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Review

Men's mental health during the COVID-19 pandemic: a scoping review

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Abstract

Background: Mental health issues can be more severe in men vulnerable to isolation and loneliness during a pandemic because of social distancing and isolation measures. The purpose of this study was to identify current research trends and the impact of the coronavirus disease (COVID-19) on men's mental health through a scoping review, and to make recommendations for improvements. **Methods**: This study conducted a scoping review to explore and analyze research trends on the effect of COVID-19 on men's mental health during the period January 2020 to October 2021. The PubMed and CINAHL databases, as well as Google Scholar, were used to identify relevant studies. The two researchers individually reviewed the studies, and all references were reviewed to determine the final sample of included studies. **Results**: A total of 27 studies were included in the analysis. Of all the studies, 14 were descriptive, one was quasi-experimental, and six were qualitative. Remaining studies included four commentaries, one case study, and one review. COVID-19 was found to impact the following areas of men's mental health at the individual level: psychological distress, addictive behaviors, sleep, well-being, cognitive function, and coping. At the interpersonal level, family outcomes, community belonging, and violence were impacted. At the social level, masculinity, inequity, and social service changes were affected. Intervention strategies for men's mental health during COVID-19 recommended by these studies were also divided into three levels (individual, interpersonal, and social level). **Conclusions**: Efforts should be made to improve mental health services for men who may experience anxiety, depression, and anger, along with the physical health concerns of the COVID-19 era.

Keywords: COVID-19; men; mental health; scoping review

1. Introduction

For the last two years, the world has suffered from the ongoing coronavirus disease (COVID-19) pandemic. With the emergence of mutant viruses, it is difficult to predict whether a complete end is even possible. People have faced anxiety and fear in this prolonged epidemic, and there are serious concerns about the deterioration of mental health around the world [1,2]. In fact, cases of anxiety and depression caused by COVID-19 continue to be reported across countries, at levels higher than before the pandemic [3]. In addition, research on past infectious diseases, such as severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS), suggests that mental health issues persist even after a pandemic ends [4,5]. A follow-up survey of patients diagnosed with infectious diseases revealed that more than half of the survivors suffered from mental health issues such as post-traumatic stress disorder, depression, and suicidal thoughts even one year after complete physical recovery [4,5]. Therefore, experts point out the need for interventions to prevent a "mental-demic"—a phenomenon in which the psychological impact or trauma of an infectious disease becomes prevalent [6].

Disasters also have a profound effect on psychological and mental health in men [7]. The emergence of COVID-19 has increased mental distress in men. In severe cases, it can cause suicidal thoughts or incidents [8]. According to previous studies, adult men reported increased stress levels, isolation, and deteriorating mental health [9,10], and the high prevalence of depression has been reported globally in adult men during the pandemic [11,12]. Specifically, the number of men accessing emotional support resources has shown an increasing trend [9]. Men's mental health outcomes are different from those of women [12,13], and despite the need for a more cautious approach in the pandemic situation, mental health studies related to the pandemic tend to focus on the anxiety and depression experienced by women. In cases of serious mental health problems such as suicidal intentions, the prevalence is reported to be higher in men than in women [14]. The mortality rate related to suicide among men is higher than that among women, because men choose more lethal means than women to attempt suicide. In addition, men are at a higher risk of exposure to social isolation than women [13]. Furthermore, the mental health issues of men vulnerable to isolation and loneliness [15] may become more serious during the pandemic because of measures such as social distancing. Socioeconomic and occupational problems caused by the pandemic also raise the level of stress in men because of the added difficulty in supporting their families financially [16]. Reports have shown that many men believe mental health disorders, such as depression and anxiety, are "signs of weakness", leading to under-reporting of negative mental outcomes in men [17]. Moreover, previous studies suggest that men do

