

We are IntechOpen, the world's leading publisher of Open Access books Built by scientists, for scientists

6,900

Open access books available

186,000

International authors and editors

200M

Downloads

Our authors are among the

154

Countries delivered to

TOP 1%

most cited scientists

12.2%

Contributors from top 500 universities



WEB OF SCIENCE™

Selection of our books indexed in the Book Citation Index
in Web of Science™ Core Collection (BKCI)

Interested in publishing with us?
Contact book.department@intechopen.com

Numbers displayed above are based on latest data collected.
For more information visit www.intechopen.com



Children and Adolescents-Survivors of the 2004 Indian Ocean Tsunami: Prevalence of Long-Term PTSD and Coping Strategies

Eni Nuraini Agustini and Hiroya Matsuo

Additional information is available at the end of the chapter

<http://dx.doi.org/10.5772/51478>

1. Introduction

On December the 26th 2004 an submarine earthquake northwest of Sumatra, Indonesia occurred, with a magnitude of 9.0, caused a giant shockwave or tsunami that ruined the shorelines of Indonesia, Sri Lanka, India, Thailand and other countries in Southeast Asia. Most affected country in terms of deaths was Indonesia, around 129.498 died, 37.606 were missing and some 400.000 were internally displaced [1]. Besides the enormous death toll, other far-reaching consequences followed. In any disaster situation children are among the most vulnerable. Exposure to natural disasters has a devastating impact on the psychological and social well-being of children, adolescents. Losing and separating family member, altering routine daily life activity, disrupting community ties, caused children become confuse, scare and distress.

According to Indonesia Social Ministry [2], the number of children orphaned by the tsunami in Aceh was 5,270. In the case of the tsunami disaster, many children and adolescent were suffering from psychological consequences following tsunami aftermath and it was exacerbated by loosing and displacing family, staying in the shelter or tents for months, and lack of social support. Even, the children and adolescent exposed to natural disasters are resilient and recover from early post-trauma symptoms, however the capacity of tsunami to affect mental health is vivid. As a direct consequence of such natural disasters, PTSD is the most common and devastating mental health disorder identified in children and adolescents [3].

According to the Diagnostic and Statistical Manual, Version IV (DSM IV) American Psychiatric Association (APA), PTSD is defined as a clinical syndrome that may develop

following extreme traumatic stress. The new definition includes criterion A1 (exposure to a traumatic event) and criterion A2, which is a subjective assessment of the criterion whereby the person report experiencing horror or helplessness at the trauma. PTSD is further characterized as acute when present for less than three months, chronic for more than three months or delayed onset when symptoms develop initially six months or more after the trauma. The first major research of the effects of trauma on children was undertaken by Bloch in 1956 following a tornado in Mississippi. Since the study by Bloch, various authors have undertaken research into the psycho social and physical effect trauma has on children.

Subsequent studies have demonstrated that children and adolescent can develop PTSD following traumatic events. Much of the research has focused on children and adolescent exposed to natural disasters such as hurricanes [4], flooding [5] and earthquakes [6]. They found the symptoms of PTSD among children and adolescences were an exaggerated startle response, repetitive behavior, intrusive thoughts and flash backs about trauma, sleep disturbances, difficult to concentrate, and somatic symptoms. Hence, children who suffer from PTSD demonstrate difficulties in academic achievement, social interaction, and aggressive behaviors [7]. Further this study claims that PTSD may have detrimental effects on their ability to achieve developmental milestones in relation to their peers and on their ability to become fully functioning adults. The self awareness begins to develop during adolescence. This is extremely important for children that have been exposed to chronic trauma, as they develop an understanding of what has and is occurring in their environment. Without the development of self-awareness an adolescent will have difficulty processing and understanding experiences, which may leads to ineffective reasoning skills when interacting with the larger world.

Among these studies, the most common question addressed in past decades is why some people develop PTSD after traumatic events, whereas other do not develop. The presence of many different factors such as gender, severity of trauma, age, social support, and coping strategy may play a role to make somebody more vulnerable to develop PTSD resulted in the individuality of the incidence and especially for coping, coping is individually matter.

