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Psychological Symptoms of COVID–19 Epidemic: A Systematic Review of Current Evidence*

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Since the outbreak of COVID–19, several published reports of increased psychological problems turned the attention towards this field and ignited controversies surrounding it. Our aim was to address the issues in this area of interest to provide information for a more robust approach.We carried out a systematic search in PubMed, Embase, Scopus, UpToDate, Science direct, and Web of Science databases. We included English-written original papers, abstracts, reports, and letters to the editor published from December 2019 to April 2020. After evaluating the title and abstract to select the most relevant papers based on inclusion and exclusion criteria, articles underwent quality assessment. The full text of selected articles was then thoroughly read to extract the essential findings.The current review of the literature showed that psychological symptoms might happen among most people, including medical staff, and patients during the COVID–19 epidemic. We identified 24 potential psychological symptoms of the SARS-CoV–2 public health emergency. Reviewing extracted studies revealed that there was a risk of occurrence of psychological symptoms among the general population during the COVID–19 outbreak. However, first-line medical staffs who provide healthcare services to patients with COVID–19 were more susceptible to these symptoms. The systematic review highlights that anxiety, depression, stress, and sleep disturbance symptoms were the most frequent psychological symptoms of the COVID–19 pandemic situation. It is recommended that future studies evaluate practical

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interventions to reduce psychological symptoms, especially in health care workers during the COVID–19 epidemic.

Keywords: Psychological symptom, Mental symptom, Psychiatric disease, Coronavirus, COVID–19, SARS-CoV–2

Highlights:

- There is a risk of occurrence of psychological symptoms in the general population and healthcare workers during the COVID–19 outbreak.
- First-line medical staffs who provide healthcare services to patients with COVID–19 were more susceptible to Psychological Symptoms of COVID-19 Epidemic.
- Anxiety, depression, stress, and sleep disturbance symptoms were the most frequent psychological symptoms of the COVID–19 pandemic situation.

Novel Corona Virus Disease (COVID–19) is a pandemic condition that first appeared in Wuhan, China, in late 2019 (Mehraeen et al., 2020). The disease was at first limited to China but soon began to spread to other countries. Consequently, the World Health Organization (WHO) declared the issue to be a Public Health Emergency on January 30, 2020, and later, a pandemic (Mehraeen et al., 2020). As of April 25, more than 2.8 million cases have been identified, of which 197,578 have died. The virus is mainly transmitted via droplets and contact (Gu et al., 2020; Organization, 2020). Early symptoms are similar to many other respiratory viral illnesses and include fever, cough, and fatigue (Cao et al., 2020). Some eventually progress to more severe conditions such as Acute Respiratory Distress Syndrome (ARDS) or even death. Some risk factors have been proposed for the severity of the disease, including high age and pre-existing health conditions ([CDC], 2020; Bo et al., 2020; Wu & McGoogan, 2020).

As it is a new disease, many characteristics of the pathogen are yet to be unraveled. Currently, there are no confirmed treatments for COVID–19 (Mehraeen, 2020; Sanders et al., 2020), and prevention is highly crucial. Countries have taken severe measures to cease the spread of the disease. Many governments have imposed restrictions such as lockdowns to prevent unnecessary travel and interaction. It is estimated that more than 1/3 of the world's population is somehow facing a constraint because of the new coronavirus (Business Insider, 2020). Besides, many health services, such as elective surgeries are postponed and suspended, to transfer resources to the fight with COVID–19 and reduce hospital visits (Centers for Disease Control and Prevention, 2020; Nowroozi & Amini, 2020; Zarrintan, 2020). WHO recommends washing hands frequently and maintaining social distancing for healthy individuals. If a person is diagnosed with COVID–19 or is experiencing symptoms, it is recommended to be isolated from other people (World Health Organization, 2020a, 2020b).

When an outbreak occurs, not only are people affected by clinical results of the disease itself, but also by the psychological burden of the disease (Xiao, 2020). A study conducted on the survivors of the Ebola epidemic in the Democratic Republic of Congo demonstrated that almost all patients were fearful after definite diagnosis, and 50% thought that they are going to die (Roo et al., 1998; Jamali Moghadam, 2015). Similar psychological concerns were present in influenza and SARS outbreaks (Rubin et al., 2010; Sim et al., 2010; Wang et al., 2020). For instance, a study showed that some patients refused to continue chemotherapy due to a fear of SARS infection (Chen et al., 2004). Such psychological effects will undoubtedly also happen in a pandemic of this scale. The world has initiated to compare the ongoing situation to war (Cohen & Kupferschmidt, 2020; Forbes, 2020; Maxwell et al., 2020), and people are panic buying and storing goods (Lins & Aquino, 2020; Sim et al., 2020).

