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A review article on the psychological consequences of post-COVID-19 syndrome

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Abstract

Post-COVID-19 syndrome (PCS), or long COVID, encompasses a variety of persistent symptoms following the acute phase of COVID-19 infection, affecting approximately 10% to 35% of individuals. Among its wide-ranging effects, psychological consequences have emerged as particularly significant, with many survivors experiencing anxiety, depression, post-traumatic stress disorder (PTSD), and cognitive dysfunction. These mental health issues not only hinder recovery but also diminish overall quality of life. Beyond the direct effects of the virus, the pandemic's broader impact—including social isolation, economic uncertainty, and disrupted routines—has further exacerbated mental health challenges worldwide. Studies have documented marked increases in mental health disorders, notably a 27.6% rise in major depressive disorder and a 25.6% increase in anxiety disorders. Certain groups, such as healthcare workers and individuals with pre-existing psychiatric conditions, have shown greater susceptibility to long-term psychological distress. Contributing factors include persistent physical symptoms, demographic vulnerabilities (e.g., younger age and lower socioeconomic status), and the complex interplay between mental and physical health. Addressing PCS requires a comprehensive, multidisciplinary approach involving psychological therapies, community-based support, and individualised care. Continued research is essential to develop effective interventions and enhance mental health resilience among those affected by the lasting consequences of the COVID-19 pandemic.

Keywords: COVID, spider vein, exercise, consequences, daily activity, psychology

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INTRODUCTION

Post-COVID-19 syndrome (PCS), commonly known as long COVID, refers to a range of health issues that persist after the acute phase of a COVID-19 infection, affecting an estimated 10% to 35% of those infected [1,2]. Among the multifaceted symptoms associated with PCS, psychological consequences have emerged as a significant area of concern, influencing the mental health of survivors worldwide. Research indicates that individuals recovering from COVID-19 often report heightened levels of anxiety, depression, post-traumatic stress disorder (PTSD), and cognitive dysfunction, which complicate their recovery process and overall quality of life [3,4,5]. The psychological repercussions of the pandemic extend beyond direct health impacts, as factors such as social isolation, economic instability, and heightened uncertainty have exacerbated mental health challenges across populations [1, 6]. Studies conducted during the pandemic have revealed substantial increases in the prevalence of mental health disorders, including a 27.6% rise in major depressive disorder and a 25.6% increase in anxiety disorders [1,7]. Furthermore, the long-term effects of these psychological conditions have been particularly pronounced among healthcare professionals and individuals with pre-existing psychiatric conditions, highlighting the need for tailored mental health interventions in the aftermath of COVID-19 [8,9]. Understanding the intricate interplay of psychological, neurological, and socioeconomic factors is essential for addressing the mental health implications of post-COVID-19 syndrome. Research has identified significant

associations between persistent physical symptoms and increased psychological distress, suggesting that the relationship between mental and physical health is complex and bidirectional [6, 8]. Moreover, demographic factors, including age and socioeconomic status, have been shown to influence the severity of psychological outcomes, with younger adults and those from lower socioeconomic backgrounds experiencing heightened vulnerability to mental health issues post-infection [10,11]. Given the substantial burden of psychological consequences associated with PCS, a comprehensive and multidisciplinary approach to treatment is necessary. Current recommendations emphasise the integration of psychological therapies, community support, and specialised care that address the diverse needs of individuals affected by long-term COVID [12, 3]. Ongoing research and clinical efforts aim to elucidate effective interventions and promote mental health resilience in the face of long-term consequences stemming from the COVID-19 pandemic [13, 14].

