

SCREENING OF POST-TRAUMATIC STRESS DISORDER AMONG ADOLESCENT VICTIMS OF THE GARUT FLASH FLOOD IN 2016

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ABSTRACT

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The flash flood that occurred in the Garut Regency three years ago brought about devastating effects, one of which was the psychological impact in adolescents, namely PTSD. This study aimed to identify Post-Traumatic Stress Disorder (PTSD) in adolescent victims of the flash flood that occurred in Garut, Indonesia three years ago. PTSD was assessed using the questionnaire of PTSD Checklist (PCL) that had been reported to be reliable and valid with Cronbach's alpha was 0.91 and 0.947. The participant of this study were 102 teenagers of the State Junior High-School (SMPN) 3 Tarogong Kidul who were victims of the flood and selected using a purposive sampling technique. This study used a quantitative descriptive method with cross-sectional approach. The results showed that three years after the Garut flash flood, a total of 80% of adolescent victims did not experience PTSD and 20 (20%) of the adolescents were identified having PTSD. Re-experiencing symptom and hyper-arousal symptom were most common trauma encountered, while 90% participants have feeling intruded by memories of trauma and 80% participants showed symptoms of increased alertness. It is expected that nurses and experts can perform early and continuous screening for PTSD following a traumatic event, both in adolescents and other age groups to prevent another more severe impact.

BACKGROUND

Disaster is an event that threatens and seriously disrupts societal lives, caused by natural factors and/or non-natural factors as well as human factors that bring about human, environmental, and economic losses, and psychological effects (Law No. 24 of 2007). The National Agency for Disaster Management (BNPB) states that the incidence of floods has the highest prevalence rate (7,152 events) among the natural disasters. Furthermore, the Province of West Java is the most vulnerable area to flooding, especially in four regencies including the Garut Regency which recorded the highest number of victims and house damages from 2008 to 2018 (BNPB, 2018).

According to the report of BNPB (2016), a flash flood that occurred in Garut on September 20

2016 at around 20.15 claimed a large number of victims. Several cases of mental disorders were found following the disaster, including 1 person diagnosed with auditory hallucinations sensory impairment, 40 people diagnosed with moderate to severe anxiety, and 80 people diagnosed with mild to moderate anxiety (Dinkes Kabupaten Garut, 2016).

The most frequent mental disorders attacking victims of a disaster compared to other types of mental disorders is post-traumatic stress disorder or PTSD (Furr et al., 2010; Feo et al., 2014). According to the American Psychological Association, during the last decade the majority of adolescents across the globe or nearly 2.5 billion adolescents were affected by the disaster (APA, 2008). Furthermore, adolescents are at a higher risk of developing PTSD due to their poor ability in adapting to changes throughout their stages of physical and mental development

(Maeda, Kato, & Maruoka, 2009).

Based on their stage of development, adolescents tend to have higher psychological distress than children (Moksnes, Espnes, & Haugan, 2014; Yavuzer, Karatas, Civilidag, & Gundogdu, 2014). This was confirmed by Pratiwi, Karini, & Agustin, (2010) who compared the rates of PTSD in adolescent and adult survivors of Yogyakarta's Merapi eruption, showing that the level of PTSD in adolescents (30.77%) was higher than in adults (18.75%).

Behavioral changes due to PTSD symptoms are more likely observed in adolescents than in children and adults. This is confirmed by the changes in behavior followed by changes in brain structure in adolescents (Steinberg, 2008 in Nooner et al., 2012). Adolescents with PTSD experienced the posterior brain atrophy in the corpus collasum (Jackowski, de Araujo, de Lacerda, de Jesus Mari, & Kaufman, 2009).

Further epidemiological studies have indicated that the traumatic events and symptoms of PTSD often appear in adolescents up to 17 years and rarely occur under the 13 years-old (Nooner et al., 2012; Neugebauer et al., 2009). PTSD can also occur more than a month or even prolongs over 6 months following the disaster (APA, 2000 in Sadock & Sadock, 2010). A total of 5.7% adolescents were detected having PTSD after three years of the earthquake event in Wenchuan, China (Tian, Wong, Li, & Jiang, 2014).

