Chapter

# Perspective Chapter: Psychological Effects of COVID-19 Pandemic

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## Abstract

COVID-19, the viral pneumonia seen in China towards the end of 2019, was declared a global pandemic in March 2020 since it spread almost all over the world. While such pandemic situations that are concerned with public health cause a sense of insecurity, confusion, loneliness and stigmatization among individuals, it can result in economic losses, closure of workplaces and schools, insufficient resources for medical needs and inadequate satisfaction of needs in societies. The economic crisis, which is one of the most important problems in pandemic periods, and the concomitant uncertainties can also cause suicidal thoughts. As a result, how the society responds psychologically during epidemics has an important role in shaping the spread of the disease, emotional difficulties and social problems during and after the epidemic. It often appears that no resources are allocated to manage, or at least mitigate the effects of epidemics on psychological health and well-being. In the acute phase of the epidemic, health system administrators prioritize testing, preventing contagion and providing patient care, but psychological needs should not be disregarded either.

**Keywords:** psychological impacts, covid 19, pandemic, adults, elderly, trauma

## 1. Introduction

COVID-19 global pandemic, caused by the severe acute respiratory syndrome coronavirus 2 (SARS-COV-2) virus, has precipitated government-mandated quarantines, social distancing, and other measures for the benefit of public health. Forced curfews have changed and disrupted people's daily routines, work, travel and leisure activities abruptly and dramatically in a way that most people living outside of war zones have not experienced. Moreover, this highly contagious virus has transformed situations such as social interaction, touching one's face, attending a concert, shaking someone's hand, and even hugging grandparents into those perceived as potentially dangerous [1].

The Covid-19 pandemic has been deemed as the most prevalent disease of our generation. This pandemic has affected people from almost all nations, continents, races and socioeconomic groups [2]. Mankind has been challenged with many undesirable and unexpected events including natural disasters such as earthquakes, floods, storms, volcanic eruptions, hurricanes, and tornadoes as well as human-induced conditions such as wars, terrorism, and accidents. These unforeseen and sudden events are considered as a crisis situation [3]. It is argued that the crisis as a term is the main subject and core concept of many scientific fields. In a broader definition, James and Gilliand states that a crisis is an event and situation that an

individual encounters at an unexpected time, has difficulty tolerating and can disrupt their equilibrium [4]. On the other hand, Kaya and Yıldırım suggest that a crisis emanates from life events that occur in some periods of one's lifetime and can lead to pathological consequences unless rational decisions are taken [5].

Given different definitions, it can be argued that the crises affect individuals adversely with their unexpected nature threatening the life, and involve making quick and rational decisions. The crises can influence the individuals physically, socially and psychologically by provoking negative emotions and eliciting different reactions by creating pressure, distress, panic and insecurity on individuals [6] and it is emphasized that the mental balance of individuals is impaired in case of any crisis. All individuals are affected by such crises differently in proportion to their developmental period and may exhibit different reactions. For example, being a child, adolescent, adult or elderly person in the event of a crisis emerges as a different situation [7, 8]. It is contended that infectious diseases are highly associated with mental problems, which is clearly illustrated by the COVID-19 pandemic [9]. The COVID-19 pandemic is a process that needs to be addressed with its social, economic, political and spiritual consequences [10], threatening people's lives and causing traumatic distress [11]. It is widely known that the COVID-19 pandemic especially gives rise to psychological problems [12–14]. It is stated that the solution to overcome this critical process in a healthy way largely depends on the extensive research on the psychological effects of the pandemic [15]. During the pandemic process, people's psychological responses significantly influence the spread of the disease and increase the emotional distress and social dysfunctions that may occur in the next stage [16]. Therefore, the psychological effects of the pandemic must be thoroughly investigated. A recent study conducted by Wang et al. in China has shown that the pandemic process causes moderate and severe psychological effects among the public [14]. Due to the pandemic, people are experiencing psychological problems such as depression, anxiety and distress. Another study conducted by Li et al. has revealed that the COVID-19 pandemic causes a decrease in people's positive emotions and an increase in their negative emotions [17]. After the pandemic, which is inherently a stressful process, people may experience anxiety and discomfort. Stressful situations need to be handled effectively in order to prevent distress and anxiety from turning into more acute state. It is important to understand how people respond to and cope with the threats of the pandemic [15]. It is thought that psychological resilience especially plays a decisive role in coping effectively with this process [18].

Psychological resilience refers to the capacity of an individual to adapt to the challenges of life and maintain mental health despite exposure to adversity [19]. The reactions or coping strategies of individual who have been exposed to many adversities, shocking, traumatic and stressful life events throughout their lifetimes may vary. While some individuals react to stressful and traumatic situations in the form of mental problems such as anxiety and depression, others can recover from their negative mood in a short time and continue their normal lives. This phenomenon is termed as psychological resilience in the positive psychology [20]. It is stated that there are optimistic perspectives that most people become stronger by tackling the difficulties they face through resilience [21]. Psychological resilience, which is defined as the capability to adapt flexibly to the changes brought about by stressful events and to recover from negative emotional experiences [22], affects the course of disease and health conditions afterwards [23].

