

# Impact of COVID-19 Pandemic on Mental Health of the General Population, Students, and Health Care Workers: A Review

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## Abstract

**Objective:** The COVID-19 among humans is spreading heavily and is largely impacting the mental health of the general population, students, and health care workers worldwide. Hence, this review aims to summarize the literatures addressing the impact of the COVID-19 pandemic on the mental health of the general population, students, and health care workers.

**Methods:** Published articles concerning mental health of the general population, students, and health care workers related to the COVID-19 outbreak have been considered and reviewed.

**Results and discussion:** Mental health symptoms of stress, anxiety, and depression are common psychological reactions to the COVID-19 pandemic in the general population, students, and health care workers. This collectively influences daily behavior, economy, prevention strategies and decision making from policy makers and health organizations, weakening the strategies of COVID-19 control leading to more morbidity and mental health needs at the global level.

**Conclusion:** There is a need for more evidence-based research from other affected countries, particularly in vulnerable populations such as children and adolescents, people of lower socioeconomic status, and those residing in rural areas, so that valid strategies can be developed and COVID-19 and outbreaks of similar types in the near future can be prevented.

**Keywords:** COVID-19 pandemic, General population, Students, Health care workers

## **Introduction**

Infectious disease disasters, including epidemics, pandemics, and outbreaks, can lead to the highest morbidity and mortality, and may account for a quarter to a third of the global death rate.<sup>1</sup> The Corona Virus Disease 2019 (COVID-19) outbreak started in China in December 2019, and by June 2020 has spread across the globe becoming a global threat.<sup>2, 3</sup> Fever, dry cough, and shortness of breath are its major symptoms.<sup>3, 4</sup> The human-to-human transmission of this virus is via droplets

and direct contact, with an incubation period of 6.4 days, and a basic reproduction number of 2.24–3.58.<sup>5</sup> WHO declared this coronavirus epidemic a pandemic and announced as the public health emergency of international concern on 30th January, 2020. To date (June 10, 2020), 71,27,753 confirmed cases and 4,07,159 deaths attributable to this disease have been reported.<sup>6</sup> Evidence suggests that the outbreak of this viral disease is associated with psychological distress and symptoms of mental illness.<sup>7</sup> While the development of a vaccine is on the way the WHO and public health authorities are acting through public health strategies to control the COVID-19 outbreak. Self-isolation (quarantine) and physical distancing (social distancing) have been enforced in nearly every country as the most effective measures to protect oneself from this dreadful disease.<sup>8, 9</sup> People failed to follow these strategies during initial stages, and countries switch to strict lockdown. Many countries announced both inward and outward travel restriction, closures of industries, both private and international business agencies, shopping malls, museums, movie theaters, hotels, swimming pools, religious places, and places with large gatherings including all educational institutions, to fight this pandemic.<sup>10</sup> However, these are associated with a range of physical effects such as decreased motor activity, changes in diet habits, and no exposure to sunlight along with adverse psychological effects, including stress, fear, anxiety, and depression.<sup>11, 12</sup> As a consequence, it is also expected to increase the levels of loneliness, harmful alcohol and drug use, and self-harm or suicidal behavior among the general population.<sup>13</sup>

Studies related to mental health in relation to COVID-19 are scarce in Nepal. This study will assist government agencies, healthcare professionals, and other researchers by providing beneficial information that can be used to safeguard the psychological well-being of people, and motivate researchers in Nepal to conduct more studies in the field of pandemics and provide evidence-based information to the public. With the above objectives in mind, the current review was designed to summarize the literatures addressing the impact of the COVID-19 pandemic on the mental health of the general population, students, and health care workers.

