

The Impact of Natural Disaster on Mental Health of Victims Lives: Systematic Review

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Abstract

Natural disasters are still a matter of the world until today. The events pose not only physical impact but also psychological impacts that leave deep sorrow and fear. The survivors of the disaster felt they were at a very unsettled condition, felt very fearful, felt agitated for uncertain circumstances, and became very easily panicked until they could experience anxiety, depression, and post-traumatic stress disorder (PTSD). This systematic review aims to identify the impact-effects often posed by natural disasters on the soul health of survivors. Data searching is done on the Proquest, Pubmed, Science Direct, Sage, and Scopus databases that were converged in the 2013 to 2019 ranges. The psychological impact experienced by the victims after natural disaster events are depression, post-traumatic stress disorder (PTSD), fear, suicide experiments, and other mental health disorders such as mood changes and a loss of interest in an activity. Natural disasters can hurt the mental health of the victims. If the psychological problems that occur to the victims are not immediately addressed, the victims will fall on more mental severe disorder conditions.

Keyword: *Impact, Natural Disaster, Mental Health, Victims*



A. INTRODUCTION

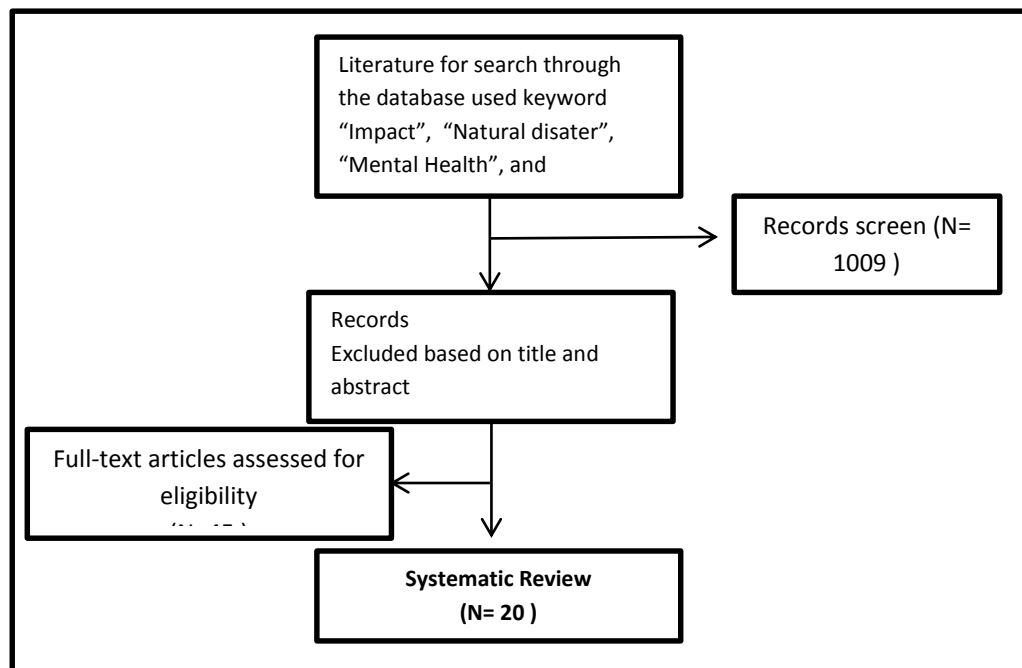
Natural disasters are still a problem in the world today. According to Act Number.24 year, natural disasters are a series of events caused by natural phenomena, such as volcanic eruptions, floods, droughts, landslides, and earthquakes. These events can cause such health crises, the collapse of health care, infectious disease, stress/mental disorders, lack of clean water, environmental sanitation problems, livelihood issues, injuries to fatalities¹. The disasters caused increased attention to health issues that caused the global permanent and interfered with daily activities. The purpose of this paper is to summarize systematically the findings related to the impact of natural disasters on the mental health of disaster victims. Natural disasters make victims face complex problems, not only physical problems but also psychological problems such as feeling depressed, moody, depression, and trauma—natural catastrophic events resulting in impaired balance a person's mental condition that can lead to severe stress². According to Nurrachaman (2007), three factors influence disaster victims under stress: natural disasters and frightening and life-threatening, the loss of a loved one, and the loss of