Social distancing measures like quarantines reduce in-person interactions and therefore increase the chance and degree of psychological problems, for instance, depression and anxiety (Xiao, 2020). Due to the high need for hygiene in this period, obsessive-compulsive disorders (OCD) might also worsen (Liang et al., 2020). Additionally, seeking psychological advice is more complicated than before because of travel bans and isolations (Xiao, 2020). Moreover, the uncertain nature of COVID–19 is another cause of mental distress not only for the patients but also for health care providers. Therefore, it is crucial to pay exclusive attention to the psychological consequences of COVID–19 pandemic by better understanding and finding feasible methods for overcoming them.

In this systematic review, we aim to report and summarize the most common psychological disturbances caused by COVID–19 pandemic according to available literature, in order to help the scientific community better address and manage them. Furthermore, by addressing the high-risk groups and their needs, we might be able to identify them more vividly, and applying personalized careful cares specialized at minimizing their risks.

Methods

Literature Search Strategy

This study was a systematic literature review conducted in the first half of 2020 to explore the current evidence on psychological disorders for the COVID–19 epidemic. A systematic search was carried out in the databases of PubMed, Embase, Scopus, UpToDate, Science direct, and Web of Science using the keywords of psychological disorder, mental disorder, mental, psychiatric disease, psychiatric illness, psychiatric disorder, psychiatric diagnosis, behavior disorder, Coronavirus, COVID–19, SARS-CoV–2, Novel Coronavirus, and 2019-nCoV based on the following search strategy, using query (C) as our final search strategy: A. Psychological disorder [Title] OR Mental disorder [Title] OR Mental [Title] OR Psychiatric disease [Title] OR Psychiatric Illness [Title] OR Intervention [Title] OR Psychiatric disorder [Title] OR Psychiatric diagnosis [Title] OR Behavior disorder [Title]; B. Coronavirus [Title] OR COVID–19 [Title] OR SARS-CoV–2 [Title] OR Novel [Title] OR Coronavirus [Title] OR 2019-nCoV [Title]; C. [A] AND [B]

We included the peer-reviewed original papers, reports, and letters to the editor published from December 2019 to April 2020. The ongoing projects, and articles addressing

non-human studies, or discussing COVID–19 symptoms in general, without reference to psychological symptoms, were excluded.

Literature Selection

We assessed the title and abstract of retrieved articles and selected the most relevant studies based on the inclusion and exclusion criteria. To ensure the quality of selected articles, a checklist (Table 1) with 15 items was developed based on the relevant studies (BinDhim et al., 2015; McKay et al., 2018; Zapata et al., 2015). The quality of articles was evaluated by two independent researchers and rated on a three-point scale: *low quality* (0–5), *medium quality* (6–10), and *high quality* (11–15). The full text of selected articles was then thoroughly read to extract the essential findings.