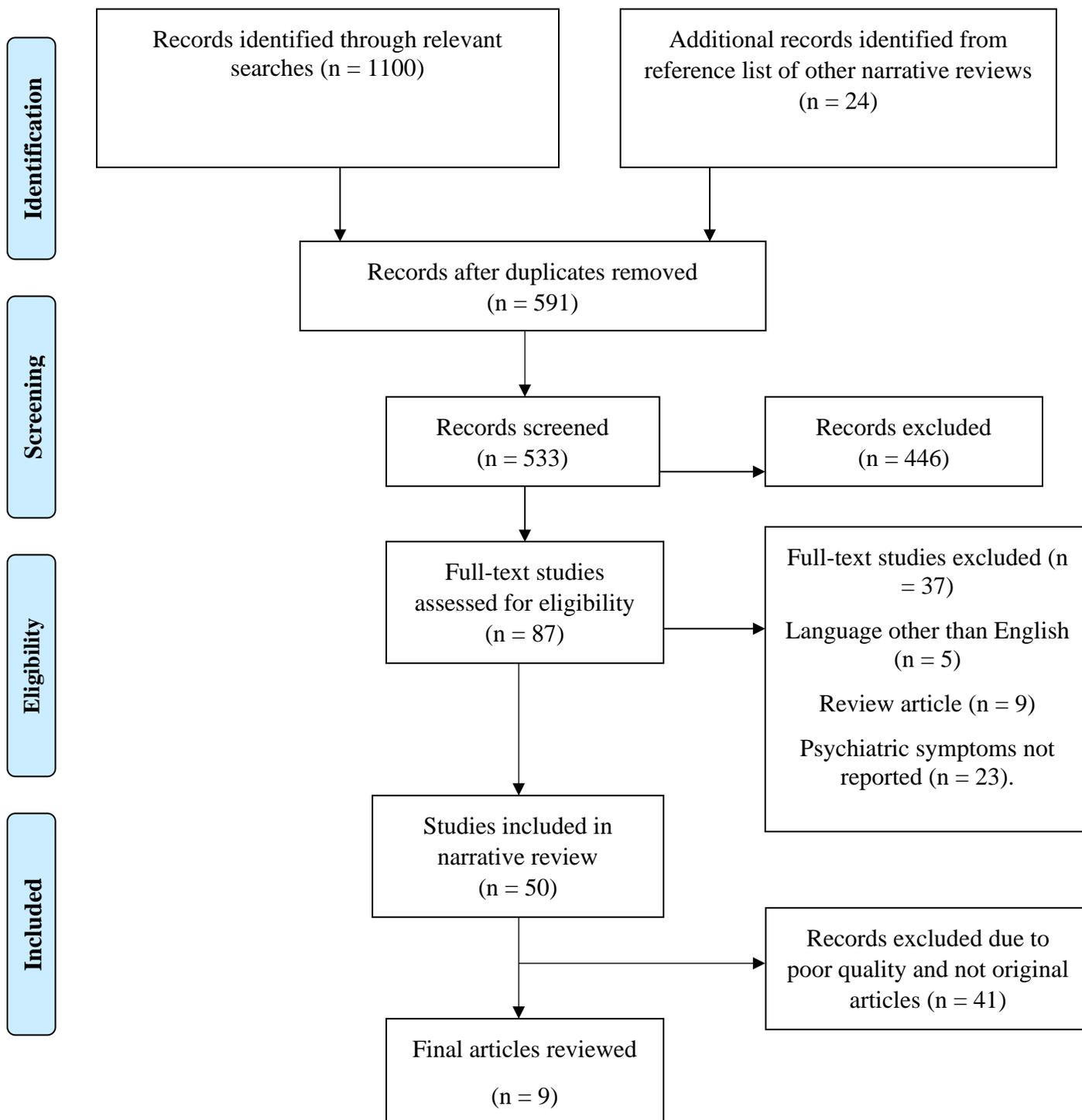
## **Methodology**

### **Search methodology and article selection**

The current article is a narrative review of the literatures relevant to the impact of COVID-19 pandemic on mental health of the general population, students, and health care workers. The search was limited to English language studies published in journals from December 1, 2019 to June 10, 2020. A search of the PubMed and Google Scholar electronic database was undertaken using the

search terms: COVID-19, novel coronavirus, mental health, psychology, anxiety, depression, stress, fear, general population, students, international students, and health care workers. We also included articles listed in the authors reference lists and those listed in other narrative reviews. Studies were selected on the basis of relevancy. Full articles on those studies, which deemed relevant to our study title were fully reviewed and irrelevant studies were eliminated.

A total of 1124 citations were retrieved, of which 87 were eligible full text studies assessed. On reviewing these, 37 were excluded: 5 because they were in language other than English, 9 because they were review articles, and 23 because psychiatric symptoms relevant to COVID-19 were not reported and dealt with clinical characteristics, drug therapy, and public health and preventive measures. The remaining 50 studies were included in this narrative review. These 50 studies consisted of original research, letters to the editor, journal pre-proofs, and editorials or commentary related to COVID-19 and mental health. Our study outcomes were various mental health symptoms such as stress, anxiety, depression, and fear in the general population, students, and health care workers relevant to the COVID-19 pandemic. Figure 1 illustrates the study selection procedure.

