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CHAPTER TEN

Effect of the COVID-19 pandemic on psychological aspects

Jaber S. Alqahtani, Ahmad S. Almamary, Saeed M. Alghamdi, Saleh Komies, Malik Althobiani, Abdulelah M. Aldhahir, and Abdallah Y. Naser

Department of Respiratory Care, Prince Sultan Military College of Health Sciences, Dammam, Saudi Arabia

Respiratory Therapy Department, King Saud Bin Abdulaziz University for Health Sciences, Alhsa, Saudi Arabia

Faculty of Applied Medical Sciences, Umm Al-Qura University, Makkah, Saudi Arabia

Faculty of Engineering, Department of Electrical and Electronic Engineering, Imperial College London, London, United Kingdom

Department of Respiratory Therapy, King Abdulaziz University, Jeddah, Saudi Arabia

Respiratory Care Department, Faculty of Applied Medical Sciences, Jazan University, Jazan, Saudi Arabia

Department of Applied Pharmaceutical Sciences and Clinical Pharmacy, Faculty of Pharmacy, Isra University, Amman, Jordan

Chapter highlights

• The COVID-19 pandemic has emerged as a serious challenge to public health, medical staff, economic stability, and the functioning of governments.

• The COVID-19 pandemic has increased social solidarity, closeness, and a sense of support among the public, but more research is needed. That said, widespread psychological distress including stress, anxiety, and depression has been reported.

• Despite being trained to be resilient and emotionally reticent, medical staff regularly suffer heavily from psychological and emotional distress and frustration, yet during the COVID-19 pandemic, these feelings are aggravated.

• Depression, anxiety, obsession, insomnia, and posttraumatic stress disorder with higher risks of infection and mortality have been reported among medical care staff.

• Government guidelines and measures imposed during the COVID-19 pandemic have led to an economic crisis and recession, with jobs being lost or threatened across economic sectors.

• Unemployment has brought more stress, anxiety, fear, public dissatisfaction, and a higher mortality rate to the older group.

• The closure of schools, universities, and learning spaces during the COVID-19 pandemic has negatively affected educators, learners, and parents and caused the largest disruption in education systems in history, despite the introduction of distance learning.

• Alexithymia, inadequate supplies, and inadequate information are risk factors predisposing individuals to mental health and psychological disorders during the COVID-19 pandemic.
Protective factors such as resilience, social support, and taking advantage of preventative strategies provided by healthcare organizations have been observed to maintain psychological stability for the public and medical staff, but more research is needed.

1. Introduction

In December 2019, a disease emerged from Wuhan, China, increasing the number of death cases caused by viral infection. When it was first discovered in 2019, the disease called COVID-19 was caused by severe respiratory syndrome coronavirus 2 (SARS-CoV-2).\(^1,2\) COVID-19 started to spread rapidly to all continents in months. This deadly virus causes serious healthcare crises that affect all aspects of human life whether social, psychological, or clinical.\(^3\)–\(^10\)

Over 113 countries had been affected by COVID-19 when the World Health Organization (WHO) declared the quick and deadly virus a pandemic in March 2020.\(^11\) The virus caused a considerable burden on the healthcare system, where hospitals suffered a shortage of critical care facilities and staff due to the vast number of cases admitted to hospitals daily.\(^12\) Moreover, COVID-19 has vastly affected the world economy, education, and social life.\(^8,13,14\)

With the rapid spread of COVID-19, countries took unprecedented protective measures to prevent and control the intensity of the spread. Governments banned human inbound and outbound travel, and countries took more serious measures like national lockdowns and 24-h curfews. Using a face mask and physical distancing when going out for essential needs were strictly implemented.\(^12\) The WHO recommended all these actions to prevent the transmission of the virus among communities.\(^15\)

The governments set rules to select the appropriate lockdown criteria for each country. These protective measures helped contain the rapid spread and effects of the virus, which allowed the countries to decrease the burden on the healthcare system. At the end of 2020, the first COVID-19 vaccine (Pfizer-BioNTech) was approved and used by the United States of America Food and Drug Administration.\(^16\) Then, at the beginning of 2021, other vaccines started to be approved worldwide. However, new COVID-19 variants started to emerge in countries such as Brazil, South Africa, and England, which makes the effect of COVID-19 vaccination unclear.\(^17\)