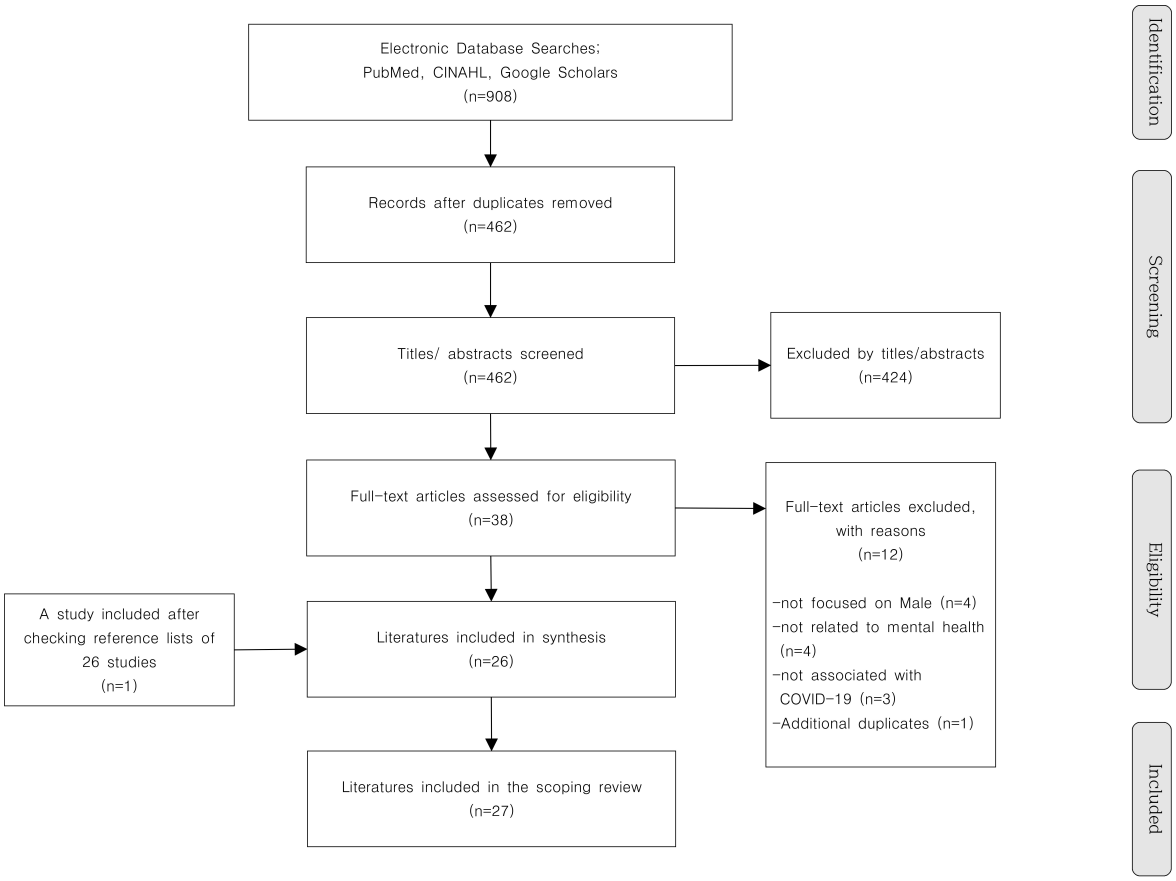

Fig. 1. Data collection, selection, and extraction processes.

not actively seek medical help and mental health resources [18], suggesting that different approaches to men's mental health are needed in the context of the pandemic.

Therefore, it is necessary to develop interventions that are different from traditional approaches. A more in-depth understanding of the impact of pandemic situations on men's mental health is needed. Recently, new types of literature review methods have emerged that synthesize evidence. The scoping review method is one such method, performed when an extensive overview of information on a new phenomenon is required [19]. Hence, this study aims to identify current research trends and the impact of COVID-19 on men's mental health through a scoping review. The findings of this study would provide a scientific rationale for developing male-specific mental health interventions.

2. Methods

This literature review explored and identified available evidence related to the effect of COVID-19 on men's mental health from January 1, 2020, to October 30, 2021. Research on COVID-19 and men's mental health has been on the rise for the last two years. The scoping review is a new method that can encompass a broader scope than traditional review approaches, and map evidence in a subject area by extensively exploring the phenomena of complex and diverse research fields. This method not only contributes to evidence-based practice by confirming the overall basis of a subject or concept, but also confirms the potential of systematic literature review by examining the scope of literature related to a specific topic [20,21]. The scoping review consists of the following five steps: (1) determining the research questions; (2) identifying relevant studies; (3) study selection; (4) charting the data; and (5) collating, summarizing, and reporting the results [20]. In this study, steps one to four are described in the methods section, and step five is described in the results section.

