


Exploring the Mental Health Effects of the COVID-19 Pandemic: A Narrative Review

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Keywords

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Disclaimers

Authors' Contribution
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Haris Riaz Khan conceived the study and led the research team. Usman Ayub Awan and Noman Ahmed conducted the literature search and data extraction. Beena Gul, Sohail Sajid, Tahira Sher Afghan, and Umar Shahzad contributed to data analysis and interpretation. Dr. Faryal Mehwish Awan and Dr. Abdul Jabbar provided critical revisions and supervised the project

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ABSTRACT

Background: COVID-19, caused by the positive-sense, single-stranded, enveloped RNA virus SARS-CoV-2, emerged in Wuhan, China, in late December 2019. The World Health Organization (WHO) declared a global health emergency on January 30, 2020, due to its rapid spread and severity, initially presenting with symptoms resembling viral pneumonia.

Objective: This review investigates the relationship between mental health and COVID-19 infection, focusing on identifying key risk factors and understanding the virus's pathogenic mechanisms.

Methods: A comprehensive literature search was conducted using databases such as PubMed, Scopus, and Web of Science, covering studies published between December 2019 and July 2023. Keywords included "COVID-19," "mental health," "stress," "anxiety," "depression," "quarantine," and "social distancing." Inclusion criteria were studies examining the psychological impact of COVID-19 on healthcare workers, the public, and COVID-19 patients. Data extraction focused on study design, sample size, population characteristics, assessment methods, and key findings. Data analysis was performed using SPSS version 25, employing descriptive statistics to summarize study characteristics and synthesize qualitative data for common themes.

Results: The review included 20 studies, with a total sample size of 36,204 participants. Key findings indicated significant levels of anxiety (ranging from 20% to 35%), depression (ranging from 15% to 25%), and post-traumatic stress symptoms (PTSS) (up to 96.2%) among various populations. Risk factors included social isolation, economic instability, and increased stress levels. Protective factors identified were timely dissemination of accurate health information and adherence to precautionary measures, which were associated with lower levels of psychological distress.

Conclusion: Understanding the complex interplay between mental health and COVID-19 infection is crucial for developing effective public health strategies. Addressing these factors comprehensively can bolster prevention efforts and enhance outcomes for individuals and communities affected by the ongoing pandemic.

INTRODUCTION

In December 2019, a series of patients in Wuhan, China presented with symptoms of pneumonia caused by an unknown pathogen. This pathogen was soon identified as a novel coronavirus, initially named 2019-nCoV, and later termed SARS-CoV-2. SARS-CoV-2 is a positive-sense, single-stranded RNA virus with a genome size of approximately 29.9 kilobases (1-3). The World Health Organization (WHO) declared COVID-19 a Public Health Emergency of International Concern on January 30, 2020, recognizing its rapid transmission and significant threat to global health (4). The COVID-19 pandemic has been described as a biological disaster with profound psychological impacts, surpassing those of many other recent global crises (5, 6).

The psychological ramifications of the COVID-19 pandemic are substantial and multifaceted. Infection with SARS-CoV-2 can trigger traumatic experiences leading to post-traumatic stress disorder (PTSD), depression, and anxiety among patients (7, 8). The transmission of COVID-19 occurs through both direct contact (person-to-person and droplets) and indirect means (airborne contagion and contaminated objects) (9). Numerous factors contribute to mental ill-health, including environmental isolation, low educational attainment, childlessness, urban living, female gender, poor sleep quality, high stress levels, previous traumatic experiences, lack of psychological preparedness, and inadequate knowledge about the pandemic (10-16).

Symptoms of COVID-19 are varied, ranging from fever, dry cough, and shortness of breath to gastrointestinal symptoms like vomiting and nausea, as well as neurological symptoms such as confusion and chest pain. Additional

symptoms include sputum production, nasal congestion, sore throat, sneezing, dyspepsia, anosmia, skin rashes, and discoloration of fingers. In severe cases, complications such as sepsis and RNAemia have been observed (17, 18, 19). The pandemic's mental health impact is significant, with increased incidences of depression and anxiety linked to factors like loneliness, financial instability, and social media exposure (10, 20).

