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A Review of Mental Health Responses to Pandemics

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Abstract

The author synthesized the contents of the articles reviewed using the categories of 1) Identifying the mental health related implications of a pandemic as well as effects from being in quarantine 2) Effects on healthcare Professionals 3) Identifying high risk populations 4) Optimizing screening protocols 5) Administering Intervention and treatment effectively 6) Evidence based treatments targeting mental health symptoms.

Keywords

Mental Health, anxiety, stress, mental illness, psychological effects.

Introduction

We are globally facing a pandemic due to COVID-19. Prior research has shown that the effects of pandemics and epidemics can result in a plethora of psychological effects. This review article will summarize some of the findings and provide insights to possible future directions. Given that number of infections in the U.S. has skyrocketed in comparison to other countries, it is imperative that we understand the existing evidence to guide the administration of effective interventions to patients and healthcare professionals.

The coronavirus disease 2019 (COVID-19) outbreak was declared a public health emergency by the World Health Organization (WHO) on 30 January 2020. All 34 regions of China had cases of infection at the time of declaration. The total case count had risen to greater than severe acute respiratory syndrome (SARS) of 2003. The origin of the pandemic is believed to be derived from a seafood wholesale market in the city of Wuhan of Hubei Province in late December 2019. The number of cases increased exponentially, eventually spreading widely across the world [1].

Effects on Mental Health

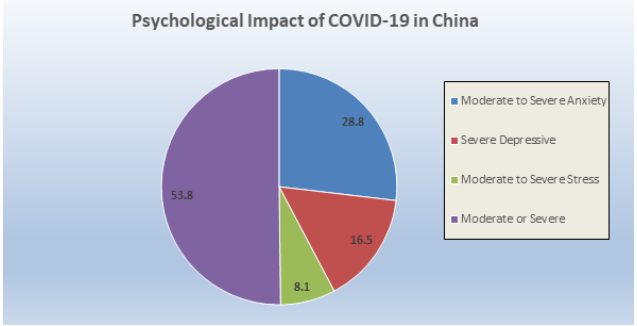
Prior research shows there can be a profound psychological impact that outbreaks can inflict on people. It can precipitate new symptoms in people without mental illness, exacerbate symptoms of those already suffering from mental illness, and cause stress to the caregivers and family members. People may experience anxiety about becoming sick or dying themselves, feelings of helplessness, or blame other people who are ill [2].

Identified mental health symptoms include depression, anxiety, panic attacks, somatic symptoms, and posttraumatic stress disorder symptoms, sometimes even delirium, psychosis, and suicidality [3-5].

A survey was conducted in China during the initial outbreak of COVID-19:

- 53.8% of respondents rated the psychological impact as moderate or severe
- 16.5% endorsed moderate to severe depressive symptoms
- 28.8% endorsed moderate to severe anxiety symptoms, and
- 8.1% endorsed moderate to severe stress levels (Figure 1)

Table 1: Psychological Impact of COVID- 19 in China



Closure of community services and the collapse of industries adversely affects economy. Increased unemployment rates coupled with financial losses can conjure up negative emotions [6]. Stigma and blame of affected communities as we have seen evidence of with COVID-19 can affect trade and cause more uncertainty and unrest. Those with depression or anxiety may further ruminate on concerns of contracting the virus [7].

Effects on healthcare professionals

The newness of COVID-19, lack of testing, effective treatment, protective equipment and medical supplies, extended workloads, and other concerns influence how outbreaks affect healthcare professionals. The combination of these factors can put stress on individuals and the systems that employ them [8].

Healthcare professionals who respond to outbreaks reported increased feelings of stress; feeling traumatized, and have higher levels of depression and anxiety [09]. The higher the risk of exposure, the more anxiety and fear arises, along with the fear of spreading infection to their families and partners. Healthcare workers can find themselves negotiating the fine balance between their professional duties, anxiety, and altruism, and these things can cause conflict among them.

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Healthcare workers who are directly exposed to infected patients, such as those in emergency departments, intensive care units, isolation inpatient rooms are at greater risk of developing adverse mental health outcomes [10]. The work involved is highly demanding, requiring making difficult decisions that are emotionally and ethically taxing. One systematic review looking at the effects of the disaster on the mental health of healthcare workers found risk factors such as poor coping skills, lack of training and lack of social support could contribute to the development of adverse psychological effects [11]. Public health authorities and media tend to focus on the biologic effects during epidemics, and less attention is given to mental health related issues. However, during the recent COVID-19 pandemic, there has been increasing calls for attention to mental health related effects [15].