Psychological Consequences

The COVID-19 pandemic, declared by the World Health Organisation (WHO) on March 11, 2020, has had profound effects on global health, resulting in approximately 774 million confirmed cases and around 7 million deaths [1, 15]. While many individuals recover from the acute phase of the illness, evidence suggests that a significant portion—estimated between 10% and 35%—experience prolonged health issues, commonly referred to as post-COVID-19 syndrome (PCS) or long COVID [2,16]. Symptoms of PCS can include fatigue, cognitive dysfunction, and psychological disorders, impacting both physical and mental health [3, 7]. The onset of post-COVID-19 symptoms is generally classified into three categories: subacute syndrome, which manifests 4 to 12 weeks post-infection; chronic post-COVID syndrome, characterised by symptoms lasting 12 to 24 weeks; and persistent post-COVID symptoms, which endure beyond 24 weeks [16, 17]. Notably, individuals who were hospitalised due to COVID-19 exhibit even higher prevalence rates of long-term symptoms, with some studies reporting figures as high as 85% [16]. Research indicates that the psychological impact of COVID-19, exacerbated by social isolation, uncertainty, and the stress associated with the pandemic, has led to significant increases in mental health disorders globally [1, 7, 15]. The COVID-19 Mental Disorders Collaborators projected a global rise of 27.6% in major depressive disorder and a 25.6% increase in anxiety disorder cases in 2020 [1]. Although there has been a decline in mental health symptoms during the pandemic, these figures have not returned to pre-pandemic levels, underscoring the long-lasting consequences of the crisis [1]. Neurological symptoms have also been frequently reported among post-COVID patients, with cognitive dysfunction being a prominent concern [15,16]. The suggested reasons for these symptoms include increased inflammation, oxidative stress, and possible damage to tissues caused by the virus, which all add to the complicated issues of post-COVID syndrome. Understanding these multifaceted interactions is crucial for developing effective therapeutic approaches to manage the psychological consequences associated with post-COVID-19 syndrome.

Hotel star ratings serve as an internationally recognised classification system that evaluates and categorises hotels based on various factors, including quality, amenities, and overall guest experience [1,2]. These ratings typically range from 1 to 5 stars, where a higher rating indicates a higher level of luxury and service, and a lower rating signifies more basic accommodations [3,4]. Tourist satisfaction is a crucial determinant in the hospitality industry, influencing both the intention to revisit and the likelihood of recommending a destination to others. Studies have shown that various factors significantly contribute to tourists' overall satisfaction levels, including service quality, perceived value, and emotional experiences during their stay [11, 12, 13]. The psychological consequences of post-COVID-19 syndrome have been a significant area of research, revealing a complex interplay of factors that contribute to mental health outcomes in affected individuals. A variety of psychiatric symptoms, including depression, anxiety, post-traumatic stress disorder (PTSD), and cognitive difficulties, have been reported among those recovering from COVID-19 [4, 18].

Associations with Pre-existing Conditions

Personal factors such as psychiatric history and coping strategies have been shown to play a crucial role in the psychological outcomes post-COVID [8]. Individuals with a prior history of psychiatric disorders are at a heightened risk of developing persistent psychological symptoms, which emphasises the value of historical context in mental health assessments following infection [8]. Moreover, maladaptive coping strategies, including rumination and catastrophising, have been linked to increased psychological distress, while adaptive strategies, such as positive reappraisal, correlate with improved mental health outcomes [8]. There is a notable association between persistent physical symptoms and increased cognitive and psychological distress following COVID-19. Research indicates that individuals experiencing ongoing physical symptoms are likely to report heightened levels of psychological distress, aligning with findings from studies that have documented similar relationships in other health contexts [8]. The nature of this relationship remains ambiguous, as it is unclear whether physical symptoms directly exacerbate psychological conditions or if they arise as a consequence of underlying cognitive distress [8]. Service quality is one