Moreover, it was reported that the psychological effects of the epidemic lasted longer and were more common than that of the physical, and it was very difficult to calculate psychosocial and economic effects in past epidemics [24, 25]. For example, it was stated that the fear experienced during the Ebola epidemic and the resulting

behaviors intensified psychological symptoms, indirectly contributing to the increase in death rates due to reasons other than Ebola [26]. Similarly, easy access to mass media and other technologies along with spread of false and inconsistent information during the COVID-19 process can instigate harmful social reactions such as violent and aggressive behaviors in individuals [27]. During the recent SARS epidemic, both healthcare staff and surviving patients experienced various psychological disorders [28, 29]. A study conducted by Mak et al. has revealed that the most common psychological disorders among the public after the SARS epidemic included as post-traumatic stress and depressive disorders [30]. Similar results were observed after the MERS outbreak [31].

Isolation measures and quarantine practices taken to avoid getting sick or to prevent the spread of the disease arouse a great deal of fear, hopelessness and loneliness among the public [32, 33]. All these negative emotional states increase suicidal thoughts. During the pandemic process, death cases that were directly or indirectly associated with COVID-19 infection were reported in many countries including India, Saudi Arabia, England and Germany [34]. The spread and prolongation of the COVID-19 pandemic imposes deeper impact on financially and socially vulnerable groups. It is predicted that suicide cases will increase in this process, and therefore, necessary precautions should be taken immediately [35]. Following many natural disasters in the world, dramatic changes have been observed in suicide rates due to regional and social structure [36]. In a study investigating the suicide rates in the elderly population after the SARS-CoV-2 epidemic in Hong Kong in 2003, it was observed that suicide rates increased by 30% especially in women compared to 2002 [36]. In a survey conducted in Canada in 2003 on the individuals who were isolated due to SARS-CoV-2, it was found that they had been experiencing boredom, frustration, and anger, and their social life after isolation was adversely affected by this period [37]. In studies conducted among uninfected individuals during the SARS-CoV-2 infection process, it has been observed that there are many psychiatric morbidities that occur with the feeling of guilt at young age [38]. It will be revealed by future studies that the COVID-19 infection may also trigger suicidal thoughts and behaviors in individuals, and underlying factors at the individual and social level.

The major situations that contribute to psychological problems during the pandemic include quarantine and isolation, wearing masks and social distancing, and stigma.

## 2. The psychological effects of quarantine and isolation

In simple terms, quarantine means separation of people who are exposed to a potentially contagious disease from other individuals to detect whether they are sick and restricting their freedom of movement, thereby reducing the risk of transmission to others [39]. This definition differs from isolation during which people diagnosed with an infectious disease are separated from those who are not sick. However, the two terms are often used interchangeably, particularly in public communication [40]. Quarantine is often an unpleasant experience for those experiencing it. Separation from the beloved ones, loss of freedom, uncertainty about disease, and boredom can sometimes have dramatic effects. Suicide cases have been reported following quarantine practices in previous outbreaks. The potential benefits of mandatory mass quarantine must be carefully assessed against the possible psychological costs [41]. The successful implementation of quarantine as a public health measure requires that we reduce as much as possible the adverse effects associated with it [42]. In another study comparing the psychological states of the quarantined and non-quarantined, it was found that hospital

staff who may have been in contact with SARS suffered from symptoms of acute stress disorder immediately after the end of the 9-day quarantine period. In the same study, it was found that the quarantined staff had significantly higher levels of fatigue, detachment from others, feeling anxious when dealing with patients with fever, irritability, insomnia, poor concentration and indecisiveness, poor job performance, and reluctance to work or considering to quit their job [43]. In another study [44], the effect of quarantine in hospital staff was found to cause symptoms of post-traumatic stress even after 3 years. Another study comparing the indicators of post-traumatic stress among the quarantined parents and children with those not quarantined, it was found that the post-traumatic stress mean scores of quarantined children were four times higher than those of non-quarantined. In this study, 28% of the quarantined parents and 6% of the non-quarantined parents had sufficient symptoms to be diagnosed with a trauma-related mental health disorder [45]. In other quantitative studies on this subject, psychological distress and disorder symptoms among the quarantined persons were highly prevalent.

Major psychological symptoms with a high prevalence include emotional discomfort [46], depression [47], stress [48], low mood, irritability, insomnia [49], post-traumatic stress [37], anger [50], and emotional burnout [51]. In two studies on the long-term effects of quarantine in healthcare staff, it was found that alcohol use or addiction were positively associated with quarantine 3 years after the SARS epidemic [52]. Therefore, recognizing the stressors in quarantine and taking measures against them is one of the most important points in mitigating the harmful effects of the quarantine process. The duration of quarantine, fears of infection, frustration and boredom, insufficient supplies, missing information are among the major stressors during quarantine while financial concerns are among the post-quarantine stressors [42].

