

# Disaster Mitigation Strategies to Maintain Mental Health Stability in Society Facing Covid-19 Pandemic: A Systematic Review

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**Keywords:** Mental Health, Disaster Mitigation, Pandemic, COVID-19.

**Abstract:** The COVID-19 Pandemic has been declared as a public health emergency and the virus already spread around the world. This has an impact on mental health in the community. The systematic review aims to review all research on mitigation to maintain mental health stability in the community facing the COVID-19 pandemic. Article searches were obtained from PubMed, Science Direct, Google Scholar, Cambridge Core, ProQuest, and SpringerLink. The research method uses Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA). The search identified 46 articles and used 9 articles that match the criteria. Analysis of 9 relevant articles shows that disaster mitigation was carried out with targets in society, specifically on healthcare workers. Healthcare workers are mostly in the form of education on anti-contagion measures by using Personal Protective Equipment (PPE) and interventions in the form of training or crisis response services. Disaster mitigation in society takes the form of strengthening crisis center services, education on the applications of a healthy lifestyle, and increasing positive thinking to reduce negative emotions as well as education on limiting information from social media to reduce anxiety and fear related to the COVID-19 pandemic.

## 1 INTRODUCTION

COVID-19 is a disease caused by novel coronavirus or better known as SARS-CoV-2 which was discovered in 2019 at Wuhan, China for the first time. SARS-CoV-2 was identified and the genetic was shared publicly in early January 2020 (World Health Organization, 2020). World Health Organization declared that COVID-19 was a public health emergency on January 30, 2020, and COVID-19 was declared as a pandemic on March 11, 2020 (Balkhair, 2020). COVID-19 was declared a pandemic due to the high risk of spreading the virus to other countries around the world (WHO, 2020). The status of COVID-19 that has been determined by the World Health Organization is then followed up limiting society's mobility, implementing social interaction, and conducting self-isolation or self-quarantine. This has a long-term impact on society's mental health (Ridlo, 2020).

Mental health is an individual's ability to adapt to various circumstances, both in adjusting to oneself and adjusting to society (Santoso, 2016). Then, mental health is how individuals think, feel,

and act when faced with the realities of life. Mental health can be optimal when individuals can overcome the problems that occur in life and individuals can deal with these problems well (Hadjam & Widhiarso, 2011). The balance between physical and psychological conditions of the individuals also reflects mental health where these two conditions are interconnected and mutually reinforcing so that individuals can adapt to the surrounding environment (Fridayanti et al., 2019).

Mental health can't distribute properly due to the problems that individuals faced. Individuals who have a high risk of experiencing mental health disorders are individuals who have a low social level and individuals are in a vulnerable position (Power et al., 2020). A study showed that the current COVID-19 pandemic causes uncertainty in life and slowing the pace of the economy can reduce mental health. Declining mental health can increased anxiety in individuals (Soklaridis et al., 2020). Another study showed that 64.3% of the total 1522 respondents experienced anxiety disorders, depression, and psychological trauma during the COVID-19 pandemic (Ross et al., 2020). Ages that

are vulnerable to increased stress and anxiety due to the COVID-19 pandemic are teenagers where there is occur due to limited access to outdoor activities (Iqbal & Rizqulloh, 2020).

Mental health disorders are not only experienced by teenagers but also experienced by adults. A study showed that adults experienced mild to moderate symptoms of depression and increased symptoms of anxiety due to the fear that arises as a result of the COVID-19 pandemic (Haider et al., 2020). High levels of anxiety can harm individuals and society. The adverse effects caused lead to maladaptive behavior (Vigo et al., 2020). The global situation that has occurred due to the COVID-19 pandemic is important to realize the trauma can affect each individual in different ways. This can create mental health challenges for society (Otu et al., 2020). The implications for mental health are long-lasting and have a greater prevalence than the virus itself. Mental health is an important aspect in realizing overall health (Ridlo, 2020).

Efforts to maintain mental health stability in society can be carried out in disaster mitigation strategies. Mitigation is an activity to reduce and minimize the impact of disasters (Niode et al., 2016). Mitigation is also an effort to reduce the impact of disasters such as natural disasters, non-natural disasters, or a combination of both disasters in a country or society (Ma'ruf, 2010). Then, disaster mitigation is the first step to do in preventing disaster (Buchari, 2020). Disaster mitigation is also an effort to reduce the occurrence of disaster risk, both through physical development as well as awareness and capacity building in dealing with disaster threats (Sunarti, 2014).