Through May 2021, the WHO reported 1,170,942,729 vaccine doses administered, 155,665,214 confirmed cases of COVID-19, and 3,250,648 deaths.\(^18\)
COVID-19 risk factors can be categorized into two groups: demographics and comorbidity. From the literature, the demographic risk factors indicate that males are considered at high risk of COVID-19. Adults older than 65 years have a higher risk than younger adults. Chronic conditions such as diabetes mellitus, chronic kidney disease, hypertension, respiratory system diseases, and cardiovascular diseases are considered risk factors for COVID-19. Other factors such as obesity and smoking are likewise considered risk factors for COVID-19.

COVID-19 has a significant impact on society and has caused more damage in low socioeconomic communities. The impact of COVID-19 on the low socioeconomic communities occurs due to crowded housing, poor housing conditions, and limited access to outdoor space. Remote working has not been implemented in low-income societies due to limited resources. Likewise, subcommunities are considered at a greater risk of COVID-19 due to race, ethnicity, and income disparity. All the previous factors may reduce the benefits of the social distancing enforced by the governments. Thus individuals who live in communities that do not treat people equally depending on their race, ethnicity, and income status are more susceptible to COVID-19 infection and more likely to be at a greater risk of COVID-19 complications.

The global economic decline due to the COVID-19 pandemic has reached an alarming level, which raises the concern of whether the current SDGs are suitable for the postpandemic period or not. Although the SDGs were not planned to respond to the current pandemic, dealing with the pandemic should parallel the achievement of the SDGs. Dealing with the COVID-19 pandemic needs collaborative efforts that integrate the SDGs with healthcare decisions at the national level.

The psychological burden caused by the COVID-19 pandemic is a well-recognized issue. Studies have investigated the negative psychological effects of the COVID-19 pandemic on the general population and healthcare providers. Xiong et al. conclude that depression, anxiety, posttraumatic stress syndrome, psychological distress, and overall stress have been higher in the general population during the pandemic than before the pandemic. Females, people under the age of 40 years old, those with a history of psychiatric illness, the unemployed, students, and individuals who view news or social media frequently were considered vulnerable to developing psychological disorders. Other studies have explored the psychological impact of the COVID-19 pandemic on healthcare providers. Luo et al. report an overall high psychological impact among healthcare providers caused by the COVID-19 pandemic. da Silva and Neto compared the psychological
effect of the pandemic on healthcare providers before and after the pandemic and conclude that healthcare providers who had higher exposure to COVID-19 cases are suffering more from anxiety, depression, and insomnia during the pandemic.29 Thus it is evident that the COVID-19 pandemic is a severe burden on humans’ psychological aspect.

The main aim of this chapter is to provide an overview of the psychological impact of the COVID-19 pandemic. This chapter first discusses the effect of the COVID-19 pandemic on the psychological aspects and reactions of the general population and healthcare providers. An in-depth overview of the psychological impact of COVID-19 on societies, including economic, education, and health, was conducted. Psychological risk factors that could increase the psychological burden of the COVID-19 pandemic and protective factors that may maintain psychological stability and achieve better health and community well-being for the general population and medical staff are explored and summarized.

2. Positive and negative psychological responses to the COVID-19 pandemic

COVID-19 has emerged as a serious challenge to public health, economic stability, and the functioning of governments. Studies have highlighted the effect of the pandemic on the public’s psychological well-being, especially among healthcare workers, who are more likely to experience distress symptoms. While most studies focus on the pandemic’s negative consequences, others have highlighted positive effects.30

2.1 The general public’s psychological responses to the COVID-19

The spread of COVID-19 has resulted in an unprecedented number of lockdowns around the world. While the severity of these restrictions has differed from country to country, they have had a significant impact on people’s everyday lives, impacting their jobs, leisure activities, livelihoods, and abilities to engage in social activities face to face. Fortunately, technology has quickly adapted to the current situation, and technical features have been implemented to help people cope with the ongoing pandemic. Since social distancing laws force people to depend more on telecommunications such as messaging, social media networking, and video conferencing,
evidence indicates that positive attitudes arose during the introduction of lockdowns.31