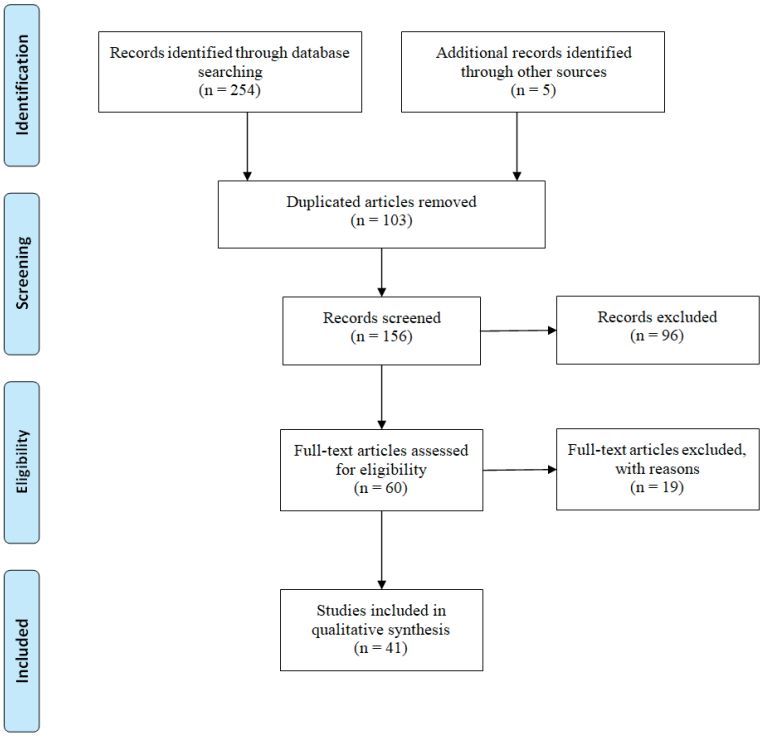
Results

We retrieved 259 sources using applied systematic search strategies. After the primary review of identified articles, 103 duplicates were removed, and 156 records were chosen for the main screening. As illustrated in Figure 1, we finally included 41 eligible articles that met the inclusion criteria. These 41 studies were published from January 2020 to April 29, 2020. The mean quality score of the selected articles was 13 (range: 11 to 15), indicating the high quality of these studies. See Table 1 for the checklist used to obtain the quality score.

Table 1
Quality assessment checklist

No.	Question
1	Does the study address any research question(s) or objective(s)?
2	Does the study provide any theoretical framework for the evaluation method?
3	Does the theoretical framework of the study include any health promotion theory?
4	Does the study provide a timeframe for the data collection?
5	Does the study identify the country where the search was conducted?
6	Does the study mention that the reviewed psychological symptoms were downloaded for evaluation?
7	Does the study discuss the selection criteria for psychological symptoms to be included or excluded for review?
8	Does the study provide a clear description of the evaluation method?
9	Are there at least two independent data extractors with a consensus procedure in place in case of disagreement?
10	Is a list of the psychological symptoms reviews provided?
11	Does the study discuss the findings of the evaluation?
12	Does the study look at the reviewed disease consequences to promote or enable behavioral change?
13	Does the study discuss any limitations?
14	Does the study provide any future recommendations in general?
15	Does the study state any conflict of interest?

Figure 1
PRISMA flow diagram of the articles selection process



The current review of the literature tries to summarize the investigations of the researchers on how the psychological symptoms might happen among most people, such as medical staff, and patients during the COVID–19 epidemic. We identified 24 potential psychological symptoms of SARS-CoV–2 public health emergency including Stress, Anxiety, Depression, Sleep disturbance symptoms, Emotional distress, Distress, Work-related worries, Post-traumatic stress disorders (PTSD), Negative coping styles, Anger, Cognitive problems, Vicarious dramatization, Fear, Paranoia, Distress related to social media, OCD, Interpersonal sensitivity, Psychoticism, Thoughts of being in danger, Psychological needs of existence, relatedness, and growth, Dream anxiety, Somatization, Apprehensiveness, and Hopelessness. The reviewed articles and the identified psychological symptoms are described in Table 2.

Table 2
Identified psychological symptoms of COVID–19

ID	The first author (reference)	Type of study	Country	Study Population	Psychological symptoms				
					Stress	Anxiety	Depression	Sleep disturbance symptoms	Other
1	Wang, C. (Wang et al., 2020)	Cross-sectional	China	*N* = 1304, General population	Yes	Yes	Yes	-	-
2	Cao, J. (Cao et al., 2020)	cross-sectional	China	*N* = 37. (43.24%) doctors, (51.35%) nurses, (5.41%) clinical technicians	Yes	Yes	Yes	Yes	Emotional distress
3	Huang, J. Z. (Huang et al., 2020)	Cross-sectional	China	*N* = 246, medical staff (30.4%) doctors, (69.6%) nurses	Yes	Yes	-	-	Post-traumatic stress disorder (PTSD)
4	Lee, S. A. (Lee, 2020)	Cross-sectional	USA	*N* = 775, General population	-	Yes	-	-	-
5	Ahmed, M. Z. (Ahmed et al., 2020)	Cross-sectional	China	*N* = 1074, General population	-	Yes	Yes	-	Alcohol use
6	Lai, J. (Lai et al., 2020)	Cross-sectional	China	*N* = 1257, Medical staff: (39.2%) physicians, (60.8%) nurses	-	Yes	Yes	Yes	Distress
7	Araujo, F. J. O.(Araujo et al., 2020)	Review	International	Students	Yes	Yes	Yes	-	-
8	Huang, Y. (Huang & Zhao, 2020)	Cross-sectional	China	*N* = 7236,General population	-	Yes	Yes	Yes	-
9	Lin, C. (Lin et al., 2020)	Cross-sectional	China	*N* = 13, medical staff	-	-	-	-	Work-related worries
10	Gao, J. (Gao et al., 2020)	Cross-sectional	China	*N* = 4827, General population	-	Yes	Yes	-	-
11	Liu, S. (Liu et al., 2020)	Review	China	*N* = 1563, medical staff	Yes	Yes	Yes	Yes	-
12	Bo, H. X. (Bo et al., 2020)	Cross-sectional	China	*N* = 714, recruited clinically-stable COVID–19 patients	Yes	-	-	-	PTSD
13	Cai, H. (Cai et al., 2020)	Cross-sectional	China	*N* = 534, front-line medical workers	Yes	-	-	-	-
14	Liang, Y. (Liang et al., 2020)	Cross-sectional	China	*N* = 59, medical workers: 38(64.4%) in COVID–19-associated departments and (35.6%) in other departments	-	Yes	Yes	-	-

