MENTAL HEALTH ILLNESSES OF PEOPLE LIVING WITH LONG COVID-19 SYNDROME IN THE UK: A STRUCTURED LITERATURE REVIEW

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Abstract - This structured literature review (SLR) investigates the mental health impacts of long COVID-19 on the UK population, focusing on depression, anxiety, and sleep disturbances. Long COVID-19, characterized by persistent symptoms extending beyond the acute phase of the infection, has emerged as a significant public health concern.A systematic search of PubMed and PsycINFO (2019–2024) identified relevant quantitative studies. Average reported prevalence included anxiety (40–43%), depression (34–37%), and sleep disturbances (22–37%). High prevalence rates of mental health symptoms were particularly among females, the elderly, individuals with prior mental illness, and those from deprived areas. Sleep disturbances emerged as common and debilitating. These symptoms significantly impair quality of life and work capacity. The review highlights the urgent need for UK-specific health policies and support services addressing the long-term mental health effects of long COVID-19.

Keywords - Long COVID-19, Mental health, Depression, Anxiety, Sleep disturbances.

I. INTRODUCTION

Since the SARS outbreak in 2002–2003, public health systems have recognized the global threat of rapidly spreading respiratory viruses (WHO, 2003). However, the world's unpreparedness for the COVID-19 pandemic, declared a public health emergency by the WHO in January 2020, exposed critical gaps in understanding the full scope of viral impacts, particularly on mental health. Studies from Wuhan revealed that up to 25% of patients experienced depression, anxiety, or sleep disturbances six months post-infection (Huang et al., 2021). Similar findings were observed in SARS survivors, suggesting long-term mental health consequences (Chau et al., 2021). The COVID-19 pandemic, with over 700 million global cases and 22 million active as of April 2024 (Worldometer, 2024), has led to a wide spectrum of outcomes ranging from mild illness to persistent, debilitating symptoms known as long COVID-19. The WHO (2021) defines long COVID-19 as symptoms persisting for at least two months post-infection without another explanation, with prevalence estimates ranging from 10% to 20% of all COVID-19 cases. These include fatigue, headaches, insomnia, and neurocognitive issues. In Europe alone, over 17 million individuals were affected in the first two years of the pandemic (WHO, 2021), prompting calls for urgent action to address the psychological aftermath (Chau et al., 2021).Recent studies have documented over 100 long COVID-19 symptoms, with variability across countries (Hayes, Ingram & Sculthorpe, 2021). In the UK, 1.9 million people are estimated to have long COVID-19 (ONS, 2023), and over 3% of Scotland's population is believed to be affected (ONS, 2023). Sleep disturbances (37.3%) and cognitive impairments (up to 77.3% in females) have been widely reported (McLaughlin et al., 2023). These symptoms significantly hinder work and education, with lasting effects beyond 12 months in some groups, particularly individuals with pre-existing mental health conditions (Hastie et al., 2023). However, research has largely focused on hospitalized or elderly populations, leaving major knowledge gaps about the general UK population. As the pandemic progresses, the focus must shift toward understanding long COVID-19's long-term neurological and psychological effects to inform healthcare and policy responses. This SLR aims to investigate the prevalence and impact of depression, anxiety, and sleep disturbances among individuals living with long COVID-19 in the UK, to address the urgent need for data-driven support strategies.

II. MATERIALS AND METHODS

2.1. Study Design

An SLR was employed instead of a systematic review, due to time constraints and single authorship. SLR design enables systematic and focused analysis of academic and grey literature relevant to a defined research question (Davies & Hughes, 2014).

2.2. Search Strategy

The search strategy followed the PIO model (Population, Issue, Outcome). Boolean operators "OR" and "AND" were used to combine keywords and synonyms, and truncations with asterisks (*) to improve recall efficiency. All English-language cross-sectional studies focusing on long Covid-19 mental health impacts in the UK from 2019 to 2024 were included. No restrictions on age, comorbidities or gender.