2.1 Determining the research questions

Research questions must be clearly described in order to conduct a scoping review. Considering that the scope of the research to be analyzed is determined through the research questions, questions should be specifically and clearly stated [20]. Therefore, when setting research questions, the concept, target population, health outcomes, and purpose of the study should be considered to clarify the focus of the scoping review. The research questions of this study were as follows: "How does COVID-19 affect men's mental health?" and "What are the current intervention strategies for men's mental health in the pandemic era?".

2.2 Identifying relevant studies

2.2.1 Searching for the relevant studies

We searched extensively for studies dealing with men's mental health in the COVID-19 era among articles published in academic journals from January 2020, when COVID-19 was first declared a pandemic, through October 2021. Google Scholar, as well as the PubMed and CINAHL databases, were used to identify studies. The language in which the study was published was limited to English. As for the search terms, "mental health", "male", "men", "father", "boy", and "covid", were combined with "AND" and "OR" to widen the scope for search and review.

2.2.2 Data selection and exclusion criteria

The selection criteria for literature included in the data analysis were as follows: (a) research articles published in academic journals from January 2020, when the first COVID-19 lockdown began in China, through October 2021; and (b) articles pertaining to men's mental health during the COVID-19 pandemic (participants of the studies were men of all ages). Studies that were not male-specific, did not analyze the impact of the COVID-19 pandemic on mental health, and did not examine the context of the COVID-19 pandemic were excluded. Due to the nature of the scoping review, commentaries, opinion pieces, and case studies were also included for a more comprehensive review of the research topic.

2.3 Study selection

A total of 905 articles were found across all databases. Among them, 454 were from PubMed, 302 from Google Scholar, and 149 from CINAHL. However, 443 duplicate articles were excluded immediately. Next, the researchers reviewed the titles and abstracts of the remaining 462 articles. After excluding 424 articles that did not meet the selection criteria, 38 remained. The full-text versions of these 38 articles were obtained and individually reviewed by the researchers, with the references of each study also being reviewed individually to determine the final sample of selected studies. A total of 27 studies were finally included in the analysis. The data collection, selection, and extraction processes are presented in Fig. 1.

The data collected on the selected studies included authors, publication year, research country, participants, methods, mental health outcomes, and conclusions according to recommendations on the scoping review method made by Armstrong *et al*. [22] (**Supplementary Table 1**). Data were analyzed through both quantitative and qualitative analysis. In the quantitative analysis, the characteristics of the selected studies were confirmed using descriptive statistics based on publication year, research design, study region, and study participants. In the qualitative analysis, the research results were analyzed and categorized according to our research questions.

3. Results

3.1 Characteristics of selected literature

A total of 27 studies were included in the review. Their characteristics are presented in Table 1. 6 studies (22.2%) were published in 2020, at the start of the pandemic, and 21 studies (77.8%) were published in 2021. Of all the studies, 55.6% were quantitative, with 14 descriptive studies, one quasi-experimental study, and 6 qualitative studies (22.2%). Other studies included four commentaries, one case study, and a review; however, these were excluded from the analysis of the study region. 9 studies (42.9%) were conducted in the Americas, of which four were conducted in the United States and three in Brazil. 4 studies (19%) were conducted in Europe, three of which were conducted in Switzerland. In addition, there were 2 global studies that had been conducted using mobile applications.

3.2 The impact of the COVID-19 pandemic on men's mental health

We analyzed a total of 27 studies to investigate the impact of the COVID-19 pandemic on men's mental health. Mental health outcomes were presented at three levels according to the characteristics of each outcome: individual, interpersonal, and social. At the individual level, the mental health outcomes of each individual were included. The interpersonal level involves an official or informal social support system that includes mental health outcomes in relationships with family, community, school, friends, and medical personnel. The social level is the highest concept and includes the results of socially agreed beliefs, policies, and laws. At the individual level, COVID-19 impacted the following aspects of men's mental health: level of psychological distress, addiction, sleep, well-being, cognitive function, and coping. At the interpersonal level, family outcomes, community belonging, and violence were affected. Masculinity, inequity, and social service changes were the social-level outcomes (Table 2).