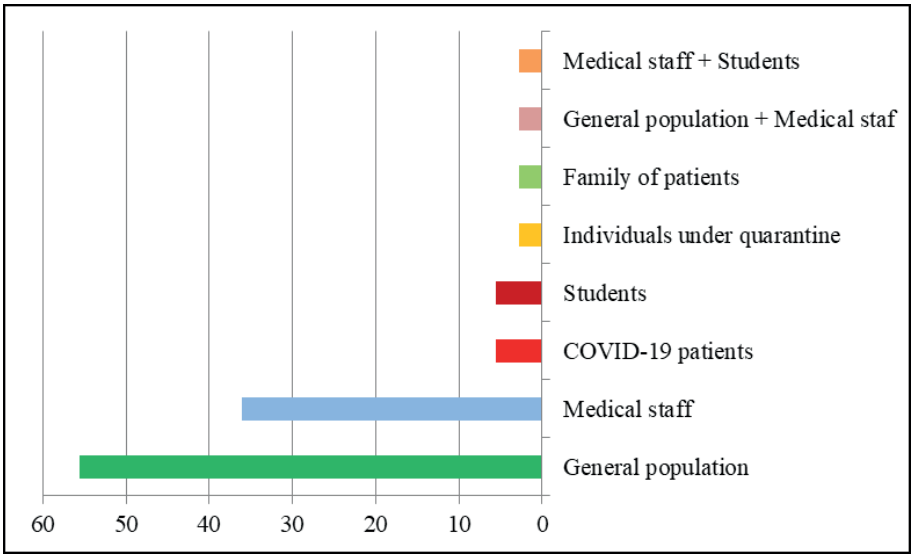
ID	The first author (reference)	Type of study	Country	Study Population	Psychological symptoms				
					Stress	Anxiety	Depression	Sleep disturbance symptoms	Other
15	Chung, J. P. Y. (Chung & Yeung, 2020)	Cross-sectional	Hong Kong	$N = 69$, medical workers: (4.3%) doctors, (34.8%) nurses, (60.9%) other groups	-	-	Yes	-	-
16	Kang, L. (Kang et al., 2020)	Cross-sectional	China	$N = 944$, medical workers: (18.4%) doctors, (81.6%) nurses	-	Yes	Yes	Yes	Distress
17	Chen, J. (Chen, 2020)	Cross-sectional	China	$N = 584$, Young people aged 14–35	Yes	-	-	-	PTSD, Negative coping styles
18	Zhu, N. (Zhu et al., 2020)	Cross-sectional	China	$N = 17865$, General population	-	Yes	Yes	-	Anger, Cognitive problems
19	Cao, W. (W. Cao et al., 2020)	Cross-sectional	China	$N = 7143$, medical college students	-	Yes	-	-	-
20	Zhang L. (Zhang & Liu, 2020)	Cross-sectional	China	$N = 740$, (28.9%) general public, (31.6%) frontline nurses, (39.5%) non-front-line nurses	-	-	-	-	Vicarious dramatization
21	Losada-Baltar A. (Losada-Baltar et al., 2020)	Cross-sectional	Spain	$N = 1310$, General population	-	-	-	-	Distress, loneliness
22	Lu W. (Lu et al., 2020)	Cross-sectional	China	$N = 2299$, 2042 medical staff, and 257 administrative staff	-	Yes	Yes	-	Fear
23	Moccia L. (Moccia et al., 2020)	Cross-sectional	Italy	$N = 500$, General population	-	Yes	Yes	-	Cyclothymic, Distress
24	Roy D. (Roy et al., 2020)	Cross-sectional	India	$N = 662$, General population	-	-	-	Yes	Paranoia, Distress related to social media
25	Tan B. Y. Q. (Tan et al., 2020)	Cross-sectional	Singapore	$N = 470$, Nonmedical Health Care Personnel ($n = 174$), Medical Health Care Personnel ($n = 296$)	Yes	Yes	Yes	-	PTSD
26	Tian F. (Tian et al., 2020)	Cross-sectional	China	$N = 1060$, General population	-	Yes	Yes	Yes	Obsessive compulsion, Interpersonal sensitivity, Psychoticism, Disturbances in appetite, Phobic anxiety, Paranoid ideation, Hostility, Distress