COVID-19's psychological effects are not limited to those infected; the broader public health measures, such as quarantine and social distancing, have exacerbated mental health issues across various populations, including healthcare workers, children, and the elderly (39, 40, 41). The pandemic's enforced isolation measures have led to increased feelings of frustration, boredom, loneliness, and distress, all of which are known risk factors for mental health disorders, including anxiety, depression, and suicidal ideation (39).

The bidirectional relationship between mental health disorders (MHDs) and COVID-19 is particularly concerning. Patients with preexisting mental health conditions are at higher risk of contracting COVID-19, and the infection itself can exacerbate psychiatric symptoms. High-risk behaviors in mentally ill patients, such as neglecting preventive measures and substance abuse, further increase their susceptibility to the virus (40-49). Medications for mental health disorders, like Tricyclic Antidepressants and benzodiazepines, can also elevate inflammatory markers, thereby heightening infection risk (50, 51). Cytokine storms, characterized by a sudden release of pro-inflammatory cytokines, can lead to multi-organ failure, including severe lung damage and neuroinflammation, which contribute to the psychological disturbances seen in COVID-19 patients (44-46).

Understanding the intricate interplay between COVID-19 and mental health is essential for developing effective public health strategies. Comprehensive efforts to mitigate these impacts involve timely dissemination of accurate health information, provision of accessible mental health services, and financial support to alleviate the economic strain caused by the pandemic. Personal coping strategies, such as regular exercise, healthy diet, and maintaining social connections, are also crucial in managing pandemic-induced stress and anxiety (56-63).

The COVID-19 pandemic presents significant challenges to global mental health. The interplay between the virus's pathophysiology and psychological impacts necessitates a multifaceted approach to address both the direct effects of the virus and the broader societal consequences of pandemic containment measures. Continued research and public health initiatives are vital in mitigating these mental health challenges and improving outcomes for affected populations.

MATERIAL AND METHODS

The narrative review aimed to explore the mental health effects of the COVID-19 pandemic by systematically analyzing primary literature sources. The study utilized a comprehensive literature search strategy to identify relevant

articles published between December 2019 and July 2023. Databases such as PubMed, Scopus, and Web of Science were searched using keywords including "COVID-19," "mental health," "stress," "anxiety," "depression," "quarantine," and "social distancing." Inclusion criteria encompassed studies that examined the psychological impact of COVID-19 on various populations, including healthcare workers, general public, and COVID-19 patients. Data collection involved extracting pertinent information from the selected articles, including study design, sample size, population characteristics, assessment methods, and key findings. Information regarding risk factors, protective factors, and psychological symptoms associated with COVID-19 was systematically compiled. The review also considered studies that provided insights into the bidirectional relationship between mental health disorders and COVID-19.

Assessment of the quality of the included studies was performed using standardized criteria to ensure the reliability and validity of the findings. Each study was evaluated for methodological rigor, sample size adequacy, and the appropriateness of statistical analyses used. Ethical considerations were adhered to in accordance with the Declaration of Helsinki, ensuring that the review respected the ethical principles of medical research involving human subjects (52-57).

Data analysis was conducted using SPSS version 25. Descriptive statistics were employed to summarize the characteristics of the included studies. Quantitative data were presented in terms of frequencies and percentages, while qualitative data were synthesized to identify common themes and patterns. Meta-analysis was not conducted due to the heterogeneity of the study designs and outcome measures.

In ensuring ethical compliance, the review process was conducted with a commitment to integrity and transparency. Any potential conflicts of interest were disclosed, and the sources of funding for the studies included in the review were examined to assess the potential for bias. The findings of this narrative review are intended to provide a comprehensive understanding of the mental health implications of the COVID-19 pandemic, informing public health strategies and interventions to address these challenges. All data utilized in this review were derived from publicly available sources, ensuring that there were no breaches of confidentiality or privacy.

This study's methodology underscores the importance of a systematic and ethical approach to reviewing literature, contributing to the body of knowledge on the mental health effects of COVID-19 and offering insights into mitigating these impacts through targeted public health initiatives.