### 2.1 Wearing masks and social distancing

The interpersonal space (IPS) refers to the area surrounding our own bodies where we comfortably interact with other individuals. Typically, individuals regulate IPS through two basic behavioral patterns: they extend their distance when they feel they are in dangerous and uncomfortable situations (i.e. avoidance behavior) or, conversely, they reduce their distance when they feel they are in friendly and safe situations (i.e. approach behavior). During the COVID-19 outbreak, holding larger-than-normal IPS and wearing a face mask is one of the most effective measures to curb the COVID-19 outbreak which is still highly recommended despite the possibility of vaccination [53].

The members of the society interact with each other. As a result of this interaction, it is known that social values, which are also described as shared values, coexist with human beings. These values are accepted, adopted and influential in people's lives. Love, respect, tolerance, freedom, justice and equality, fraternity, cooperation, honesty, industriousness, hospitality, compassion and mercifulness, and protecting cultural heritage, which are counted as social values, are important values to be handed down to future generations [54]. Being locked down, feeling like a captive, being separated from the beloved ones and close contacts have unexpectedly and radically changed our daily life and traditional values. When encountered with situations such as epidemics with unpredictable effects, it is considered natural for individuals to exhibit panic, fear, hopelessness, avoidance and protective behaviors [55]. When feelings such as anxiety, fear and uneasiness begin to spread among the public, the factors that create fear and anxiety begin to direct people, and with the weakening of traditional solidarity, individuals who are isolated in big cities feel more vulnerable and powerless, thereby promoting the feeling of insecurity. Staying indoors for a long time, being disconnected from social life and work have caused

psychological problems. The social imbalance between those who have the opportunity to work at home and those who have to go to work has been clearly revealed. Consequently, we all experience that the social/physical isolation in our lives with the pandemic affects our interpersonal relations adversely. A study conducted among 145 participants on the subject drew attention to the psychological effects of the virus on themselves and their relationships in most of their responses. Participants reported that, in addition to the fear of contracting the disease, there was a lack of communication between them and their loved ones due to the social/physical distance in the process, that they distanced individuals from each other, and that they were worried about the fact that the traditional ties that bound the generations and the society together would disappear if the process continued like this [56].

### 2.2 Stigma

Public health strategies to deal with emerging outbreaks require a delicate balance between maintaining public health and initiating exclusionary practices and treatments that can lead to fear, stigma and discrimination against certain communities. Due to their evolving nature and inherent scientific ambiguity, emerging epidemics of infectious disease may be associated with fear in a significant way in the general population or in certain communities, particularly where the disease and death are significant. Reducing fear and discrimination against the infected and the affected by a contagious disease can be vitally important in controlling the transmission. Those people who are feared and stigmatized may delay seeking care, remaining unnoticed within the society [57]. Fear of being socially marginalized and stigmatized on account of a disease outbreak may contribute to individuals' denial of early clinical symptoms and failure to seek medical care on time [57]. Such fears can aggravate stigma when cases are detected at a later time. The stigma associated with discrimination often has social and economic consequences that exacerbate internalized stigma and feelings of fear [57].

Among those affected by the 2003 SARS epidemic, the stigma associated with the disease was found to be somewhat evident even years later, and resuming the usual rituals of daily life was very difficult for many [50, 57, 58]. Similarly, the COVID-19 pandemic, with all its social and economic consequences, can lead to stigmatizing factors such as fear of isolation, racism, discrimination and marginalization [58]. A stigmatized community tends to seek medical care late and conceal their important medical history related to travel in particular. In addition to the potential psychological problems caused by the Covid 19 pandemic, the stigma, discrimination and social rejection of the quarantined group, suspicion and avoidance by the neighbor, distrust of property, prejudice at workplace and withdrawal from sociocultural events even after the epidemic is under control are among other crucial issues [42]. Health care providers (HCPs), especially general practitioners, have been found to be more prone to stigma of those caring for patients affected by SARS [59]. Since health care staff are quarantined and constantly more psychologically affected, they are more subject to stigma than the general public.