ID	The first author (reference)	Type of study	Country	Study Population	Psychological symptoms				
					Stress	Anxiety	Depression	Sleep disturbance symptoms	Other
27	Wang C. (Wang, et al., 2020)	longitudinal study	China	$N = 1738$, General population	Yes	Yes	Yes	-	-
28	Wang M. (Wang et al., 2020)	Cross-sectional	China	$N = 600$, General population	-	Yes	Yes	-	-
29	Wu W. (Wu et al., 2020)	Cross-sectional	China	$N = 4268$, $n = 2110$ medical staff, $n = 2158$ college students	Yes	-	-	Yes	Thoughts of being in danger
30	To K. (To et al., 2020)	Cross-sectional	China	$N = 10$, all nurses	-	-	-	-	Psychological needs of existence, relatedness & growth
31	Yuan R. (Yuan et al., 2020)	Cross-sectional	China	$N = 100$, $n = 50$ family of patients hospitalized during the epidemic period, $n = 50$ family of patients hospitalized during the epidemic period	-	Yes	Yes	-	Dream anxiety
32	Yuan S. (Yuan et al., 2020)	Cross-sectional	China	$N = 939$, General population	-	Yes	-	Yes	Problems in emotional state & behavior
33	Zhang H. (Zhang et al., 2020)	Cross-sectional	China	$N = 107$, $n = 57$ Patients who experienced COVID-19 infection, $n = 50$ Individuals under quarantine	-	Yes	Yes	-	-
34	Zhang W. R. (Zhang et al., 2020)	Cross-sectional	China	$N = 2182$, Medical health workers ($n = 927$) Nonmedical health workers ($n = 1,255$)	-	Yes	Yes	Yes	Somatization, Obsessive-compulsive symptoms
35	Zhang Y. (C. Huang et al., 2020)	Cross-sectional	China	$N = 263$, General population	Yes	-	-	-	Apprehensiveness, Hopelessness, Fear
36	Zhu S. (Zhu et al., 2020)	Cross-sectional	China	$N = 2279$, $n = 1443$ Participants with quarantine, $n = 836$ Participants without quarantine	-	Yes	Yes	-	-
37	Moghanibashi-Mansourieh A. (Moghanibashi-Mansourieh, 2020)	Cross-sectional	Iran	$N = 10754$, $n = 7173$ lived in high prevalence provinces (Tehran, Qom, Isfahan, and Mazandaran), $n = 2528$ lived in average prevalence provinces, $n = 1053$ lived in low prevalence provinces	-	Yes	-	-	-

ID	The first author (reference)	Type of study	Country	Study Population	Psychological symptoms				
					Stress	Anxiety	Depression	Sleep disturbance symptoms	Other
38	Özdin S. (Özdin & Bayrak Özdin, 2020)	Cross-sectional	Turkey	$N = 343$, $n = 278$ lived in an urban area and $n = 71$ of whom lived with another person aged above 60	-	Yes	Yes	-	-
39	Mazza C. (Mazza et al., 2020)	Cross-sectional	Italy	$N = 2812$, General population	Yes	Yes	Yes	-	-
40	Sadiković S. (Sadiković et al., 2020)	Cross-sectional	Serbia	$N = 444$, General population	-	-	-	-	Longitudinal changes in worry, fear, boredom, and anger/annoyance
41	González-Sanguino C. (González-Sanguino et al., 2020)	Cross-sectional	Spain	$N = 3480$, General population	-	Yes	Yes	-	post-traumatic symptoms