property and livelihood to make the victim struggling to meet the basic needs of life. Stress experienced by victims of natural disasters is the impact of traumatic experiences. Psychological trauma is a condition where a person experiencing physical or mental disorders as a result of events/experiences are pretty awful and make them helpless. Injury is also often associated with the condition of people who battered by bitter experiences that happened to them. The impact of the maladaptive stress will cause a reaction in individuals who have difficulty finding clean water sanitation problems, livelihood issues, and injuries to fatalities¹. The disasters caused increased attention to health issues that caused the global permanent and interfered with daily activities. The purpose of this paper is to summarize systematically the findings related to the impact of natural disasters on the mental health of disaster victims.

B. DISCUSSION

Literature search strategy

To identify all relevant publications, searches conducted on databases of *Proquest*, *Pubmed*, *Science Direct*, *Sage* and *Scopus*. The keywords used in the search is the "impact" or "effect," "natural disaster," "mental health" and "victims" with restrictions only articles in English. The guidelines used in specifying the number of items in a review were determined using the PRISMA method. Criteria for inclusion in this study is a review article on 1) experience, 2) mental health issues disaster victims. The selected item is an article reviewing at least one of the two criteria. While exclusion criteria in this study were 1) to discuss items that are not about the experience and mental health concerns to victims, 2) duplicate articles. The searching process based on the PRISMA flow and can be seen in (Fig.1)



Tabel 1. Summary of articles

No.	Title	Author/year	Objectives	Methods	Result
1.	Criticism by community people and poor workplace communication as risk factors for the mental health of local welfare workers after the Great East Japan Earthquake: A cross-sectional study	Author: Ueda et al /2017	<ol style="list-style-type: none"> 1. To determine mental health disorders experienced by social welfare workers (Shakyo) such as depression, PTSD, and other psychological distress after the earthquake. 2. To determine the factors that affect mental health caseworkers (Shakyo). 	Multivariate logistic regression Descriptive analysis with a non-experimental approach	The results of this study found as many as 819 (81.3%) Local social welfare workers (SHAKYO) the possibility to experience a mental health problem such as depression, post-traumatic stress disorder (PTSD), and psychological pressure after an earthquake. Social factors associated with work, including criticism by the public and the lack of communication in the workplace, are associated with the risk of mental health problems to social workers (SHAKYO) after an earthquake.
2.	Assessing the Mental Health	Author: Lieber/ 2017	<ol style="list-style-type: none"> 1. Assess the mental health of children of primary and secondary schools 	Multivariate logistic	The results showed that children traumatized in the

	Impact of the 2011 Great Japan Earthquake, Tsunami, and Radiation Disaster on Elementary and Middle School Children in the Fukushima Prefecture of Japan		<p>living in the Fukushima prefecture of Japan.</p> <p>2. identify risk and protective factors associated with mental health scores of children</p>	<p>regression</p> <p>Descriptive analysis with a non-experimental approach</p>	<p>past are more prone to mental health disorders.</p>
3.	The Impact of Drought on Mental Health in Rural and Regional Australia	Author: Edwards et al./ 2015	It was knowing the impact of drought in Australia on the mental health of people who experience dryness, especially farmers.	Regression analysis	The results of this study showed 15.7% of the farmers have a mental health problem is bigger than the agricultural workers in general (9.1%), working in the field of non - agriculture (8.9%), did not work (17.4%).