One of the disaster mitigation strategies is providing education on implementing a healthy lifestyle, such as regulating sleep patterns and increasing physical activity to reduce the emergence of negative emotions during the COVID-19 pandemic (Zhang et al., 2020). Disaster mitigation can also be done by providing services by telephone to individuals who have a high level of risk of experiencing mental health disorders (Momoi et al., 2020). The authors would like to conduct a further systematic review of disaster mitigation strategies to maintain mental health stability in a society facing the COVID-19 pandemic. This systematic review aims to summarize and identify disaster mitigation to maintain mental health stability in a society facing the COVID-19 pandemic.

## 2 METHOD

Article searches were obtained from PubMed, Science Direct, Google Scholar, Cambridge Core, ProQuest, and SpringerLink with the keywords relevant to the topic, which were “Disaster mitigation AND “COVID-19” OR “Mental health” AND “COVID-19” in English as well as “*Mitigasi bencana*” AND “*COVID-19*” OR “*Kesehatan mental*” AND “*COVID-19*” in Indonesian. This systematic review was conducted and reported under the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA).

The articles found would be reviewed based on the inclusion criteria: 1) disaster mitigation to maintain mental health stability in society; 2) the publication of the articles between 2020-2021; 3) full text; 4) the articles in English and Indonesian.

The search identified 46 articles (PubMed 14 articles, Science Direct 10 articles, Google Scholar 8 articles, Cambridge Core 6 articles, ProQuest 4 articles, and SpringerLink 4 articles). 18 articles were issued which mental health articles that did not lead to disaster mitigation and articles that were not in the form of publication such as letters to the

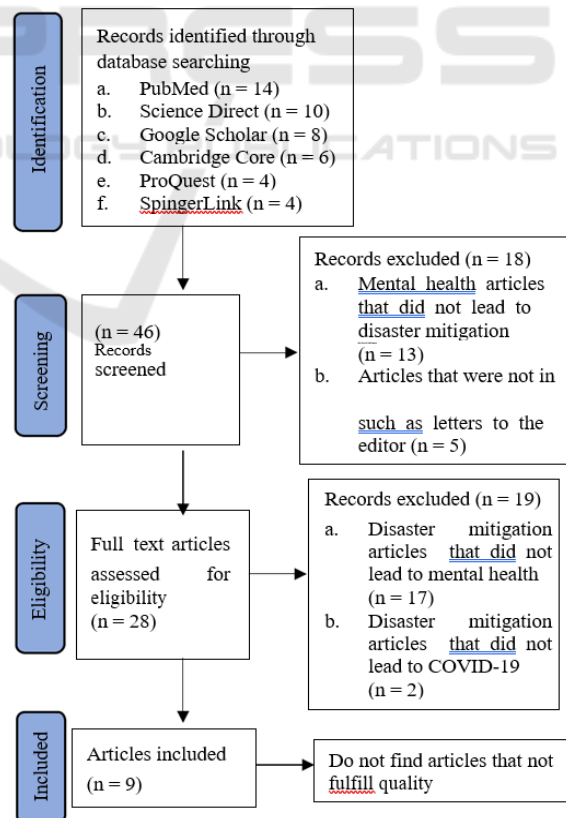


Figure 1: Article Selection Flow.

editor. Then, 28 full-text articles were obtained which were assessed for eligibility. 19 articles were issued where disaster mitigation articles that did not

lead to mental health and disaster mitigation articles that did not lead to COVID-19. 9 full-text articles match the criteria as shown in Figure 1.

### 3 RESULT

Table 1: Article Review Summary.