People in the general population have improved their resilience. According to Serafini et al.,32,33 psychological resilience is defined as the capacity to help or retrieve psychological well-being during or after addressing stressful and disabling conditions. Given the inability to meet face to face, the mutual experiences brought by the lockdowns have increased people’s social solidarity and closeness34–36 and their sense of support for each other. As a result, enhanced social and/or community support has been linked to a lower risk of developing psychological distress and psychiatric disorders.37–39

Despite this, studies have shown that lockdowns have caused widespread psychological distress among the general public, especially those who are more vulnerable to stress.32–34,36,40 However, psychological distress may be caused by other factors than the fear of contracting the virus.41 Stress, anxiety, and depression16,42,43 are among the common signs of distress. The public’s sense of helplessness44–46 has grown because of separation from loved ones, loss of freedom, progression of the disease, and uncertainty about the future.8,47

Emotional distress, mood alterations and irritability, insomnia, post-traumatic stress symptoms, frustration, and emotional fatigue33,48 have all been reported by individuals who have been quarantined.33,48 Children and adolescents in particular are more susceptible to developing anxiety symptoms.49 The slowing economy and the suspension of academic activities are two risk factors for college students who are stressed, anxious, or depressed.14,50

Overthinking and obsession with handwashing and an aversion to crowds have been identified as negative effects of lockdowns.51 People exposed to possible infections may develop pervasive anxiety about infecting other people and their family members,28,52,53 particularly if they have had symptoms that could be due to the coronavirus, which could lead to mental breakdowns.54 Researchers have indicated that individuals without mental illness may experience new psychological symptoms, whereas those with mental illness may have their symptoms exacerbated. People who have already contracted the disease may experience shame, intense guilt, and social isolation.55

Cases of mental disorders and an increase in cases of suicide have been linked to the COVID-19 pandemic.4,5,7,8,10,50,56 Boredom, frustration, anger, and loneliness are common signs of emotional and psychological distress in the general population. If these symptoms are heightened, they can
increase the risk of suicidal ideation and, in the worst case, lead to suicide attempts.\textsuperscript{57,58}

\subsection*{2.2 Healthcare professionals’ psychological responses to the COVID-19}

It is undeniable that the COVID-19 is a physiological and psychological health epidemic and that no one is immune to its effects. Apart from the immediate family members of those who contract the disease, healthcare staff are likely to be the most frequently affected simply because they are exposed to individuals who have contracted the virus. Although it is believed and expected that healthcare workers should have gained a certain level of endurance and resilience, it is understandable that they will eventually reach their breaking points. The surge in coronavirus cases, the constant exposure to deaths, the absorption of the emotional distress of patients and their families, and the exhaustion and social stigma they face may lead to considerable distress among healthcare workers.\textsuperscript{10,52,59}

From a more optimistic perspective, reports show that during the current COVID-19 crisis, healthcare staff can still cultivate positive attitudes.\textsuperscript{60,61} As a result, messages of hope and assurance of social security may aid healthcare workers in a more positive response to social threats. Unfortunately, only limited resources have looked at the potential positive effects of COVID-19 on healthcare staff, while reports have shown a slew of negative consequences that significantly affect the mental health of those employed in the healthcare sector.\textsuperscript{28,62,63}

Luo and colleagues\textsuperscript{28} conclude that the COVID-19 pandemic has caused a heavy psychological impact among medical workers and the general public. Despite being trained to become resilient and emotionally reticent, healthcare workers are vulnerable to developing psychological distress symptoms during the pandemic. A study shows that insomnia among healthcare workers is significantly higher compared to nonhealthcare workers.\textsuperscript{64}

Aside from experiencing physical and emotional exhaustion, psychological stress, and burnout syndrome due to overwork,\textsuperscript{62} healthcare professionals may experience posttraumatic stress disorder, depersonalization, and dissociation.\textsuperscript{63,65,66} Healthcare workers have a higher risk and incidence of coronavirus infection and a higher mortality rate regardless of their staffing location.\textsuperscript{63}

Healthcare providers may develop secondary stress disorders\textsuperscript{67} due to daily exposure to traumatic scenarios and discomfort, especially when confronted with helpless situations. For instance, a lack of personal protective
equipment (PPE), treatment shortages, patient care prioritization, palliative care discontinuation, or life support termination of patient cases that have no chance of recovery may lead to secondary stress disorders. Like the general population, healthcare staff have experienced negative psychological symptoms such as depression, anxiety, insomnia, distress, and post-traumatic stress disorder due to their limited medical and social support access. Healthcare workers have developed pervasive anxiety and obsessive thoughts, limiting their ability to communicate with others.

