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THE MODEL OF *TRAUMA HEALING* POLICY FOR THE TSUNAMI DISASTER MITIGATION IN PADANG, INDONESIA

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ABSTRACT: Padang City is one of the cities threatened by tsunami hazard in Indonesia. There have been many government efforts to reduce casualties and physical damage to development. But there has not been a focus mitigation step discussing the *trauma healing*. This research aims to develop a model of *trauma healing* policy for the mitigation of tsunami disaster in Padang. This research is qualitative research using the *Analytical Hierarchy Process* (AHP) as data analysis. The results of the study using three criteria i.e resources, education, and social values, religion and culture of society. These three criteria, in a succession of 4 policy priorities, i.e a) the enhancement of the resource psychiatrist/counsellor/therapyhis; b) Involvement of family and school citizens in the *trauma healing* Program; c) The increase of social, religious and cultural values in the process of *trauma healing*; and d) the implementation of non-farmalogi therapy programs that are targeted to disaster victims tailored to the needs. The priority of these policies can be achieved by implementing various program activities taking into account the implementation time and budget cost.

Keywords: Disaster, Tsunami, Model Policy, Trauma Healing, Padang

1. INTRODUCTION

Indonesia is famous for its rich natural resources and has fertile soil. However, Indonesia is also one of the vulnerable countries with natural disasters. This is due to its position in the meeting zone and the collision of three plates, the Indo-Australian, Eurasian, and Pacific plates [1]. Also, Indonesia is a ring of fire area or a country that has an active volcano, thus making this country as the most active and complex tectonic areas or causing vulnerable natural disasters [2]. National Disaster Management Agency/BNBP mentioned 1,207 disasters occurred since January-March 2019, where the number is more increased than the number in the year 2018 [3]. One disaster that has a huge impact can even be a national disaster is a tsunami disaster. The tsunami catastrophe can cause enormous damage and casualties due to water and materials that are carried by the tsunami wave [4]. According to Aydan Indonesia has experienced thousands of earthquakes and hundreds of tsunamis over the last four hundred years [5]. The centre of Volcanology and Natural disaster mitigation mentions tsunami-prone areas covering 21 regions, one of which is West Sumatera [6].

West Sumatra became vulnerable to tsunami because it was located on the west coast of Sumatra island which faced with the Indian Ocean and had a volcanic plateau in the east formed by Bukit Barisan, where some of its territories were passed by volcanic pathways and plates stretching from northwest to southeast, which was vulnerable to colliding between the earth plates and active faulting [7]. One of the areas prone to the tsunami disaster in West Sumatera is Padang City.

The research results of Oktiari and Manurung mentioned that the risk spreads sub-district in Padang City based on potential tsunami disasters consist of: the High-Risk Zone (sub-district of West Padang, North Padang, Nanggalo, and Koto Tangah), Medium Risk Zone (sub-district East Padang, South Padang, Kuranji, Bungus Teluk Kabung) and Low-Risk Zone (sub-district of Lubuk Kilangan, Pauh, and Koto Tangah) [8]. Padang City, which is the provincial capital, makes it an area that has high community activities, with the highest population spread in Koto Tangah, Kuranji, Lubuk Begalung, and East Padang [8] with the potential risk of tsunami disaster is medium and high.

The high potential risk of the tsunami disaster, making the Padang City must be prepared with the impact caused one of the impacts on the psychological. The tsunami disaster that caused a lot of casualties can make people anxious, afraid, and the onset of trauma. Ramirez & Peek-Asa

mentions that disaster victims are not only experiencing physical damage problems, but also psychological mental health issues, such as; Problems with anxiety, stress (pressure), depression, and trauma [9]. The WHO Data mentions after a catastrophic event, about 15-20% of the population will experience mild or moderate mental disorders that refer to *post-traumatic stress disorder* (PTSD) conditions, while 3-4% will experience severe disorders such as psychosis, severe depression and high anxiety [10]. This psychological problem, especially affecting children, is especially the age of 0-8 years [11]. However, the psychological impact on early childhood after the disaster is often not well identified [12].