**Figure 1: Study selection**

## Results

A total of 50 studies were included in our review, where only 9 original articles were reviewed. All these nine studies were online and cross-sectional surveys. The majority (5/9) of them were from China, two publications from India, and one each from Iran and Denmark. Table 1 shows the main findings of these studies.

**Table 1: Study, objective, methods, and major findings of the studies**

Study	Objective	Methods	Major findings
Kazmi et al (2020) <sup>14</sup>	To assess the mental health of individuals during lockdown amid Covid-19 pandemic in India.	Online survey Study population: general population (n=1000) Study instrument: Depression Anxiety and Stress Scale (DASS-21), to assess Depression, Anxiety and Stress.	50% severe stress was seen in 21-25 years age group and women. Stress and anxiety was high in 21-25 years age group and in women, whereas depression was high in 15-35 year age group, and mostly in men. Unemployed were most affected than employed.
Wang et al (2020) <sup>15</sup>	To establish the prevalence of psychiatric symptoms and identify risk and protective factors contributing to psychological stress.	Cross-sectional online survey Study population: general population (n=1210) Study instrument: Impact of Event Scale-Revised (IES-R), and Depression, Anxiety and Stress Scale (DASS-21) used to assess psychological impact and mental health status.	16.5% people had moderate to severe depressive symptoms, 28.8% had moderate to severe anxiety symptoms, and 8.1% had moderate to severe stress.
Roy et al (2020) <sup>16</sup>	To assess the knowledge, attitude, anxiety experience, and perceived mental healthcare need among adult Indian population during the COVID-19 pandemic.	Cross-sectional online survey Study population: general population (n=662) Study instrument: online self-reported questionnaire	Sleep difficulties, paranoia about acquiring COVID-19 infection and distress related social media in 12%, 40%, and 41% participants respectively. About 72% were worried of themselves and their near ones.

Sønderskov et al (2020) <sup>17</sup>	To measure the level of psychological well-being in Denmark during the COVID-19 pandemic	Online survey Study population: general population (n=2458) Study instrument: WHO-5 well-being scale	Psychological well-being of the Danish general population was affected negatively by the COVID-19 pandemic. Females were more affected than men.
Moghanibashi-Mansourieh, (2020) <sup>18</sup>	To assess the general population anxiety level during COVID-19 spread.	Online survey Study population: general population (n=10,754) Study instrument: Depression, Anxiety and Stress Scale (DASS-21)	Anxiety level was severe in 9.3 %, and very severe in 9.8 %.  Level of anxiety was significantly higher ( $P<0.001$ ) in: female, 21–40 years age group, highly educated people, those who followed coronavirus new, and who had at least one family member with COVID-19.
Huang and Zhao, (2020) <sup>19</sup>	To assess the mental health burden of Chinese population during the COVID-19 pandemic, and to explore the potential influence factors.	Web-based cross-sectional study Study population: general population (n=7236) Study instrument: GAD-7 (Generalized Anxiety Disorder-7) scale, Center for Epidemiology Scale for Depression (CES-D), and PSQI (Pittsburgh Sleep Quality Index) scale for assessing sleep quality.	Prevalence of anxiety disorders, depressive symptoms, sleep quality: 35.1%, 20.1%, 18.2%, respectively. Younger people and healthcare workers (31.1%) were more prone to develop anxiety, depression, and poor sleep quality ( $P<0.001$ ).
Cao et al (2020) <sup>20</sup>	To evaluate the mental situation of college students during the epidemic.	Cross-sectional survey Study population: college students (n=7143) Study instrument: 7-item Generalized Anxiety Disorder Scale (GAD-7)	21.3% students had mild anxiety, 2.7% had moderate, and 0.9% had severe anxiety.
Lu et al (2020) <sup>21</sup>	To assess the psychological status of medical workforce during the COVID-19 pandemic.	Cross-sectional survey Study population: medical and administrative staffs (n=2299)	Medical staff who come in close contact with infected patients of respiratory, emergency, infectious disease, and ICU were 1.4 times more likely to feel fear, twice

		Study instrument: Hamilton Anxiety Scale (HAMA) and Hamilton Depression Scale (HAMD)	more likely to suffer anxiety and depression than administrative staffs.
Lai et al (2020) <sup>22</sup>	To assess the magnitude of mental health outcomes and associated factors among health care workers treating patients exposed to COVID-19 in China.	Cross-sectional, hospital-based survey Study population: health care workers (n=1257) Study instrument: 7-item Generalized Anxiety Disorder (GAD-7) scale, 7-item Insomnia Severity Index (ISI), 9-item Patient Health Questionnaire (PHQ-9), and 22-item Impact of Event Scale–Revised (IES-R).	Of all the participants, 50.4% reported symptoms of depression, 44.6% reported anxiety, 34.0% reported insomnia, and 71.5% reported distress, respectively.