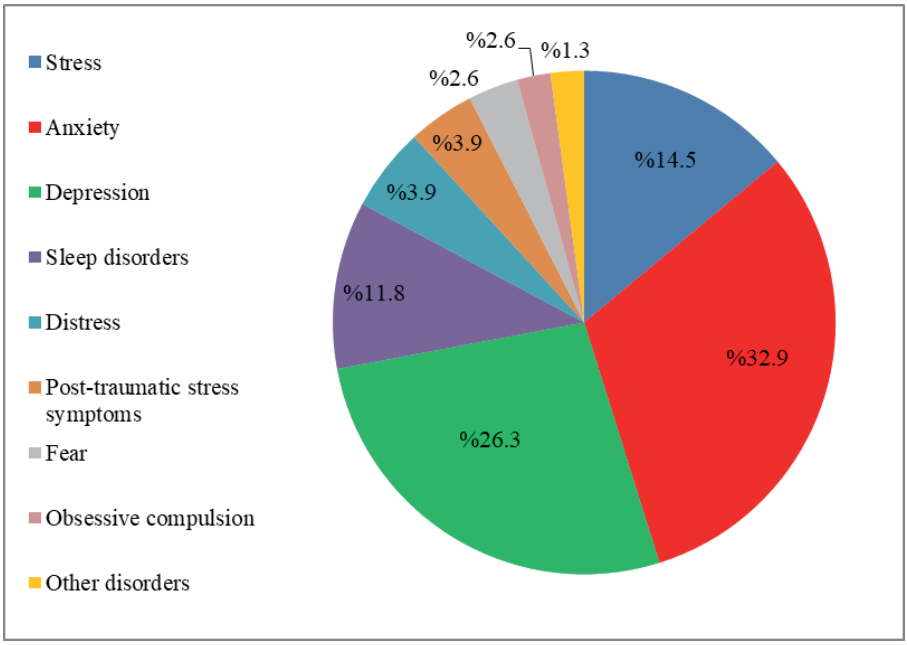
According to the findings, 55.5% of the articles presented in this section investigated psychological symptoms of COVID–19 among the general population. Also, 36.1% of the studies tried to address and recognize the occurrence of mental symptoms among the medical staff. Other studies tried to pinpoint the situation of mental health among medical students, participants with quarantine, patients, and their families as distinct target populations (Figure 2).

Figure 2
Distribution of participants in the surveyed studies



A review of studies showed that symptoms related to anxiety (n = 29), depression (n = 25), stress (n = 13), and sleep disturbance symptoms (n = 10) were the most frequent psychological consequences of COVID–19 disease. The percentage of psychological disorders of COVID–19 is reported in Figure 3.

Figure 3
Distribution of psychological consequences based on the investigation of the presented publications



Out of 41 included studies in this systematic review, 29 (80.6%) proposed an established questionnaire, and 4 (11.1%) utilized a novel one, and 3 (8.3%) did not use a questionnaire that some of them implemented an interview-based method instead.

Overall, a total of 71 previously established questionnaires were distributed among participants of 29 studies (an average of 2.45 questionnaires per study). The most common were Generalized Anxiety Disorder–7 (GAD–7) (n = 8), Patient Health Questionnaire–9 (PHQ–9) (n = 7), Impact of Event Scale-Revised (IES–R) (n = 6), Insomnia Severity Index (ISI) (n = 4), Depression, Anxiety and Stress Scale–21 (DASS–21) (n = 3), Self-rating Anxiety Scale (SAS) (n = 3), Self-Rating Depression Scale (SDS) (n = 2), Pittsburgh Sleep Quality Index (PSQI) (n = 2), PTSD Checklist-Civilian Version (PCL–C) (n = 2), modified versions of mentioned tests (n = 3), and other tests (n = 31).

Discussion

COVID–19 has rapidly crossed borders, infecting people throughout the whole world (Roy et al., 2020). Because of the unexpected nature of the pandemic and the infectious power of the COVID–19, it will unavoidably increase the chance for experiencing psychological symptoms in many people. It

is noteworthy to mention that many of the prevalent psychological symptoms can potentially be reactionary and a kind of coping with the fear of this pandemic, as is part of the natural process of infectious epidemics most of the time, rather than the direct consequence of the disease itself. It is essential to understand and consider public psychological status during this emergency occasion (Chen Wang et al., 2020). We aimed to review current evidence on psychological symptoms of COVID–19 emergency health situations.