2.3 Implications

Governments worldwide have implemented social confinement as the most effective measure for preventing the spread of the coronavirus. However, as the world focuses on reducing the number of deaths and illness cases, therapeutic assistance seems to have been pushed to the sidelines. Inevitably, the pandemic has caused psychological and social distress among the public (Fig. 1). The virus causes constant anxiety, concern, and apprehension among the public, especially among the elderly, who are more vulnerable, and healthcare professionals working with coronavirus patients. Quarantines, changes in our daily lives, job loss, financial hardship, and grief over the death of a loved one may all influence people’s mental health and

Fig. 1 Psychological sequelae of the COVID-19 pandemic on people.
well-being. To sum up, countries have made a tremendous effort to mitigate the undesirable effects of the COVID-19 pandemic. Nonetheless, it is critical that the public, especially healthcare professionals, receive sufficient psychological and social support to cope with and respond to the mental stresses brought on by the coronavirus pandemic, especially during the unprecedented period where all measures exist.10,69,70

3. The psychological burden of the COVID-19 pandemic on society

The coronavirus pandemic has financially impacted many individuals and resulted in a global economic crisis and recession. The government guidelines and measures imposed, including self-isolation, social distancing, and travel restrictions, have led to a reduction in the workforce across numerous economic sectors with jobs lost or currently being threatened. For example, in the United States, unemployment peaked at levels unheard of since 1948 during the recession.71 Levels in April 2020 (14.8%) declined by December 2020 to 6.7%, although this was still elevated.71 The American Psychological Association has reported a strong relationship between depression, stress, anxiety, and loss of life satisfaction and increased unemployment.72 This trend is bidirectional between mental health and unemployment, whereby stable mental health is maintained by stable employment. In the long term, unemployment causes stress and anxiety, which eventually has a major effect on individual psychological health and can lead to negative consequences for public mental health.72 The longer the stretch of unemployment, the worse people fare, with people out of work for 6 months or more experiencing significantly greater negative mental health outcomes.73

A previous metaanalysis study that included the psychological assessment of 63,439 participants from 10 countries reported that the prevalence of anxiety is 31.9% (95% CI: 27.5–36.7) of the general population. Additionally, the prevalence of depression among 44,531 participants was 33.7% (95% CI: 27.5–40.6). Table 1 presents the details of the included studies in this systematic review.

