

## ORIGINAL RESEARCH

### **Post-Traumatic Stress Syndrome (PTSS) in Nurses Post-Earthquake Disaster in Indonesia**

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#### **Abstract**

Post-traumatic stress syndrome (PTSS) may be experienced by individuals who were traumatized by unpleasant experiences, such as earthquakes, which occur suddenly, and are difficult to predict. This study is aimed to explore PTSS experienced by nurse survivor following earthquakes in several areas in Indonesia. A qualitative study was conducted to participants with the following criteria: nurses who were actively working in the primary level health care services (health centers) and had experienced PTSS as determined by screening results. The study was conducted in regencies/cities that have experienced earthquakes in West Sumatra, North Sulawesi, Yogyakarta, East Java, and Banten. Data were collected for 3 months, between September and November 2011. Participants were recruited through purposive sampling according to the inclusion criteria for PTSS screening (experienced 2-3 years of grief). Ten participants agreed to be interviewed. Data were analyzed by thematic analysis. Two main themes emerged consisting of physical and psychological responses of nurses. Trembling and being scared have been the consistent response up to several years after the incident. The results of the study can serve as source of information for developing nursing skills in the prevention and mitigation stage of disaster, as well as for the formulation of supportive policies.

**Keywords:** Earthquake; nurses survivor; physical response; psychological response; PTSS

#### **Introduction**

Post-traumatic stress syndrome (PTSS) is a continuous response due to extreme traumatic events (Stuart, 2013; Kinchin, 2009; Shiramoni, Keane, & LeDoux, 2009). Bodkin et al. (2006), stated that PTSS occurs due to chronic stress, which continues into trauma. Trauma is a severe shock characterized by disturbances in one's defense mechanism and the loss of all functions of the body (Agaibi & Wilson, 2005; Carl, 2007). PTSS is caused by the inability of individual to address an unpleasant experience as a result of a disaster (Ciccarelli & White, 2009). In this case, a disaster refers to calamity that is difficult to predict and occurs suddenly. It is mainly categorized as a natural disaster that may lead to damage and loss of numerous lives, including an earthquake. In Indonesia, earthquakes were found to be more frequent (40.7%) than floods (30.86%) (Departemen Kesehatan RI, 2007<sup>a</sup>).

Earthquakes commonly bring about serious damages that impact on the entire system of life; including property damage, physical disability, and death. Earthquakes cannot be controlled by humans, because they occur suddenly and unpredictably which in turn cannot be avoided. Earthquakes

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are terrifying for survivors and sometimes cause traumatic experiences, especially when they are subsequently followed by another enormous catastrophe, i.e. Tsunami. According to the Indonesian Ministry of Health (Departemen Kesehatan RI, 2007<sup>b</sup>), earthquake in the country often occur at sea level with the epicenter located at a depth of less than 30 km and a scale of 6.5 on the Richter scale; and if these exceeds 6.5 on the Richter scale, a Tsunami may possibly take place.

In the year 2009, there were at least 5 major earthquakes that caused extensive damage in West Java, East Java, Banten, Yogyakarta and North Sulawesi. The earthquake in West Java occurred on September 2nd, 2009, at the magnitude of 7,3, killed at least 79 people, injured more than 1200 people, and displaced over 210.000. A notable earthquake of no less devastating effect was the earthquake in East Java at the magnitude of 4,9 on Richter scale, the earthquake in Yogyakarta at the magnitude of 6,8 and the earthquake in North Sulawesi in early 2009 at the magnitude of 7,4. The earthquake in West Java also caused small tsunami (20 cm) after.

The losses attributed to an earthquake are wide-ranging from the loss of economic resources, social, and health care, to the loss of lives; and the inability of individuals, families, and communities to use these resources (ICN-WHO, 2009). The loss and grieving period takes 1 to 3 months (Stuart & Laraia, 2005; Frisch & Frisch, 2006). Individuals who experience prolonged loss and grief may develop chronic stress, thus they are unable to make decisions and control themselves against the events that transpired (Larsen & Buss, 2008; Stuart, 2009). This is in line with the primary symptoms of PTSS, namely, anxiety, terror, excessive fear, and helplessness (Larsen & Buss, 2008; Shiramoni, Keane, & LeDoux, 2009). PTSS occurs when two of three main symptoms are found in the time frame of  $\geq 6$  months to 2 years after the occurrence of natural disasters (Langan & James, 2005; Ursano et al., 2007; Ciccarelli & White, 2009).

There were only a handful limited studies about PTSS and its debilitating effect, especially among nurse survivors following disasters. The current investigation explored the experience of nurse survivors in Indonesia in dealing with PTSS associated with traumatizing earthquakes.