## Discussion

### Impact on the general population

Epidemics and pandemics are a periodic phenomenon, whose impacts are often intense and may even adversely affect the well-being of the general population.<sup>16</sup> Increasing number of patients, suspected cases, and increasing number of countries affected by the outbreak have contributed making people more worry about being infected by the outbreak, which as a result increases anxiety in people.<sup>7, 14-19</sup> Since the onset of COVID-19, the use of masks and sanitizers has increased, leading to their exhaustion in the market.<sup>23</sup> Some degree of nervousness resides in public due to the unavailability of protective measures also. Likewise, media also influences the mental well-being of people and can add to the level of mental symptoms. The shortage of regular updates from reliable sources, misleading headlines, reports, and contents in social media further have been adding to the existing level of stress, anxiety, fear, and depression in people.<sup>24</sup> In fact, fear of unknown lead the way to increased anxiety level in both the normal as well as pre-existing mental patients.<sup>25</sup> During this crisis, people remain more eager to know about what is going in the world, what is the status of pandemic, about the treatment measures discovered, and many other related things. In such a desire, they seek many event-related information. When such information from

reliable sources lacks, there is a high chance of people being exposed to misleading and conflicting information on social sites.<sup>26</sup> Most of the news on COVID-19 are very disappointing and frustrating and even comes with some rumors, which happens when one is constantly exposed to COVID-19 news.<sup>18</sup> Inaccurate or exaggerated information from the media makes people more prone to develop higher level of stress and anxiety. Studies have reported that the more people follow COVID-19 news, the more anxious they become.<sup>18, 27, 28</sup>

Many parts of the world that contribute largely to the global economy have halted their service and products due to lock-down. Because of this, the global supply chain has been broken and harshly affected the global economy.<sup>29</sup> Although many companies employees are working from home in this pandemic, which even has financial disadvantages.<sup>16</sup> In contrast, many families have lost their source of income in this outbreak, which has added problems in their livelihood. The uncertain time of returning to work and infections associated with public transportation further exacerbated fear, stress, anxiety, and depression in people of poor economic status.<sup>20, 30</sup> Similarly, additional changes like isolation, social distancing, restriction of travel, worry about health conditions of family, friends or colleagues, and any family members or people from the same community being infected, are also likely to affect the mental health of the public adversely.<sup>31</sup>

### **Impact on college students**

Where the whole country is facing lockdown, students alone cannot remain untouched. Many studies have reported on their disturbed mental health in this pandemic. Many students are experiencing stress, anxiety, and depressive symptoms because of this COVID-19 pandemic.<sup>32</sup> Anxiety in students is reported to be associated with the concern of effect of this pandemic on their studies, being far from their home, low family income, and future employment.<sup>20</sup> In contrast, students of urban areas, living with their parents, stable family income are predicted to be in a safe zone.<sup>32</sup> To reduce the spread of COVID-19 among young and adult populations, many countries have prompted the closure of schools, colleges, universities, and other educational institutions, which no doubt has a specific impact on the educational growth of students.<sup>33, 34</sup> Continuous spread of COVID-19, travel warnings and bans, strict isolation measures, absence of interpersonal communication, and possible delay in starting of educational institutes were reported to be the prime cause of anxiety in students.<sup>20, 35-37</sup> Moreover, in this situation, many parents have lost their source of income, which might have made students to feel anxious about paying their tuition fees

and further education.<sup>20</sup> In addition, many schools, colleges, universities have begun to prepare lesson plan to deliver through online teaching to their students. Computers and internet at home are in high demand by students, but many families with low economic status cannot afford them. Children of such economic backgrounds develop anxiety as they fear not being able to cover their course, which also contributes to family members being anxious and depressed, as this method is expensive for them in this crisis.<sup>38</sup> The students who are to be graduated this year are also affected by COVID-19, as they are experiencing interruptions in their assessment in the final part of their studies. They are likely to develop anxiety as they are likely to graduate late as well as they have to stay home in their career developing phase. The uncertainty in reopening of educational institutes and postponement of examinations are other stressors for students.<sup>16</sup> Likewise, difficulties in getting job opportunities after the elimination of COVID-19 is other concern that might be responsible for depression in graduate students. International students who are staying far from their parents/loved ones are at a higher risk of developing mental problems such as anxiety and depression.<sup>39</sup> They are not only worried of their health and education, but also have a huge concern for the well-being of their families.<sup>39, 40</sup> Students who anyhow managed to go home stress about being unable to return to their educational institutions for the completion of their studies.