Individuals with low income and resources are more vulnerable to stress than individuals with a good average income.74,75 Stress is strongly correlated to a decline in mental and physical health, even without considering financial conditions and strain. A study showed that, with respect to job loss during the COVID-19 pandemic, there was little comfort in solidarity; once
| Study, date, country | Population | Male % | Tool | Score | Method          | Depression % (n) | Anxiety % (n) | Stress % (n) |
|----------------------|------------|--------|------|-------|-----------------|------------------|---------------|--------------|
| Amir Moghanibashi-   | 10,754     | 34.2%  | DASS-21 | 28    | Online survey  | NA (5472)         | 50.9%         | NA           |
| Mansourieh, 2020,    |            |        |       |       |                 |                  |               |              |
| Iran                 |            |        |       |       |                 |                  |               |              |
| M.Z. Ahmed et al.,   | 1074       | 53.2%  | BAI BDI-II | 23    | Online survey  | 37.1% (399)       | 29% (312)     | NA           |
| 2020, China          |            |        |       |       |                 |                  |               |              |
| C. Wang et al.,      | 1210       | 32.7%  | DASS-21 | 22    | Online survey  | 30.3% (367)       | 36.4% (440)   | 32.1% (389)  |
| 2020, China          |            |        |       |       |                 |                  |               |              |
| W. Cao et al.,       | 7143       | 30.35% | GAD-7 | 20    | Cluster sampling| NA (1776)         | 24.9% (1776) | NA           |
| 2020, China          |            |        |       |       |                 |                  |               |              |
| Y. Huang et al.,     | 7236       | 45.4%  | GAD-7 | 18    | Web-based survey| 20.1% (1454)     | 35.1% (2540) | NA           |
| 2020, China          |            |        |       |       |                 |                  |               |              |
| M. Ueda et al.,      | 1000       | 49.6%  | GAD-7 | 25    | Online survey  | 43.1% (431)       | 33.2% (332)   | NA           |
| 2020, Japan          |            |        |       |       |                 |                  |               |              |
| D. Liu et al.,       | 14,592     | 31.6%  | GAD-7 | 26    | Online survey  | 53.5% (7503)      | 44.6% (6196)  | NA           |
| 2020, China          |            |        |       |       |                 |                  |               |              |
| S.J. Zhou et al.,    | 8079       | 46.5%  | GAD-7 | 26    | Online survey  | 43.7% (3533)      | 37.4% (3020)  | NA           |
| 2020, China          |            |        |       |       |                 |                  |               |              |
| A. Sigdel et al.,    | 349        | 54.2%  | GAD-7 | 29    | Online survey  | 34% (119)         | 31% (109)     | NA           |
| 2020, Nepal          |            |        |       |       |                 |                  |               |              |
| S.S.H. Kazmi et al., | 1000       | 38%    | DASS-21 | 19    | Online survey  | 38.9% (389)       | 43% (430)     | 35.7% (357)  |
| 2020, India          |            |        |       |       |                 |                  |               |              |
| N. Othman et al.,    | 548        | 49.6%  | DASS-21 | 19    | Online survey  | 44.9% (246)       | 47.1% (258)   | 17.5% (96)   |
| 2020, Iraq           |            |        |       |       |                 |                  |               |              |

Continued
Table 1  Prevalence of depression, anxiety, and stress among the general population—cont’d

| Study, date, country                  | Population | Male % | Tool        | Score | Method                                      | Depression % (n) | Anxiety % (n) | Stress % (n) |
|--------------------------------------|------------|--------|-------------|-------|---------------------------------------------|------------------|---------------|--------------|
| Y. Wang et al., 2020, China          | 600        | 44.5%  | SAS SDS     | 19    | Online survey                               | 17.17% (103)     | 6.33% (38)    | NA           |
| M. Qian et al., 2020, China          | 1011       | 50.44% | GAD-7       | 28    | Telephone survey via random digital dialing | NA               | 26.6% (269)   | NA           |
| M. Shevlin et al., 2020, United Kingdom | 2025      | 48%    | GAD-7       | 22    | Online survey (quota sampling)              | 22.12% (448)     | 21.63% (438) | NA           |
| P. Odriozola Gonzalez et al., 2020, Spain | 3550    | 35.1%  | DASS-21     | 24    | Social media                                | 44.1% (1566)     | 32.4% (1150)  | 37%          |
| Agberotimi et al, 2020, Nigeria      | 502        | 53.6%  | GAD-7       | 29    | Respondent-driven sampling (RDS) technique and random survey sampling (RSS) | 23.5% (118)      | 49.6% (249)   | NA           |
| C. Mazza et al., 2020, Italy         | 2766       | 28.3%  | DASS-21     | 27    | Online survey                               | 32.8% (906)      | 18.7% (517)   | 27.2%        |

DASS-21, the depression, anxiety, and stress scale; GAD-7, generalized anxiety disorder 7-item; PHQ-9, patient health questionnaire; SAS, Zung self-rating anxiety scale; SDS, Zung self-rating depression scale; BAI, the Beck Anxiety Inventory, BDI, Beck Depression Inventory, CES-D, Center for Epidemiologic Studies Depression Scale.

Modified from a study by Salari, N., et al. Prevalence of stress, anxiety, depression among the general population during the COVID-19 pandemic: a systematic review and meta-analysis. *Global Health* 2020;16:57.
people became reemployed, their mental health improved. The age at which a worker loses a job can lead to greater damage in terms of wellness, with this being most severe between the age of 50 and 60. During a recession, job losses for this demographic result in an increase in mortality rate, which could be due to loss of health insurance.