We can discuss the mental health effects of COVID-19 on healthcare professionals also by using the concept used in the military known as moral injury. Moral injury is the psychological distress that is the result of actions or inactions that violate a person's ethical and moral code [12]. Individuals may experience negative thoughts about themselves and others, shame, guilt, which may result in symptoms of depression, posttraumatic stress disorder, even suicidal ideation [13]. Individuals can also experience a period of post-traumatic growth, which can increase self-esteem, resilience, perspectives and values [14].

The way a person is supported before, during or after a highly challenging situation can influence whether there is psychological growth or injury. Proper preparation of staff on the realistic burden of disease interventions, risks to their wellbeing, challenges can reduce the risk of mental health problems. Team leaders can use the model of Schwartz rounds, where a forum is provided for healthcare workers to reflect on the emotional impact of their work [15].

Avoidance behaviors often occur with trauma, so staff need to be checked in on, especially the ones who feel they are too busy to attend such meetings. In general, support from colleagues and supervisors positively affects their mental health [16]. It is important to note that one session debriefing can do more harm than good, and so therefore should be avoided [17]. Evidence of moral injury has resonated with medical students with exposure to trauma in pre hospital care and in emergency rooms, so it is quite possible that a similar concept can occur with healthcare workers treating patients with COVID-19 [18-19].

In the UK, in the aftermath of a crisis, the National Institute for Health and Care Excellence put forth guidelines recommending active monitoring of staff so that those who have mental health symptoms can be triaged to receive evidence-based treatment [20]. A similar model should be instituted in the United States to assure healthcare workers have access to mental health resources. There are some emerging networks that aim to provide emotional and social support to healthcare workers on the frontlines. One example is Physician Support Line, a hotline run by volunteer psychiatrists that physicians can call for emotional support.

High Risk Populations

It is important for psychiatrists to understand which population groups may be at higher risk for the development and mortality associated with COVID-19. We play a role in dissemination of knowledge of public health to our patients and providing information that can be instrumental to primary prevention. Some groups are more vulnerable to the psychosocial effects of pandemics. These include people who acquire the disease, the elderly, the immune compromised, those living or receiving care in board and care homes or nursing homes, people with preexisting medical, psychiatric, and substance use problems, and healthcare workers [21].

One of the main takeaways from data from China is that it was reported that older adults are at higher risk from death due to complications from COVID-19 than younger people. Among the older adults, severity of illness was also associated with having serious underlying medical comorbidities. It was reported that about 80% of deaths occurred in adults age 60 or above. Most cases, around 80% were classified as mild, and one death was reported in a person 19 years of age or younger (0.1%) [22]. In the United States, about 49 million people are over 65 years of age.

A study of 125 hospitalized patients with COVID-19 showed 57 had an ischemic stroke, 39 patients had altered mental status, which included encephalitis, and encephalopathy. Ten of the patients carried a psychosis diagnosis, six had a dementia like presentation. The patients were between the age range of 20s to 90s, and although strokes were more common in older patients, half of those with altered mental status were under the age of 60 [23]. It remains unknown what is causing the neuropsychiatric effects, and further research is warranted to understand the neuropsychiatric sequela.

A meta-analysis of 3027 patients diagnosed with COVID-19 showed that being male, over 65, and smoking was associated with disease progression. Hypertension, diabetes, cardiovascular and respiratory disease were statistically significantly higher is critically ill patients. Clinical presentations such as fever, shortness of breath, and certain elevated laboratory values such as wbc, Cr, LDH, hypersensitive cardiac troponin I, PCT, and d-dimer can also be predictive of disease progression [24].

In one study, the incidence of stroke in COVID-19 patients was about 5% with a median age of 71.6. Patients who acquired stroke had a higher incidence of risk factors like hypertension, diabetes, previous cerebrovascular disease, coronary artery disease, and developing stroke was also associated with more severe disease. It is possible that elevated c-reactive protein and d-dimer, which indicate abnormalities in the coagulation pathway and an inflammatory state, may predispose one to develop stroke [25].

As part of psycho educational efforts, the knowledge of the above information may be used to educate younger patients that although they may not necessarily contract severe illness, their elderly loved ones may. This may help bolster efforts to motivate patients to follow public health recommendations such as physical distancing, hand washing, wearing masks, etc.

Racial Disparities

According to a Washington Post analysis, counties where the majority is black had three times the COVID-19 infection rate, and almost six times the death rate compared to white majority counties [26]. What also is notable is that few states or counties actually report racial data, so the true magnitude of effect is unknown.

