



Analysis of Psychological Problem of Coastal Flooding Survivors and Its Implications for Psychological Help

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Abstract. Coastal flooding is one of the disasters that regularly occur in Indonesia, especially in coastal areas. Like other disasters such as earthquakes and mountain eruptions, the coastal flooding disaster has an unfavorable psychological impact on disaster survivors. However, it is not yet known for certain the impact of coastal flooding on the psychological survivors and the help needed by them. The purpose of this study was to analyze the psychological needs of coastal flooding disaster survivors and formulate the recommended psychological help. The research method used a *cross-sectional* survey. The instrument used is the Harvard Trauma Questionnaire (HTQ) with 25 items and four aspects which include: (1) A picture of the trauma experienced by survivors; (2) Subjective descriptions of the most severe traumas; (3) Events related to head injuries; and (4) Symptoms of Post-Traumatic Stress Disorder. Questionnaires were distributed to 122 high school students who were affected by the coastal flooding. The data analysis technique used is a descriptive statistic, which is by using the help of the SPSS 25 application. The results showed that the level of stress caused by tidal flooding was 42.8% and depression was 39.%. Based on gender, women have a higher level of depression than men. Recommendations for psychological assistance are creative counseling which includes music, bibliotherapy, and cinematherapy.

Keywords: Psychological Problems · Coastal Flooding · Psychological help recommendation

1 Introduction

Coastal flooding are catastrophic events that often occur in archipelago countries such as Indonesia [1]. In coastal areas, floods often occur due to tidal activity, astronomy the high waves, the high sea level, and the acceleration of sea level rise due to global warming [2]. Semarang, which is located in Central Java province, is the city that most often experiences coastal flooding [3]. Coastal flooding caused by the combination of water level rise and land subsidence has resulted in huge losses and economic damage that is not measured. Coastal flooding or known as “tidal floods” inundate residents’ settlements, damaging housing and schools [4]. Coastal flooding significantly affects

the communities around the coast and has the potential to disrupt many community activities [5].

Coastal flooding in Semarang City has a fairly detrimental impact on coastal communities, because coastal flooding affects the community's economy with difficulty access to work places and basic needs. In addition, it also affects the health condition of the surrounding community because there are often diseases such as diarrhea, fever, and malaria [6]. Other impacts of coastal flooding are psychological problems that hit survivor caused by regular disaster. Psychological problems that often lead to prolonged grief are fear of subsequent disasters, deep feelings of loss due to the departure of family members, and loss of property and sources livelihoods [7]. The psychological impact of disaster management, especially coastal flood disasters, has not been identified much because the focus of disaster management is still on physically handling impacts. In Indonesia, there is a lack of research that focus on the impact of floods on mental health or psychic impacts on survivors [8].

Referring to the fact that the effect of coastal flooding as regular exposure to psychological impacts that are still not widely identified, then this becomes necessary to investigate the psychological problem arise from coastal flooding and identify the psychological help recommendation. Identification of psychological problems can also be the basis for counselors to provide psychological assistance for coastal flood disasters survivor.

Identification of psychological problem of coastal flooding survivor and recommendations for psychological assistance aimed at knowing the picture of the psychological assistance problem of coastal flood disaster survivors, especially in the Semarang City. In addition to that, the purpose of identifying the psychological problems of survivor can help to provide recommendations for the effective assistance.

2 Method

This study used a *cross-sectional* survey method. There are several stages that are crucial in the implementation of survey research, preparation of the instruments, data collection, and data analysis [9]. The instruments in this study used *the Harvard Trauma Questionnaire* (HTQ). *The Harvard Trauma Questionnaire* (HTQ) is a cross-cultural instrument that describes trauma of disaster survivors. According to Berthold et al. (2019) HTQ reveals four aspects which include: (1) A picture of the trauma experienced by survivors; (2) Subjective descriptions of the most severe traumas; (3) Events related to head injuries; and (4) Symptoms of Post-Traumatic Stress Disorder [10]. Respondents in this study were 122 survivors of coastal flooding disasters with an age range of 12–18 years old.

The data analysis technique used is descriptive because it aims to describe the data that has been collected regarding the psychological problems of disaster survivors [5]. Descriptive statistical analysis is used to analyze data that has been collected without intending to make generalizations [11]. In describing this quantitative data, the important thing is to look at the mean and standard deviation. Mean is a group explanation technique based on the values of that group, while standard deviation is the degree of spread of individual values from the mean. To calculate this analysis, it is by using the help of the SPSS 25 application.