4.	Mental Health Problems following the 2005 Earthquake in Kashmir: Findings of Community-Run Clinics	Author: Chadda <i>et al.</i> , / 2014	Knowing the impact of earthquakes on mental health in Kashmir	Quantitative	The results of this study are as much as 40% of samples of women, and 30% of the sample of men experience physical complaints, around 30% of people reported having a sign - a sign of depression such as the inability in feeling pleasure, loss of interest in doing daily activities - day, and about 10% had suicidal ideation self.
5.	Depression and its risk factors among pregnant women in the 2008 Sichuan earthquake and non-earthquake area struck an	Author: Dong <i>et al.</i> , /2013	1. To assess whether there is a negative impact on the mental health of pregnant women generated by the Sichuan earthquake occurrences women after four years 2. To identify risk factors and symptoms of depression among pregnant women	Descriptive analysis with logistic regression multivariate	The results showed: 1. 35.4% of pregnant women in the earthquake area (Mianzhu) were depressed and 33.9% in the region (Gaonbeidan) 2. Prenatal depression risk factors include pregnancy pressure, general social support from their husbands.

	area in China.				
6.	Assessment of prevalence and determinants of post-traumatic stress disorder and depression symptoms in adults survivors of an earthquake in Haiti after 30 months	Author: Cenat and Derivois/ 2014	It was knowing the impact of the earthquake in adults two and a half years later. Also, factors predictive of PTSD and depressive symptoms were identified.	Quantitative	<p>The results found</p> <ol style="list-style-type: none"> 1. The prevalence rate of PTSD and depressive symptoms was 36.75% (498 cases) and 25.98% (352). 2. The risk factors for PTSD and depressive symptoms are the younger and older age, female gender, unemployment status, and low education levels.
7.	Young adults' fear of disasters: A case study of residents from Turkey, Serbia, and Macedonia	Cvetkovic/ 2019	To know the fear of natural disasters in adults in Turkey, Serbia, and Macedonia.	Quantitative by using purposive sampling.	<p>The results showed that.</p> <ol style="list-style-type: none"> 1. Almost all participants feel fear of all the disaster on many levels. 2. According to the average percentage of the three countries, the

					<p>highest percentage score is the fear of earthquakes as much (66.9%), the second-highest is the fear of dryness (59.8%), and the third-highest is the fear of an epidemic (58.1%),</p> <p>3. Students of Turkey stated that the earthquake disaster is regarded as the most feared (85.7%), while Serbia says epidemic students (67.5%) being the most feared and catastrophic phenomenon of drought is the most feared by students Macedonia (61.0 %).</p> <p>4. An earthquake fears to achieve the highest score.</p>
8.	Mental health effects following the	Gissuradottir <i>et al</i> ., 2019	To check the mental health effects of the eruption of the Eyjafjallajökull volcano in Iceland in 2010 on nearby	Quantitative	<p>The results of this study showed</p> <p>1. Populations exposed and live near areas of volcanic eruptions</p>

	eruption in Eyjafjallajökull volcano in Iceland: A population-based study		residents, the level of exposure and experience.		<p>more likely to have mental health problems than people who do not live and not exposed to the volcanic eruption.</p> <p>2. People who directly experience the eruption are more likely to suffer symptoms of mental disorder, the symptoms of PTSD, and stress.</p>
9.	Prevalence and predictors of PTSD and depression among adolescent Victims of the Summer 2016 tornado in Yancheng City	Xu <i>et al.</i> / 2018	The level of prevalence of the possibility of post-traumatic stress disorder (PTSD) and depression in adolescents who experienced a tornado Yancheng 2016, 3 months ago, and to analyze the associated risk factors.	Multivariate logistic regression analysis	<p>Results showed that</p> <p>1. 57.5% reported symptoms of PTSD, 58.7% had depression, and risk factors of mental health disorders are age and exposure to tornadoes.</p> <p>2. The severity of PTSD is higher in boys - boys than in girls.</p> <p>3. PTSD scores were higher in children aged 15 to 17 years old than children aged 12 to 14 years</p>