According to the studies reviewed in the 2020, (Ahmed et al., 2020; Gao et al., 2020; Huang & Zhao, 2020; Lee, 2020; Xu et al., 2020; Yuan et al., 2020; Zhang & Ma, 2020), there is a high prevalence of mental health problems, and everyone may be at risk for psychological symptoms such as anxiety, depression, and stress during COVID–19 epidemic. The vulnerability to psychological consequences across populations in the COVID–19 outbreak could be attributable to various factors, including gender, occupation, rate of face to people with COVID–19 infection, length of isolation, and the amount of exposure to the media (Zhang et al., 2020). Female gender, previous diagnoses of mental health problems or neurological disorders, having symptoms associated with the virus, or those with a close relative infected were associated with greater symptomatology in all three variables (Moghanibashi-Mansourieh, 2020).Wang et al.(2020),carried out a longitudinal study to survey the general public in China to better understand their levels of psychological symptoms during the initial stage of the COVID–19 epidemic. The results of that study showed that more than half of the respondents rated the psychological impact as moderate-to-severe, and about one-third proclaimed moderate-to-severe anxiety (Wang et al., 2020). In a similar study, Ahmed et al. reported that anxiety, depression, alcohol use disorder, locked down in their own home for infinite time, disease of family and friends, death of closed one all these could lead to psychological consequences. In addition, the prevalence rate of anxiety and depression was troublesome, which could very easily develop a potent psychiatric symptom over a long period of time (Ahmed et al., 2020).

Healthcare workers (HCW) are first-line fighters that are providing health requirements for patients with COVID–19. Every day, they encountered a high risk of being infected and are exposed to long and distressing work shifts to meet healthcare services (Zhang et al., 2020). Based on the results, HCW were more susceptible to psychological impairments caused by COVID–19 infection.

COVID–19 has a considerable impact on public health and poses a challenge to healthcare workers, particularly to front-line medical staff who are exposed to direct contact with the patients (Chung & Yeung, 2020; Kang et al., 2020; Lu et al., 2020; Tan et al., 2020; To et al., 2020; Wu et al., 2020). The results of similar studies showed that the incidence of anxiety, depression, OCD, and somatization is high among medical staff (Cao et al., 2020; Huang et al., 2020; Zhang et al., 2020). Kang et al. (2020) in a cross-sectional observational study, showed that the COVID–19 epidemic in Hubei resulted in increased workload and stress for medical staff. The most important factors associated with stress included the supposed threat of infection to themselves and their families,

patient mortality, and the availability of clear infection control guidance (Kang et al., 2020).

Lai et al., (2020) in a survey of HCWs in hospitals equipped with fever clinics or COVID–19 care wards in China, reported that participants experiencing psychological symptoms, especially nurses and front-line HCWs directly engaged in the care for the patients with COVID–19 (Lai et al., 2020). As a result, growth attention should be paid to the psychological problems of the medical staff, especially front-line nurses, under the situation of the spread and control of COVID–19 (Lin et al., 2020). For this purpose, front-line HCWs participating in the care of COVID–19 infected patients and staff working in isolation ward should receive prior psychological crisis intervention training to anticipate the psychological consequences of the COVID–19 pandemic situation (Chung & Yeung, 2020).

The research included in this work shows that more common psychological symptoms such as stress, anxiety, depression, sleep disturbance symptoms, and distress might happen to people during the COVID–19 public health emergency. Rapid transmission of COVID–19 around the world and reporting continuously of this event by the media has led to a massive public reaction about the pandemic situation (Roy et al., 2020). Social media has a huge impact on people's moods, and it is obvious that the high prevalence of mental health problems, positively associated with frequent social media exposure during the COVID–19 outbreak (Gao et al., 2020). Therefore, in addition to being a community physical health consequence, COVID–19 affected public mental health and caused psychological symptoms like stress, anxiety, and depression (Wang et al., 2020).

Cao et al. (2020) in a related study, represented that approximately 24.9% of college students had experienced anxiety because of the COVID–19 outbreak. However, living in urban areas, living with parents, having a steady family income were protective factors for the students against experienced anxiety during the COVID–19 epidemic (Cao et al., 2020). Similarly, Liang et al. (2020) in a cross-sectional study, demonstrated that low education levels, enterprise employees, PTSD, and negative coping styles were the influence factors of youth psychological consequences during the COVID–19 outbreak (Liang et al., 2020).