Several psychologists have described the emotional stages of someone who has experienced a job loss as similar to grieving. The emotional stages start with shock, then denial, anger, bargaining, and eventually acceptance and hope.

Based on the Office for Budget Responsibility (OBR) projection, the UK’s unemployment rate will reach 6.5% by the end of 2021, which amounts to around one million more unemployed people compared to the period before COVID-19. In another study, the OBR indicated that the associated length of unemployment would add an additional 200,000 people to the previous burden. Finally, unemployment or seeking a job have a negative impact on both physical and mental health. The duration of time off work is directly proportionate to the negative health consequences for physical and mental health and life satisfaction. Measures to combat COVID-19 have generally resulted in reduced income and job availability.

Education plays a vital role in developing societies, qualifying, and preparing individuals for work. The largest disruption in history to education systems has occurred during the COVID-19 pandemic. Around 1.6 million learners have been affected in more than 190 countries, and 94% of the world’s student population have been impacted by the closure of huge numbers of learning spaces. Education disruption has substantial effects beyond education, although e-learning has been shown to have several advantages.

Children and adolescents have been the groups most affected by the closure of education campuses. According to UNESCO, school closures occurred in more than 186 countries, resulting in 1.3 billion young people being affected. A study on parents who were obliged to care for their children in Japan showed that school closures led mothers with primary school children to have poorer mental health than other females. In a survey conducted by the mental health charity Young Minds, which included 2111 participants in the UK presenting with an existing mental health condition, a total of 83% reported that the pandemic had made their conditions worse. A survey carried out to investigate the impact of the COVID-19 pandemic on student mental health, which surveyed around 3239 high school and higher education students in April 2020, showed that 20% of college students’ mental health had
significantly worsened during COVID-19. According to a later survey conducted in September 2020 that included 2051 students, 75% of students reported that their mental health had “worsened,” “worsened somewhat,” or “worsened significantly” since the beginning of the pandemic; 87.03% had experienced anxiety or stress; 78.06% had experienced sadness and disappointment; and 77.47% had felt lonely or isolated. The majority of respondents reported that stress, anxiety, sadness, and depression had increased since the beginning of the pandemic. Another study conducted by Effective School Solutions found that educators, teachers, and professors had struggled as much as students with their mental health during the pandemic. In total, 84% of educators reported moderate to significant mental health challenges.

Children were one of the most affected populations because of community-based mitigation programs, such as distance learning and closing playgrounds, among other life disturbances. These precautionary measures resulted in distress and confusion in both young and older children. They also resulted in annoyance, hostility, mental and physical violence, and disappointment, which could trigger adverse mental consequences in the long run. Teachers also experienced more stress due to the increase in online classes, accompanied by symptoms of depression, lack of sleep, and anxiety due to increased workloads and working from home. In another comprehensive study on the psychological impact of COVID-19 on secondary school teachers, 34% were found to be very anxious during the pandemic while 8% of teachers had experienced depressive emotions.

Although distance learning has several advantages, most families are not able to sustain long-term distance learning due to varying education-based resources and connections. Families in poverty, working mothers, single parent families, and those with unstable employment may experience more psychological effects. Many surveys across several educational systems indicated dissatisfaction with the one-way communication and teacher-control functionalities of the system. Real-time interaction allows for the simulation of a real classroom learning situation, immediate interactive clarification of meaning, and higher quality discussion between groups. However, students in online classes may experience headaches, lack of motivation, fatigue, avoidance/procrastination, ineffective time management, and isolation due to higher exposure to the personal computer screen. The mismatch between reality and expectation can be difficult for students, especially younger learners, as children may experience a loss of motivation during interactive activities.
There was a strong association between job loss, personal economics, and level of education during COVID-19 and the impact on psychological health in all ages of societies. Fig. 2 outlines the most relevant and common psychological factors, such as education disturbance, unemployment and job loss, and financial situation, that affected and impacted the general population during COVID-19.