During the period after the onset of the COVID-19 epidemic in China, the 'social media panic', characterized by an endless flux of false and manipulated information and misinformation, evolved into a metastatic condition more rapidly than the coronavirus itself [60, 61]. WHO defined it as "coronavirus infodemic" that fueled fear and panic by unleashing uncontrolled mind-blowing rumors, bombastic news propaganda, and sensationalism [62] From the onset of the COVID-19 pandemic, social media has played an integral role in generating anti-Chinese sentiments and opinions around the World [60]. Conspiracy theory, derogatory headlines about eating habits, biased comments on Chinese socio-cultural norms posted on social

| Social strata | Psychosocial issues | Intervention |
|---|---|---|
| COVID-19 positive patients and quarantined individuals | • Loneliness<br>• Anxiety<br>• Panic<br>• PTSD<br>• Depression | • Secure communication-channel between patient and family<br>• Delivery of progress-reports and discussion with families on further treatment plans through telephone, video-calls, WhatsApp, e-mail etc.<br>• Close monitoring of mental state of quarantined persons using tools like impact of event scale-revised (IES-R) and through smartphone technology<br>• In-time referral<br>• Psychotherapy by stress-adaptation model<br>• Psychiatric follow-up post-discharge, if needed |
| Health care providers | • Fear of worthlessness<br>• Guilt<br>• Overwhelming work-pressure<br>• Deprivation of family while being in quarantine<br>• Burnouts<br>• Depression<br>• Fear of infection and outcomes<br>• Uncertainty<br>• PTSD<br>• Substance abuse | • Support from Higher authority<br>• Clear communication and regular accurate updates regarding precautionary measures<br>• Sustained connection with family and friends through smartphone<br>• Shorter working duration, regular rest period, rotating shifts<br>• Sufficient supply of appropriate PPE<br>• Arrangements for well-equipped isolation wards specific for infected HCPs, insurance-system for work-related injuries<br>• Long term psychological follow-up |
| Children | • Boredom<br>• Anxiety related to educational development<br>• Irritability<br>• Developmental issues<br>• Fear of infection | • Proper parenting<br>• Online classes, online study material<br>• Clear, direct, open and detailed information about disease transmission and precautionary measures<br>• Maintenance of sleep cycle, physical exercise schedule<br>• Educate about proper hygiene practice |
| Old age | • Irritability, anger, fear, anxiety, cognitive decline<br>• Deprivation from pre-scheduled check-up and/or follow-up sessions<br>• Difficulties in accessing medicines due to travel restriction and lockdown | • Home-based physical exercise during quarantine<br>• Sessions via telephone, online video-conference for physician guidance and mental health services<br>• Essential drug-delivery system via online approach |
| Marginalized community | • Depression<br>• Stress<br>• Financial insecurity<br>• Stigma of discrimination<br>• Health crime | • Protection of basic human rights<br>• Providing proper accommodation<br>• Adequate food and waters supply from government and NGO<br>• Affordable health care delivery<br>• Education about social distancing, hygiene<br>• Deploy mental health social worker to address specific need and referral to psychiatrists, if needed |

| Social strata | Psychosocial issues | Intervention |
|---|---|---|
| Psychiatric patients | • Hampered routine psychiatric follow-up<br>• Addiction<br>• Violence | • Structured letter therapy<br>• Counseling via telephone, online chat<br>• Online based psycho-reduction therapies<br>• Proper supply of prescribed medications |

*Source: Dubey et al. [65].*

**Table 1.**
*Psychosocial impact o Covid 19 on different strata of society and suggested interventions.*

media, and news have paved the way for situations that could lead to discrimination, isolation of an entire nation, and a rise of racism [63].

Stigma and blaming targeted at the affected communities can hamper international trade, finance and relations, provoking further unrest. Due care should be taken to eliminate the stigma associated with disease, racism, religious propaganda and psychosocial impact. Furthermore, it should be implemented through regular evaluation with trained and specialized health staff by establishing a directly health-related task force and executive teams [64].

To avoid discrimination and stigma in the context of COVID-19, governmental institutions, political leaders and health officials must undertake an integral role in maintaining interracial harmony during and after the pandemic [65]. In addition to the aforementioned issues, the Covid 19 pandemic has effects on different segments of the society. Special attention should be paid to more vulnerable groups such as quarantined people, healthcare staff, children, the elderly, marginalized communities (including daily bookies, migrant workers, slum dwellers, inmates and homeless populations) and patients with pre-existing psychiatric conditions (**Table 1**) [64].

The **Figure 1** below illustrates the relevant psychosocial consequences and impact of COVID-19 in various segments of modern society [65].

Bearing in mind that psychopathology may differ across developmental stages, it is essential to address the psychological effects of the pandemic primarily on adults, children, adolescents and the elderly.