Coping is defined as effort to regulate emotion, cognition, behavior, physiology and the environment in response to stressful event or circumstances [8]. Coping conceptualized in the two broad responses: emotion focused coping and problem focused coping [9]. Recently, an empirical evidence has introduced multidimensional of children coping. An investigation proposed four-factor model coping including active coping, distraction, avoidance and support seeking [10]. Active coping involves direct problem solving, cognitive decision making, and restructuring. Distraction refers to replaced action and physical release of emotion. Avoidance involves behavior and cognitive strategies such as withdrawal, denial, and refusing to think about the trauma. Support-seeking consists of emotional sharing and seeking help from others. Children use coping strategies in order to protect and adapt with stressful situation.

The literature clearly explains the consequences of PTSD toward growth and development of children and adolescence. However, there are very few research of the long-term outcome

of PTSD in children and adolescence [11]. Furthermore, there is a paucity of study to examine the long-term effect of the tsunami among children and adolescence in Indonesia, especially PTSD and its associated factor. Therefore, we conduct the study of long-term PTSD and its associated factors. Hence, we want to examine the coping strategy of children and adolescence with long-term PTSD.

2. Subjects and methods

2.1. Participants

The participants in this study were 482 students from 4 Junior and Senior High School in Banda Aceh and Aceh Besar district. The data collection was conducted 4.5 years after tsunami. Permission to conduct the study were acquired by School of Nursing, Faculty of Medicine and Health Sciences Syarif Hidayatullah State Islamic University, School of Nursing, Faculty of Medicine, Syiah Kuala University, the principals of Junior and Senior High School and by the students.

2.2. Ethical consideration

Questionnaires were administered to the participants in their classrooms by the researcher and teacher. Before collecting the data session, students were informed that their participation was voluntary and they had the right to withdraw from the study without any consequences. It was clarified that there were no right or wrong answers to the questions. The participants were encouraged to ask of each item to the researcher if they needed further explanation.

2.3. Self-reported questionnaire

Socio-demographic characteristics. Questionnaire of socio-demographic characteristics consist of age, gender, school grade, losing of parents, somatic response, sources of emotional supports, and history of trauma.

The Child Post Traumatic Stress Reaction Index (CPTSD-RI) consists of 20 items designed to measure children's reactions and distress related to a specific traumatic event [12]. Children are indicating a response on 5 point Likert-type scales from 0 (*none*) to 4 (*most of time*). Total scores range from 0 to 80 with the following severity ranges: 0 to 12 = doubtful, 12 to 24 = mild, 25 to 39 = moderate, 40 to 59 = severe, 60 and above = very severe.

3. Post-traumatic stress disorder symptoms and its associated factors

3.1. Socio-demographic Characteristics (Table 1)

The mean age was 14.4 years (range 11–19). Two hundred and forty-six (51%) were female and 236 (49%) were male. Participants were classified into six groups according to their school grade, junior high school VII–IX and senior high school X–XII.

Background	N	Mean± SD	Range
Age (years)	482	14.4± 1.7	11-19
Percentage			
Gender:			
Female	246	51%	
Male	236	49%	
School Grade:			
Grade VII	88	18.2%	
Grade VIII	64	13.3%	
Grade IX	62	12.9%	
Grade X	125	25.9%	
Grade XI	80	16.6%	
Grade XII	63	13.1%	
Loosing Parents:			
None	365	75.8%	
Loosing father	57	11.8%	
Loosing mother	18	3.7%	
Losing both of father and mother	42	8.7%	
Supports:			
Support from family	403	84.7%	
Support from teacher	119	24.7%	
Support from relative	80	16.6%	
Support from friend	97	20.1%	
Other	30	6.2%	
History of trauma			
single trauma	31	6.4%	
multiple trauma	451	93.6%	
Somatic response :			
Heartbeat	170	35.3%	
Headache	132	27.4%	
Stomachaches	94	19.5%	
Cold in extremities	94	19.5%	
Sweating palm of hand and feet	79	16.4%	
The best person to share:			
Friend	277	57.5%	
Mother	248	51.5%	
Sibling	234	48.5%	
Father	123	25.5%	
Relative	66	13.7%	
Teacher	37	7.7%	
Others	17	3.5%	

Table 1. Socio-demographic Characteristics

Receiving supports were categorized into five categories: no support, mild (one support), moderate (received two supports), good (received three supports) and very good (received all supports) were reported by 37 (7.7%), 240 (49.8%), 123 (25.5%), 55 (11.4%) and 27 (5.6%), respectively. Support also divided into: familial support, extra familial support and professional support. Familial support that consist of family and relative support were 83.6 % and 16.6% respectively. Extra familial support that consist of teacher, friend and others support were 24.7%, 20.1%, 6.2%, respectively. Professional support was 15.6 % and for social supports level divided into 3 categories: less support level, moderate level, and good level were 57.5%, 36.9%, and 5.6%, respectively.