As a consequence of PTSD, adolescents tend to develop behavioral problems and maladaptive emotional regulation as well as personal and social dysfunction, and have poor academic performance (Boyras, Horne, Owens, & Armstrong, 2013; Bulut, 2013; Taft, Creech, & Kachadourian, 2012). PTSD simplified the symptoms into three clusters, including constant re-experiencing of the traumatic event, avoidance of traumatic reminders and a sense of threat (APA, 2000). Therefore, sustainable and multidisciplinary recovery efforts need to be made through involvement of general workers, social workers, and health workers such as nurses to investigate the prevalence of PTSD in adolescent survivors three years after the flash flood in Garut, and to prevent PTSD symptoms by screening risk population and providing early and timely interventions.

METHODS

Our study used a descriptive-quantitative design, aiming at identifying the presence of post-traumatic stress disorder (PTSD) in the adolescent

victims of the flash flood that occurred in the Garut Regency in 2016. The population of this study included all of the 9th grade students of SMPN 3 Tarogong Kidul with a total of 297 adolescents. Population of this study was focused on the school that was most severely affected by the disaster and based on the recommendation of the Health Office and the Regional Agency for Disaster Management (BPBD) of Garut. The sample of this study involved 102 adolescents, taken using a purposive sampling technique. They were selected according to specific criteria and research objectives, i.e., having experience of the flash flood that occurred 3 years ago, either direct exposure to or witnessing the flood.

PTSD symptoms were assessed using PTSD Checklist-Stressor Version (PCL), which has 17 items corresponding to the symptoms discussed in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) (Weathers et al., 1993). Validity testing of the English-version of PCL revealed the coefficient of 0.93 and the reliability testing showed a Cronbach's alpha of 0.96 (Weathers et al., 1993; Blanchard et al., 1996). As for the Bahasa Indonesia version, the validity coefficient of the instrument was 0.947 and the Cronbach's alpha reliability of coefficient was 0.91 (Kalsum, 2014; Amelia, 2016).

The PCL questionnaire consists of 17 questions with 3 cluster, including re-experiencing, avoidance, and hyper-arousal symptoms (APA, 2000). Data interpretation was performed by aggregating the total score of each statement. Subsequently, the range of 17-85 was obtained from each respondent. For non-military individuals, the score below 36 is said to not having PTSD, while the criterion for having PTSD is the score of 36-85 (NCPTSD, 2000; APA, 2000). The description of PTSD can be seen based on their respective indicators which were subsequently analyzed using descriptive statistics of frequency distribution and percentage.

Letter of approval for the study was obtained from the Ethical Committee for Health Research of the Faculty of Medicine, Universitas Padjajaran (No. 417/UN6.KEP/EC/2019). Afterward, the researchers proposed the approval letter to the Office of National Integration and Politics of Garut and gained study approval letter (No. 072/26-Bakesbangpol/I/2018) to be forwarded to the Headmaster of SMPN 3 Tarogong Kidul. Following approval completion, the researchers directly came to the school to collect data

RESULTS

Respondent Characteristics

Half of the respondents were female (50%) and half others were male (50%). As for experience, 50% of them were directly exposed to the flood and 50% witnessed the flood. Also, some of the respondents have their houses severely damaged by the flood (30.3%), while 30% lost their materials including losing stationery (table 1).

Screening for PTSD in Adolescent Victims of Flash Floods in Garut of 2016

A small proportion of adolescents (20%) had PTSD, while almost all adolescents (80%) did not experience PTSD (table 2).

Description of PTSD in Adolescent Victims of Flash Floods in Garut of 2016 Based on Subvariable

Adolescents with PTSD mostly showed re-experiencing symptoms (95%), while the second-frequently symptoms is hyper-arousal (80%) symptoms, and the least is avoidance or avoidance related events (60%) (Figure 1).

Subvariables of PTSD Adolescent Victims of Flash Floods in Garut of 2016 Based on Indicators

The indicator with the highest percentage was item 8 or sub-variable avoidance, i.e., trying to avoid memory about events (84%). It was followed by subvariable of hyper-arousal (82%) with indicator item 16 and 17, i.e., becoming increasingly alert and shocked than before (table 3).