A comprehensive search was conducted in PubMed and PsycINFO, covering English-language studies

from 2019 to 2024. These databases are complementary for health sciences research, with PsycINFO adding breadth in mental health coverage. The search also included grey literature to reduce publication bias, as unpublished studies may contain valuable negative or null findings (Hopewell et al., 2007). Snowball searching was also used to capture any additional references.

2.3. Screening process

Each article underwent a two-phase screening process. Titles and abstracts were reviewed first to remove irrelevant studies. Full texts of potentially relevant articles were then assessed for eligibility, with reasons documented for exclusions. The PRISMA flowchart (Page et al., 2021) was used to map the selection process, including additional studies from grey literature.

2.4. Quality assessment

Quality appraisal was performed using a modified version of the Newcastle-Ottawa Scale (NOS), a validated tool for non-randomised studies (Ottawa Hospital Research Institute, 2021). Although originally designed for cohort and case-control studies, adjustments were made to apply NOS to cross-sectional designs (Luchini et al., 2017). The NOS assesses three domains, sample selection (max 4 stars), comparability (2 stars), and outcome assessment (3 stars), with total scores from 0–9 (Gierisch et al., 2014). Scores were interpreted as: high risk of bias (≤3 stars), moderate risk (4–6 stars), and low risk (7–9 stars) (Gates et al., 2018).

2.5. Data Extraction

Data extraction was carried out using a structured Excel form adapted from the JBI Manual for Evidence Synthesis (JBI Global Wiki, 2022). The extraction table captured elven key components across studies, including sample size, setting, mental health outcomes, and statistical findings. This facilitated comparison and synthesis of findings across diverse studies.

2.6. Data Synthesis

Narrative synthesis was employed to analyse and summarise the results, given the heterogeneity in study designs, populations, and measurement tools. As Lisy and Porritt (2016) noted, narrative synthesis supports thematic interpretation and comparison across studies, especially when meta-analysis is not feasible. This method helped identify trends, gaps, and common findings related to anxiety, depression, and sleep disturbances among long COVID-19 patients in the UK. Despite its utility, narrative synthesis has been criticised for lacking transparency (Campbell et al., 2019), which was mitigated through systematic documentation of all decisions and assessments.

III. RESULTS

3.1. Overview

The search retrieved 207 studies illustrated with PRISMA flowchart (Figure 1). After title and abstract screening, 149 were excluded as irrelevant. Full-text screening excluded 52 more for reasons including wrong population (n=26), outcomes (n=12), study design (n=10), no access (n=2), wrong setting (n=1), and non-primary research (n=1). Ultimately, four studies met the inclusion criteria for data extraction. All screening was conducted by a single reviewer.