of the most impactful elements affecting tourist satisfaction. It encompasses multiple aspects, such as the efficiency, hospitality, and responsiveness of hotel staff. Research indicates that high service quality leads to increased satisfaction, with guests often viewing it as a critical component of their overall experience [9, 11]. Effective complaint management and the image of the hotel also play vital roles in fostering loyalty among guests [19, 20]. Furthermore, the level of service can vary significantly between budget and luxury hotels, affecting how guests perceive their value for money [21]. Socioeconomic factors also significantly influence mental health outcomes during the pandemic. Sudden changes in income or employment status can lead to substantial lifestyle adjustments, increasing stress and feelings of shame associated with job loss, which may further precipitate depressive symptoms [6]. Conversely, individuals with a history of low income may exhibit greater resilience to economic downturns, as they are more accustomed to the stressors associated with poverty [6]. Perceived value combines the quality of services received with the cost incurred, shaping how guests evaluate their experiences. Studies indicate that both perceived value and service quality significantly enhance tourist satisfaction and influence the decision to return to a destination [13, 22]. Guests often gauge their satisfaction not only by the physical attributes of the hotel, such as cleanliness and comfort, but also by the intangible aspects of their interactions with staff and the overall ambiance of the establishment [23, 24]. The physiological mechanisms underlying the benefits of daily walking on varicose veins primarily revolve around the improvement of circulation and the functioning of the calf muscle pump. Walking is a low-impact exercise that engages the leg muscles, particularly the calf muscles, which play a crucial role in venous return—the process of pumping blood back to the heart. When the calf muscles contract during walking, they exert pressure on the veins, facilitating the upward movement of blood and reducing the risk of pooling in the lower extremities [1, 2]. The long-term psychological effects of COVID-19 have garnered attention, as many individuals report symptoms of depression, anxiety, and PTSD well beyond the acute phase of infection [5, 11]. Studies have found that the prevalence of these symptoms remains significant, with healthcare professionals reporting particularly high rates of psychological distress during the pandemic [1]. Notably, factors such as marital status and underlying health conditions, including cardiac diseases, have been identified as predictors of increased likelihood of developing depression in the post-COVID context [9,16]. This action is vital in combating conditions such as chronic venous insufficiency and peripheral artery disease, where poor circulation can lead to significant discomfort and complications [3, 4]. Emotional connections formed during a hotel stay can also drive satisfaction. Research suggests that affective commitment and emotional experiences significantly contribute to tourists' loyalty towards a hotel [19, 20]. Guests who feel a personal connection to the staff or the brand are more likely to express satisfaction and recommend the hotel to friends and family, emphasising the importance of personalisation in the guest experience [21, 24].

Demographic Factors Influencing Psychological Outcomes

Socioeconomic status (SES) is another critical demographic factor influencing mental health outcomes. Individuals from lower SES backgrounds exhibit a higher prevalence of mental health-related symptoms, as the pandemic has disproportionately impacted their economic stability and access to resources [7]. Studies have indicated that during the pandemic, those in lower SES groups experienced significant financial stress, which correlates with increased psychological distress [1, 7]. Additionally, the intersection of gender and SES further exacerbates these disparities, with women from lower socioeconomic backgrounds particularly vulnerable to mental health challenges [7]. Demographic factors play a crucial role in determining the severity of psychological outcomes following COVID-19 infection. Studies indicate that age, gender, and socioeconomic status (SES) significantly influence the manifestation of mental health symptoms such as anxiety, depression, and overall quality of life [10, 19, 7]. Age has a complex relationship with psychological outcomes in the context of COVID-19. Research suggests that younger patients, particularly those aged 30 to 39 years, experience higher levels of psychological distress compared to older individuals. They report greater anxiety and lower mental quality of life, which can be attributed to the pandemic's impact on their occupational and social perspectives [11, 7]. Conversely, older adults tend to face more pronounced physical health challenges and limitations in autonomy, primarily due to pre-existing comorbidities exacerbated by COVID-19, although they may demonstrate greater resilience in terms of psychological adaptation [11, 7, 20]. The relationship between hotel star ratings and tourist satisfaction is a complex interplay that significantly influences guests' overall experiences and their likelihood of revisiting a destination. Numerous studies have indicated that hotel star ratings serve as critical indicators of service quality and guest expectations. For instance, higher star ratings not only reflect the quality of facilities and service provided but also set specific expectations for potential guests regarding their stay [5,1]. Research suggests that star ratings play a moderating role in the relationship between service quality and customer satisfaction. In particular, for low-end hotels, aspects such as accommodation infrastructure and employee expertise emerge as significant predictors of satisfaction, whereas higher-rated establishments must maintain elevated service standards to meet guest expectations [25, 26]. Gender differences also emerge as a significant factor in post-COVID psychological outcomes. Women are