Native Americans died at a rate four times greater than the national rate during the H1N1 influenza outbreak, according to a retrospective review by the CDC [27]. Preliminary data from hospitals in 14 US

states showed that African Americans, despite comprising 18% of the total population studied, represented 33% of hospitalizations associated with COVID-19 [28].

Healthcare disparities encompass differences in outcomes due to race, ethnicity, and other variables besides insufficient access to care [29]. Research on comorbidities including hypertension, diabetes, and obesity can obviously influence outcomes. However, over time, data on how adverse social determinants of health have affected morbidity and mortality from COVID-19 is likely to be more apparent [30].

Where one lives, such as areas with high density, high crime, poor access to resources like healthy food, overall socioeconomic status affect healthcare outcomes. In addition, social distancing is not a privilege afforded to so many black essential workers, who cannot minimize their risk of exposure, as their livelihood and feeding of their families depends on the work they do. COVID-19 has laid bare the racial disparities in terms of healthcare [31].

The United States needs to confront this issue and create task forces to address these disparities, something that is long overdue. Hospitals and healthcare organizations should seek diversity in their leadership so that there is representation of minority populations. Every healthcare organization should have a strategy of how systemic racism will be confronted, on an individual level, as part of a team, and as an ethical foundation for the administration of services. This can include collecting data on disparities, having meetings to discuss how to deal with the disparities, and following up at regular intervals to monitor progress. Healthcare professionals are not immune to both implicit and explicit biases, regardless of how fruitful the medical knowledge.

Intimate Partner Violence

In the US Approximately 1 in 4 women and nearly 1 in 10 men have experienced intimate partner violence during their lifetime [32]. More than 43 million women and 38 million men experienced psychological aggression by an intimate partner in their lifetime [33]. About 16% of homicide victims (1 in 6) are killed during intimate partner violence [34]. Research has shown that intimate partner violence can have harmful consequences to women's mental and physical health [35].

As one can imagine, a person in a vulnerable situation already requires courage to leave such circumstances. The pandemic can affect the previously established safety plan. Friends may not want to open their dwellings to victims as easily for fear of contracting the virus, the victim may have fears about contracting the virus when considering escaping to a hotel or other rental property. Even filing a restraining order may not a simple task to be completed during this time. The fear of all the above is that IPV may rise as a result. For many victims, a lockdown can mean staying stuck in a potentially lethal circumstance [36].

Child Abuse and Neglect

According to the CDC, 1 in 7 children have experience abuse or neglect. In 2018, about 1,770 children died of abuse or neglect in the United States. Lower socio-economic status is associated with a five fold increase in rates of child abuse and neglect in comparison to families with a higher socio-economic status [37]. It has been well established that adverse childhood experiences such as child abuse and neglect can cause long lasting effects. It can increase risks of bodily harm, future victimization and predatorial behavior, drug and alcohol use, alterations in brain development, sexually transmitted diseases, limitations in educational achievements and employment opportunities [38].

Since outbreaks can lead to stress, and stressed parents may be at higher risk of abusing their children. The typical social structures such as sending their child to school have been affected, accentuating stress for many parents. Also, child abuse and neglect reports are often made by school staff, and if a child is not attending school it can be harder to assess the home environment. Even phone calls or video conferencing calls may have limitations if the abusive parent is nearby making a child afraid to disclose what is happening at home. Many families who are at risk also do not have access to technology, making communication with those children more challenging [39].

As a result, we must use vigilance to ensure the protection and safety of children and families we treat. People, including the young members of our society need to know that there is still help available. There must be open communication with officials and law enforcement regarding the need to possibly relax stay-at-home orders when there are safety concerns in the home. Schools must allow for virtual checking in of children by counselors and teachers or at least over the telephone. Hotels and other businesses must remain aware that during this pandemics, victims of domestic violence may require shelter away from home.

Optimizing Screening Protocols

Screening for mental health problems should target high risk populations. Conflicting messages from government and public health authorities, greater duration of confinement, lack of supplies, difficulty securing medical care and medications, and financial losses all contribute to increased adverse emotional outcomes. Study of communities affected by SARS in early 2000s showed that emotional distress tempted some to consider violating public health measures and orders, which is why messaging by leadership matters [40]. Home confinement can limit opportunities to monitor psychosocial needs and administer proper treatment or support [41]. Psychosocial services are being offered via telemedicine more recently.