## **Method**

This study used a qualitative descriptive design aimed to explore the nurses who experienced PTSS following earthquakes in Indonesia and their responses to the post-earthquake catastrophe which included physical, psychological, cultural, and spiritual responses in accordance with their values, culture, and beliefs (Creswell, 1994; Polit & Hungler, 2001). The research took place in districts/cities where nurses worked and experienced earthquakes, i.e. West Sumatra, North Sulawesi, Yogyakarta, East Java, and Banten. Data were collected between September and November 2011.

The inclusion criteria for the participants were male and female nurses, experienced an earthquakes survivor, worked in the disaster area, experienced PTSS which was determined by PTSS screening, and experienced a loss in the course of 2-3 years of grieving (Shives, 2005). Screening of survivor nurses was done through two stages: selection based on inclusion criteria followed by instruments usage on the impact of adverse events or traumatic experiences (IES) (Horowitz, Wilner & Alvarez, 1979; Yehuda, 2002) and the level of individual feelings resulted from traumatic events (AIM) (Larsen & Buss, 2008; Townley & Kloos, 2009).

At first, the researchers visited post-disaster area. With the support of the related district Indonesian National Nurses Association and Public Health Center (Puskesmas), the researchers selected and screened as many as 30 nurses from each post-earthquake area based on the above criteria. Of 150 nurses in 5 post disaster area, 10 participants were found to match the criteria and agreed to participate. The researchers conducted an in-depth interview in private room in the primary level health care services (health centers).

The interview guideline was developed by the research team members based on the research guideline conducted by Hamid & Mustikasari (2009) on the experience of survivor nurse who experienced Post Traumatic Stress Syndrome (PTSS) after the earthquake and Tsunami disaster in Banda Aceh. The content of instruments included questionnaires for the characteristics of participants, PTSS screening instruments, and in-depth interview guidelines. The research was ethically approved by the ethics committee of the Faculty of Nursing, Universitas Indonesia and corresponded to the principles of research ethics that include respect of human dignity (respect for persons), beneficence, no harm (non-maleficence), and justice (Polit & Hungler, 2001; Departemen Kesehatan RI, 2005). The participants were asked to fill out informed consent prior to the interview.

The results of the in-depth interviews were transcribed and then analyzed with Thematic Analysis by arranging the data in sequence according to their respective research questions. Answers that have the same characteristics are grouped to form categorized themes (cluster themes). Triangulation of the data was done with triangulation method (with observation).

## **Results and Discussion**

### **Characteristics of Participants**

Characteristics of participants in the study were illustrated in the table 1.

Based on Table 1, most of participants were young adults with the youngest age of 30 years and the oldest of 45 years old. All participants' education was Diploma III of Nursing and they work in primary level health care service (health centers). Most participants were women.

The results were consistent with a study by the National Co-morbidity Survey (NCS), that the prevalence of PTSS affected age is 15-54 years, as well as the research conducted by the Health Maintenance Organization (HMO) which showed that the individuals affected by PTSS are mainly of 21-30 years old (Shiramoni, Keane, & LeDoux, 2009). While this study was conducted particularly on nurses with PTSS, another study found that the prevalence of PTSS was 6.8% of the 5692 people surveyed (Shiramoni, Keane, & LeDoux, 2009). The research conducted by the NCS also showed that there was no relationship between age and the incidence of trauma. However, traumatic events increase in line with the development of life (developmental age of the individual).

Table 1. Characteristics of participants who experienced earthquake disaster by age, education, gender in primary health care (Puskesmas) (n=10)

Participant	Age (year)	Education	Gender	Working in Puskesmas
1	30	diploma (D III) in Nursing	Female	West Sumatra
2	34	diploma (D III) in Nursing	Female	East Java
3	33	diploma (D III) in Nursing	Female	North Sulawesi
4	30	diploma (D III) in Nursing	Female	East Java
5	31	diploma (D III) in Nursing	Male	Yogyakarta
6	32	diploma (D III) in Nursing	Female	Banten
7	30	diploma (D III) in Nursing	Male	Yogyakarta
8	45	diploma (D III) in Nursing	Female	West Sumatra
9	45	diploma (D III) in Nursing	Male	North Sulawesi
10	30	diploma (D III) in Nursing	Male	Banten

This study found that some participants were working to serve patients when earthquakes occurred. Along with age, education and employment are integral to the worldview and perception of the participants. The research by Lai et al. (2003) found that the factors that influence the incidence of PTSS were age, sex, and education, while differences in the category of PTSS in survivors depend on the level of depression, trauma associated with loss of lives, and psychosocial disorders due to severe stress.

### **Nurse PTSS Following the Earthquakes**

The participant's responses during onset of disaster varied including trembling and the feeling of scared; and these were consistent up to several years after the incident.

In details, the nurses' responses are described in the following paragraphs. The researches determine a list of keywords to be employed in the subsequent analyzes based on sub categories, categories and themes, as illustrated in table 2.