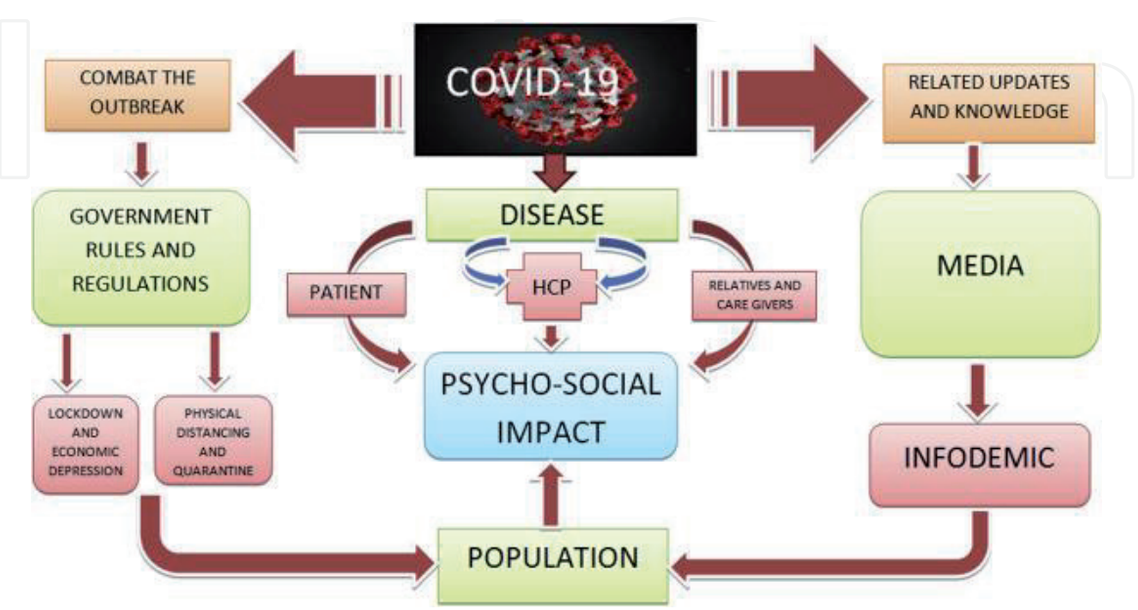


**Figure 1.**
*Intricate psychosocial relationship between the disease, health care providers, government and population. Source: Dubey et al. [65].*

## 3. The effects on psychological health of children and adolescents

The psychological impact of the COVID-19 pandemic on young children and adolescents is perhaps a crucial but apparently ignored aspect of this phenomenon [66, 67]. Developmental psychology literature has substantially revealed that experiences learned through environmental factors in early childhood lay the foundations for lifelong behavioral patterns and success, since it is a critical stage for cognitive, emotional, and psychosocial skills development [68]. During a severe pandemic like COVID-19, community-based mitigation programs such as the closure of schools, parks and playgrounds can disrupt children's usual lifestyles, potentially causing distress and confusion. The children who have to cope with these changes may display impatience, distress and hostility while both younger and older children are likely to become more demanding, which can lead to physical and mental violence by parents who are under extreme pressure. Stress factors such as monotonous Daily life, frustration, lack of face-to-face communication with classmates, friends, and teachers, inadequate personal space at home, and financial losses of the family during the quarantine can all trigger potentially distressing and even long-lasting adverse mental consequences among the children [66]. The interplay between changes in daily routine, house arrest, and fear of infection can further intensify these undesirable mental responses, leading to a vicious circle [66, 69]. A European study has also revealed that there are strikingly positive associations between children's fearful responses to the disease and parents' knowledge of H1N1 virus threat [70]. Likewise, children experiencing the COVID-19 pandemic may suffer from various phobias and PTSD after learning risk information and other depressing details through mass media, especially social media [66, 71]. The children with single parents, including healthcare staff caring for COVID-19 patients, may experience adjustment disorders if their parents are to be quarantined [72]. Immediate or temporary separation of parents from children can create tensions, thereby causing long-lasting psychological effects as the children fear for their life or his loved ones.

Adults should provide information to considering the children's age and level of intelligence when talking about the epidemic. It has been stated that having a sensitive and effective conversation about a life-threatening disease is an improving factor for the long-term psychological health of the child and family [73]. Given that the adolescents indicate less or no symptoms of coronavirus, not paying attention to the social distance rule and personal hygiene may accelerate spread of the infection [74]. Hence, curfews were enforced for those under the age of 20 in many countries in the first months of the epidemic. However, since adolescence is a period in which autonomy develops and peer relationships gain importance [75], this process, in which social distance rules are particularly emphasized, may affect adolescents psychologically negatively.

Studies on past epidemics have reported that public health emergencies negatively affect the psychological states of university students, and may lead to complaints such as anxiety, fear, and depression [76]. The main reasons why the university students are worried about COVID-19 may include the impact of the virus on their educational life [77] and the belief that they will be unemployed after graduation [14]. It is widely known that anxiety disorders occur or worsen in the absence of interpersonal communication, and the isolation of young people from their peers and social settings during the quarantine could be one of the reasons that increase their anxiety [78].

To put it briefly, it has been stated that the factors that escalate anxiety among the university students include the economic stressors emerging with the epidemic, the disruptive changes in daily life routine (travel restrictions, all mandatory

measures to control the epidemic), academic delays (changes and reorganization of the academic calendar), distance education and decreased social support [79].