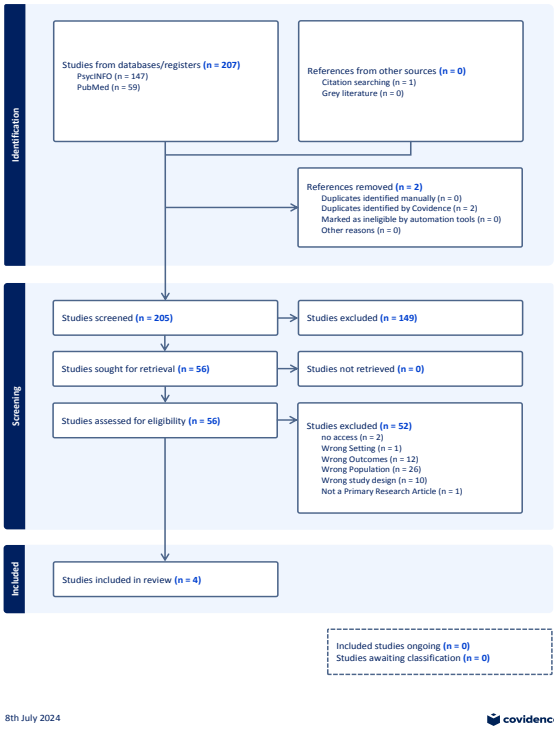


Fig.1. PRISMA flowchart

3.2. Characteristics of the Studies

The ongoing COVID-19 pandemic has led to increased research on long-term physical, cognitive, and functional effects. From a systematic search, four relevant studies were identified (see Table1), focusing on cognitive and functional impacts of long COVID-19 between 2022 and 2023. These studies spanned several regions including the UK, England and Wales, Scotland, and other English-speaking countries.Sample sizes ranged from 222 (Vakaniet al., 2023) to 754 (Walker et al., 2023), with participant ages varying from 18 to 69 years. While all studies addressed cognitive or functional impairments, their specific objectives differed. Guo et al. (2022) examined predictors of cognitive deficits; Vakaniet al. (2023) compared pre- and post-COVID cognitive performance; Walker et al. (2023) evaluated quality of life and functional limitations, and McLaughlin et al. (2023) assessed symptom prevalence and severity in Scotland.

Guo et al. (2022) reported significant memory impairments in COVID-19 survivors even after adjusting for demographic variables ($p = 0.001$). Similarly, Vakaniet al. (2023) observed notable impacts on energy, emotional well-being, physical functioning, pain, stress, and sleep. However, neither Vakaniet al. ($p = 0.299$; $p = 0.527$) nor McLaughlin et al. (2023) ($p = 0.26$; $p = 0.64$) found associations between symptom load and age or vaccination. McLaughlin et al. (2023) did find that longer symptom duration was linked to fewer reported symptoms ($p = 0.003$), suggesting symptom consolidation over time, with fatigue and pain remaining predominant.

Cognitive impairments were prominent: 95% of previously hospitalised patients reported cognitive difficulties, and 90% had reduced psychological well-being (Vakaniet al., 2023). Guo et al. (2022) found poorer cognitive performance ($p < 0.001$) and slower reaction times ($p < 0.001$) in COVID-19 survivors, while memory performance differences were weaker ($p = 0.056$). Smoking status influenced symptom burden: smokers reported more symptoms than non-smokers (Mean: 20.25 vs. 11.75, $p = 0.028$) and former smokers ($p = 0.044$) (McLaughlin et al., 2023). Pre-existing conditions also correlated with higher symptom counts (Mean: 14.9 vs. 12.08; $p = 0.002$).

Vakaniet al. (2023) found small-to-medium correlations between cognitive test accuracy and symptoms like chest pain, arrhythmia, and headaches. Participants with ongoing symptoms had slower reaction times than both recovered and non-COVID groups (Guo et al., 2022). A significant link between poor mental awareness and initial illness severity was also noted ($p = 0.013$). McLaughlin et al. (2023) reported higher cognitive impairment in females (77.34%) than males (68.75%), though their sample was 77% female, limiting reliability. They also found symptom burden was higher among those in socially deprived areas, with frequent cough ($p = 0.0289$), general pain ($p = 0.0001$), and muscle weakness ($p = 0.009$) being more common.

Half of participants with long COVID-19 lost one or more workdays in the past month (Walker et al., 2023), and 37.3% of McLaughlin et al.'s respondents identified sleep disorders as severely debilitating. Pain (96.2%) and anxiety/depression (95%) were most frequently reported (Walker et al., 2023). Vakaniet al. (2023) also found high rates of anxiety, depression, insomnia, and even hallucinations (14.7%).

Anxiety prevalence was similar across studies: 40% (McLaughlin et al., 2023), 43.4% (Vakaniet al., 2023), and a mean score of 9 on Walker et al.'s (2023) anxiety scale. Depression was reported by 34% (McLaughlin et al., 2023) and 37.2% (Vakani et al., 2023), with Walker et al. (2023) finding a mean depression score of 11.8. Emotional harm and depression were more common in females (Vakaniet al., 2023), and close personal relationships positively influenced depression levels (Walker et al., 2023).

Sleep quality scores were lower in the long COVID-19 group, especially for women (Vakaniet al., 2023). Poor sleep correlated with executive dysfunction and slower processing speeds (McLaughlin et al., 2023).

Together, these studies offer critical insight into the mental health and cognitive challenges faced by long COVID-19 patients in the UK and highlight the need for consistent assessment tools, long-term follow-up, and equity-focused healthcare responses.