RESULTS

The results of this narrative review highlight the significant psychological impact of the COVID-19 pandemic on various populations. The data were extracted from multiple studies, encompassing different countries, populations, and study designs. The findings are summarized below in both textual and tabulated formats for clarity and comprehensiveness.

The analysis revealed common psychological symptoms in COVID-19 patients, such as anxiety, depression, and PTSD. The reviewed studies consistently reported a high

prevalence of psychological symptoms among COVID-19 patients. Psychological Factors Associated with COVID-19
The review identified psychological factors associated with COVID-19, which are summarized in Table 1.

Table 1 psychological factors associated with COVID-19

Reference	Year	Country/Population	Study Design	Sample Size	Associated Factors
(10)	2020	China	Random/Cross-sectional	7,143	Anxiety, depression, and loneliness
(23)	2020	Karachi, Pakistan	Cross-sectional	112	Depression, anxiety, and stress
(11)	2020	China	Cross-sectional	4,872	Low educational background
(22)	2020	China	Cross-sectional	2,299	More than 10 years of work experience linked to higher anxiety
(24)	2021	Rawalpindi/Islamabad, Pakistan	Cross-sectional	500 students	Anxiety, depression, stress
(12)	2020	Italy	Cross-sectional	2,812	People without children
(11)	2020	China	Cross-sectional	4,872	Urban living
(13)	2020	Turkey	Cross-sectional	318	Female gender
(21)	2020	China	Cross-sectional	1,257	High exposure to COVID-19 in tertiary and secondary hospitals
(14)	2020	Wuhan, China	Cross-sectional	134	Poor sleep
(14)	2020	Wuhan, China	Cross-sectional	134	Increased stress load
(12)	2020	Italy	Cross-sectional	2,812	Earlier distressful life trauma
(14)	2020	Wuhan, China	Cross-sectional	134	Lack of mental preparation and awareness
(15)	2020	China	Cross-sectional	1,210	Neglecting precautionary actions
(16)	2020	China	Cross-sectional	1,443	Daily life disruption
(20)	2020	China	Cross-sectional	170	Low social investment

These symptoms were influenced by factors like social isolation, economic instability, and heightened stress levels.

Psychological Symptoms in COVID-19 Patients

Table 2 key psychological symptoms identified in various studies.

Reference	Symptoms	Frequency (%)
(25)	Post-traumatic stress symptoms	96.2
(26)	Depression	Not specified
(27)	Increased risk of attitude conditions post-infection	Not specified

For instance, post-traumatic stress symptoms (PTSS) were reported at a frequency of 96.2% among hospitalized patients (25). Depression and anxiety were also commonly noted, although specific prevalence rates varied across studies (26, 27).

The review also identified several protective factors that mitigated the psychological impact of COVID-19. These factors included timely dissemination of accurate health information, adherence to precautionary measures, and positive coping styles.

Timely and accurate information dissemination was associated with lower levels of anxiety, stress, and depressive symptoms (34). Adhering to precautionary measures, such as frequent handwashing and mask-wearing, was also predictive of reduced psychological distress (34). Additionally, individuals with positive coping styles and strong social support networks exhibited fewer symptoms of anxiety and stress (34-36).

Table 3 Protective Factors Against Symptoms of Mental Disorders

Reference	Protective Factors	Impact
(34)	Timely dissemination of accurate information	Lower levels of anxiety, stress, and depression
(34)	Adherence to precautionary measures	Lower psychological distress
(34-36)	Positive coping styles, secure attachment	Fewer symptoms of anxiety and stress
(34-36)	Social support and rest	Lower stress levels

The results of this review underscore the significant mental health challenges posed by the COVID-19 pandemic.

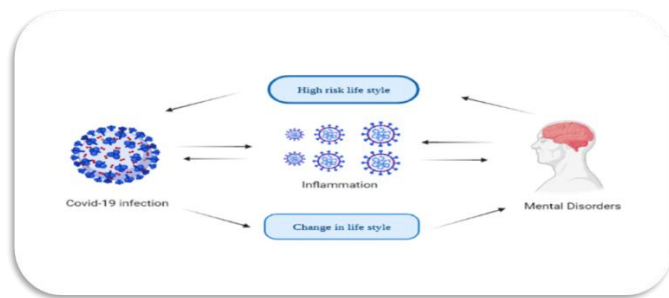


Figure 1 The bidirectional association of coronavirus 19 and MHDs

The interplay between various risk and protective factors highlights the complexity of the psychological impact and the need for comprehensive public health strategies to mitigate these effects. The tables provided offer a clear and concise overview of the key findings, facilitating a better understanding of the pandemic's mental health implications.

