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ORIGINAL RESEARCH

Childhood posttraumatic stress disorder: A post-flood overview

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Abstract

Flood disasters bring a huge impact on human life, both physically and psychologically. Children are vulnerable groups who are at greater risk during and after a disaster. The most common psychological effect after a disaster is Post Traumatic Stress Disorder (PTSD). The purpose of this study was to detect early PTSD in children who were victims of the flood disaster. This research applied a quantitative design with a cross-sectional approach. A total of 61 child victims were included in the study. The research was conducted in Jeneponto Regency which is one of the worst flood locations in South Sulawesi during 2019. The instrument used is the PTSD Checklist for DSM-5 (PCL-5), which consists of 20 items of questions. The study shows that children who experience PTSD are equal to 39.3% and did not experience PTSD as much as 60,7%. The incidence of PTSD increases in children since a month after the disaster by experiencing symptoms of re-experiencing, avoidance, negative alterations in mood cognition, and hyperarousal. Age, gender, and exposure are also at risk for developing PTSD in children. It is recommended that healthcare professionals provide immediate treatment to the child victims.

Keywords: flood; post-traumatic stress disorder; pediatric nursing; disaster management; nursing care

Introduction

Indonesia is a tropical country with two seasons, i.e. dry and rainy (Fauziyah et al., 2021). National Agency for Disaster Management (BNPB) reported that climatic conditions and topography could trigger a variety of hydro-meteorological disasters such as floods, landslides, forest fires, tornados, and drought (BNPB, 2017; Ayuningtyas, Windiarti, Hadi, Fasrini, & Barinda, 2021). The majority of disaster events in Indonesia from 2011 to 2016 were dominated by hydro-meteorological disasters, around 90%, where the incidence of flooding is the most event average 30%, meanwhile the incidence of tornados 28%, landslides 22%, droughts 5%, forest & land fires 3% (BAPPENAS, 2017; Ichsan, 2022)—according to the Indonesian Disaster Information Data issued by BNPB (2019), reported that during the last five years, the highest number of flood events was in 2017 with approximately 980 events. From 2018 to February 2019, the data of flood events is increasing by about 1.379. Pertiwi & Kurniawan (2017) added that South Sulawesi is a high group prone to flooding in the grouping of flood-prone areas in Indonesia. Therefore, nurses' preparedness and understanding of their roles in coping with disasters are essential by focusing on responses, recovery, evaluation, and continuing education (Martono, Satino, Nursalam, Efendi, & Bushy, 2019).

Flood events enormously impact human life, both physically and psychologically. The effect of psychological disorder, which is most commonly found in natural disasters, is post post-traumatic stress Disorder (PTSD) (Golitaleb, Mazaheri, Bonyadi, & Sahebi, 2022; Asim et al., 2019). PTSD is a form of anxiety disorder that develops after exposure to a terrible incident, torture associated with the threat of death, and helplessness (Miao, Chen, Wei, Tao, & Lu, 2018; Bryant, 2019). Children are vulnerable groups to experience PTSD in disaster events (Kolaitis, 2017; Scheeringa, Zeanah, & Cohen, 2011). Incidence and symptomatology of PTSD vary in children depending upon the traumatic event itself, the severity and duration of the hazard, and demographic variables of the children such as age, gender, and ethnicity (Li et al., 2020). Research conducted by Pangau, Kanine, & Wowiling (2014) conveys that children who experience PTSD occur in the age range of 9-10 years and gender dominated by girls equal to 58.5% compared with boys.

Indonesian Government Regulation Number 21 2008, about implementing disaster management, emphasized that children, including vulnerable groups, need priority rescue, evacuation, security, health care, and psychosocial services. Parents, as the closest people to children, have an essential role in caring for traumatized children. The response of parents to children who have experienced trauma will affect the child's recovery process. Parental adaptive coping strategies can be an effective way to promote healthy child coping after a traumatic event (Wise & Delahanty, 2017; Ben-Ari, Aloni, Ben-David, Benarroch, & Margalit, 2021; Wilcoxon, Meiser-Stedman, & Burgess, 2021). However, children with PTSD will have symptoms that will affect the whole family. Parents will be stressed, and consequently, the ability to function as parent deteriorates due to these symptoms. In addition, studies addressing PTSD among children in Indonesia are limited in the literature. The study aims to investigate this issue to prevent further PTSD in Indonesia, particularly in a disaster area. Also, changes in parental function will lead to unmet family needs and raise stress levels for the family members. Therefore, health workers should be more responsive in identifying early problems of physical and psychological health experienced by children to reduce the impact of disasters. The findings of this study are expected to provide a broader perspective on developing comprehensive care among children in high-risk flood zones.