4. Risk and protective factors relevant to psychological reactions

4.1 Risk factors

The world has previously experienced several pandemics, such as the influenza virus (H1N1) in 1918, influenza virus (H2N2) in 1957, influenza virus (H3N2) in 1968, and flu pandemic (H1N1) in 2009. However, the COVID-19 pandemic has caused a global crisis that has affected every individual. COVID-19 has caused not only deaths and physical harm but also fear and mental health problems. This section highlights the risk factors of mental health problems based on current evidence, and protective factors that could mitigate the psychological burden of the COVID-19 pandemic.

During the past year, a growing body of research has been looking at the risk and protective factors that predisposed individuals to mental health
disorders during the pandemic. Recent research has demonstrated several risk and protective factors, such as alexithymia, inadequate supplies, and inadequate information. Individuals who experience these risk factors are more susceptible to mental health disorders. Resilience, social support, and taking advantage of preventative strategies provided by the healthcare organizations were protective factors that helped maintain psychological stability during the COVID-19 pandemic. Fig. 3 shows a summary of the risk and protective factors relevant to psychological reactions.

4.1.1 Alexithymia

Studies of COVID-19 pandemic risk factors have uncovered a risk for individuals prone to alexithymia associated with mental health and psychological symptoms. Alexithymia refers to emotional identification and expression deficiencies, and it includes externally oriented thinking, difficulty identifying feelings, and difficulty describing feelings. Individuals prone to alexithymia fail to regulate their emotions and responses, which is associated with mental health problems. Consequently, individuals

Fig. 3 Summary of the risk and protective factors that are relevant to psychological reactions.
with such traits fail to respond adequately and may show several psychological symptoms, such as depression, anxiety, and emotional distress.\textsuperscript{104}

### 4.1.2 Inadequate supplies

Previous research has emphasized inadequate supplies and deficiency of necessities such as masks, food, water, and medication during the COVID-19 pandemic quarantine. This caused a great deal of frustration, fear, confusion, depression, stress, worry, anger, and uncertainty.\textsuperscript{35,105} Various governmental systems introduced restrictions that impacted the food supply chain.\textsuperscript{106} The food supply chain disruptions and food shortages placed substantial strain on governments, which induced panic.\textsuperscript{107}

Unfortunately, countries were unprepared to protect healthcare providers and maintain adequate healthcare system supplies, resulting in uncertainty and panic. Alqahtani et al. conducted an international survey to explore the current global practices of ventilatory support management in COVID-19; in the study, the clinicians demonstrated that there was a shortage of PPE, testing, and mechanical ventilators.\textsuperscript{108} Inadequate protective equipment and ventilator supply was a major emotional issue for frontline healthcare providers. The shortage of such critical equipment contributed heavily to them developing anxiety, losing control, having fear of spreading the virus to family, and feeling isolated.\textsuperscript{109} Healthcare providers are vulnerable to emotional distress, frustration, anxiety, and depression on a normal basis; during the COVID-19 pandemic, because of increased workload and supply shortage, these feelings were exacerbated.\textsuperscript{110} Healthcare providers were more vulnerable to burnout and increased workload during the pandemic due to increased cases and shortage of medical supplies.\textsuperscript{52} Previous evidence showed that healthcare providers who worked during the SARS outbreak suffered posttraumatic stress disorder.\textsuperscript{111} Posttraumatic stress disorder and mental health problems are associated with exposure to pandemics.\textsuperscript{112–115}

### 4.1.3 Inadequate information

Other risk factors that jeopardized mental health during the COVID-19 pandemic, which several studies have suggested, are inadequate information, rumors, and conspiracy theories.\textsuperscript{40,116–118} Bad news may cause fear, denial, anger, depression, and emotional distress. Despite extensive efforts from government leaders and health experts to create a clearer guide to mitigate the harm of COVID-19 and save individuals during quarantine, inaccurate information and its dissemination continued to undermine the global health
response to control this pandemic.\textsuperscript{119} Conflict guidelines by authorities confused the public and caused emotional distress. This caused confusion, insecurity, and isolation.\textsuperscript{120}