Thirty-one adolescents (6.4%) suffered a single trauma whereas 451 (93.6%) had various traumatic experiences. The somatic response were reported in 5 categories, such as no somatic response 29.3%, mild somatic response 40.3%, moderate 17.8%, severe 8.9% and very severe 3.7%. The most frequently reported somatic responses were heart beating fast (35.3%) and headache (27.4%). Parental loss was categorized into four categories: lost no parents (75.8%), lost father (11.8%), lost mother (3.7%), lost both parents (8.7%). The best person with whom to share was also evaluated; and participants mostly prefer: friend (57.5%), mother (51.5%) and sibling (48.5%) as the best person to share.

3.2. Post-traumatic stress disorder symptoms (Table 2)

The mean score on CPTSD-RI was 28.9 (range 0–61). Children who reporting none, mild, moderate, severe and very severe symptoms were 54 (11.2%), 124 (25.7%), 196 (40.7%), 103 (21.4%) and 5 (1%), respectively. The most frequently reported symptoms in this study were emotional avoidance, identified events as extreme stressor and regular fea.

PTSD Symptom Severity Level	N	Percentage
None	54	11.2 %
Mild	124	25.7%
Moderate	196	40.7%
Severe	103	21.4%
Very Severe	5	1%

Table 2. PTSD Symptom Severity Level

3.3. PTSD& age

There was no correlation among age and mean score CPTSD-RI ($P = 0.308$). A one-way anova between groups was conducted to explore the impact of school grade on total score on CPTSD-RI. There was no statistically significant difference among groups ($P = 0.57$).

3.4. PTSD and social support

The severity of symptoms of PTSD in participants who received very good support differed significantly from the severity of symptoms. Among those who received no support;

participants who received very good support had a lower mean CPTSD-RI score than those who received no support ($P = .004$). Independent sample of T test was conducted to predict PTSD symptom severity scores (CPTSD-RI) with familial support, extra familial support, and professional support. Our findings showed that extra-familial support ($p: .04$) was significant correlate with PTSD symptoms. When comparing the mean score of PTSD symptoms in participants who acquired good support to less support, there was significant difference among supported group, participants who acquired good support were having lower mean score of CPTSD-RI rather than less support group ($p: .01$).

3.5. PTSD and gender

There was a significant gender difference in the mean score on CPTSD-RI; female students had higher scores than male ($P < 0.05$).

3.6. PTSD and lost of parents

The main score between losing parents and severity of posttraumatic stress reaction were showed higher mean score CPTSD-RI among participant who lost both of parents (analyses of variance, $p: <.05$).

3.7. PTSD and number of prior trauma experience

This study showed that the CPTSD-RI score of participants who suffered a single trauma did not differ significantly from those who had various traumatic experiences ($P = 0.704$).

3.8. PTSD and somatic responses

Somatic responses also differed significantly in the mean score on CPTSD-RI; participants with a very severe somatic response had the highest scores on the mean of CPTSD-RI ($P < 0.05$) (Table 3).

4. Long-term PTSD and coping strategy

4.1. Subjects and methods

4.1.1. Participants

As a part of our mix-method study, then we selected participants from the previous study. Eventually we found 10 children who involved in this study from one private junior high school at Aceh Besar district. Along with the teacher, the selection process was held. In this study only children who directly experienced the 2004 Indian Ocean tsunami and lost their parents (one or both parents) were involved. Prior to interview session, since the children were orphaned, the aim of the study and written inform consent were given directly to children under teacher's supervision.