Table 2. illustrated the findings of earthquake disaster in primary level health care service (health centers)

Sub Category	Category	Theme
Response at the time of disaster: limp legs, knee-trembling, cold sweat Response hour after the disaster: Cold sweat, , knee-trembling Response one week after the disaster: limp legs, knee-trembling, loss of energy, confusion, dizziness, concentration difficulty Response until recently (2-3 years after the incident): sleep disturbances, concentration difficulty, dizziness, knee-trembling	Trembling	Physical response from the time of disaster up to several years after the incident
Response at the time of disaster: scared to death, panic attack Response one hour after the disaster: Scared to death, short patient inspection Response one week after the disaster: Inability to think, uncomfortable feeling, helpless feeling (not knowing what to do) Response until recently (2-3 years after the incident): fear of disaster reemergence, panic attack, insecurity feeling, being triggered with a rumble noise (running)	Scared	Psychological response from the time of disaster up to several years after the incident

**Physical and Psychological Response from the Time of Disaster Up to Several Years After the Incident**

The dominant physical responses were feelings of limp legs and knee-trembling in the post-earthquake period (2 years after the earthquake). In this light, the participants had experienced symptoms of severe trauma characterized by the responses shown ≥6 months to 2 years after the earthquake; thus, they were determined as having PTSS (Langan & James, 2005; Ursano et al., 2007; Ciccarelli & White, 2009). An event that is difficult to control or threatening induces subjective feelings perceived by individuals (Larsen & Buss, 2008), leading to physical, psychological, and social changes (Rexrode, Petersen, & O’Toole, 2008; Varcarolis & Halter, 2009).

Several stress responses accounted by the majority of participants were physical responses at the sight of a house or building collapse, such as weak legs, shaky feeling. Few participants stated that they broke into a cold sweat. Even after 2 years from the time of the disaster, the participants claimed they felt like they were back in the past, the physical response of perceived leg weakness, tremor, and sweating at the sound of a vehicle passing and rumbling noises on the road.

- “.....Legs felt weak....” (P1, P4)
- “I was experiencing knee-trembling ...” (P5, P6)
- “it feels ... I broke into cold sweat ...” (P7, P8)
- “...when a large vehicle was passing .... (P4, P9)
- “....felt a jolt or tremor or the kind ...” (P1, P10)

All participants expressed this fear when they were seeing a collapsed house or building, and this feeling remained at present even though the earthquake occurred two years ago. In addition, they panicked and felt sad for a few seconds to several minutes; felt unsure of what to do or only stared each other.

“... which was felt when the earthquake scared to death and panic ...” (P2)

“...had been silent for a few seconds to minutes for fear and panic ... sad ...” (P4)

“... Was so scared of disaster reemergence and panicked ...” (P8)

“...not knowing what to do ... .frozen for a few minutes to a few seconds” (P5)

All illustrated above, the participants experienced psychological responses two 2 years after the earthquakes. The expression of the participants during interview: sad, crying, fear, and sometimes angry with themselves. Some participants showed a resigned expression. In this light, the participants had experienced symptoms of severe trauma characterized by the responses shown  $\geq 6$  months to 2 years after the earthquake; thus, they were determined as having PTSS (Langan & James, 2005; Ursano et al., 2007; Ciccarelli & White, 2009).

PTSS is a response which reminds people of the unpleasant incident (a condition that causes damage) in the form of anxiety, helplessness, and fear (Stuart, 2013; Varcarolis & Halter, 2009). An event that is difficult to control or threatening induces subjective feelings perceived by individuals (Larsen & Buss, 2008), leading to physical, psychological, and social changes (Rexrode, Petersen, & O’Toole, 2008; Varcarolis & Halter, 2009).

Losses that occur suddenly and continuously, may cause an unpleasant traumatizing experience, until it becomes traumatizing (Lambert & Lambert, 1985; Stuart, 2013). The results of research conducted by Hamid & Mustikasari (2009) on the initial psychological response against loss and grief of earthquake disaster and Tsunami found that helplessness and disbelief or shock, will develop into guilt and sleep disorders. This was also in line with the research conducted in Yogyakarta and Padang in 2009, suggesting that the psychological response against loss and grief were shock, disbelief, sadness, and helplessness (Mustikasari, 2009). Adequate grieving period lasted for 1-3 months (Stuart, 2013; Frisch & Frisch, 2006). Prolonged grieving may cause chronic stress, leaving individuals incapable of making decisions and to controlling themselves against the events that happened (Larsen & Buss, 2008; Stuart, 2009).