					<ol style="list-style-type: none"> 4. The level of depression is higher in girls than in boys. 5. Score average level of depression was significantly higher in children aged 15 to 17 years old than children aged 12 to 14 years. 6. In conclusion, students aged 15-17 years at risk of 1.87 to 2.12 times more likely to experience symptoms of PTSD or depression than students aged 12 to 14 years.
10	The impact of the Wenchuan earthquake on early puberty: a natural experiment	Author: Scaramutti <i>et al.</i> ,/ 2019	They assess the relationship between the impact of Wenchuan earthquake-related and early puberty, both in boys and girls.	Retrospective cohort study	<p>The results showed</p> <ol style="list-style-type: none"> 1. The impact of the Wenchuan earthquake increases the risk of early puberty in boys and girls. 2. Preschoolers are more prone to psychological disorders compared

					with children of the school.
1 1	The Mental Health Impact of Hurricane Maria on Puerto Ricans in Puerto Rico and Florida	Carolina <i>et al.</i> , / 2019	The purpose of this study was to compare the effects of Hurricane Maria on and post-traumatic stress disorder (PTSD) among residents of Puerto Rico who moved to Florida after the storm versus	Quantitative	<p>The results of this study are</p> <ol style="list-style-type: none"> 1. The level of PTSD at a higher population of Florida is 65.7%) while the population of Puerto Rico (43.6%) 2. People who live in urban areas (Florida) more significant risk of PTSD than people living in rural areas (Puerto Rico)
1 2	Post-traumatic stress disorder and its risk factors in Tibetan bereaved adolescents three years after the 2010 Yushu earthquake, a cross-sectional	Xiao <i>et al.</i> , 2019	<ol style="list-style-type: none"> 1. To determine the incidence of post-traumatic stress disorder symptomatology (PTSD) in adolescents grieving Tibet three years after the Yushu earthquake in 2010, 2. Identifying possibilities and risk factors for PTSD 	Descriptive analysis using ANOVA test. Bivariate logistic regression analysis was performed to assess the	The results show that the Tibetan teenagers who have experience of PTSD post-earthquake mourning Yushu

	study in China			independent risk factors of symptomatology PTSD.	
13	Post-traumatic stress disorder and coping strategies among adult survivors of an earthquake, Nepal	Adhikari Baral Ishwari and Bhagawati/ 2019	Investigate the prevalence of post-traumatic stress disorder and the use of coping strategies among adult survivors of earthquakes.	A cross-sectional descriptive	<ul style="list-style-type: none"> • Earthquakes pose a significant impact on the mental health problems of the victims of the earthquake survivors. • Maladaptive coping strategies lead to an increase in PTSD in victims.
14	Impact of Major Earthquakes on Parkinson's disease	Ryoichikurisasi, Hidetsugu Ueyama, Yasushi Maeda, Tetsuro Sakamoto Nakahara Keiichi, Shunya Nakane,	This study investigates the impact of the massive earthquake in patients with Parkinson's Disease.	Quantitative earth.	<ul style="list-style-type: none"> • 228 patients (68.1%) experienced a worsening physical health • One hundred eighteen patients (35.2%) had PTSD related mental health disorders, fear of aftershocks (77.1%), decreased concentration (31.4%), and anxiety

		Satoshi Yamashita, Yukio Ando/ 2019			associated concerns the future (32.3%).
1 5	Lessons Learned From the Great East Japan Earthquake: Impact on Child and Adolescent Health	Kenji Hayashi and Naoko Tomita/ 2016	I saw the impact of the earthquake that occurred in Japan, the eastern part of the health of children and adolescents.	Qualitative	Tohoku Earthquake caused psychological effects such as anxiety and long-term social impact.
1 6	Post-traumatic stress disorder, anxiety, and depression symptoms among adolescent earthquake Victims: comorbidity and associate	Wanjie Tang, Yi Lu and Xu Jiuping/ 2018	Our study aimed to examine the prevalence of psychiatric symptoms and comorbidities and their correlation with sleep problems among adolescents victims three years after the earthquake Ya'an, 2013.	Logistic regression	Exposure to earthquakes causing some psychological impact on children and adolescents in whom PTSD, depression, anxiety, feeling fear, insomnia (difficulty sleeping, nightmares).