Study ID	Guo *et al.* (2022)	Vakani *et al.* (2023)	Walker *et al.* (2023)	Mclaughlin *et al.* (
Title	COVCOG 2: Cognitive and memory deficits in long COVID: A second publication from the COVID and cognition study	COVID-19 and cognitive function: Evidence for increased processing speed variability in COVID-19 survivors and multifaceted impairment with long-COVID symptoms	Impact of fatigue as the primary determinant of functional limitations among patients with post-COVID-19 syndrome: a cross-sectional observational study.	A Cross-Sectional of Symptom Prevalence, Frequ Severity, and Impa Long-COVID in Scotland: Part I
Date	2022	2023	2023	2023
Country of origin	English speaking countries (UK, Ireland, US, Canada, Australia, New Zealand and South Africa)	UK	England and Wales	Scotland
Participants	421 aged >18	222 aged 19 - 69	3754 aged >18	253 aged >18
Area of interest	Cognitive and Memory deficits that are consequences of long COVID-19	The research aims to understand the neuropsychological consequences of COVID-19, particularly in relation to the severity of the illness and the persistence of symptoms.	The research aims to inform clinical care and rehabilitation strategies for managing PCS, with a particular emphasis on addressing fatigue as a key symptom.	The study highlight significant impact long COVID on individuals' ability work and perform tasks.
Data collection methods	Participants were recruited through various online platforms, including social media groups (e.g., Facebook Long COVID Support Group) and the Prolific recruitment site.	Participants were recruited via social media platforms and sent invitations through MyCognition database	31 clinics all over England and Wales	via online surveys
Mental health assessment tools	• Word List Recognition Memory • Pictorial Associative Memory Test • Category Fluency Test • Mental Rotation Test • Wisconsin Card Sorting Test • Number Counting Test • Relational Reasoning Test	• Short Form Health Survey-36 (SF-36) • Depression, Anxiety and Stress Scale-21 (DASS-21) • Pittsburgh Sleep Quality Index (PSQI)	• Patient Health Questionnaire " Eight Item Depression Scale (PHQ-8) • Generalised Anxiety Disorder Scale, Seven-Item (GAD-7) • Perceived Deficits Questionnaire, Five-Item Version (PDQ-5)	Not mentioned
Methods of analysis	Descriptive analysis Inferential analysis	Descriptive analysis Inferential analysis (Pearson correlation, ANOVA)	Descriptive statistics Inferential statistics (Linear regression, R-squared)	Descriptive analys Inferential analysis (ANOVA, Spearma Mann-Whitney U)
Mental health outcomes	Severity of Initial Illness and Cognitive Performance Ongoing Symptoms and Cognitive Performance Cognitive Symptoms and Cognitive Performance Association Between Symptoms and Cognitive Performance	Processing speed Attention Working memory Executive function Memory	Functional impairment Health-related quality of life severity of patient-reported symptoms working days lost due to post-COVID-19	Sensory functions Mental functions Physical functions
Findings	Individuals who had COVID-19 performed worse on memory tasks and had slower reaction times compared to the control group, even after controlling for demographic variables.	COVID-19 has a limited cognitive impact on the adult UK sample, with only processing speed variability being significantly impacted. However, individuals who experienced severe COVID-19 or report long-COVID symptoms may benefit from repeated cognitive assessments and interventions.	Significant burden of long COVID-19 syndrome on patients, particularly those of working age, and emphasizes the need for clinical care and rehabilitation strategies to prioritize managing fatigue to improve functionality and Health Related Quality of Life.	Respondents from deprived areas rep a higher number of symptoms. Vaccin status had a minor negative associati with the frequency certain symptoms runny nose, sore th

Table.1. comparative overview of the included studies

The quality and risk of bias of the included studies were assessed using the modified Newcastle-Ottawa Scale (Table2). Three studies scored 5 stars, indicating moderate risk, while McLaughlin et al. (2023) scored 4 stars. None of the studies accounted

for potential confounders such as social isolation or bereavement (Ornell et al., 2020). All four studies had small sample sizes and inefficient sampling methods, limiting generalizability. Guo et al. (2022) and Vakaniet al. (2023) relied on self-reported data, increasing risk of bias, and McLaughlin et al. (2023) did not specify mental health assessment tools. Despite these limitations, all studies employed valid and robust analytical methods.