### **Impact on health workers**

World has faced a nightmare as many health care workers have lost their lives in their battle against the corona virus pandemic.<sup>14</sup> During this pandemics, where the world is facing shutdown or slowdown in daily activities and people are encouraged to obey social distancing to reduce interpersonal contacts, health care workers go in opposite direction.<sup>21, 41</sup> In this critical situation, health care workers are frontline professionals who are at a higher risk of developing psychological distress and other mental health problems, as they are directly involved in the diagnosis, treatment, and care of infected patients.<sup>22, 42</sup> Medical workers round the globe are dealing with high risk of infection, inadequate protection, overwork, frustration, patients with negative emotions, isolation, discrimination, lack of contact with their family members, lack of specific drugs, and feelings of being inadequately supported,<sup>43</sup> which has become the major cause for stress, anxiety, insomnia, depressive symptoms, anger, and fear in them.<sup>22, 44</sup> These negative mental conditions not only affects medical workers understanding, focusing, and decision making ability, which are essential for fighting against COVID-19, but also could have ever lasting effect on their overall well-being.<sup>43, 45</sup> Despite of stressful day at work they can't spend time with their family, can't hold their

own children being afraid of fact that COVID-19 is human-to-human transmissible, associated with morbidity, and potentially fatal.<sup>46</sup> They fear autoinoculation and the possibility of spreading virus to their families, friends and colleagues.<sup>47</sup> This force them to isolate from their family, change their habit, and narrow their social network resulting in different levels of psychological pressure.<sup>47</sup><sup>48</sup> This triggers the feeling of helplessness and loneliness leading to a series of dysphoric emotional states such as stress, irritation, physical and mental fatigue, and despair.<sup>48</sup> Health care workers involved directly in the care of infected person also have to suffer stigma, due to which pressure to them increases with an increase in the number of confirmed and suspected cases.<sup>49</sup> During this pandemic, a trend is popular, that is, health professionals are given the tag of superheroes, which in one way adds value but on the other way increases pressure to them because superheroes never fail, and never give up nor gets sick.<sup>50</sup> In case of any mistake instead of emotional support and encouragement, media exaggerates it and makes it more sensational than actual event. This type of moral suffering leads to the collapse of the health system, prevents health professionals from making effective decisions because of fear and inability to face suffering or due to hierarchical pressure, organizational problems, and lack of resources.<sup>50</sup>

### **Conclusion and Recommendations**

Although the COVID-19 outbreak started in Wuhan, China, it has now become a global public health issue. Despite the protective strategies of the WHO and government of many countries to safeguard their people from this pandemic, it is rapidly spreading and leading to additional mental health symptoms. Increasing actual and suspected cases, conflicting and frustrating news, inadequate protection due to shortage of protective measures, travel bans, concern to catch infection, isolation, concern of well-being of family, friends or colleagues, uncertainty of return to work station, school, college, and universities, and lack of social support are leading to different levels of psychological pressure, are found to contribute to the increased prevalence of stress, anxiety, depressive symptoms, insomnia, and fear in the general public, students, and health care workers worldwide. This can influence daily behavior, economy, prevention strategies and decision-making from policy makers and health organizations. As a result, strategies to control COVID-19 fails, leading to increased mortality and mental health care needs at the global level. Therefore, related authorities across the world should be aware of this emerging mental health issue related to the COVID-19 pandemic and time-limited and culturally sensitive mental health

interventions should be employed to address psychosocial stressors or it will evolve into long-lasting global health problem. This also indicates the need for further evidence-based research in the field of mental health problems and their determinants, addressing vulnerable populations such as children and adolescents, people of lower socio-economic status, and those residing in rural areas, focusing those countries where mental health infrastructure is less developed but the impact is likely to be more severe. Such studies will help in the development of rational strategies at both the individual and population levels, which will be fruitful to eradicate this pandemic and outbreak of similar type in the near future.

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