	sleep-disturbing factor				
17	Psychosocial and Mental Health Problems of Older People in Nepal Postearthquake	P. Ramesh Adhikari, Nawaraj Upadhyaya, Sasmita Paudel, Ruja Pokhrel, Nagendra Bhandari, Laura Cole, and Suraj Prasad Koirala/ 2019	To identify community perceptions of psychosocial and mental health problems, parents in a post-earthquake situation in Nepal.	Qualitative	Experienced health problems such as mood changes and feelings, low self-esteem, crying for no reason this case is associated with a physical injury, disability, family conflict economic problems, loss of concentration, and social isolation.
18	The psychological impact of a dual - disaster caused by the Earthquakes and radioactive	Tomihisa niitsu, City Takoaka, Saho Uemura, Akiko Kono, Akikho Saito, Norito	This study investigated the impact of the double disaster (earthquake and radioactive contamination) on the prevalence of psychological distress in the landlocked city in the Tohoku region, Japan.	Cross-sectional	48% of respondents in Ichinoseki city experienced moderate psychological distress.

	contamina tion in Ichinoseki after the great east Japan earthquak e	Kawaka mi, Nakazato and Eiji Shimizu Michiko/ 2014			
1 9	The effects of living environme nt on disaster workers: a one - year longitudin al study	Author: Masanori Nagamin e, Nahoko Harada, June Shigemur a, Kosuke Dobashi, Makiko Yoshiga, Naoki Esaki, Miyuki Tanaka, Maaaki Tanichi Aihide Yoshino and Kunio Shimizu/ 2016	Evaluating the environment, work environment, and psychological factors affecting individuals disaster volunteer activity	Logistic regressio n analysis	The psychological impact that occurred at a minimal JGSDF troop.

20	The Role of Personality and Subjective Exposure Experience in Posttraumatic Stress Disorder and Depression among Children systems Following the Wenchuan Earthquake	Xiancan chen, Jiajun xu, Bin Li, Na Li, Guo Wanjun, Shenng Mao Ran, June Zhang Yanchun Yang and Hu Junme/ 2017	Investigate the role of personality traits and subjective experience of exposure in post-traumatic stress disorder and depressive symptoms.	Cross-sectional	<p>The results of this study indicate that</p> <ul style="list-style-type: none"> • Symptoms of PTSD and depression commonly occur in children after a disaster. • Experience the child feels unable to escape from the disaster experienced extreme panic or fear and was stuck for a long time identified affected by PTSD.
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Total Articles

The total article obtained as many as 1,512. Filter results based on the title and inclusion criteria found 20 articles. After examining duplicate articles, I obtained 1009 articles for screening by checking the titles and abstracts. Four hundred fifty-eight articles do not correspond to the titles and abstracts, thus obtained 45 articles with full text for eligibility process is carried out. A flow diagram of the search and selection process is presented in (Figure 1). Finally, 20 articles have to review in this study consisted of 2 qualitative articles and 18 quantitative articles. As seen in Table 1, the natural disasters reviewed in this systematic review include earthquakes as much as 16 articles, a whirlwind two articles, one article about tsunamis, and one article about volcanic eruptions.

Depression

Four of the twenty research reports one of the mental health impacts of the disaster is the occurrence of depression. According to the research conducted by Cenat and Xusurvivors of the earthquake depressed^{3,4,5}. The signs that show depression by the quake victims, including; inability to feel pleasure and lose interest in doing daily activities⁶. Several factors influence depression in victims of the earthquake that were gender and age. According to research conducted by Xu et al. (2018) shown that level of depression in girls is higher than boys, and children aged 15 to 17 years had a risk of 1.87 to 2.12 times more at risk of depression than children aged 12 to 14 years⁴. Furthermore, Dong et al. and Chen et al. stated one group that is easily depressed after experiencing the earthquake were children and pregnant women^{7, 8}.