Variables	N	PTSD Mean ± SD	p Value
Gender:	482		
Female	246	31.8 ± 12.5	.000
Male	236	25.8 ± 12.4	
School Grade			
Grade VII	88	26.6± 13.9	
Grade VIII	64	28.5 ± 12.6	
Grade IX	62	29.4 ± 13.3	.57
Grade X	125	29.4 ± 13.3	
Grade XI	80	29.7± 12.1	
Grade XII	63	29.9± 10.8	
Loosing Parents:			
None	365	26.2± 12.1	
Loosing father	57	35.2 ± 12.5	
Loosing mother	18	40.9 ± 10.1	.000
Losing both of father and mother	42	38.6 ± 10.3	
Support level :			
Bad/none of supports	37	31.9 ± 12.1	
Mild	240	30.1 ± 12.9	
Moderate	123	28.6± 12.7	.004
Good	55	23.4± 12.4	
Very Good	27	26.4 ± 12.1	
Somatic response category:			
None	141	22.6± 11.7	
Mild	194	30.3± 12.4	
Moderate	86	32.4± 12.7	.000
Severe	43	32.3±11.3	
Very severe	18	38.7± 10.9	
History of trauma			
single trauma	31	28.0 ± 12.9	
multiple trauma	451	28.9 ± 12.8	.704

Table 3. PTSD and Socio-demographic Characteristics

4.1.2. Design overview

This cross-sectional qualitative study was conducted as the part of our mix method study. We conduct this study on February, 2010. This study were approved by the Kobe University Graduate School of Health Sciences; Faculty of Medicine and Health Sciences, Syarif Hidayatullah State Islamic University; School of Nursing, Faculty of Medicine, Syiah Kuala University; and the principal of junior high school. Data for this study were obtained from clinical structured the PTSD symptoms and coping style post- the 2004 Indian Ocean tsunami.

4.1.3. Interview procedures

The interview was conducted face-to-face on each one child with two researchers. Some of the children were preferred to answer in Aceh language; therefore we were using both of Indonesian and Aceh language. Children's PTSD symptoms and coping strategies were assessed during an individual meeting that occurred at school. Especially for children whom preferred answer in Aceh language, the local researcher was interpreted and wrote the child's answer from Aceh language into Indonesian. The researchers wrote the answers and read back to the child what had been written to make sure that the response was accurately documented. The interviews with children lasted approximately 60 minutes.

4.1.4. Data collection of CAPS-CA

The data collection were consist of 3 items questionnaire; first, basic information like demographic data and the tsunami's experience; two, Clinician-Administered PTSD Scale for Children and Adolescents (CAPS-CA); three, children coping strategy. Prior to data collection, the questions for the interview was piloted with two children at the same school by using both of Indonesia and Aceh language to make sure if the child understood the intended meaning of the questions and written the responses. After pilot interview, then we conducted the data collection among 10 children. Data have been collected through observations and clinician structure interview among participants. We were performed clinical diagnoses by using CAPS-CA.

The CAPS is a structured interview that assesses the 17 symptoms of PTSD [13]. We assess both of the frequency and intensity of the 17 diagnostic criteria and two associated features (self blame and trauma spesific fears). Children's coping strategy was asked from one open-ended questions: "what did you do to help you feel better when the intrusive thought occurred?".

The duration of each interview was 60-90 minute for 2-3 times of session. All the child response were typed into an Excel database and double checked for accuracy. All children were signed by an indicated number.

4.2. Qualitative analysis of coping strategy

Qualitative study literature states that the step on qualitative study consist of, transcribed data to identify the significant statement of informant; read the transcribed data several times; categorized the statements; determined the potential subthemes from the categories of statements; determined the themes and subthemes; clarified to verified data from key informant as needed; and revised themes based and verified data as needed.

First of all, we gather coping literatures [8],[9],[10],[15],[16],[17],[18]. Based on coping literatures, then, we analyze the coping strategy among children. The next steps, we divide children's answer into categories. Each category consist of subtypes of coping strategies which represent of children's coping responses, again at this step, we analyze and match

children's answer with appropriate coping literatures. Because of the differences of children's characteristics, so some of the definitions of the categories and subtypes of coping for children are vary. As a part of cultural consideration, we included a coping subtype to the use of religious or spiritual guidance.