After the Severe Acute Respiratory Syndrome Outbreak in 2003, more high-risk healthcare workers reported fatigue, anxiety about health, fear of social contact, poor sleep, and fatigue, even with confidence in infection-control procedures. By 2004, higher anxiety, depression, and posttraumatic stress scores were reported associated with heightened perception of stress in the high-risk group [42]. Similarly, a survey of health care workers in three different Hong Kong hospitals during the SARS outbreak revealed that 68% of participants reported a high level of stress [43].

Based on those results, it would seem reasonable to use the Impact of Event Scale-Revised (IES-R) to evaluate psychological responses to COVID-19. Rating scales can help target mental health symptoms and assist in triage of those who need further interventions. Impact of Event Scale-Revised (IES-R) has also been used in Singapore during public health crises [44 -45].

A multi-national, multi-center study of healthcare workers in five major hospitals in Singapore and India was conducted to find out the

psychological impact of COVID-19 on healthcare workers. Healthcare professionals filled out a self-administered questionnaire during the period of February 19 to April 17, 2020. Out of 906 healthcare workers who participated, 8.7% met criteria for moderate to extremely severe anxiety, 5.3% for moderate to very severe depression, and 2.2% for moderate to extremely severe stress. 3.8% of participants met criteria for moderate to severe levels of psychological distress [46].

Coronavirus Anxiety Scale (CAS) is a brief mental health screening tool developed to identify probable cases of dysfunctional anxiety associated with COVID-19. This 5-item scale was used to evaluate 775 adults with anxiety over the coronavirus. Elevated CAS scores were found to be associated with acquiring coronavirus diagnosis, impairment, coping with alcohol or drugs, feelings of hopelessness, suicidal ideation, negative coping with respect to religion, and attitudes toward President Trump and Chinese products [47].

Assessments and monitoring should include queries about COVID-19 related stresses. Exposure to infected sources, infected family members, loss of loved ones, physical distancing should be in consideration. Also, secondary adversities like economic loss, depression, anxiety, psychosomatic preoccupations, insomnia, drug or alcohol use, and domestic violence should be screened for. Preexisting physical and psychosocial conditions should also be inquired about [48].

Recent proposals have included the development of teams of specialists to address psychological effects, as well as training community healthcare workers some basic aspects of mental health symptoms and interventions [49-50]. Using online surveys to provide a better idea of how people are being affected, creation of mental health educational online content and access to online therapeutic services can help to provide services without increasing infection risk [51].

Administering treatment and interventions

Some patients will need referrals for mental health evaluations and care while for others, it may suffice to provide psycho education and supportive interventions such as psycho education and cognitive behavioral techniques.

Economic downfall and uncertainty can contribute to increased suicidal ideation requiring immediate treatment by a mental health professional or emergency psychiatric hospitalization. Suggestions, such as recommending some routine and structure with activities, can help people manage stress and improve coping. Referrals to mental health and social services can be beneficial so that patients can get psychosocial support period.

Pandemic-related news should be limited with children. Children should be spoken to in developmentally appropriate language about germs and measures to limit spread, open discussions should be encouraged. Healthcare workers should be encouraged to monitor their own stress levels, speak up about concerns, and mental health care should be accessible. Healthcare systems including hospitals, treatment centers, etc. should address the concerns and stress of their healthcare workers. Accommodations such as changing schedules and modifying assignments, making psychosocial supports accessible should be within the realm of possibility [59-60].

Providing information, connecting with patients and proper triage, using a combination of blended therapeutic interventions, such as apps and online programs, can assist in providing interventions for mental health symptoms. Making telephone calls and leaving messages to reach those faced with digital poverty, is important as digital resources are important to access patients in need. The effectiveness of digital technologies in monitoring risk suicide risk requires research around digital therapeutics and artificial intelligence.

There are some practical applications that can be implemented in terms of intervention and treatment, and some of the protocols used during the SARS outbreak can be utilized. Multidisciplinary mental health teams should be established at regional and national levels. These should consist of psychiatrists, psychologists, case managers, nursing staff, and other mental health professionals, who work collaboratively to administer care.

There should also be availability of specialty treatment for those with comorbid mental disorders. Clear, effective communication between leadership, mental health professionals, and patients should be ongoing and consistent with regular updates regarding COVID-19 to address fears and concerns. Patients should be aware of their treatment plans, receive education on how to use digital applications and other technologies. In addition, once a patient or healthcare worker has been diagnosed with COVID-19, there should be screening for anxiety, depression, suicidal ideation with timely intervention [52-55].