Considering the challenge of education during the pandemic, the only effective way to continue education is teaching online lectures and assignments. However, experts have warned about overloading on the web. Specific psychological needs, healthy lifestyles, appropriate hygiene advice and good parenting guidelines can be addressed through the same online platform [66].

## 4. The effects on adult psychological health

It is obvious that the current pandemic process will bring some drastic changes in human life such as reshaping of the economic and social system in the context of the transition to remote working systems [80]. It is also thought that the immediate effects of the pandemic period will be apparent in economical indicators in terms of visibility, followed by social and psychological issues depending on both economic and other factors [81]. It is argued that these problems will differ according to age groups, and in general, problems such as stress, anxiety, lowered motivation [3], fear at night, insomnia, pessimism and isolation from social environments, and demoralization, temporary memory loss, and irritability in some people can be observed [82]. Individuals may project their psychological problems on their families and private lives [81]. From this perspective, a sociological crisis may appear as a result of individuals projecting their problems on the family and then to the society since sudden changes in daily life can evolve into a social trauma [83].

Daily lifestyles and many routines of adults such as their relations with their environment, the way they go to work, and their social activities have been changed due to the epidemic. This phenomenon shows the extent of a crisis like the COVID-19 pandemic as well as challenges encountered by the adults in adapting to the new lifestyle. These changes, along with social isolation, have led to a dramatic surge of stress and anxiety in individuals. On the other hand, there are some uncertainties in social life that cause individuals to be afraid and panic. It can be argued that these uncertainties are primarily about how the epidemic is transmitted, how long it will end, whether a treatment or effective vaccine will be found, and how business and working life will be shaped in the future [84]. It is believed that the COVID-19 Pandemic may cause significant mental problems in individuals in the long term, and therefore it is important to address the psychological problems of individuals arising from the pandemic [3].

On the other hand, the pandemic process has also affected working patterns, requiring the use of the remote working system usually from home. However, remote working system can be perceived as normal by those individuals who are socially isolated or who have introverted +personality traits. This may also pose a problem for those individuals who are apt to using technological devices. However, for those sociable individuals with extroverted personality traits, this situation can actually pose a problem [3].

A report (2020) released by Inter-Agency Standing Committee (IASC) categorized the reactions of employed or unemployed adults to the epidemic crisis in the following [3];

- Fear of being infected and dying,
- Reluctance to apply to hospitals and other health facilities,
- Fear of losing one's job,

- Fear of being quarantined,
- Concerns about losing relatives due to the epidemic,
- Fear of being separated from relatives due to quarantine,
- Feeling helpless and alone due to social isolation.

It is clear that the mental reactions shown during the epidemic range from experiencing extreme fear to being indifferent. Therefore, it is plausible to contend that the responses to the epidemic are variable [8]. Given the reactions of employed adults to the crisis, it is seen that these reactions generally differ from each other in terms of mental and behavioral characteristics [8]. Considering the psychological status of adults [85], who work at risky conditions in the healthcare system for the benefit of society, it is seen that they also experience mental problems such as stress, anxiety, low motivation [3] in the lead, being afraid at night, insomnia, pessimism and being isolated from social environments while some may also suffer from moodiness, temporary memory loss, and irritability [82]. Therefore, it is considered important to create a safe and healthy working environment for the adults working in healthcare and to meet the psychological support needs of individuals with impaired mental health [86].

On the other hand, it can be suggested that the unemployed adults are negatively affected in terms of psychological resilience during the epidemic as much as those employed [87]. In this period, it is thought that parents who take care of their children at home are affected negatively from the epidemic both physically and psychologically as much as those employed. For instance, insomnia, muscle pain and joint problems and a constant state of fear and anxiety can be observed in parents. Considering that such a continuous state of fear and panic at home can have an adverse effect on children, it can be argued that the reactions of adults to the crisis are vitally important [88]. Now that it seems inevitable that adults who spend almost all of the day in isolation at home, they project their disrupted emotions on their children [89].

It is stated that the psychological resilience levels of adults who suffer from high levels of depression and anxiety and do not take adequate precautions against the epidemic are significantly lower than others. It is believed that the main reason lies in the fact that they feel insecure because of not taking measures. On the other hand, it is obvious that the psychological resilience of adults who have low depression and anxiety levels and take the necessary precautions against the epidemic is significantly high [90]. In addition, obsessive behaviors such as frequent hand washing can be observed in individuals with extremely high sensitivity to the epidemic. The major reason for this situation is thought to be the need for individuals to feel safe [91]. Living under the continuous threat of death can elicit feelings of helplessness and trauma in some adults. Psychological studies on natural disasters conclude that societies will experience emotional distress and therefore will be negatively affected psychologically. Particularly the economic crisis and the accompanying uncertainties may trigger suicidal thoughts [92].