Global health scientists and government healthcare authorities failed to provide clear advice and sufficient communication to ensure public mental health safety.\textsuperscript{95–97} A massive flow of unverified information from television broadcasts, social media, and newspapers contributed to complex emotional distress for the public. The uncertainty and fear of the COVID-19 pandemic crisis have had serious health consequences, ranging from distress and anxiety to depression and panic.\textsuperscript{121,122}

4.2 Protective factors

4.2.1 Resilience

Resilience is a key protective factor to strengthen individuals’ approach to any challenging situation.\textsuperscript{123,124} It is a personal attribute that promotes psychological stability during difficult situations and responding appropriately to difficult life events and future shock. It is the ability to anticipate, adapt, absorb, cope, and recover when traumatic events happen,\textsuperscript{125} although some individuals are more likely to be rigid. Existing studies suggest that mindfulness and cognitive behavioral therapy techniques appear to improve individual resilience.\textsuperscript{126} A survey in the United States found that resilient healthcare providers reported low levels of anxiety and depression.\textsuperscript{98}

4.2.2 Psychological and social support

Another essential protective measure to maintain psychological stability is psychosocial support. Recent studies examined the role of social support during the COVID-19 quarantine and found that families and healthcare providers who received social support reported reduced anxiety and depression.\textsuperscript{98} In nonpandemic situations, the study found a positive association between social support and individuals’ general well-being.\textsuperscript{127} An online survey in the United States found evidence of the association between social support and self-efficacy, lower levels of anxiety, and better sleep quality.\textsuperscript{128}

4.2.3 Preventative strategies

We failed to learn a lesson from prior deadly pandemics such as H1N1, H2N2, H3N2, and the Middle East respiratory syndrome coronavirus MERS-CoV. The public, specifically healthcare providers, may have been protected better and the chaotic situation may have been prevented by learning the lesson and improving the healthcare system. Consequently,
there was a lack of necessities (such as food, water, testing, PPE, oxygen, and mechanical ventilators), and conflicting public guidelines contributed to COVID-19 cases surging and the global crisis. These effects were a source of stress and triggered unstable emotional reactions. Global authorities, scientists, politicians, healthcare staff, social media, and the public all have crucial roles to play in maintaining stable and low-level sources of stress.129

Authorities, politicians, and news agencies should work closely with scientists and healthcare providers to understand their needs to support and empower them. The preparation and training of healthcare system management and personnel in psychosocial problems and implementing protocols would help reduce the risk of people developing mental health disorders.130 Evidence-based resources that address mental health issues relating to disasters and the pandemic should be disseminated among staff. Furthermore, authorities should communicate effectively and implement clear and transparent guidelines for the public during quarantine.131–135

Providing alternatives that utilize online platforms to deliver psychological support during the COVID-19 quarantine to prevent mental health deterioration may be beneficial in gaining the public’s trust. Integrating telehealth and home-based care is imperative to address psychological concerns in more vulnerable individuals, such as the elderly, people with immunosuppressant disorders, and those already living with mental health issues.136 Telehealth plays an important role in addressing the needs of individuals with mental health instability without the need for physical contact.137 Social media networks, telephone helplines, internet access, and informative TV programs should be implemented to minimize the level of loneliness and isolation.138

5. Conclusion

The negative impact of the COVID-19 pandemic was multidimensional and led to significant negative consequences on people’s life. The prevalence of psychological disorders increased during the pandemic and varied significantly from one country to another and across different populations of the community, such as students, healthcare professionals, and the general population.4,7,10 Since the emergence of COVID-19, governments have implemented restrictions, ranging from social distancing, quarantine, travel restrictions, curfews to complete national lockdown, to contain the rapid spread and effects of the coronavirus. These restrictions jeopardized global health by causing a severe physiological impact on the
public and healthcare workers and creating an economic crisis. In addition, several risk factors, such as alexithymia, inadequate medical supplies, and lack of information, have caused mental health disorders and psychological impairment during the pandemic. Therefore individuals need to be resilient and benefit from social support and preventative strategies provided by healthcare organizations to maintain psychological stability. At the same time, government leaders and health experts should make an extra effort to provide clear advice and good communication to mitigate mental health issues caused by inaccurate and misleading information from television broadcasts, social media, and newspapers during the COVID-19 pandemic.

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