When we conceptualize the emotional and behavioral responses to high amounts of stress, for patients and healthcare workers, those responses are adaptive. Therefore, psychotherapy that is based on stress-adaption might be helpful [56-57]. If psychotropic medications are used, there should be attention to reducing harmful effects such as interactions with COVID-19 related treatments [58-59].

Evidence Based Treatments

In addition to telemedicine for administering mental health care, consider online or smartphone-based technology to provide psycho education, teach about improving mental health and start interventions. The increasing use of virtual platforms is useful to provide intervention for those who are in quarantine, whether at home or in hospitals, nursing homes, etc. A systematic review showed that psychotherapy delivered over video conferencing can be effective in the treatment of anxiety and mood disorders. The evidence is even stronger for internet-based interventions that are guided by a therapist [60-61].

There has been reluctance in the past to implement e-mental health interventions due to lack of acceptance by healthcare professionals and myths such as the belief that virtual interaction will not be effective [62-63]. However, due to the current public health crisis and anxiety over contracting the virus, healthcare professionals seem to be more accepting of telemedicine. It is likely that more online work will be available as an alternative to face to face contact [64]. It is also likely that mental health institutions will be unlikely give up digital technologies such as video conferencing, especially once advantages are experienced [65].

Cognitive therapy can be beneficial for patients with anxiety and behavior therapy can teach relaxation techniques to reduce anxiety and help improve depressive symptoms. CBT helps to redirect poor coping skills that lead to worsening mental health symptoms[66-67]. Cognitive behavioral therapy can help address insomnia related to acute, rapid-onset stressful situations [68-69].

Elements of treatment can be adapted to address insomnia related to quarantine, changes in day and nighttime routines [70]. Elements of CBT treatment for insomnia includes stimulus control(shifting negative associations with the bed and bedroom to more positive associations of improved sleep quality), sleep hygiene, relaxation interventions, cognitive reappraisal, paradoxical intention(trying to stay awake rather than fall asleep), and sleep restriction [71-74]. Usually, pharmacological treatment is not a first line solution given the often chronic nature of insomnia, but in situations of acute stress or with comorbid disorders, psychotropic medication such as hypnotics or antidepressants maybe useful [75].

People in quarantine can experience symptoms of anxiety, depression, hopelessness, delirium, PTSD, cognitive impairment [76-78]. A systematic review showed that although most patients with SARS or MERS did not develop psychiatric disorders, a significant minority exhibited anxiety, depression, insomnia, cognitive effects such as impaired memory and confusion [79]. A recent study published of 7,263 volunteers in China found that the overall prevalence of GAD was 35.1%, depressive symptoms 20.1%, and poor sleep quality was 18.2% [80].

Mindfulness Based Treatment (MBT) involves being in the present moment through a variety of mindfulness practices, including meditation. It can also be helpful in reducing stress associated with medical conditions [81]. The principle mindfulness revolves around being in the present moment without judgment [82]. Meditation, which is a type of mindfulness practice, involves deliberately focusing attention and awareness for greater mental control to improve the overall feeling of wellbeing [83]. Mindfulness meditation has been shown to stimulate the middle prefrontal brain which is associated with meta-cognition and self-observation [84].

Mindfulness meditation has been shown to create changes in the regional cerebral blood flow and white matter connectivity in areas such as the anterior cingulate cortex, the dorsolateral prefrontal cortex, and to cause certain changes in EEG and event related potentials [85]. Meditation has been shown to affect the physiological pathways which connect the anterior cingulate cortex and the autonomic nervous system [86]. A meta-analysis found that the reduction in blood pressure associated with regular meditation practices was similar to what was achieved with diet and exercise.

Practicing meditation for 20 minutes a day over eight weeks resulted in decreased blood pressure, and this effect lasted for a year during follow-up [87]. A study of 44 interns completing an emergency medicine rotation who were randomly assigned to an active control(one hour extra break a week) or an ten week mindfulness training program showed reduction in stress and burnout among the mindfulness participants [88-89].

Treatment considerations

- Teletherapy and telepsychiatry
- Cognitive Behavioral Therapy
- Mindfulness Based Treatment
- Psychopharmacological treatment of insomnia and comorbidities

Conclusions

Pandemics offer challenges to individuals, communities, and globally. The loss of life can be monumental. It is important to identify high risk populations at risk for exacerbation of mental health symptoms. It is also important to screen for symptoms, refer to treatment when deemed appropriate, and offer support to healthcare professionals. Mental health professionals should be involved in messages given by leadership to enhance consistency and efficacy. We must combat stigma, misconceptions, racial and ethnic targeting.

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