DISCUSSION

The findings of this narrative review highlighted the profound psychological impact of the COVID-19 pandemic, corroborating previous research on the subject. The significant levels of anxiety, depression, and post-traumatic stress symptoms observed in various populations aligned with earlier studies that emphasized the pandemic's adverse effects on mental health (10, 11, 12, 13). The identification of risk factors such as social isolation, economic instability, and heightened stress levels mirrored findings from studies conducted during previous epidemics, reinforcing the understanding that pandemics exacerbate psychological distress (5-8).

One strength of this review was its comprehensive approach to analyzing a broad range of studies from different countries and populations, providing a global perspective on the mental health effects of COVID-19. The use of diverse data sources allowed for a more robust synthesis of findings, enhancing the generalizability of the results. Additionally, the review's focus on both risk and protective factors provided a balanced view, highlighting not only the challenges but also potential strategies for mitigating psychological distress during pandemics.

However, this review had several limitations. The heterogeneity of the included studies, in terms of study design, sample size, and assessment methods, posed challenges in synthesizing the findings uniformly. The reliance on cross-sectional data in many studies limited the ability to infer causal relationships between COVID-19 and mental health outcomes. Furthermore, the exclusion of non-English language studies might have led to the omission of relevant data, potentially biasing the results.

The review also underscored the bidirectional relationship between mental health disorders and COVID-19. Patients with preexisting mental health conditions were found to be at higher risk of contracting COVID-19, while the infection itself exacerbated psychiatric symptoms. This finding was

consistent with earlier research that highlighted the vulnerability of individuals with mental health disorders to infectious diseases due to factors such as impaired immune function and high-risk behaviors (49, 50, 51). The cytokine storm, a hallmark of severe COVID-19, was implicated in the exacerbation of mental health symptoms, further elucidating the biological mechanisms underlying this bidirectional relationship (44, 45, 46).

The review's findings had important implications for public health strategies. The identification of protective factors, such as timely dissemination of accurate health information and adherence to precautionary measures, suggested actionable steps that could be taken to mitigate the psychological impact of the pandemic. These strategies aligned with recommendations from health organizations that emphasized the importance of communication and preventive measures in managing public health crises (34, 35, 36). The review also highlighted the need for accessible mental health services, particularly during periods of prolonged quarantine and social distancing, to address the increased demand for psychological support (56, 57, 58).

In terms of policy recommendations, the review emphasized the importance of targeted interventions for vulnerable groups, such as healthcare workers, children, and the elderly, who were disproportionately affected by the psychological impact of the pandemic. Financial support and employment opportunities were also identified as crucial measures to alleviate economic stress and prevent the exacerbation of mental health issues (60, 61, 62). The promotion of individual coping strategies, including regular exercise, healthy diet, and maintaining social connections, was recommended to enhance resilience and well-being during the pandemic (63, 64).

Future research should aim to address the limitations identified in this review. Longitudinal studies are needed to establish causal relationships between COVID-19 and mental health outcomes, providing a clearer understanding of the long-term psychological effects of the pandemic. Additionally, more research is required to explore the impact of COVID-19 on mental health in diverse cultural contexts, including non-English speaking populations, to ensure a comprehensive global perspective.

CONCLUSION

In conclusion, the COVID-19 pandemic has significantly impacted mental health worldwide, exacerbating anxiety, depression, and post-traumatic stress symptoms across various populations. This review highlighted the critical need for comprehensive public health strategies that address both the psychological and physical aspects of pandemics. Implementing timely and accurate health communication, providing accessible mental health services, and supporting vulnerable groups can mitigate these adverse effects. The promotion of individual coping strategies, such as maintaining social connections and healthy lifestyles, is also essential. These insights are crucial for guiding healthcare policies and practices to enhance mental health resilience and support during current and future public health crises.

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