3.2.1 Individual outcomes

At the individual level, most studies reported psychological distress among men. Studies have shown an increase in psychological distress after the outbreak of COVID-19. Depression (n = 11), anxiety (n = 7), fear (n = 6), and isolation (n = 6) were also frequently reported. Men who were directly affected by COVID-19 were classified into higher-risk groups; for example, participants who reported COVID-19 symptoms themselves were found to have a higher rate of psychological distress than those who were not infected or symptomatic. Only one study reported similar levels of depression in men before and after the pandemic. Another experimental study reported that cognitive behavioral intervention improved depression, anxiety, and cognition in elderly men during the pandemic. Low sleep quality (n = 4) and substance use (n = 3) due to the pandemic were reported as mental health outcomes at the individual

Table 1. Publication characteristics of included studies (n = 27).

Variables	Categories		n (%)
Year of publication	2020		6 (22.2)
	2021		21 (77.8)
Research design	Quantitative		15 (55.6)
		Descriptive	14
		Quasi-experimental	1
	Qualitative		6 (22.2)
	Others		6 (22.2)
		Commentaries	4
		Case study	1
		Review	1
Study region*	America		9 (42.9)
		USA	4
		Brazil	3
		Canada	1
		Mexico	1
	Europe		4 (19.0)
		Ireland	1
		Swiss	3
	Asia		3 (14.3)
		Indonesia	1
		Iran	1
		Thailand	1
	Australia	(Australia)	2 (9.5)
	Global		2 (9.5)
	Africa	(Uganda)	1 (4.8)
Study participants	Adults		22 (81.5)
		Non-specific	11
		Sexual minorities (LGBTQ+)	8
		Fathers	3
	Adolescent		3 (11.1)
		Non-specific	2
		Fathers	1
	Elderly		1 (3.7)
	Social services		1 (3.7)

*For the study region, only 21 studies are included, excluding 6 other research design studies (e.g., commentaries, case studies, and reviews).

level. Increased coping was also reported as an individual-level outcome, and included maintaining hope (n = 2) and help-seeking behaviors (n = 2).

3.2.2 Interpersonal outcomes

At the interpersonal level, family outcomes, community belonging, and violence were presented as mental health outcomes. Family factors showed increased family stress (n = 2), changes in the father's role (n = 1), and increased attachment to children (n = 1). The increase in family stress was higher when the risk of COVID-19 infection was high. A qualitative study on fathers suggested that family stress was related to uncertainty due to the COVID-19 pandemic. In addition, an expansion of the father's role and increased attachment to preterm babies were reported in a qualitative study on neonatal intensive care during the pandemic. A decrease in community belonging and an increase in violence were also reported as interpersonal-level outcomes.

3.2.3 Social outcomes

Social outcomes included masculinity, inequality, and changes in social service. One study reported that the mobilization of masculinity appeared to help men find meaning to improve their mental health, and cope better with the pandemic situation [23]. The mobilization of masculinity emerged from men's narratives expressing psychological distress, especially among those who were more sensitive to mental health issues [23]. One commentary on men's mental health during the pandemic reported the emergence

Table 2. Numbers of studies about Men's mental health outcomes.

Level	Mental health outcome		Number of studies
Individual level	Psychological distress	Depression	11
		Anxiety	7
		Fears	6
		Isolation	6
		Suicide	5
		Stress	4
		Trauma	4
		Distress	4
		Stigma	2
		Pessimistic repetitive thoughts	1
		Psychiatric somatization	1
	Substance use		3
	Sleep		4
	Wellbeing		7
	Cognitive function		1
	Coping	Maintaining hope	2
		Help seeking behaviors	2
Interpersonal level	Family outcomes	Family stress	2
		Father's role	1
		Father-child attachment	1
	Community belonging		3
	Violence		2
Social level	Masculinity		1
	Inequity		1
	Social service change		1

*Some studies included multiple outcomes; the total does not reflect the number of studies included in the review.

of inequalities from a public health perspective [24]. During the pandemic, health-related interventions and policies that did not cover gender differences continued. This is problematic because intersections between race, social determinants, and gender issues exacerbate inequalities [24]. Moreover, one study reported changes in male-specific social service during the pandemic [25]. The survey revealed that 81% of service providers recorded significant changes in service delivery, and 84% adopted strategies to conduct virtual interventions with clients [25].