5. Long-term PTSD and coping strategy

5.1. Participants characteristics

Children current age range was 12–16 years, whereas the age at the tsunami was 6-10 years. Five children were females and 5 children were males. Familial loss were separated as: lost father (4 children), lost mother (3 children), lost both of parents (3 children), lost either parents and siblings (4 children).

5.2. CAPS-CA (Table 4)

Children who diagnosed as full PTSD were 5 children, while the remaining children were diagnosed as partial PTSD.

Children	Meet Criteria				Total Score of CAPS-CA	Type of PTSD
	A	B \geq 1 (B1-B5)	C \geq 3 (C1-C7)	D \geq 2 (D1-D5)		
P1	YES	YES (21)	YES (9)	YES (26)	56	Partial
P2	YES	YES (20)	YES (18)	YES (22)	60	Full
P3	YES	YES (20)	YES (12)	YES (14)	46	Partial
P4	YES	YES (25)	YES (26)	YES (21)	72	Full
P5	YES	YES (15)	NO (4)	YES (11)	30	Partial
P6	YES	YES (19)	YES (31)	YES (22)	72	Full
P7	YES	YES (20)	NO (0)	YES (13)	33	Partial
P8	YES	YES (23)	YES (36)	YES (26)	85	Full
P9	YES	YES (18)	YES (15)	YES (15)	48	Full
P10	YES	YES (12)	YES (5)	YES (21)	38	Partial

Table 4. CAPS-CA

5.3. Coping strategy (Table 5)

This qualitative study surfaced the coping strategy among 10 children. We reported 38 coping responses from answer statement of 1 open-ended question about their coping response when the intrusive thoughts occurred. When answering the question, each child answers not only using 1 coping response, but also several coping responses. Of 38 coping responses, we identified the meaning participants coping responses with the meaning of coping strategies based on literatures. Then, we divide into 12 sub types of coping strategy from 38 coping responses and eventually, we determine 4 coping strategies.

Coping strategy (n: 38)
Avoidance coping (n = 20/38)
Paralysis passivity (3/38)
If the intrusive thoughts occurred, sometimes I can't do anything
I prefer to be quite
Thought suppression (2/38)
I had forgot about the tsunami experience
I don't want to remember it anymore
Rumination (3/38)
I can't do anything because it's very hard to eliminate those thoughts
Avoidance other (1/38)
I don't want to hear air plane's sounds
Self isolation (1/38)
I cant's share it with anyone, nobody can understand me
Avoidance action (10/38)
I don't want to go of the sea any more
I don't want to start any conversation related to the tsunami
Active Coping(n = 6/38)
Seeking meaning (5/38)
I use to pray, say Istighfar (ask God forgiveness), and read Quran
Seeking social support (1/38)
Sometimes I try to share with my friend
Adaptive coping(n= 3/38)
Distractive (3/38)
Sometimes I play with my friend
Sometimes I had wrote a poem
Emotion focused(n= 9/38)
Emotional Expressions (5/38)
I use to cry
Self blaming (3/38)
I'm feeling guilty, since I couldn't safe my sister
Wishful thinking (1/38)
I wish I could hold my sister's hand, she would be live now

Table 5. Coping strategy

1. **Avoidance coping.** This is the majority coping among children (20 coping responses). All the children were using avoidance coping like avoid the place, conversation, or any thoughts related with the tsunami experience. For example they state: "I don't want to start any conversation related to the tsunami, except somebody ask me first". or "I can't share it with anyone, nobody can understand me".
2. **Active coping.** Seeking meaning and seeking social support was reported as active coping in this study. Using religious and spiritual sources in order to feel better and

attempts to accept the tsunami event as God will is defined as seeking meaning. Making the religious sources as seeking meaning in this study had showed such as “I use to say Istighfar (ask God forgiveness)”, “I will pray” and “I use to read Quran”.

3. **Emotion focused coping.** Three children were reported emotional expression or expression feeling, self blame and wishful thinking as their coping. They thought that some part of the tsunami experience was they fault, for example: “I’m feeling guilty, since I couldn’t safe my sister” and “I feel regret that I can’t safe my parents”. Emotional expression or expression feeling can be reported such as “I use to cry” or “I felt sad and cry”.
4. **Adaptive coping.** Distractive action as the only adaptive coping have been using among 2 children. Effort to change the attention of their mind into another activity as they stated that “playing with friends’ or “writing a poem” can make them feel better when the intrusive thought occurred.