Adolescents with PTSD and Non-PTSD Impacted by Flash Flood in Garut of 2016 Based on Characteristics.

Adolescents with PTSD had more experi-

ence of being directly exposed to the disaster (75%), and this occurred more among girls (55%) than boys (45%). Meanwhile, adolescents without PTSD were most commonly boys (51%) and they were mostly merely witnessed the event (46%) (table 4 and table 5).

DISCUSSION

The results of the study among 102 teenagers of flash flood victims in Garut showed that a total of 82 teenagers (80%) were identified as not having PTSD. Meanwhile, 20 teenagers (20%) had PTSD three years after the flash flood. This finding confirms that PTSD can be experienced by adolescents and can persist over different periods for each individual.

As with 82 adolescents (80%) who did not suffer PTSD, this shows that adolescents seem to have effective coping strategies to adapt to the post-flash flood situation. In this study, all adolescents who were victims of the flash flood had participated in a single trauma healing session at one week following the disaster. The school collaborated with Aksi Cepat Tanggap, a humanitarian NGO (Non-Profit Organization), in providing support for mental health recovery and health education, especially for teenagers in the school.

The school also initiated activities that incorporate a spiritual approach such as reciting the Holy Qur'an and Duha prayer prior to the class activities. This effort certainly facilitates adolescents to cope with the trauma and produces different responses in each individual. This study is in line with Trickey (2012) who suggests that social support and the selection of coping mechanisms are among the risk factors for individuals having PTSD. Likewise, previous studies found that the spiritual aspects also have a positive impact on the coping mechanism of individuals to respond to the arising PTSD symptoms (Thabet, EL-

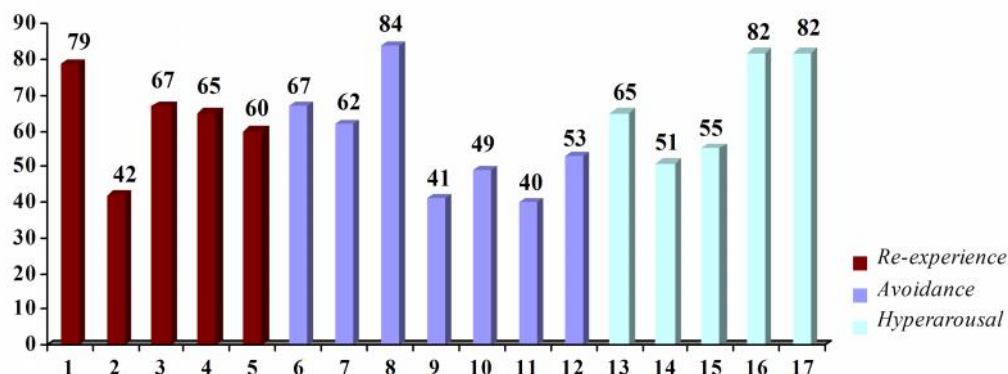


Figure 1. Description of PTSD in Adolescent Victims of Flash Floods in Garut of 2016 Based on Subvariabel

Table 1. Respondent Characteristics

Characteristics	Frequency	Percentage
Gender		
Male	51	50.0
Female	51	50.0
Experience with flash flood		
Witnessing the event	51	50.0
Direct exposure:		
Injured	50	49.0
Disability	1	1.0
Family loss:		
Not lose	100	98.1
Lose	2	1.9
Material loss:		
Not lose	71	69.6
Lose	31	30.4
House damage:		
Not damaged	53	51.9
Minor	14	13.7
Medium	4	3.9
Major	31	30.3

Table 2. Screening for PTSD in Adolescent Victims of Flash Floods in Garut of 2016

Description of PTSD	Frequency	Percentage
Having PTSD	20	20.0
Not having PTSD	82	80.0

Table 3. Subvariables of PTSD Adolescent Victims of Flash Floods in Garut of 2016 Based on Indicators