References	Country	Respondents	Disaster Mitigation Strategies	Outcomes Related to Review Aims
Giorgi et al., 2020	Italy	673 office workers	Education of Personal Protective Equipment (PPE)	Respondents who returning to their duties after protracted lockdown, showed that respondents are facing post traumatic stress disorder (10,8%). Meanwhile, respondents reported a low prevalence of anxiety (3,8%), depression (3,7%), stress (1,5%), and insomnia (2,3%). Disaster mitigation carried out by the organization are improving infrastructure at workplace, implementing anti-infectious measures where Personal Protective Equipment (PPE) provided, and implementing resilience training programs to increase understanding the psychological conditions during the COVID-19 pandemic.
Gray et al., 2021	USA	1170 healthcare workers	a. Mental Health Liaison (MHL) b. Mental Health Crisis Response Team (MHCRT)	Disaster mitigation that carried outs is to form a program with the Mental Health PPE model to support the mental health of healthcare workers during COVID-19 pandemic. Mindfulness and breathing exercises that include on effective support techniques having ability to text someone when they needed to access to referrals for mental health treatment.
Matto & Sullivan, 2021	UK	100 emergency services personnel	Mindfulness techniques with art therapy from Ashes2Art Organization	Ashes2Art is a non-profit organization that works with firefighters who promote creativity to offset exposure to extreme loss and trauma. Ashes2Art has around 100 emergency services personnel and family members actively participating during the crisis during COVID-19 pandemic. Mindfulness techniques that integrated with art therapy to reduce burnout and enhance self-care in healthcare workers to provide a community of support.

Table 1: Article Review Summary (cont.).

References	Country	Respondents	Disaster Mitigation Strategies	Outcomes Related to Review Aims
Momoi et al., 2020	Japan	210.000 respondents	Intervention by Telephone	Disaster mitigation that carried out by sending a mental health and lifestyle survey to the society and then providing interventions by telephone to individuals who is at high risk based on the survey results. This is done to help individuals at risk cope with stress, reduce emotional burden, provide information on social resources (e.g., schools, public offices, or medical facilities), and provide advice related to lifestyle. Respondents who received telephonic system help in the form of stress coping method (36,6%), social resource information (29,4%), and lifetsyle advice (28,8%).
Otu, Charles, & Yaya, 2020	UK	775 respondents of adults	<ul style="list-style-type: none"> <li>a. Eductaion of Personal Protective Equipment (PPE)</li> <li>b. Education of Implementin g Positive Thinking</li> </ul>	<ul style="list-style-type: none"> <li>a. Disaster mitigation that provide education related to the proper use of Personal Protective Equipment (PPE) and to understand the main principles underlying the management of patients COVID-19. Healthcare workers trained to be able to identify the early signs of stress or burnout that arise at workplace and seek help immediately.</li> <li>b. Disaster mitigation that carried out for society are provide education related to positive thinking and full of hope and build a positive image. Then, society is also taught to be able to limit exposure the news that related to COVID-19 which can cause anxiety and psychological stress.</li> </ul>
Sheek-Hussein, Abu-Zidan, & Stip, 2021	UAE	<ul style="list-style-type: none"> <li>a. Healthcar e Workers</li> <li>b. Society</li> </ul>	<ul style="list-style-type: none"> <li>a. Academic Journal Club</li> <li>b. Education of Implementin g Positive Thinking</li> </ul>	<p>Disaster mitigation that carried out includes two targets which is healthcare workers and society.</p> <ul style="list-style-type: none"> <li>a. Disaster mitigation for healthcare workers is to form the Academic Journal Club. This club was formed to increase the reading interest of healthcare workers. This club was also formed to reduce negative emotions and improve stress management. Read at one's own pace with a follow-up session by phone or video call.</li> <li>b. Disaster mitigation for society is provide education that related to positive thinking. Another disaster mitigation for society is also taught to be able to limit themselves from news that related to COVID-19 which can cause anxiety and psychological stress.</li> </ul>

Table 1: Article Review Summary (cont.).