5.4. CAPS-CA and coping strategy (Table 6)

This study showed children with both of partial or full PTSD had several coping strategies. Avoidance coping strategy has been dominated of 10 children as well as the development of PTSD.

Children	Type of PTSD	Coping strategic	Sub category
P1	Partial	Emotion focused	Emotional expression
		Avoidance coping	Paralysis passivity
		Avoidance coping	Rumination
		Emotion focus	Self blaming
P2	Full	Active coping	Seeking meaning
		Adaptive coping	Distraction
		Avoidance coping	Self isolation
P3	Partial	Avoidance coping	Avoidance action
		Active coping	Seeking social support
		Active coping	Seeking meaning
P4	Full	Active coping	Emotional expression
		Avoidance coping	Rumination
		Avoidance coping	Avoidance action
P5	Partial	Emotion focused	Emotional expression
		Avoidance coping	Avoidance other
P6	Full	Avoidance coping	Thought suppression
		Avoidance coping	Avoidance action
		Emotion focus	Self blame
		Emotion focus	Wishful thinking
		Adaptive coping	Distraction
		Active coping	Seeking meaning

Children	Type of PTSD	Coping strategic	Sub category
P7	Partial	Emotion focused	Emotional expression
		Avoidance coping	Paralysis passivity
		Adaptive coping	Distraction
		Emotion focus	Self blame
P8	Full	Active coping	Seeking meaning
		Emotion focused	Emotional expression
		Avoidance coping	Rumination
		Avoidance coping	Avoidance action
P9	Full	Avoidance coping	Paralysis passivity
		Emotion focused	Emotional expression
		Avoidance coping	Avoidance Action
P10	Partial	Active coping	Seeking meaning
		Avoidance coping	Avoidance action
		Avoidance coping	Thought suppression

Table 6. PTSD & Coping strategy

6. Conclusion

This study showed that children and adolescence who live through disaster do experience long-term of PTSD symptoms (63.1%). The persistence of PTSD symptoms in this study appeared to be associated with the memory of tsunami that was ingrained even after 4.5 years; indeed many associated factors contribute with the presence of symptoms [19]. Traditionally, their responses have been misunderstood or trivialized. The idea that “children are resilient and will get over it” is no longer valid. Most children and adolescents will regain normal functioning once basic survival needs were met, safety and security have returned and developmental opportunities were restored, within the social, family and community context [20]. Unfortunately, children and adolescent in these studies did not meet their need immediately. Moreover, they did experience such as displacement, death of family and relative, damage to good and home, and staying in the shelter for months. These circumstances exacerbated their psychosocial consequences.

This study determined adolescents with higher CPTSD-RI score were either lost their parents and less of support. It means that, being lost of family was associated with the less of support for recovery. In particular, results of this study indicate that social support level was also significant correlate with the severity of PTSD. These findings were supported with the previous investigation which showed that social support form family, friends and community are thought to protect against the development of PTSD as family, friend and community can challenge negative beliefs, help to find solutions and encourage behavior [21]. Less social support in this study was determined as a significant risk for psychological consequences such as PTSD. Another study suggested that the severity and persistence of PTSD might be related to the deterioration of social support [22].

However in our study, extra familial supports were considered more significant with the severity of PTSD symptoms compare to familial support and professional support. This could be explained with another previous research that a caregiver's or family member's own trauma could interfere with her or his ability to provide appropriate care and support for their children [23]. Moreover, since many family member of children and adolescent were became tsunami survivors, they do not have more time and energy to pay attention , which in turn children and adolescent were seek support from extra familial supports as their helpfulness support at that moment. Findings in current study confirm previous report that, once extra familial support (e.g., teachers, friends, community leader and religious figures) was increased as perceived helpfulness support then posttraumatic stress reaction in youth would decrease [24]. Children and adolescents in present study were mostly reported friend and mother as the best person to share, this findings seems to be linked with the presence of extra familial support sources. The result enlightened that during adolescence the need for emotional support extend beyond the familial and kin confines to friend and non-kin adults in the community [25]. Which means that adolescent begin to rely on peers than solely on parents for sources idea, value, and behavior.