reported to experience more severe mental health issues, including higher levels of anxiety, depressive symptoms, and impaired quality of life when compared to men. This trend aligns with existing literature indicating that women are disproportionately affected by the psychological fallout of the pandemic, which may be linked to increased household responsibilities and social pressures [11, 7, 20]. Notably, women reported poorer sleep quality, nutritional issues, and challenges in returning to work post-infection [10]. This is particularly evident in locations like Hong Kong, where factors such as perceived value for money and the star rating of accommodations were found to be crucial determinants of overall guest satisfaction [27, 28]. Several studies have examined the effects of daily walking on the improvement of varicose veins, with many findings highlighting the benefits of this simple physical activity. Walking is recognised as a form of cardiovascular exercise that can enhance blood flow and reduce symptoms associated with varicose veins. For instance, a study indicated that exercise groups, which included walking, exhibited improved venous blood return compared to control groups, suggesting a positive impact on venous function [10]. A systematic review and meta-analysis by Tang et al. (2019) found that walking significantly reduced sleep disturbances in patients with various health conditions, including those affected by varicose veins [11]. The distinction between official star ratings and guest review scores is essential in understanding tourist satisfaction. Official star ratings are based on structured assessments of measurable performance and quality standards, ensuring a level of consistency and objectivity [16, 17]. Conversely, guest review ratings are subjective and vary according to personal experiences, which may reflect elements such as friendliness and perceived value [17]. Age has a complex relationship with psychological outcomes in the context of COVID-19. Research suggests that younger patients, particularly those aged 30 to 39 years, experience higher levels of psychological distress compared to older individuals. They report greater anxiety and lower mental quality of life, which can be attributed to the pandemic's impact on their occupational and social perspectives [11, 7]. Conversely, older adults tend to face more pronounced physical health challenges and limitations in autonomy, primarily due to pre-existing comorbidities exacerbated by COVID-19, although they may demonstrate greater resilience in terms of psychological adaptation [11, 7, 20]. This dual rating system complicates how potential guests perceive quality, making it imperative for hotels to manage both their star ratings and online feedback effectively. Guest satisfaction is strongly linked to revisit intentions. Studies have demonstrated that tourists who report high levels of satisfaction with their hotel experiences are more likely to recommend the establishment to others and consider returning themselves [29, 30]. Additionally, star ratings help consumers easily compare different hotels, enabling them to identify options that align with their expectations and budget. This simplification aids in decision-making, ultimately enhancing the overall travel experience and influencing future travel behaviour [6]. Improved sleep quality can contribute to better overall health, potentially alleviating symptoms related to varicose veins, as poor sleep can exacerbate physical discomfort and limit mobility. Moreover, the Pittsburgh Sleep Quality Index (PSQI) is often utilised in studies assessing the impact of lifestyle changes on sleep quality, revealing a direct correlation between physical activity, such as walking, and sleep improvement [12]. Regular walking not only enhances physical fitness but also positively influences mental health by reducing stress and anxiety, which can be beneficial for patients coping with the discomfort associated with varicose veins [13, 14]. In addition, walking has been shown to be a low-risk exercise option that promotes overall cardiovascular health, essential for individuals with varicose veins [15]. Gender differences also emerge as a significant factor in post-COVID psychological outcomes. Women are reported to experience more severe mental health issues, including higher levels of anxiety, depressive symptoms, and impaired quality of life when compared to men. This trend aligns with existing literature indicating that women are disproportionately affected by the psychological fallout of the pandemic, which may be linked to increased household responsibilities and social pressures [7, 11, 20]. Notably, women reported poorer sleep quality, nutritional issues, and challenges in returning to work post-infection [10].