References	Country	Respondents	Disaster Mitigation Strategies	Outcomes Related to Review Aims
Skilbeck, Spanton, & Roylance, 2020	UK	a. Healthcare Frontline and Non-Frontline Workers b. Society	Improving Access to Psychological Therapies (IAPT) Services: a. Stepped-care model of talking therapy for low-intensity (guided self-help) b. Stepped-care model of talking therapy for high-intensity (CBT)	Disaster mitigation with Improving Access to Psychological Therapies (IAPT) is a mental health service that has shown variability in response to COVID-19. Several IAPT services are adapting quickly to reduce anxiety and fear of uncertainty condition during COVID-19 pandemic.
Suyadi, Nuryana, & Fauzi, 2020	Indonesia	3917 patients in 79 hospitals	<i>Fikih Kebencanaan</i> (Coping with Disaster)	Disaster mitigation that carried out by <i>Fikih Kebencanaan</i> (Coping with Disaster) where the medical health movement and the reconstruction of <i>fiqh</i> worship are about the rules to adapt with emergencies or COVID-19 pandemic situation. <i>Fikih Kebencanaan</i> teaches how to deal with disasters from a general religious perspective.
Zhang et al., 2020	China	66 college students	Education of Implementing Healthy Lifestyle	Respondents reported a high prevalence of stress (71,21%), anxiety (54,55%), and depression (77,27%). Disaster mitigation that carried out is to provide education on implementing a healthy life such as doing regular exercise by physical activities that are in accordance with the physical abilities of each individual and regular sleep. Disaster mitigation to reduce negative emotions of everyone.

#### 4 DISCUSSION

This study aims to find out about disaster mitigation to maintain mental health stability facing the COVID-19 pandemic. There are found two main targets of disaster mitigation that related to mental health based on 9 articles, such as healthcare workers and society. Many of the articles were reported from overseas and only one article was conducted in Indonesia. The results show that disaster mitigation to maintain mental health stability mostly to prevent the emergence of negative

emotions and psychological stress as well as the form of intervention to manage a crisis or emotional burdens that occur during the pandemic.

**Disaster Mitigation for Healthcare Workers.** Disaster mitigation can be done by establishing a service program for healthcare workers. First, disaster mitigation to maintain mental health stability by educating to use and provision of Personal Protective Equipment (PPE) to avoid susceptibility to COVID-19 transmission (Gray et al., 2021). Completeness of Personal Protective Equipment (PPE) was found to have a significant

relationship with decreasing anxiety about being infected with COVID-19 in healthcare workers (Asriyani & Sriningsih, 2021; Irmayanti et al., 2021). Healthcare workers' perceptions of Personal Protective Equipment (PPE) the availability that complete and good are related to an increase in symptoms of anxiety and depression (Smith et al., 2021). The government and health agencies need to be aware of the magnitude of mental health problems in healthcare workers and expected to always be vigilant in providing adequate Personal Protective Equipment (PPE) when the pandemic continues (Arnetz et al., 2020).

Second, Disaster mitigation that carried out to maintain mental health stability by implementing resilience training programs, providing Personal Protective Equipment (PPE), and improving infrastructure (Giorgi et al., 2020). Disaster mitigation can be done by establishing a service program for healthcare workers. The program of disaster mitigation is divided into two teams, Mental Health Liaison (MHL) where the team provides prevention support to the COVID-19 hospital unit and the emergency unit, and Mental Health Crisis Response Team (MHCRT) were the team that has crisis response services for 7 days 24 hours to support and reduce the crisis in healthcare workers as needed (Gray et al., 2021). Healthcare workers also need help to maintain their mental health through actions to reduce negative emotions and improve stress management (Sheek-Hussein et al., 2021).

Healthcare workers are also trained to be able to identify the early sign of stress or burnout that appear at the workplace and seek help immediately (Otu et al., 2020). Resilience is very important to deal with stress and important to keep it balance during pandemics (Vinkers et al., 2020). The resilience training program is seen as an alternative to disaster mitigation measures that can be used to maintain mental health disabilities. Resilience is described as an individual's capacity to rise above adversity, conflict, confusion, and failure and the ability to make positive changes (Gatt et al., 2020). High resilience is associated with good mental health (Xu et al., 2020). That is very important for intervention programs and support strategies to be developed during the COVID-19 pandemic to protect mental health and against mental distress and increase psychological resilience (Bakioğlu et al., 2020).

**Disaster Mitigation for Society.** Disaster mitigation in society can be done by providing interventions in

the form of education or opening mental health crisis center services for society. This service aims to reduce the level of anxiety, emotional burden, and fear, especially during the uncertainty of the COVID-19 pandemic (Momoi et al., 2020; Skilbeck et al., 2020). Providing education-related to positive and hopeful thinking as well as building a positive self-image, especially in a pandemic situation (Otu et al., 2020). Maintain mental health stability should be made to overcome stress, provide information that is available on social resources, and provide advice related to a better lifestyle (Momoi et al., 2020). Disaster mitigation is also carried out by providing education related to implementing a healthy lifestyle to increasing positive emotions and reducing exposure to COVID-19 news. Education on the application of a healthy lifestyle such as doing regular exercise by doing physical activity, managing to sleep well, and reduce the negative emotions of each individual (Zhang et al., 2020).