Table 1. Stress and depression of coastal flooding survivors

Level	Stress		Depression	
	Male	Female	Male	Female
Mild	21	28	28	37
Moderate	12	28	17	31
Chronic	23	10	4	5

3 Findings and Discussion

Based on Harvard Trauma Questionnaire (HTQ) with 25 items distributed to 122 high school students affected by coastal flooding, it showed that the level of survivor is 42.8% and depression by 39%. By gender, female students have a higher number of mild and moderate levels of stress, while males show a higher number of chronic levels. Meanwhile, females have a higher number of depression than males (Table 1).

Adolescents are vulnerable to the psychological impact of disasters because they are prone to witness firsthand the impact of disasters such as massive damage, witnessing the injured of close family, the school yang evacuated, destroyed school, and the loss of a loved one. As a result, adolescents are particularly vulnerable to post-traumatic stress disorder (PTSD) [12]. The main reason is that adolescents have immature coping stress in response to stressors that come suddenly.

The high level of stress in adolescents affected by disasters depends on the time span between the event of the disaster and the time of evaluation, the region and quality of life, the severity of the disaster experienced, the level of education, the loss of immediate family or friends, the social support received and the perception of the acceptance of such social support [13] The results showed that adolescent girls have more depression than adolescent boys. These results are corroborated by other studies [14] which show that women are more vulnerable to developing symptoms of post-disaster stress due to high fear of threats.

To help adolescents who are experiencing post-disaster stress, creative counseling is one of the effective individual counseling interventions because it can help counselees express themselves in ways the creative. Creative interludes can put teenagers in playfulness so that it can help them face serious problems more casually and help gain clarity of life perspective. In addition, creative counseling can increase togetherness, communication, and understanding of self [15]. Types of creative counseling that are recommended for disaster survivors are music and bibliotherapy [16].

Music can help teenagers in expressing their emotions by choosing music with tune, rhythm, style, and lyrics that suit their condition. The counselor may also ask teenagers to rewrite, edit, or create new lyrics that focus on healing from catastrophic trauma with stages a) understanding b) feeling, c) remembering, d) integrating, e) growing. At the understanding stage, teenager helped to understand the cause of the disaster, understand the reaction, and understand that the reaction is a common thing. At the feeling stage, teenager trying to express various emotions of loss caused by disaster. Next, the teenager wrote lyrics to remember memories of being together with loved ones affected by the

disaster. At the integrating stage, lyrics can help teenager rise from his life and adapt to the changes in his life so that helping teenager develop their growth through the loss caused by disasters.

Another type of creative counseling that can reduce post-traumatic stress disorder of disaster survivor is creative bibliotherapy [17]. Bibliotherapy is the use of literature that is used as a therapeutic adjuvant in medicine and psychiatry and also as a medium for solving personal problems through directed reading [18]. Bibliotherapy has a positive effect on intervening in grief and trauma by helping to make meaningful inferences from experiences and to rediscover the world of disaster survivors [19]. The stages of bibliotherapy that can be used to help disaster survivors are selecting the literature, identifying or universalizing, catharsis, insight or integration, and commitment to change [20].

4 Conclusion

The result of this research showed that female students have higher number of mild and moderate levels stress, while male show higher number of chronic level. Meanwhile, female have higher number of depression than male. To help adolescents who are experiencing post-disaster stress, creative counseling is one of the effective individual counseling interventions because it can help counselee express themselves in ways the creative. Types of creative counseling that recommended for disaster survivors are music and bibliotherapy.