Mechanisms behind Psychological Consequences

Psychological factors play a significant role in the exacerbation and maintenance of various neurological symptoms associated with post-acute COVID-19 syndrome (PACS). Evidence suggests that during the acute phase of COVID-19, individuals may experience heightened levels of anxiety, depression, and social isolation, which can worsen their clinical condition and lead to long-term psychological repercussions such as post-traumatic stress disorder (PTSD) and chronic fatigue [21, 22]. The psychological stress stemming from fears related to death, the potential for infecting loved ones, and the enforced isolation due to quarantine measures are critical elements contributing to these outcomes [22]. Personal factors, including psychiatric history and coping strategies, are crucial in understanding psychological outcomes in post-COVID-19 patients. Individuals with a prior history of psychiatric illnesses are often more susceptible to developing persistent symptoms following COVID-19. Studies have shown that maladaptive coping strategies, such as rumination and catastrophising, are associated with increased psychological distress, while adaptive strategies, like positive reappraisal, are linked to improved mental health outcomes [5, 8]. These findings underscore the necessity of integrating psychosocial

factors into future research on long-term cognitive and psychological symptoms following COVID-19. The willingness of guests to return to a hotel, often referred to as revisit intention, is significantly influenced by customer satisfaction, which is shaped by various factors throughout the guest experience [31, 29]. A pivotal aspect of this relationship is the perceived value for money, which varies according to the trip's purpose and the hotel's star rating. Research indicates that higher star ratings can enhance service expectations, which in turn influences the overall experience of hotel guests [14, 32, 28]. Customer satisfaction is critical in determining whether guests will return to a hotel. Several studies have demonstrated that a positive experience directly correlates with higher revisit intentions, as satisfied customers are more likely to recommend the property and return for future stays [31, 33]. Feedback mechanisms, such as post-stay surveys, serve not only to engage guests but also to identify areas for improvement, thereby fostering loyalty [33]. To effectively prevent skin cancer incidence related to solar radiation exposure, various strategies and public health campaigns have been developed. These initiatives emphasise the importance of minimising exposure to ultraviolet (UV) radiation, which is a significant risk factor for skin cancer. One of the primary strategies is to limit sun exposure, particularly during peak sunlight hours, typically between 10 a.m. and 4 p.m. This recommendation encourages individuals to seek shade whenever possible and to avoid direct sunlight during these hours to reduce the risk of sunburn and prolonged UV exposure [3, 6, 20]. The neurobiological mechanisms underlying these psychological consequences are also noteworthy. Cognitive dysfunction observed in PACS may be driven by neuroinflammatory processes and altered cerebral metabolism, potentially leading to changes in white matter and reduced neurogenesis in critical areas such as the hippocampus [15]. The release of neuroinflammatory cytokines can activate microglia, contributing to cognitive deficits and mood disorders [15]. Moreover, neurofeedback therapy has shown promise in improving brain function and could be a viable intervention for managing symptoms related to PACS [22]. The star ratings of hotels play a crucial role in shaping guest perceptions and expectations. Higher star-rated hotels are often associated with better service quality, amenities, and overall experience, which can lead to increased guest satisfaction and a greater likelihood of returning [14, 15, 34]. Conversely, a mismatch between guest expectations based on star ratings and actual experiences can lead to dissatisfaction and diminished revisit intentions [14, 15]. Protective clothing is another essential aspect of prevention. Wearing long-sleeved shirts, long pants, and a wide-brimmed hat can significantly shield the skin from harmful UV rays [21, 22]. Additionally, clothing with an ultraviolet protection factor (UPF) label provides enhanced protection against sun exposure, making it a recommended choice for those concerned about skin cancer [23]. The use of sunscreen is widely advocated as a critical component of sun safety. Applying a broad-spectrum, water-resistant sunscreen with a high SPF (sun protection factor) should be a daily habit, regardless of the season, as even winter sun can cause skin damage [8, 24]. Social factors, such as traveller reviews, also significantly impact guests' willingness to return. Positive online reviews can create a favourable impression of the hotel and influence potential guests' decision-making processes [35, 36]. Furthermore, the psychological effects of cognitive dissonance and confirmation bias can lead travellers to seek out and prioritise information that aligns with their pre-existing beliefs about a hotel, thereby reinforcing their desire to return if they have had a positive prior experience [37, 38].