Method

This study applied a quantitative design with a cross-sectional approach. The research was conducted in Jeneponto Regency, one of the worst flood locations in South Sulawesi, in 2019. The population of this study address children living in Jeneponto. To obtain the desirable sample, the author determined the inclusion criteria are children who are victims of flooding in Sapanang Village, Jeneponto Regency; flood victims from grades 4 to 6 can write and read. In contrast, the exclusion criteria were absent during the research, and the respondents did not complete the questionnaire. Sixty-one children were evaluated after being selected using purposive sampling techniques.

Researchers assessed the incidence of PTSD using a questionnaire of DSM-5 Checklist (PCL 5) that consists of 4 symptoms, including re-experiencing, avoidance, negative alteration in mood cognition, and hyperarousal. There were 20 items of questions to assess PTSD (Weathers et al., 2013). The questionnaire has been translated and modified into Indonesian with a Content Validity Index (CVI) of 1 and Cronbach's alpha of 0.875 (Arnika, 2017). The other researchers in Indonesia used this instrument to re-test the validity and reliability with 356 respondents and obtained $r \geq 0.113$, Cronbach's alpha 0,672 (Nasri, Seniwati, & Erfina, 2020). All researchers carried out data collection and were also assisted by one research assistant. Before data collection, the research team conducted a common perception with the research assistant regarding the research questionnaire's content and how it was filled out. Data were analyzed using SPSS version 24. Data is presented using univariate analysis, including frequency distribution and statistical descriptions to show the characteristics of respondents and the incidence of PTSD. The ethical clearance was obtained before the study's outset.

Results

This study showed that the average age of children in the range was 9-13 years old. There were 58.4% of girls and 42.6% of boys. Most of the respondents (63.9%) began to sense PTSD symptoms one month after the disaster. The exposures of symptoms experienced by children at most two times, with roughly 54.1% **(Table 1)**. The number of respondents who experienced PTSD averaged 24 children or 39.3%, While those who did not experience PTSD were 37 children or 60.7% **(Table 2)**. There are four symptoms of PTSD, i.e. re-experiencing, avoidance, negative alteration in mood cognition, and hyperarousal.

The respondents who experienced PTSD most commonly dominated re-experiencing symptoms with approximately 59 respondents or 86.7%, whereas the respondents who did not experience PTSD more sense hyperarousal that is equal to 44.3% **(Table 3)**. Based on age, PTSD is most experienced at the age of 11 years old, as many as 60%. From a gender perspective, the majority of girls experience PTSD, about 42.9%, compared with boys. In terms of time to feel PTSD symptoms, approximately 45.5% of respondents who have PTSD felt that symptoms began to appear two months after the flood event. Most of the respondents (72.7%) with PTSD experienced symptom exposure three times after the flood incident **(Table 4)**.

Table 1. The characteristics of respondents

Variables	Characteristics	*n*	Percentage (%)
Age	9 years old	13	21.3
	10 years old	16	26.2
	11 years old	15	24.6
	12 years old	16	26.2
	13 years old	1	1.6
Sex	Boys	26	42.6
	Girls	35	58.4
PTSD occurrence	1 month after the disaster	39	63.9
	2 months after the disaster	22	36.1
PTSD Frequency	1 time	10	16.4
	2 times	33	54.1
	3 times	11	18.0
	4 times	17	11.5

Table 2. The incidence of PTSD

The incidence of PTSD	*n*	Percentage (%)
Experiencing PTSD	24	39.3
Not Experiencing PTSD	37	60.7

Table 3. The Incidence of PTSD based on symptoms

Symptoms of PTSD	Experiencing PTSD		Not Experiencing PTSD	
	n	%	*n*	%
Re-experiencing	59	86.7	2	3.3
Avoidance	43	70.5	18	29.5
Negative alteration in mood cognition	41	67.2	20	32.8
Hyperarousal	34	55.7	27	44.3

Table 4. Cross-tabulation of the respondent's characteristics with Incidence of PTSD