Other studies have reported that patients with or suspected of being infected with COVID-19 exhibit intense emotional and behavioral responses such as fear, boredom, loneliness, anxiety, insomnia, or anger [42, 93]. Such responses have been associated with disorders such as panic and post-traumatic stress disorder, psychotic and paranoid symptoms, and even suicidal behavior [94]. These symptoms may be more prevalent especially among the quarantined patients [42]. Even in patients with conventional flu symptoms, stress and fear may emerge due to its similarity to COVID-19, creating psychological distress [95]. Despite the relatively

low number of suspected cases, the majority of cases showing asymptomatic or mild symptoms, and the low mortality rate of the epidemic, the psychological effects of the epidemic can be much more serious [96].

In a study conducted in China on the COVID-19 epidemic, a high rate of generalized anxiety disorder and sleep quality problems are observed in the population. The anxiety disorders are found to be more prevalent in those younger than 35 years, particularly those who pay too much attention to the agenda on the epidemic [97]. In a study by Ho et al., it is stated that the failure of planned travel plans, social distance, continuous exposure to information about the epidemic from the media, and panic about meeting the household needs trigger anxiety and depression all over the world [98]. In another study conducted in China, the indirect traumatization levels of the society are found to be higher than the nurses working in the field [99]. In another survey, symptoms of post-traumatic stress disorder are observed among the participants in the first period after the outbreak. The same surveys are administered four weeks later and although the symptoms of post-traumatic stress disorder are decreased, it is revealed that this decrease was not clinically significant and the symptoms were severe. In the same study, moderate to severe levels of stress, anxiety, and depression are determined in the first evaluation, and it is observed that the same severe psychological distress persist in the evaluation made four weeks later [100]. According to a study conducted in Turkey, it is found that participants show significantly high levels of somatization, anxiety, phobic anxiety, obsessive–compulsive disorder, depression, hostility, and anger after COVID-19 [101]. In addition, when the pre- and post-coronavirus symptom scores are compared, it is determined that women differ significantly in all symptoms, indicating that they are much more affected psychologically by the coronavirus [101].

In addition, it is reported that the psychological symptoms of those who are anxious about their health and fear contracting the disease before COVID-19 have worsened considerably during the epidemic period. On the other hand, individuals with pre-epidemic obsessive–compulsive disorder (OCD) may be the most affected group by the epidemic due to obsession of contamination, hygiene compulsion, suspicion obsession, and control compulsion. The increase in symptoms, stress and disease anxiety in OCD patients due to the epidemic seem to be quite challenging [102]. In a large-scale study in China, 53.8% of the respondents reported the negative impact of the epidemic on their psychology as moderate or severe. 16.5% of them reported that they experienced moderate and severe depressive symptoms. 28.8% of them reported moderate and severe anxiety symptoms, and 8.1% experienced moderate and severe stress. 84.7% of them spent 20–24 hours a day at home while 75.2% of them were seriously worried about their family members. Variables such as being female, studying, experiencing physical symptoms like cold, dizziness and muscle pain, and evaluating the health status as poor were associated with experiencing more stress, anxiety and depression. It has been stated that obtaining epidemic-specific health information such as treatment protocols in the country and the number of appropriate beds in local hospitals, paying attention to hand hygiene, and taking precautions by wearing masks reduce the possible negative psychological effects of the epidemic [100]. In addition to the patients diagnosed with or suspected of having COVID-19, psychological disorders may also be observed in their families and close contacts. It has been stated that this may cause mass hysteria as the number of cases increases [42, 103, 104].

## 5. The effects on psychological health of elderly individuals

The elderly individuals, particularly those older than 80 years, are at higher risk of suffering from adverse effects which can lead to a mortality rate five times

the global average [105]. More than 95% of deaths due to COVID-19 in Europe and about 80% in China involve people over 60 years of age [106, 107]. Although the effects of COVID-19 on all age groups are prominent, most of the confirmed cases and deaths in particular have occurred among the elderly [108]. According to a report published by the US Centers for Disease Control and Prevention (CDC) in March 2020, more than 80% of deaths are seen in patients older than 65 years, indicating that the elderly are more vulnerable to the virus [109, 110]. In addition, China has reported that the increase in serious infection and death rate from COVID-19 depend on age. Specifically, the incidence of severe infection was found to be 19.8%, 43.2% and 81.3% in 50–64 years, 65–79 years, and 80 years and older age groups, respectively, indicating a relationship between the incidence of severe infection and age. In addition, the mortality rate for these age groups rose 1.2%, 4.5% and 18.8%, respectively [111]. The mean age of death in Korea was found to be 75.7, and reports have shown that the death rate from COVID-19 increases with age [108]. The elderly are vulnerable to serious infections and death due to weakened immune function and comorbidities caused by aging [112, 113]. In a study, 50–75% of Korean patients had underlying comorbid medical conditions such as high blood pressure, diabetes, cardiovascular disease, chronic obstructive pulmonary disease, and cancer, so they were classified as vulnerable to COVID-19 and at a high-risk group [114, 115]. Health care, emergency response and quarantine measures for the elderly become mandatory since the elderly, especially those with comorbidities, are vulnerable to epidemics. The psychological and mental health problems caused by COVID-19 among the elderly should be discussed in a broader perspective and investigated thoroughly. In particular, the individuals over the age of 60 require more effort and attention and are classified as high-risk group [116] since they are physically and mentally more susceptible than other age groups. In a recent study of the general population in China, it was found that 53.8% of the participants were moderately or severely affected psychologically and it was reported that the most common problems were severe depression (16.5%), anxiety (28.8%), and stress (8.1%) [117]. Studies have highlighted that 37.1% of the elderly have experienced depression and anxiety during the pandemic [42] and that the emotional response of individuals over 60 years is more prominent compared to other age groups [118].