An online investigation was conducted on a sample of 1074 Chinese people. Results revealed a low level of mental well-being and a high level of anxiety, depression, hazardous and harmful alcohol use. Results of that survey also showed that young people aged 21–40 years are in a more vulnerable position in terms of psychological symptoms (Ahmed et al., 2020). Bo et al.(2020) in an online assessment, found that most clinically stable COVID–19 patients suffered from significant psychological consequences, especially PTSD, prior to discharge from hospital (Bo et al., 2020). All these studies present us valuable data to assess the psychological situation in the era of COVID–19. Nevertheless, one major setback of them all is the lack of a control group to check for a more reliable change in the mental health status of the society.

Ultimately based on our findings in this review, we suggest some practical and protective measures to reduce the negative psychological consequences

of this devastating pandemic on the community: getting enough sleep, eating healthy foods, engaging in regular physical activity, avoiding tobacco, alcohol and, drugs, relaxing and recharging activities, limiting screen time, maintaining daily life routines, limiting exposure to news media, keeping busy, focusing on positive mind and thoughts, setting priorities for missions and activities, having positive connections with others, being supportive of family members and friends and finally asking help when required are proposed procedures to get through this pandemic in a more mental and physical wellbeing.

Study Limitations

Some included studies were restricted in the matter of data attainability, sample size, and methodological appropriateness. Hence, the cautious interpretation of reported findings inside that context should be considered. Furthermore, due to the circumstances of the current pandemic, many published articles were of Chinese origin. Considering the global pandemic of COVID–19, further literature from all over the world needs to be included in future systematic reviews. We encourage researchers to continue to keep track of the literature and update our knowledge upon emergence of new evidence.

Conclusion

The present systematic literature review highlights that anxiety, depression, stress, and sleep disturbance symptoms were the most frequent psychological symptoms of the COVID–19 pandemic situation. The available research shows that there is a risk of occurrence of psychological symptoms in the general population and HCWs during the COVID–19 outbreak. However, first-line medical staff who provide healthcare services to patients with COVID–19 were more susceptible to these symptoms. It is recommended that future studies evaluate practical interventions to reduce psychological symptoms, especially in HCWs during the COVID–19 epidemic.

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BinDhim, N. F., Hawkey, A., & Trevena, L. (2015). A systematic review of quality assessment methods for smartphone health apps. *Telemedicine and e-Health*, *21*(2), 97–104.

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Psihološki simptomi COVID–19 epidemije: Sistematski pregled trenutnih podataka

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Nakon izbijanja (epidemije, prim. prev.) COVID–19, nekoliko objavljenih izveštaja o porastu psiholoških problema je skrenulo pažnju na ovo područje i rasplamsalo kontroverze. Naš cilj je da se pozabavimo pitanjima iz ove oblasti kako bi pružili informacije za robusniji pristup (u budućim istraživanjima, prim. prev.). Sproveli smo sistematsku pretragu baza podataka: PubMed, Embase, Scopus, UpToDate, Science direct i Web of Science. U pretragu smo uključili originalne naučne radove, apstrakte, izveštaje i pisma uredniku koji su napisani na engleskom jeziku i objavljeni u periodu od decembra 2019. do aprila 2020. Nakon procene naslova i asptrakta, da bismo izabrali najrelevantnije članke prema kriterijumima za uključenje, tj. isključenje, pristupili smo kvalitativnoj proceni odabranih članaka. Izabrani članci su temeljno pročitani u celini da bi se izdvojili važni nalazi. Pregled dostupne literature je ukazao da se psihološki simptomi tokom epidemije COVID–19 mogu javiti kod većine ljudi, uključujući medicinsko osoblje i pacijente. Identifikovali smo 24 potencijalna psihološka simptoma virusa SARS-CoV–2. Pregled izabranih članaka nam ukazuje da postoji rizik od pojave psiholoških simptoma u opštoj populaciji za vreme trajanja epidemije, ali su im medicinski radnici koji se nalaze na prvoj liniji pružanja zdravstvene zaštite podložniji. Anksioznost, depresija, stres i problemi sa spavanjem su se pokazali kao najčešći psihološki simptomi koji prate pandemiju COVID–19. Preporuka je da se u budućim studijama evaluiraju praktične intervencije namenjene redukciji psiholoških simptoma, naročito kod osoba koje rade u zdravstvenoj zaštiti za vreme pandemije COVID–19.

Ključne reči: Psihološki simptomi, mentalni simptomi, psihijatrijska bolest, koronavirus, COVID–19, SARS-CoV–2

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