Our study revealed that children employ similar coping strategy with adult, such as avoidance, emotion focused, active, and adaptive [26]. However, there were some differences between children and adult. Participants in our study tends to be more frequently using avoidance coping and emotion coping. Traumatized children typically employ emotion-focused, avoidant and distractive coping [27]. In contrast, seeking social support was reported less often on children in this study, which means the initiative of children to seek support from other still immature. Nevertheless, our result indicated coping response may be effective in protecting children's mental health in extreme life-endangering condition.

Supporting previous study [28],[29], our study found that gender showed significance difference on CPTSD-RI score, female participants showed high score CPTSD-RI compare to male participants. Reversed with the gender, support, and somatic response, we found in this study, there is no difference between age and severity of PTSD symptoms. Our data indicated that the impacts of disaster may vary depending on the circumstances of characteristics of the adolescents, adolescent's support and their coping.

Findings from this investigation show the need to set up "child-friendly" spaces as soon as possible and activities that normalize the lives of children, give them a sense of safety. Focus and build on interventions that strengthen the population's resiliency and resources. Effective intervention strategies should enhance children and adolescence psychological adaptation despite the tsunami.

Author details

Eni Nuraini Agustini

*Psychiatric Nursing Department, School of Nursing, Faculty of Medical and Health Sciences,
Syarif Hidayatullah State Islamic University, Ciputat, Indonesia*

Hiroya Matsuo

International Health Department, Kobe University Graduate School of Health Sciences, Kobe, Japan

7. References

- [1] Health Minister Department of Indonesia. *Indonesia Health Profile 2006*. Available at: <http://www.depkes.go.id/>. (Accessed 20 May, 2009)
- [2] Dinas Social and Inter-agency joint registered children database analysis, 13 October 2005.
- [3] Norris, F. H., Friedman, M. J. and Watson, P. J. (2002) '60,000 Disaster Victims Speak: Part I: An Empirical Review of the Empirical Literature, 1981–2001', *Psychiatry: Interpersonal & Biological Processes* 65: 207–39.
- [4] Sallom A. & Lewis M.L. (2010) An explanatory study of African American parent-child coping strategies post-hurricane Katrina. *Traumatology* 16 (1), 31-41
- [5] Earls, F., Smith, E., Reich, W. and Jung, K. (1988) 'Investigating Psychopathological Consequences of a Disaster in Children: A Pilot Study Incorporating a Structured Diagnostic Interview', *Journal of the American Academy of Child and Adolescent Psychiatry* 27: 90–95.
- [6] Bal, A. (2008). Post-Traumatic Stress Disorder in Turkish child and adolescent survivors three years after the Marmara earthquake. *Child and Adolescent Mental Health*, 13, 134-139.
- [7] Anderson T (2005). PTSD on Children and Adolescence. Retrived from: <http://www.uic.edu/cuppa/gci/publications/workingpaperseries/pdfs/anderson%2005-04.pdf>(Accessed 20 June, 2009)
- [8] Compas B. E., Conner-Smith J. K., Saltzman H., Thomsen A. H. & Wadsworth M. E. (2001). Coping with stress during childhood and adolescence: Problems, progress, and potential in theory and research. *Psychological Bulletin* 127, 87-127
- [9] Lazarus, R. S., & Folkman, S. (1984) *Stress, appraisal, and coping*. New York: Springer
- [10] Ayers T. S., Sandler I. N., West S. G. & Roosa, M.W. (1996) A dispositional and situational assessment of children's coping: Testing alternative models of coping. *Journal of Personalit*, 64, 923-958
- [11] Goenjian, A.K., Walling, D., Steinberg, A.M., et al. (2009). Research report Depression and PTSD symptoms among bereaved adolescents 6½ years after the 1988 Spitak earthquake. *Journal of Affective Disorders* 112 81–84
- [12] Goenjian, A. K., Pynoos, R. S., Steinberg, A. M., et al. (1995). Psychiatric comorbidity in children after the 1988 earthquake in Armenia. *Journal of the American Academy of Child and Adolescent Psychiatry*, 34(9), 1174-1184
- [13] Nader K., Kriegler J.A., Blake D.D., Pynoos R.S., Newman E. & Weathers F.W. (1996) *Clinician Administered PTSD Scale, Child and Adolescent Version*. White River Junction, VT: National Center for PTSD.