The research by Hamid & Mustikasari’s (2009) in Aceh on the experience of nurse survivors revealed that nurses suffered PTSS after the earthquake and Tsunami in Aceh. Similar finding was the results of research conducted by Mustikasari in Yogyakarta in 2009 where they found nurses who experienced PTSS were survivors after the earthquake. Both studies show that nurse survivors still felt the aftermath of disaster. The difference with the current research was the acceptance after the disasters, where nurse survivors in Yogyakarta have ‘nrimo’ culture, meaning to accept their fate gracefully and was evidenced by the fact that they immediately work to help others who needed help in the event of disaster. While in Aceh, based on the findings of research conducted by Hamid et al. (2006), some nurse survivors refused to work at night, expressed their feelings of volunteers to always want to share and mitigate their feeling of losing a family member and always wanted to be close to them. Behavioral manifestations and expressions of feelings studied showed that they were still experiencing conditions that require psychosocial support. The psychosocial support was expected to empower nurse survivors, and focus more on productive activity and further enhance their self-esteem, thus increase their motivation to work.

According to Karanci & Acarturk (2005), the factors that influence the post-trauma development were troubleshooting (optimistic) and coping, whereas in the recovery phase of the post-traumatic effect was supervision in the use of coping approaches. Positive coping used only in part from having confidence from the norms and values of the spiritual beliefs; when the earthquake strikes, the participants in this study immediately prayed.

“Yes, yes direct physical response because we believe in God we prayed... directly ask God for help ..” (P7)

On the other hand, Mustikasari's research results in the City of West Sumatra in 2009 following the earthquakes found guilty feelings arising from role conflict between the desire to help themselves and others. This was because nurses are bound to the code of professional conduct, especially the principle of altruism, to always serve people and the principle of beneficence in making the best decision in favor of the community (ICN-WHO, 2009).

Demands from work according to standards and codes of ethics for nurse survivors is not easy, because they also require time, energy, resources, and coping skills including social support to restructure the loss suffered, so they can function optimally. Other studies on the experience of nurse survivors who experienced PTSS in a district in West Java province resulted in emotional changes, changes in social relationships, interactional skills, and psychological burden (Mustikasari, 2009). In addition, qualitatively, what was felt by the nurse survivors after the earthquake significantly affected their lives. When viewed from the earthquake disaster, although not all earthquakes are of large-scale, the repeated exposure can lead to psychological problems, such as the feelings of anxiety and fear.

Feelings of anxiety and fear resulted from the earthquake disaster are trauma of threat that happened to self or others in the event that is not pleasant (Resick, 2001; Yehuda, 2002). The cause of individual trauma due to the inability to use the coping is owned or the individual cannot think to use the various coping skills possessed (Lyons et al., 1998; Yehuda, 2002; Karanci & Acarturk, 2005). It is also the main symptom that emerged in PTSS that is anxiety until a scary event, excessive fear to helplessness (Larsen & Buss, 2008; Shiramoni, Keane, & LeDoux, 2009). Bodkin et al. (2006) who conducted a study of 103 respondents about PTSS caused by chronic stress, obtained 70 respondents who experienced PTSS due to chronic stress that continues to be traumatized. Another research is about the development of PTSS after the earthquake disaster in Marmara in 1999 (4.5 years) among the survivor, it was revealed that the earthquake disaster is perceived as a disaster that has a great impact and threatens life, affect the ability to use coping, is fatal, helpless, and lead to confusion using adaptive coping. The most influential factors in post-traumatic development are problem-solving (optimism) and coping, whereas in an influential post-traumatic recovery phase is supervision in using various coping approaches (Karanci & Acarturk, 2005). Lai and colleagues (2003) conducted a study after 10 years of earthquake events in Taiwan (1999) in survivors who experienced PTSS and had different categories of PTSS on survivors depending on the severity of the occurrence of depression, trauma associated with loss of life, and psychosocial disorders due to deep stress.

The current study has provided a picture of physical and psychological responses of nurse survivors. This has not covered other aspects such as economical, cultural, and spiritual responses in details.

## Conclusion

Age, education, and work can affect participants (nurse) in their perspective and perception of earthquake catastrophes that can lead to unpleasant experiences affecting how they act and make decisions depending on the subject's means of solving problems (coping).

PTSS cause nurse to panic and, experience anxiety, fear, and helplessness at the time of the earthquake until the subsequent 2 years. Furthermore, people feel the emotional changes, changes in social relationships, psychological burden, and changes in interaction skills post-earthquake. Post-traumatic healing depends on one's coping; individuals who are religious will adhere to the values and norms through the spiritual aspects of the belief that the earthquake is an act of God and will resign to seek help from God through prayer.

This study suggests developing indicators for intervention development in reducing the trauma, the provision of knowledge and skills at the stage of prevention and mitigation, and the formulation of supportive policies. Besides, it needs further exploration about the cultural and spiritual experiences of participants who experience earthquake disaster.

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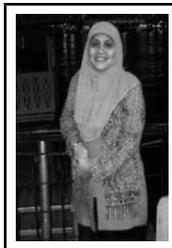
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