Research Studies

The studies reviewed employed various research designs, with a notable focus on cross-sectional and longitudinal methodologies. The majority included 324 cross-sectional and repeated cross-sectional studies, alongside 38 longitudinal studies, encompassing a total of 5,677,007 participants, with a gender distribution of approximately 41% female and 59% male [6]. Participants were predominantly recruited from survey panels, ensuring a diverse demographic that included significant representations of Hispanic, Black, and White populations [23]. Participants in these studies reported varied socioeconomic backgrounds, with many indicating an annual income below $50,000 and a considerable percentage having only a high school education or less [23]. This diversity in the sample is crucial for generalising findings across different populations and contexts, although some limitations related to convenience sampling were acknowledged [24]. Notably, the inclusion of self-report data introduced potential biases related to recall and personal interpretation of mental health symptoms [8, 24]. The review adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, ensuring rigorous methodological standards. Literature searches were conducted across multiple databases, including Scopus and PubMed, without language restrictions, to encompass a broad range of studies related to the psychological impacts of COVID-19 [14]. The systematic review process allowed for the categorisation of socioeconomic indicators into 'actual versus perceived' and 'static versus fluid' classes, which provided insights into their differential effects on emotional health outcomes during and after the pandemic [3]. The star rating system serves as a critical benchmark for hotels, influencing both guest expectations and overall satisfaction. For hotel managers, understanding how to optimise their service offerings in line with these ratings can significantly impact occupancy rates and customer loyalty. To elevate their star ratings, hotels should prioritise service quality, which is an abstract yet vital concept characterised by

intangibility, heterogeneity, and inseparability [39]. Managers can foster an environment of excellence by ensuring consistency across all guest touchpoints—from online interactions to physical service delivery. For instance, maintaining brand consistency during the booking process and throughout the guest's stay can cultivate positive perceptions and increase satisfaction levels [40]. A personalised guest experience is essential for generating repeat business and positive reviews. Hotels should invest in understanding their guests' preferences and habits to tailor their services accordingly. This can include thoughtful gestures, such as welcoming guests with personalised amenities like a bottle of champagne for special occasions [33]. Walking is a widely recognised form of physical activity that can significantly benefit individuals suffering from varicose veins. Regular walking is recommended for promoting circulation and reducing symptoms associated with this condition. The American Heart Association suggests that adults engage in at least 30 minutes of moderate-intensity aerobic activity most days of the week. [17] For those managing varicose veins, walking for 30 minutes five days a week can enhance blood circulation, which is crucial for alleviating discomfort and preventing the progression of vein issues. If daily walking for this duration is challenging, shorter sessions can also provide benefits. Even brief walks taken multiple times throughout the day can improve overall vascular health and aid in symptom management [18]. Choosing the right environment for walking can enhance the experience and effectiveness. Walking outdoors in nature has been shown to reduce negative moods and improve mental health, which can further motivate individuals to maintain their walking regimen [11]. The findings of these studies have significant implications for both research and clinical practice. Chi-square analyses indicated marked differences in the impacts of COVID-19 across various ethnic and racial groups concerning economic stability and health outcomes, which points to the importance of targeted interventions [23, 3]. Furthermore, qualitative methodologies revealed additional dimensions of social health not previously identified, such as social justice and social cohesion, suggesting areas for further exploration in future research [25]. Despite the strengths of the studies, including a comprehensive approach to literature review and a robust sample size, limitations such as the reliance on observational data and the absence of unexposed control groups were noted, which hindered causal inferences [3, 24]. Additionally, the variability in definitions of long COVID across studies posed challenges in drawing consistent conclusions about mental health consequences [3]. Effective guest profiling allows hotels to anticipate needs, thereby enhancing the overall experience and satisfaction levels [20, 40]. The quality and variety of amenities play a significant role in influencing guest satisfaction. Investments in comfortable beds, cleanliness, and well-equipped fitness centres are foundational to achieving a higher star rating [39]. Additionally, hotels should consider adding leisure facilities such as pools, gyms, and dining options to meet modern travelers' expectations [1]. By diversifying food and beverage offerings with high-quality, locally sourced ingredients, hotels can cater to a broader audience and enhance their appeal [1]. In a post-COVID world, guest expectations have evolved to prioritise health, safety, and comfort [40]. Hotels must adapt to these shifting behaviours by incorporating wellness-focused amenities and ensuring that their operations reflect these priorities. Managers can utilise technology to streamline processes and enhance customer service, helping staff focus on delivering exceptional guest experiences despite reduced staffing levels [33]. Establishing a connection with guests post-booking is crucial for setting the tone of their stay. Hotels should employ follow-up communications to gather valuable guest information, enabling them to offer personalised services like dinner reservations or extra amenities [33]. Engaging guests before, during, and after their stay can help reinforce brand loyalty and encourage word-of-mouth referrals, which are invaluable for attracting new customers [33]. By implementing these strategies, hotels can not only aim for higher star ratings but also foster a loyal customer base, thereby enhancing their reputation and driving revenue growth.

