Mental Health Foundation, National Institute of Mental Health, Mental Health America, National Alliance on Mental Illness, Canadian Mental Health Association, Centre for Addiction and Mental Health and Mental Health Commission of Canada.

Language

Studies published in English will be selected for review. While we acknowledge the potential for missing some studies by not including non-English language papers, we anticipate that the impact on our findings will be minimal due to the small number of such studies identified during our initial screening. Currently, we cannot access professional translation services. We believe that relying on electronic translators for scientific research can lead to inaccuracies and misinterpretations, which could compromise the quality and reliability of the review.

Types of studies

The studies used were all types of studies that focused on quantifiable outcomes (such as prevalence, risk factors and intervention efficacy), including randomised controlled trials and observational studies. To avoid counting the same studies multiple times, careful attention will be paid to identifying and excluding duplicate studies.

Time frame

The search included studies published from January 2020 to 4 April 2024. The initial search was carried out to build a foundational understanding and assess the study's feasibility. We intend to update the search by extending the time frame before finalising and publishing the results.

We will exclude the following studies:

- Irrelevant to long COVID and mental health.
- Duplicates or replicates of studies.
- Studies not published in credible sources.
- Non-research papers such as editorials, comments/opinion papers, case reports and letters to editors.
- Qualitative studies and reviews (rapid reviews, systematic reviews, scoping reviews and literature reviews).
- Preprints.
- Studies published primarily as theses, conference proceedings or poster abstracts.
- Studies in other languages than English.

Search strategy

Two rounds of searches were conducted in two electronic databases and grey literature sources. The searches were limited to studies published on or after January 2020. Preliminary search was undertaken on 16 February 2024, and a follow-up search was carried out on 4 April 2024 (online supplemental appendix). The preliminary search was performed to establish a basic understanding and determining the study's feasibility. Before publishing the results, we plan to extend the search period and update the findings accordingly. Through the Saskatchewan Health Authority library, we searched Medline (Ovid) and APA PsycINFO (Ebsco) databases. The two bibliographic databases were selected because of their relevance to our research objectives. Medline is well-known for its extensive collection of biomedical literature, while APA PsycINFO focuses on psychology and behavioural sciences, making both invaluable to our study. Grey literature was also sought from relevant not-for-profit, professional and government websites. We identified 3104 potentially eligible articles published from 1 January 2020 to 4 April 2024. Following removal of duplicates and retracted articles, a total of 2767 articles were imported for screening.

The search strategy combined three main concepts using Boolean and proximity/adjacency searching: "long COVID", "mental health" and "adults". Searches included a combination of Medical Subject Headings (MeSH), Thesaurus of Psychological Index Terms (APA PsycINFO), titles and abstracts (online supplemental appendix). Search terms were identified iteratively, beginning with the terms identified at the onset of the study. Additional terms were added after subsequent searches to identify gaps in terms and concepts. The details of the iterative process based on JBI guidelines are presented in table 1. The search strategy was adapted to the syntax appropriate for each database. Wildcards (*) and truncation were applied as needed. In addition, reference lists of all the included evidence sources will be screened for additional studies. Through an iterative process and in

Table 1 Process of building search terms

Joanna Briggs Institute search strategy	Iterative process for search term building
Step 1: Limited search of at least two appropriate online databases (Medline and APA PsycINFO) ► Analysis of text words contained in ti/ab of retrieved papers ► Analysis of indexing terms Step 2: Second search including additionally identified terms/ keywords from step 1 search Step 3: Reference list of identified reports and articles would be searched for additional sources (reference lists)	Step 1: Build and approve Medline search ► Identify all relevant Medical Subject Headings (MeSH) ► Compose title/abstract/keyword search based on MeSH ► Combine terms Step 2: Build and approve APA PsycINFO searches ► Based on initial Medline search ► Identify all relevant APA PsycINFO classifications ► Compose title/abstract/keyword search based on APA Thesaurus of Psychological Index terms Step 3: Revise and finalise Medline search ► Rebuild search in Medline, incorporating any additional terms discovered in APA PsycINFO ► Combine terms ► Run search ► Validate search ► Export Step 4: Translate search to other sources ► Translate from Medline (primary) to secondary databases

consultation with the review team, the search strategies were developed by an experienced librarian (LM) and peer reviewed by an experienced librarian/searcher.

Stage 3: study selection

All records were uploaded into Covidence software (an online systematic review tool).[31] The study began with article screening on 15 April 2024 and is scheduled to be completed in January 2025. The titles and abstracts of the candidate articles were screened by two independent reviewers (DAA and AA) using the eligibility criteria. The full text of articles selected after the initial screening will be further assessed for eligibility. Full articles will only be selected for data extraction if there is an agreement between the two reviewers. Any disagreements during the screening process will be resolved through discussion or by involving a third reviewer (KBA). In addition, the references of the potentially relevant articles marked for inclusion will be checked for eligibility through 'citation chaining'.

Stage 4: data extraction and synthesis

The results of the search process will be reported using a PRISMA-ScR flow diagram. Using a PRISMA-ScR flow chart will create a transparent and reproducible process for documenting the screening decisions and the rationale for including or excluding studies at each stage of the review. The study will use a data extraction tool developed by the research team to capture authors' names, year of publication, title, publication type, study objective, geographical area of focus/country of origin, study design/type, sample size, sample characteristics (such as age/age range and ethnicity), mental health outcomes assessed, assessment tools used, key findings related to mental health, other reported outcomes and any limitations identified. Prior to data extraction, the predefined extraction form will be pretested and revised, as appropriate. Using Braun and Clarke's inductive-deductive approach,[32] the extracted data will be analysed to identify key themes, trend and gaps in literature. In addition, data visualisation methods will be used to map the extracted data, allowing for comparisons and identification of patterns, gaps and areas of consensus or divergence across the studies.

ETHICS AND DISSEMINATION

This study does not involve human participants or non-publicly available literature. Ethical approval is, therefore, not required. The review will only analyse existing published research. The findings from the scoping review will be disseminated through a peer-reviewed publication, conference presentations and professional networks. Also, a summary of the results will be shared with patient partners and other relevant stakeholders.

PATIENT AND PUBLIC INVOLVEMENT

This scoping review is part of a Saskatchewan Centre for Patient-Oriented Research Learning Health System project,[33] focusing on long COVID and mental health in adults. Throughout the scoping review process, we are collaborating with a patient partner (DH) to incorporate their unique insights and perspectives. The patient partner was involved in the protocol development and would be involved throughout the review process. This will help ensure that the review captures the full spectrum of experiences and perspectives related to mental health and long COVID.

PUBLIC HEALTH IMPLICATIONS

This scoping review is intended to provide a better understanding of the current body of research into mental

health conditions experienced by people who are dealing with long COVID so that improved mental healthcare services can be provided for such people. Also, the review will enable researchers to understand existing strengths, weaknesses and gaps in the literature.

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Contributors DAA was responsible for drafting the original protocol and overseeing revisions by the other contributors. DAA, AA, AH, LM, DH, KBA and GG were thoroughly involved in revising the protocol prior to submitting it for publication. GG is the principal investigator of the project. All authors are in agreement regarding the final version of the protocol. GG is the guarantor.

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Competing interests None declared.

Patient and public involvement A patient partner with experience of long COVID (DH) was involved in the design of this protocol.

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