Recently, besides indicators of a prolongation of the pandemic, strict measures implemented around the world such as avoidance of social activities, social distancing and isolation to prevent the spread of COVID-19 have further raised mental health concerns among the elderly. These social measures will contribute immeasurably to combat against the spread of disease. However, the mental health of the elderly requires more attention and care as they constitute the demographic group that experiences social isolation for the longest period [119]. In addition, as shown by previous studies on the elderly, social isolation measures which increase the risk of cardiovascular, autoimmune, neurological and mental health problems, and the impact of COVID-19 on elderly mental health problems need to be discussed and addressed as a public health crisis.

## 6. Conclusion

The new type coronavirus disease (COVID-19) has become a pandemic affecting health and well-being at global scale. In addition to its effects on physical health and socioeconomic structures, its psychological effects are increasingly being reported in the literature. The current literature suggests that those affected by COVID-19 may have a high burden of mental health problems such as depression, anxiety disorders,

stress, panic attacks, irrational anger, impulsivity, somatization, sleep disorders, emotional disturbance, post-traumatic stress, suicidal tendencies. Moreover; age, gender, marital status, educational level, occupation, income, place of residence, close contact with people diagnosed with COVID-19, accompanying physical and mental health problems, exposure to news and social media about COVID-19, coping styles, stigma, psychosocial support, health communication, safe healthcare, personal protective measures, risk of contracting COVID-19, and perceived probability of survival have been identified in the literature as the factors associated with mental health problems in COVID-19. Present evidence pinpoint that a psychiatric outbreak has emerged with the COVID-19 pandemic, which will warrant the attention of the global health community. Therefore, COVID-19 should be recognized as a global public health emergency with enormous mental health implications. Future epidemiological studies should focus on the psychopathological variations and temporariness of mental health problems in different populations. However, multifaceted interventions need to be developed and adopted to address current psychosocial challenges to support mental health during the COVID-19 pandemic [120].

## 7. Recommendations

Current evidence on the epidemiological burden of mental health problems in COVID-19 require the development and implementation of multifaceted interventions and strategies for promoting mental health. Furthermore, since face-to-face mental health services are largely disrupted, psychosocial interventions delivered via digital platforms like the world wide web, social media, mobile phones and applications are increasingly being popular. Again, special strategies should be provided in terms of access to mental health for disadvantaged groups such as those who cannot use these services, have limited access to these technologies, live in rural areas, have a low education level, and are in the elderly age group. In this context, mental health policies and programs should be reviewed and strengthened, taking into account the operational challenges of COVID-19.

While the high prevalence of mental health problems indicates a widespread need for mental health services, most countries lack adequate infrastructure and human resources to provide these services. In this sense, mental health services should be integrated into primary care, as it can significantly increase access to mental health services. Many studies have highlighted the fact that access to accurate information is associated with a lower risk of mental health problems. Rumors or misinformation have appeared on mass media and social media platforms since the beginning of the pandemic. In short, infodemic should be combated, and access to accurate information and mental health resources should be provided. Timely and effective health communication regarding factual information and preventive measures is essential to avoid public concern and fear of COVID-19. Moreover, access to resources that promote positive mental health can greatly assist in addressing and self-managing mental health issues among individuals. Online resources such as self-help meditation, mental health education, providing information and care about early symptoms can be helpful methods to consider for preventing COVID-19 and associated mental health problems. In addition, to address mental health inequalities in the combat against these problems, to mobilize social and community resources and organizations, factors such as strengthening mental health systems for COVID-19 and future public health emergencies should not be disregarded.

Consequently, one of the major lessons to be learned from the COVID-19 pandemic is to strengthen mental health systems that provide resilience to systemic

shocks. Potential strategies to achieve such resilience involve establishing mental health policies, developing population-based programs, consolidating institutional capacities to develop the mental health workforce, reviewing health systems financing for mental health, addressing barriers to accessing mental health by communities and institutions, and promoting positive relationships among the communities and promoting mental health should be taken seriously.





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