Description of PTSD	Frequency	Percentage
Re-experiencing	19	95.0
Avoidance	12	60.0
Hyperarousal	16	80.0

Table 4. Adolescents with PTSD Impacted by Flash Flood in Garut of 2016 Based on Characteristics

Experience with The Flash Flood	Gender				Total	
	Male		Female		f	%
	f	%	f	%		
Direct exposure	5	25.0	10	50.0	15	75.00
Witnessing	4	20.0	1	5.0	5	25.00
Total	9	45.0	11	55.0	20	100

Buhaisi, & Vostanis, 2014; Jocson et al., 2020; Hourani et al., 2012).

Meanwhile, in adolescents who were identified as having PTSD (20%) following the flash flood, the symptoms could be identified and last more than three years after disaster. This finding is consistent with Moksnes et al. (2014) who entail that PTSD

can prolong over periods of time and include delayed onset or over 6 months. This study is also in agreement with Tsujiuchi et al. (2016) who found 59.4% of the participants identified as probable PTSD one year after the disaster occurred. Similarly, Tian et al. (2014) also pointed out that 5.7% of adolescents have PTSD three years after the earthquake in Wenchuan,

Table 5. Adolescents with Non-PTSD Impacted by Flash Flood in Garut of 2016 Based on Characteristics

Experience with The Flash Flood	Gender				Total	
	Male		Female		f	%
	f	%	f	%		
Direct exposure	15	18.0	21	26.0	36	44.0
Witnessing	27	33.0	19	23.0	46	56.0
Total	42	51.0	40	49.0	82	100

China. This prolonged PTSD can be triggered by several factors, such as differences in experience with disasters, whether direct exposure to the event or merely witnessing the event.

In this study, the majority of adolescents with PTSD (75%) had direct exposure to the disaster, while adolescents who did not suffer from PTSD mostly (56%) merely witnessed the event. This suggests that the experience of a catastrophic event has a different impact on each individual. As Sadock & Sadock (2010) argue, with regard to the effect of stressors, both direct exposure to and witnessing the disaster are among the factors of PTSD emergence.

Based on gender, this study found PTSD was more experience by female adolescents (55%) than the male. This indicated that there is no gender difference in response to the PTSD symptoms between men and women. This finding is supported by Green et al. (1991) who reveal that male and female victims of a disaster in Buffalo Creek tend to show similar responses and have no significant difference in the level of response to the symptoms. In short, gender is not always a major contributing factor for individuals to suffer from PTSD.

As for this study, most adolescents with PTSD showed avoidance symptom responses in item 8, i.e., trying to avoid some memories of disaster. All adolescents stated that they experienced this with different rates with 0% of adolescents responding no at all (1), 20% saying they had little experience (2), 25% of adolescents reporting the medium category (3), 35% reporting several times (4), and 20% reporting frequent experience (5). This finding is in accordance with the previous study, showing that teenagers with PTSD tend to present with avoidance responses indicated by the effort to escape from any stimuli such as memories and activities that are related to the traumatic events (Mueser & Taub, 2008 in NHMRC, 2013). Therefore, adolescents tend to develop maladaptive behavior as a result of negative appraisal of the traumatic event and inadequate coping strategies in dealing with difficult situations in each stage of their life.

In line with this study, the earlier study has

demonstrated the presence of prolonged health problems after identification of PTSD. A study conducted by (Jin, Xu, Liu, & Liu, 2014) found 1181 (40.1%) participants overall were diagnosed to be suffering from PTSD, while 58.7% of the respondents reported that they suffered from at least 1 re-experience symptom such as specific phobia and 49.4% suffered from 2 or more arousal symptoms such as panic disorder. This finding implies the need for an effective follow-up therapy to cope with the response to the PTSD symptoms.

According to APA (2008) the CBT (Cognitive Behavior Therapy) is an effective intervention to deal with PTSD. Several previous studies have indicated a significant change in the PTSD symptoms and improvement in life quality. CBT is a psychosocial therapy that covers several interventions to modify three interrelated functioning of thoughts, feelings and behavior, that control responses and negative behavior (Association for Behavioral and Cognitive Therapies [ABCT], 2017; APA, 2008). CBT can be given by incorporating various types of therapies that focus on reducing a response to some symptoms or overall symptoms of PTSD.