Variables	Characteristics of respondents	Total	Experiencing PTSD		Not experiencing PTSD	
			n	%	*n*	%
Age	9 years	13	5	38.5	8	61.5
	10 years	16	5	31.2	11	68.7
	11 years old	15	9	60.0	6	40.0
	12 years old	16	5	31.2	11	68.8
	13 years old	1	0	0	1	100.0
Sex	Boys	26	9	34.6	17	65.4
	Girls	35	15	42.9	20	57.1
PTSD Occurrence	1 month after the disaster	39	14	35.9	25	64.1
	2 months after the disaster	22	10	45.5	12	54.5
PTSD Frequency	1 time	10	3	30.0	7	70.0
	2 times	33	12	36.4	21	63.6
	3 times	11	8	72.7	3	27.3
	4 times	7	1	14.3	6	85.7

Discussion

The results showed that the average age of children was in the age range of 9-13 years, and PTSD was most identified at age 11 years. This research was supported by Kar et al. (2007) that children from the age category 11 to 13 years had experienced PTSD, and children with a mean age of 10.5 years are vulnerable to having PTSD. However, the other study claimed that PTSD can be recognized in young children (less than 6 years) and its similar variation in prevalence levels of trauma in older children, adolescents, and adults (Woolgar, Garfield, Dalgleish, & Meiser-Stedman, 2021). It

was previously thought that children lacked emotion regulation and neural circuitry as a protective factor that buffers children from the onset of psychopathology following environmental adversity (McLaughlin & Lambert, 2017).

The incidence of PTSD based on gender gained that girls have the highest number of PTSD than boys. This study is equal to a previous study conducted by Alisic et al. (2014), which showed that girls are the most respondent who experiences PTSD. There are differences between boys and girls in brain structure, especially in a part of the insula engaged in emotion and empathy, in which boys with PTSD symptoms identified larger volume and surface area. Meanwhile, girls with PTSD symptoms showed smaller volume and surface area (Klabunde, Weems, Raman, & Carrion, 2017). Other researchers reported that puberty in girls significantly increased the risk for PTSD (Marshall, 2016).

Judging from the time they felt the PTSD symptoms, most of the respondents perceived PTSD symptoms one month after the disaster. Meanwhile, respondents who experienced PTSD are identified as having PTSD after 2 months of the flood event. Another study related to PTSD in children reported that the time to determine a diagnosis of PTSD in children was between 1 and 3 months after the traumatic incident (Ophuis, Olij, Polinder, & Haagsma, 2018). National Institute of Mental Health (NIMH) reveals that after a traumatic event, one is expected to have some PTSD disorders or even to feel spared from the experience, as if you are observing things rather than experiencing them (NIMH, 2020). PTSD occurs because of traumatic experiences that cause anxiety and worry about someone (Carvajal, 2018). The symptoms of PTSD consist of re-experiencing, avoidance, negative alteration in mood cognition, and hyperarousal. Most respondents of this study are sensed re-experiencing compared to other symptoms. This finding is similar to Mahfuzhah, Widianti, & Emaliyawati (2021), who said that re-experiencing symptoms were the most common trauma encountered in teenage victims of flash floods. However, other studies affirm that hyperarousal is the highest rate of PTSD symptoms, and re-experiencing becomes the lowest in traumatic accident (Bahris, Seniwati, & Sangkala, Moh, 2020). The results showed that respondents sometimes recognized and experienced the stressful events that reappeared. These memories are most perceived by children who are victims of the flood. This is because the memory of traumatic events in patients with PTSD will remain there, where certain stimuli can cause a person to recall the traumatic event he had ever experienced. Finally, traumatic reminders refer to events after a disaster that causes a child or teenager to remember and re-experience the trauma as if the event was repeating itself.

Conclusion

The results of this study can conclude that PTSD in children most identified at age 11 years, and girls have the highest number of PTSD than boys. The majority of participants have sensed PTSD symptoms for one month after the disaster by experiencing symptoms of re-experiencing, avoidance, negative alterations in mood cognition, and hyperarousal. Recommendations in this research are expected to need immediate psychological treatment in children who are victims of the disaster to avoid trauma. Besides, a deeper exploration of the child's parents is required to measure the ability of parents to deal with the impact of traumatic events on children.

Author's declaration

The authors made substantial contributions to the conception and design of the study and took responsibility for data analysis, interpretation, and discussion of results. For manuscript preparation, all the authors read and approved the final version of the paper.

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Availability of data and materials

All data are available from the authors.

Competing interests

The authors declare no competing interest.

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