Identification to get more precise targets in providing services through surveys to society, such as collecting data on society's health and lifestyle then followed up by providing interventions by telephone that have adjusted to the needs based on the results of the survey (Momoi et al., 2020). The interventions by telephone have the beneficial impact of reducing psychological distress. In addition, interventions by telephone that are carried out consistently are also for the treatment of anxiety and depression (Martin et al., 2020). Mental health services are changing due to the COVID-19 pandemic. The demand for face-to-face mental health services decreased significantly because of fear of infection (United Nations, 2020). Restrictive measures on physical and social contact hinder traditional face-to-face psychological services during the COVID-19 pandemic. This is in line with the passing of the acute phase during the pandemic where it is very likely that people who are more vulnerable (both biomedically and psychologically) will avoid face-to-face contact (Ribeiro et al., 2020).

Another important thing that was found was the need for restrictions to news-related COVID-19 in society who are vulnerable to mental health. Excessive coverage in the mass media can cause anxiety and psychological stress (Lin et al., 2020). Individuals who sit more and spend more time reading news related to COVID-19 can increase anxiety and depression (Huckins et al., 2020). The importance of credibility through mass media and social media as well as the right strategy to fight misinformation during the pandemic. The role of social media is very necessary to provide correct

information during the COVID-19 health crisis. On the other hand, wrong or correct information is received by the public it will have a global negative impact on mental health (Abbas et al., 2021).

The special thing that appears in the study of research article found in Indonesia is the effort to maintain mental health stability in society through a religious or religious approach which is *Fikih Kebencanaan* (in the form of coping strategies in dealing with disasters). *Fikih Kebencanaan* teaches how to deal with disaster from a general religious perspective. Disaster mitigation through a religious approach also teaches the rules of worship to be able to adapt the emergencies or the COVID-19 pandemic (Suyadi et al., 2020). This is supported by research results show that a strong relationship between religiosity and mental health, especially in the form of social welfare (Winurini, 2019). Religiosity has an important role in relieving suffering, having an influence on health outcomes, and minimizing the consequences of social isolation (Lucchetti et al., 2020). That is necessary to highlight religious activities during the pandemic as a step in maintaining mental health stability.

Disaster mitigation can also be done using art media, such as Ashes2Art as a non-profit organization based in the UK apart from using a religious approach. This organization has creative activities to offset exposure to extreme loss and trauma. Another purpose of this activity as an effort to help manage the short-term and long-term emotional impact of the activity or work that is carried out (Matto & Sullivan, 2021). Art is related to the positive mental health domain. The effect of art goes beyond the scope of energizing, relaxing, or bringing relief to positive psychological aspects. These are attention, autonomy, flexibility, social relationship with others, emotional well-being, experiencing freedom, play, and self-directed (Haeyen et al., 2018). Art as a tool to improve mental health well-being and in line with global health challenges. Art activities have been documented as non-medic, holistic, low-cost with the potential to promote mental health and community well-being (Jensen, 2018). Art engagement amongst society may help to enhance positive mental health and life satisfaction, especially against mental distress (Wang et al., 2020).

## 5 CONCLUSION

Various disaster mitigation methods were carried out to reduce and minimize the impact caused by the

COVID-19 pandemic situation. Disaster mitigation by providing education on healthy lifestyle and other intervention services to reduce stress and emotional burden as well as increase positive thinking that is full of hope. Disaster mitigation during the COVID-19 pandemic is related to mental health is not only given to the society in general but also needs to be done to healthcare workers who are in direct contact with COVID-19 patients who give anxiety of transmission. Further research can conduct studies related to disaster mitigation that leads to mental health stability in Indonesia as well as disaster mitigation services that can be accessed and accepted by all levels of society in Indonesia to deal with the COVID-19 pandemic situation.

## ACKNOWLEDGMENT

We thank the Faculty of Psychology Universitas Diponegoro for supporting the study. The authors declared no potential conflict of interests concerning the research, authorship, and publication of this article. The study is based on literature that is publicly available and does not require any declaration.

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