As for this study, the adolescents with PTSD mostly present with re-experience symptoms with a total of 95% of the teenagers. This can be overcome by several types of therapy such as conducting activities that discuss stress due to traumatic events, compile a list of events and traumatic memories, establish a safe space for individuals in their imagination, imaginative techniques, kinesthetic techniques, and EMDR (Erwina, 2010).

Meanwhile, the second highest symptom in this study is the hyper-arousal symptom responses, stated in item 16 of the questionnaire regarding the response to be more alert than before. It was found that some of the adolescents (55%) reporting several times and frequent experience. This finding agrees with Heir, Piatigorsky, & Weisaeth (2010), showing that excessive response (hyper-arousal) is usually characterized by a sense of anxiety or increased alertness, which can result in disrupted daily activities. This can also be coped with CBT that target arising symp-

toms, such as exercise in controlling fear and bodily reactions, muscle relaxation, deep breathing, positive statements, and proper sleep management (Erwina, 2010).

The avoidance response appears in 60% of the adolescents who present with the symptoms or try to prevent memories related to the disaster. This can be solved by effective therapeutic activities such as conducting discussions about avoidance behavior, assessing traumatic memories, a series of CBT techniques such as imagined exposure, drawing, storytelling and writing (Erwina, 2010). In addition, CBT is also recommended to involve their parents to relieve fear or other symptoms at home (Higa-McMillan et al., 2016). In terms of therapy administration, individual CBT is more effective than group CBT (NICE, 2018).

From this, it can be said that adolescents of SMPN 3 Tarogong Kidul, which is the only educational institution that most severely struck by the disaster mostly, show re-experience and hyperarousal responses. They feel intruded by memories of the event and become increasingly alert since the event of disaster three years ago.

Compared to the previous studies which investigated the prevalence of PTSD among adolescents in seven years following Pangandaran's Tsunami (19.9%) and three years following the earthquake in Wenchuan, China (5.7%), adolescents with PTSD in our study has higher prevalence (20%). This can be a focus of attention for health workers, especially nurses, to provide a follow up effort to prevent prolonged PTSD among the victims.

Individuals with PTSD also experience stress so that further evaluation from professionals is required to assess their level of stress (Weiss & Marmar, 1997). Delayed detection and treatment can result in the emergence of symptoms that can disrupt individuals' life and cause other health problems (NCPTSD, 2000). Therefore, the nurses have an important role in identifying and conducting follow-up measures on individuals who need mental health care to prevent further harmful effects.

The limitations of this study that no comparison was made with the pre-disaster condition due to a lack of data, so it is difficult to conclusion about the extent of the effect of the flash flood on the respondents. Future studies should include larger sample sizes and more powerful designs. Based on the result highlights the importance of continued psychological support and enhancement and utilization of resilience factors in management of PTSD in the aftermath of any future natural disaster.

CONCLUSION

A small proportion (20%) of adolescent victims of the Garut flash flood three years ago was identified having PTSD, while the other large number of adolescents did not have PTSD. This study shows that the most common PTSD symptom occur in adolescents are re-experiencing and hyper-arousal symptom, such as feeling intruded by memories of catastrophic events and increased alertness.

Suggestion for nurse practitioner, It is important to perform early screening and provide effective therapy for PTSD that target adolescents and other high-risk age groups. The suggested therapies include CBT (Cognitive Behaviour Therapy), psycho-education, stress management, acupuncture, pharmacotherapy, family therapy, and school-based intervention. Suggestion for parents and relevant institutions, mental health problems following a traumatic event among children and adolescents need to be early detected and treated. Additionally, it should be a concern for relevant institutions such as schools, public health centers, and other relevant institutions to carry out early detection and set follow-up measures for PTSD quickly and responsively. Suggestion for further research, need to analyze other aspects such as immediate screening for PTSD following catastrophic events in a certain area, either in adolescents or other age groups.

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