- [14] Colaizzi, P.F., (1978) Psychological research as the phenomenologist views it. *Existential Phenomenological Alternatives for Psychology* (eds) R.S. Valle and M. King (Oxford University Press, New York), pp48-71
- [15] Ebat, A. T. & Moos, R. H. (1991) Coping and adjustment in distressed and healthy adolescents. *Journal of Applied Developmental Psychology* 12, 33-54
- [16] Stallard P. & Smith E. (2007) Appraisals and cognitive coping styles associated with chronic post-traumatic symptoms in child road traffic accident survivors. *Journal of Child Psychology and Psychiatry* 48 (2), 194-201
- [17] Stallard P. (2003) A retrospective analysis to explore the applicability of the Ehlers and Clark (2000) cognitive model to explain PTSD in children. *Behavioural and Cognitive Psychotherapy* 31, 337-345
- [18] Punamaki R. L., Muhammed A. H. & Abdulrahman H. A. (2004) Impact of traumatic events on coping strategies and their effectiveness among Kurdish children. *International Journal of Behaviour Development* 28 (1), 59-70
- [19] Agustini, E. N., Asniar, Matsuo, H. (2011) The prevalence of long-term post traumatic stress symptoms among adolescents after the tsunami in Aceh. *Journal of Psychiatric and Mental Health Nursing*. Volume 18, Issue 6, Pages 469-561, e16-e18.
- [20] Save the Children (2005). Psychosocial Care And Protection Of Tsunami Affected Children Guiding Principles. Retrived from [http://www.savethechildren.org.uk/resources/online-library/search?publication=&page=6&f\[0\]=field_publication_topic%3A25](http://www.savethechildren.org.uk/resources/online-library/search?publication=&page=6&f[0]=field_publication_topic%3A25) (Accessed 1 July, 2009)
- [21] Ellis, A. A., Nixon, R. D.V., & Williamson, P. (2009). The effects of social support and negative appraisals on acute stress symptoms and depression in children and adolescents. *British Journal of Clinical Psychology*, 48 (4), 347-361.
- [22] Kaniasty, K. Z., & Norris, F. H. (2008). Longitudinal linkages between perceived social support and posttraumatic stress symptoms: Sequential roles of social causation and social selection. *Journal of Traumatic Stress*, 21, 274-281
- [23] Scheeringa, M. S., & Zeanah, C. H. (2001). A relational perspective on PTSD in early childhood and adolescents. *Journal of Traumatic Stress*, 14, 799-815.
- [24] Pina, A.A., Villata, I.K., Ortiz, C.D., Gotschall, A.C., *et al* (2008). Social support, discrimination, and coping as predictors of posttraumatic stress reactions in youth survivors of Hurricane Katrina. *Journal of Clinical Child & Adolescents*. 37(3).564-574
- [25] Betz, C. L., Hunsberger, M., & Wright, S. C. (1994). Family centered: Nursing care of children (2nd edition). *WB Saunders company*, Philadelphia
- [26] Agustini, E. N., Asniar, Hashimoto, T., Matsuo, H. (2010). Time course of long-term PTSD symptoms on youth tsunami survivor. *Bulletin of Health Sciences Kobe*, 26:81-87
- [27] Tolan, P.H., Guerra, N.G., & Montaini-Klov Dahl, L.R. (1997). Staying out of harm's way: Coping and development of inner-city children. In S.A. Wolchik & I.N. Sandler (Eds.), *Handbook of children's coping: Linking theory and intervention* (pp. 453-479). *New York: Plenum Press*.

- [28] Davis, L., & Siegel, L.J (2000). Posttraumatic Stress Disorder in children and adolescents: a review and analysis. *Clinical Child and Family Psychology Review*, 3, 135-154
- [29] Bokszczanin, A. (2002) 'Long-Term Negative Psychological Effects of a Flood on Adolescents', *Polish Psychological Bulletin* 33: 55–61.

IntechOpen

IntechOpen