3.3 Interventions for men's mental health in the COVID-19 pandemic (Table 3)

Intervention strategies to support men's mental health during the COVID-19 pandemic recommended by the 27 studies were divided into three levels: individual (interventions for addictive behaviors, suicide prevention, sleep, and cognitive behaviors); interpersonal (interventions for community, collaborative, and family care); and social (targeted interventions for vulnerable groups, men-specific approaches, telehealth services, and intervention for social stigmatization).

The individual level involves approaches to individual mental health symptoms. At the interpersonal level, interventions target formal or informal social support systems, and include strategies that can be employed in relationships with family, community, school, friends, and medical personnel. Social level includes strategies for socially agreed-upon beliefs, policies, and laws.

3.3.1 Individual level

Interventions for addictive behavior (n = 2) and suicide prevention (n = 2) were commonly reported in the selected studies. In addition, one study recommended interventions for sleep disorders and cognitive behavioral therapy programs.

3.3.2 Interpersonal level

4 studies suggested that interventions for family-related issues were needed, and three studies mentioned the need for family-centered intervention. In addition, collaborative intervention was suggested in 2 studies. Cooperation with family, community, and other health professionals was recommended. 2 studies reported the need to promote friendships and networks. The need for community-based interventions was also reported in 2 studies. One of these interventions included securing sexual minorities (e.g., homosexual and trans men) by emphasizing the value

Table 3. Numbers of studies about interventions for men's mental health.

Level	Interventions for men's mental health		Number of studies
Individual level	Intervention for substance use, and other reinforcing behaviors		2
	Suicide prevention		2
	Intervention for sleep		1
	Cognitive-motor training		1
Interpersonal level	Community care	Promoting friendship, network	3
		Community-based intervention	2
	Collaborative care		2
	Family care	Family-centered care	3
		Management of family stress	1
Social level	Intervention for targeting vulnerable/high risk groups		11
	Men sensitive approach		8
	Online/Tele health services		3
	Intervention for social stigma, discrimination		2
	Financial social support (guarantee of employment, funding for services, etc.)		2
	Securing privacy		1

*Some studies included multiple interventions; total does not reflect the number of studies included in the review.

of community spaces and organizations [10]. Additionally, strengthening interpersonal intimacy and networks was recommended.

3.3.3 Social level

Recommendations at the social level were mentioned with the highest frequency in the selected studies. 11 studies mentioned that specific interventions targeting adolescents, sexual minorities, and men with low socioeconomic status were needed, in order to protect vulnerable groups. 8 studies reported that male-centered intervention based on the understanding of masculinity should be formed to address men's mental health issues, and that these should be differentiated from women-centered intervention. Intervention through telemedicine services in the pandemic era was examined in 3 studies. Interventions for social stigma and financial support for vulnerable groups (e.g., social minorities or lower socioeconomic status groups) were recommended in 2 studies.

4. Discussion

This scoping review of 27 studies considered the impact of the COVID-19 pandemic on men's mental health. We aimed to investigate this impact and provide recommendations for appropriate approaches and intervention strategies.

Of the 27 selected studies, six were published [24–28] in 2020, when the pandemic was first declared. However, in 2021, 21 studies [8–11,16,23,29–43], 3.5 times as many, were published—and publication is still ongoing. There is still insufficient research on men's mental health in the COVID-19 era. Most of the research designs to date have been descriptive studies, and only one study used a quasi-experimental design [30]. Considering that previous studies focused on the exploration of the phenomenon, more experimental studies that introduce intervention programs based on clinical evidence should be conducted in the future.

All studies included in this review were male-specific. Clinicians have pointed out that mental health issues in men are different from those in women [17,18]. Studies have reported that traditional signs of depression may not appear in men [17]. Unlike women, men find it difficult to share their feelings and have difficulties forming intimate relationships with others [22]. Moreover, men tend to believe that accepting their own mental health problems weakens them. They do not actively seek solutions for psychological distress [18]. Therefore, despite the need for a review that specifically addresses men's mental health, studies and services that address male-specific mental health issues experienced during the pandemic are lacking. This trend indicates that men may suffer from health inequities. Most studies reviewed in this research recommend male-specific interventions [8,9,24,26,28,38,41] in the current pandemic situation.