Post-traumatic stress disorder (PTSD)

Ten of the twenty articles reported the impact of natural disasters that victims experience post-traumatic stress disorder (PTSD). People who are victims of natural disasters to experience post-traumatic stress disorder (PTSD)^{8,4,5,9,3}. Several factors cause PTSD in victims of natural disasters such as age, gender, location of residence, coping strategies used, unemployment status, education level, and experience of grieving^{9, 10, 11, 14}. In his research, Chen et al. add the experience the child feels unable to escape from the disaster and experiencing panic, extreme fear, and trapped in a long time to be a factor supporting the occurrence of PTSD¹⁵. Also, Baral and Bhagawati research 2019 and found that maladaptive coping strategies used by victims of the earthquake increased the incidence of PTSD in disaster victims¹¹. Research conducted by Gissirardottri et al. and Carolina et al. found that communities living in areas affected by the storm more likely to have PTSD than people who live far away from the areas affected by the storm^{12, 13} Xiao et al. also explained that grieving teens who have rules of thumb risk for PTSD¹⁴.

Fear

Three of the twenty articles reporting fear into one impact experienced by victims of natural disasters. Research conducted by Tang et al. found that victims experience fear¹⁶, Kurisaki et al. found that victims experience fear of aftershocks¹⁷. Besides, Cvetkovic also reported fears are the highest psychological impact experienced by the victims in the three areas studied, droughts, earthquakes, and epidemics incident is the most feared natural disaster by disaster victims¹⁸.

Suicide

One of twenty studies found the victims had suicidal thoughts. Chadda et al., in their study, found as many as 10% of victims of the earthquake had a desire to commit suicide¹⁹.

Anxiety

One of twenty studies found that the Tohoku earthquake's psychological impact is anxiety in the period long enough²⁰.

Other mental health problems

Seven of the twenty articles reporting natural disasters lead to mental health problems. Research conducted by Edwards et al. found that drought causes mental health problems in people who work in agriculture are more significant than those who are not working in the field of agriculture²¹. In his research, Lieber also found children who have trauma in the past to be at risk of mental health problems on²². Research conducted by niitsu et al. on earthquake victims reported that the average earthquake victims experience psychological distress²³. Further research conducted by Ramesh et al. found that mental health problems experienced by the victims of such disasters, mood changes, low self-esteem, and crying for no reason can be attributed to physical injuries suffered, disability, conflict, and family issues and economic issues²⁴. Research conducted by. Baral and Bhagawati find an earthquake cause a significant impact on the mental health problems of survivors¹¹. But research conducted by Nagamine et al. (2016) contradicts the previous research. Nagamine finds the psychological impact experienced by a very small JGSDF troops²⁵. The disaster provides trauma for the victim. This is because of the disaster and without warning, causing widespread destruction, death, injury, loss of property or loss of shelter and economic losses²⁶ Exposure to traumatic events causing them to be able to manage the problems experienced so can cause stress on its victims. Traumatic stress usually caused by a severe injury that is felt from the death of or threat to the physical integrity of self or others that can cause its victims to experience psychological disorders. Stress experienced by the victim may lead to the condition of post-traumatic disorder (PTSD) experienced a few months or years after the occurrence of natural

disasters. People with PTSD usually show symptoms such as repeating the traumatic event, avoidance behavior, and nightmares. The psychological condition of victims with feelings of mourning in the long term can fall on the condition of depression caused people to feel the despair of all the labor of any that do not bring change to their lives. Individuals who are depressed would be interested in the things that he liked before experiencing a traumatic event. Individuals also develop true feelings, feelings of guilt, blame themselves and feel that the events that happened were his fault. This happens because the victim cannot manage the problems that happened; thus, several victims of natural disasters have feelings of despair and do not want to continue her life and have the desire to commit suicide because of the heavy burden borne. Psychological problems experienced by victims of natural disasters is closely associated with coping strategies. Use adaptive coping strategies that can help reduce psychological problems and direct people towards adaptive behaviors.

C. CONCLUSION

The disaster not only affects the physical condition of the victims and the environment but also affects the psychological conditions such as depression earthquake victims Post-traumatic stress disorder (PTSD), fears, suicide, and other mental health problems. If the psychological problems do not get adequate treatment, they can fall victim to the condition of a more serious mental disorder.

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