Treatment and Management

Current recommendations for managing the psychological consequences of post-COVID-19 syndrome favour a multimodal approach that includes psychotherapy and considers the mental health needs of patients with varying symptoms. It is essential for healthcare providers to adopt a biopsychosocial model rather than a purely biomedical approach, addressing alternative risk factors and allowing for more precise referrals to psychological treatment [12, 8]. This comprehensive strategy is particularly vital for individuals experiencing persistent symptoms that disrupt daily life, as there is currently no evidence-based treatment specifically for these conditions [8]. Different psychological approaches have been utilised to manage anxiety, depression, and other mental health issues in post-COVID-19 patients. Interventions include Cognitive Behavioural Therapy (CBT), which has been shown to effectively target the connection between thoughts, feelings, and behaviours [26, 27]. Other therapeutic modalities employed include Eye Movement Desensitisation and Reprocessing (EMDR), interpersonal therapies, and mindfulness-based approaches, reflecting the diverse needs of patients [28, 14]. A systematic review highlighted various studies that reported positive outcomes from these interventions, although limitations regarding the duration, format, and efficacy of treatments were noted [14, 29]. For patients presenting with multiple symptoms, treatment may require collaboration among specialists from fields such as cardiology, pulmonology,

neurology, and psychiatry [30]. This collaborative care model can enhance the efficacy of interventions by tailoring them to the specific needs of each patient. Cognitive rehabilitation techniques, aimed at improving focus and memory, can also play a crucial role, particularly for those suffering from cognitive deficits related to their post-COVID-19 experience [13]. Support groups have emerged globally to assist individuals grappling with long COVID, offering emotional support and resources [31]. These groups provide a vital sense of community and connection, helping patients navigate the challenges associated with their symptoms. Furthermore, organisations like The Body Politic and the Centre for Chronic Illness provide platforms for psychoeducation and community support, emphasising the importance of social connections in mental health recovery [32].

Future Directions

The management of post-COVID-19 psychological symptoms should also incorporate strategies for addressing coping mechanisms. Research suggests that both maladaptive (such as rumination and catastrophising) and adaptive coping strategies influence psychological outcomes [8]. Future efforts must focus on identifying effective interventions and ensuring equitable access to mental health resources, particularly for marginalised populations disproportionately affected by the pandemic [1, 23].

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