References

1. Aris, M., Lorenz, M. Æ., Junun, K. Æ., & Sudrajat, S. Æ. (2008). The impact of tidal flooding on a coastal community in Semarang, Indonesia. 237–248. <https://doi.org/10.1007/s10669-007-9134-4>
2. Marfai, M. A., & King, L. (2008). Coastal flood management in Semarang, Indonesia. *Environmental Geology*, 55(7), 1507–1518. <https://doi.org/10.1007/s00254-007-1101-3>
3. Anindita, K., Putri, P., Hasibuan, H. S., & Tambunan, R. P. (2021). *The Impact of Rising Sea Levels on Historical Sites Old City Semarang. 04012*, 1–9.
4. Irawan, A. M., Marfai, M. A., Nugraheni, I. R., Gustono, S. T., Fortune, H. A., Widodo, A., Mahmudiah, R. R., & Faridatunnisa, M. (2021). Urban Climate Comparison between averaged and localised subsidence measurements for coastal floods projection in 2050 Semarang , Indonesia. *Urban Climate*, 35(December 2020), 100760. <https://doi.org/10.1016/j.uclim.2020.100760>
5. Buchori, I., Pramitasari, A., Sugiri, A., Maryono, M., & Basuki, Y. (2018). Adaptation to coastal flooding and inundation: Mitigations and migration pattern in Semarang City , Indonesia. *Ocean and Coastal Management*, 163(November 2017), 445–455. <https://doi.org/10.1016/j.ocecoaman.2018.07.017>
6. Marfai, M. A., King, L., Sartohadi, J., Sudrajat, S., Budiani, S. R., & Yulianto, F. (2008). The impact of tidal flooding on a coastal community in Semarang, Indonesia. *Environmentalist*, 28(3), 237–248. <https://doi.org/10.1007/s10669-007-9134-4>
7. Chatarina, R. (2012). Handling the Psychological Impact of Psychological Treatment of Merapi Disaster Victims. *Journal of Information*, 17(2).

8. Stanke, C., Murray, V., Amlôt, R., Nurse, J., & Williams, R. (2012). The effects of flooding on mental health: Outcomes and recommendations from a review of the literature. *PLoS currents*, 4.
9. Adiyanta, F. C. S. (2019). Report on the use of MKJP for 2018-2019. *Administrative Law & Governance Journal*, 2(4), 697–709.
10. Berthold, S. M., Mollica, R. F., Silove, D., Tay, A. K., Lavelle, J., & Lindert, J. (2019). The HTQ-5: Revision of the Harvard Trauma Questionnaire for measuring torture, trauma and DSM-5 PTSD symptoms in refugee populations. *European Journal of Public Health*, 29(3), 468–474.
11. Navarro-Rivera, J., & Kosmin, B. A. (2013). Surveys and questionnaires. *The Routledge Handbook of Research Methods in the Study of Religion*, 395–420.
12. Furr, J. M., Comer, J. S., Edmunds, J. M., & Kendall, P. C. (2010). Disasters and Youth: A Meta-Analytic Examination of Posttraumatic Stress. 78(6), 765–780. <https://doi.org/10.1037/a0021482>
13. Derivois, D., Mérisier, G. G., & Cénat, J. (2014). Journal of Loss and Trauma: International Perspectives on Stress & Coping Symptoms of Posttraumatic Stress Disorder and Social Support Among Children and Adolescents After the 2010 Haitian Earthquake. December, 37–41. <https://doi.org/10.1080/15325024.2013.789759>
14. Wahab, S. (2021). *Post-traumatic Stress Symptoms in Adolescents Exposed to the Earthquake in Lombok, Indonesia : Prevalence and Association With Maladaptive Trauma-Related Cognition and Resilience*. 12(November), 1–11. <https://doi.org/10.3389/fpsy.2021.680393>.
15. Gladding, S. T. (2005). *Counseling as an art: The creative arts in counseling* (3rd ed.). Alexandria, VA: American Counseling Association
16. Slyter, M. (2012). Journal of Creativity in Mental Health Creative Counseling Interventions for Grieving Adolescents. November 2014, 37–41. <https://doi.org/10.1080/15401383.2012.657593>
17. Glavin, C. E. Y., & Montgomery, P. (2017). Creative bibliotherapy for post-traumatic stress disorder (PTSD): a systematic review (PTSD): a systematic review *. *Journal of Poetry Therapy*, 0(0), 1–13. <https://doi.org/10.1080/08893675.2017.1266190>
18. Kling, M. (1968). *Bibliotherapy : Definitions , Uses And Studies*. 7(2).
19. Sa, R., & Yoluyula, O. (2019). *Healing Mental Bibliotherapy Health through Reading : 11*(4), 483–495. <https://doi.org/10.18863/pgy.474083>
20. Pierce, L. M. (2016). *The Use of Bibliotherapy With Adolescents and Their Families The Use of Bibliotherapy With Adolescents and*. 5353(March). <https://doi.org/10.1080/08975353.2015.1097294>

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