Included Studies	Selection: (up to 3 stars)	Management of confounding variables: (up to 2 stars)	Conclusion: (up to 4 stars)	Overall	Risk of bias
Guo *et al.* (2022)	*		****	5	Moderate
Vakani *et al.* (2023)	*		****	5	Moderate
Walker *et al.* (2023)	*		****	5	Moderate
Mclaughlin *et al.*(2023)			****	4	Moderate

Table.2. Quality assessment of the included studies.

IV. DISCUSSION

The SLR found cognitive impairments in 68% and 78.3% of people with long COVID-19 in the UK (McLaughlin et al., 2023; Vakaniet al., 2023), notably higher than rates reported in other systematic reviews—15% (Alkodaymiet al., 2022) and 28% (Natarajan et al., 2023). Similar UK-based research reported 72% prevalence (Ziauddeenet al., 2022), while a Japanese study showed only 8% (Terai et al., 2023). Guo et al. (2022) further reported memory deficits and slower reaction times. These discrepancies may stem from varied assessment tools, reliance on self-reported data, population differences, and small sample sizes, all of which limit comparability and generalizability.

This SLR identified high levels of anxiety (49%) and depression (44%) among people with long COVID-19 in the UK (McLaughlin et al., 2023), while Vakaniet al. (2023) reported a 77.5% reduction in psychological well-being. These rates exceed those in other UK studies (32% anxiety; 15% depression, Ziauddeenet al., 2022) and international findings. For instance, Houben-Wilke et al. (2022) reported anxiety in 35.6% and depression in 46.9% at 3 months, with only slight reductions at 6 months. A broader review found 23% prevalence for both anxiety and depression globally (Alkodaymiet al., 2022), suggesting higher psychological burden in the UK long COVID-19 population.

Sleep disturbances were also prominent. McLaughlin et al. (2023) found 37.3% considered sleep issues severely debilitating, with 57.7% ranking it among the most severe symptoms. Vakaniet al. (2023) reported a lower prevalence at 22.5%. Systematic reviews indicate sleep issues affect 21- 24% of long COVID-19 patients (Alkodaymiet al., 2022; Natarajan et al., 2023), while Mertz Shou et al. (2021) highlighted significant variability, up to 85% in some cohorts, suggesting inconsistency in measurement. Mertz Shou et al.(2021) also noted female sex as a risk factor for sleep difficulties, but found no association with COVID-19 severity.

The SLR also found that individuals with pre-existing conditions reported significantly more symptoms compared to people with no mental illness medical history (mean: 14.9 vs 12.08; p = 0.002) (McLaughlin et al., 2023). This aligns with Chen et al. (2022), who identified comorbidities such as obesity and hypothyroidism as risk factors for long COVID-19. Similarly, Wong et al. (2020) reported that anxiety or depression affected 22% of long COVID-19 patients with comorbidities, compared to 9% without. However, this review found no link between symptom burden or duration and age, which contrasts with existing literature that associates older age with increased long COVID-19 risk.

Overall, the findings underscore the considerable psychological impact of long COVID-19 in the UK and highlight the need for mental health support and targeted intervention

V. CONCLUSIONS

This structured literature review found that long COVID-19 significantly impacts mental health in the UK, with high rates of depression, anxiety, and sleep disturbances. These symptoms are persistent and debilitating, particularly sleep issues, which severely affect quality of life. Vulnerable groups include females, older adults, and those with pre-existing mental health conditions. UK-based studies report higher prevalence and severity compared to international data. Quality of life was reported to be largely impaired due to long COVID-19 mental health symptoms, especially sleep disturbances. Future research must address limitations of existing studies, including small, homogenous samples and reliance on self-reported data. Larger, more ethnically diverse and longitudinal studies are needed to map the long-term mental health trajectory. Incorporating patient experiences will be essential in shaping effective, person-centered care and policy responses to the long-term consequences of COVID-19.

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