Furthermore, most studies have consistently reported that the COVID-19 crisis negatively affects mental health in men. Isolation due to the pandemic and social distancing causes psychological distress in men, with an increase in the levels of depression, anxiety, stress, and suicides. One study suggested that the level of depression has remained the same in men [39]; however, it is important to consider that participants of this study were adult males who had participated in mental health services themselves. In addition, the level of use of substances such as alcohol and tobacco increased [8,29,43], and sleep quality in men deteriorated [11,27,32,35]. Negative mental health outcomes are also consistent with those observed during the SARS and MERS outbreaks [44]. After the SARS outbreak, the prevalence of anxiety and depression increased in Hong Kong, the epicenter of the SARS outbreak, and 46% of men in the general population experienced psychological distress associ-

ated with the MERS outbreak [23]. Similar trends were consistently observed in the long-term follow-up after the crisis. This could provide strong evidence supporting concerns related to the mental-demic of COVID-19. Therefore, appropriate early intervention is needed to prevent mental health issues in men from progressing to chronic diseases.

Negative mental health outcomes are more severe in vulnerable groups, including sexual minorities [12,27,33, 34], adolescents [36,38,43], and men with low socioeconomic status [11]. Sexual minorities have reported high levels of depression due to isolation [34]. During the pandemic, the rate of sleep deterioration was higher in people with low socioeconomic status [26] and whose job security was not guaranteed [32]. In the case of groups with weak psychosocial development, such as male adolescents, the frequency of drug use during the pandemic can be higher than that of girls [43]. They also experienced various forms of abuse and violence [36,43]. These results indicate that the male group is not homogeneous [9]. In other words, various vulnerable sub-groups inevitably exist, and therefore tailored interventions targeting each group are required.

COVID-19 has also affected men's roles as fathers at home. It has been reported that family stress has increased due to uncertainty related to the virus [16,32]. On the other hand, due to social distancing, fathers have been spending more time at home. Men have expanded their roles as fathers in the care of children [31]. Father-child attachments have developed [31], indicating a positive effect on men's mental health. Therefore, resolving family stress in the environment and providing family-centered care can be viewed as a meaningful approach.

The pandemic has accelerated the development of non-face-to-face online/telehealth services. Research has suggested that social telehealth services should be provided for men's mental health care during a pandemic [9,34,43]. Services should not only replace traditional interventions, but also provide new opportunities for men's mental health care in the age of COVID-19. The fact that men are less likely to participate in traditional treatment due to their unique characteristics, and that the rate of men seeking mental health care services has increased during the pandemic, is very encouraging for online and telemedicine services. To this end, it is necessary to establish mechanisms to protect privacy, in order for men to disclose their feelings and psychological problems without fear.

In this review, the consequences of the COVID-19 pandemic on men's mental health and the interventions suggested in previous studies have been divided into three levels: individual, interpersonal, and social. It was confirmed that the pandemic situation affects men's mental health at all levels (individual, family, community, and society). In addition, multi-level interventions are also required. The phenomena related to men's mental health in the COVID-19 era are organically connected at the three multi-layered levels.

This review has several limitations. We suggested several intervention strategies to help men's mental wellness in a pandemic situation based on the results of our analysis using the scoping review method. However, only a limited number of studies were included, because few men-specific studies have been carried out; longitudinal and experimental studies are limited. Men-specific longitudinal studies in the future could provide a stronger basis for the causal relationship between the COVID-19 pandemic and men's mental health. In addition, because this analysis was based only on the literature published in academic journals, it may not completely reflect the actual conditions of programs and policies of the community, government, and clinical practice.

5. Conclusions

The prolonged COVID-19 pandemic has affected individual psychological well-being, causing various obstacles in daily life. Men's mental health characteristics are different from those of women, and despite the need for a more holistic approach in a pandemic situation, mental health studies tend to focus on depression in women. Men's mental health issues are equally necessary in the context of the pandemic. Our review provided evidence of the effect of COVID-19 on men's mental health in terms of personal, interpersonal, and social aspects. In addition, intervention strategies have been presented at three levels, which should be provided in various aspects during the COVID-19 pandemic. Efforts should be made to improve mental health services while managing a system that can support the mental health of men who may experience anxiety, depression, and anger, along with the physical health concerns associated with the COVID-19 era.

Author contributions

SY contributed to the design of the study. HP and SY undertook the searches and screened studies for el- igibility, assessed the quality of the papers. HP and SY drafted the manuscript. All authors revised the important contents of the manuscript and approved the final version.

Ethics approval and consent to participate

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Conflict of interest

The authors declare no conflict of interest.

Supplementary material

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