Research in Taiwan showed after six weeks after the earthquake, obtained as much as 21.7% of 323 students showed problems in post-disaster trauma stress, due to physical injuries in children and loss or death of family members [13]. In Turkey also showed an increase in PTSD, depression, and fears caused by earthquakes in groups of children and adolescents, caused by a loss of control over fears of a sudden unexpected and uncontrollable tremor of earthquakes [14].

In addition to stress, children also show the decline of children in school activities after the disaster, because of the somatic problems such as pain that can affect the presence of the school, so that the disaster victims will experience a decline in skills and achievement of academic learning in school [15]. Psychological problems at the age of children and adolescents after natural disasters will last a long time [16, 17] and the psychological stress experienced is more thorough [18].

Behaviours demonstrated by children when experiencing psychological problems such as; Sleep, excessive fear, fear of entering the house, not going to sleep in the house, overcome with anxiety and withdraw [19]. Then the children will shy away, become a deplorable, self-reproach, and change in behaviour such as symptoms; Have a dream about the quake, afraid to stay in the house, be bullied with sound and sound suddenly, after sleeping difficulties, reluctance to go to school and join the game [20].

A psychic problem that suggests trauma or an emotional and physical occurrence that causes substantial damage to the physical and psychological of a person in a relatively long period [21], needs to be dealt with immediately. This is because the trauma over time can cause a depressed inner condition because of the recall with an event that is poorly pleasing, depressing, painful, scary, worrying and irritating [22].

Based on the information above, it is known that post-disaster psychological impacts are long term if not resolved immediately. The magnitude of the impact, caused the government of Padang City to develop the policy as a step anticipating in the event of a disaster, the government becomes alert especially in the psychological or trauma disaster, especially children. If it is ignored for a long period, the development of the child may be hindered [23]. The problem above can be solved immediately by drafting a policy on *trauma healing* that aims to provide comfort, psychic support and entertainment for children, to minimize the traumatic impact that is quite severe [24]. Therefore, this research aims to develop a model of *trauma healing* policy after the tsunami in Padang.

2. METHODS

This research includes qualitative research categories by collecting data through in-depth interview techniques (in-dept interview) and *Focus Group Discussion (*FGD). The implementation of FGD is carried out with the Regional Disaster Management Agency/BPBD, the head of the related service, the village head, community and members of disaster care community. The results were processed using *Expert Choice 11*, which was later analyzed Using the AHP technique.

The policy alternatives generated in the FGD, are analyzed using the AHP method [25] so that the policy priority is obtained. The working principle of AHP consists of the formulation of a hierarchy *(decomposition)*, assessment of criteria and alternatives *(Comparative Judgement)*, Determination of priority (synthesis of priority), as well as logical consistency *(local consistency)* [26] [27, 28]. In the assessment of criteria and alternative, the comparison of pairs uses a scale of 1 to 9 [25] as found in Table 1 below.

3. RESULTS AND DISCUSSION

Padang City is one of the cities threatened by tsunami hazard, of which one-third of the population is residing in coastal areas [29-31]. Padang City has low surface topography, and about 50% of the population live in a low area or about 0-5 m from sea level [32]. The tsunami disaster in Padang City is predicted to have a bath altitude between 0.1 m and 9 m [32] with arrival time of tsunami to reach the beach is estimated to range between 30-40 minutes [30, 33, 34].

This condition makes Padang City must have anticipation to reduce the impact it has caused, such as disaster victims and physical damage to buildings/property. Post-disaster physical damage can still be improved. Padang City government has been conducting various mitigation efforts to reduce the impact caused in the event of a tsunami disaster, such as shelter development at disaster-

prone points, disaster-prone zoning, vertical and horizontal evacuation routes, vertical and horizontal evacuation locations [35]. However, disaster victims will not be inevitable. While the survivors, the victims should be promptly addressed, especially psychological problems.

Psychological problems for survivors of disaster can occur due to trauma. Trauma is psychologically interpreted as great and sudden anxiety from an event in someone's ward that exceeds its ability to endure, overcome or dodge [36]. After the disaster, the living victim will be traumatized by the loss of the loved ones, so that it can embed trigger memories such as earthquakes etc. [22]. According to the deputy of emergency handling of BNPB, post-disaster of some of the conditions of adult refugees and depressed, while displaced children have trauma heard loud noises and momentum in the shelter [1]. In addition to the loss of the loved ones, the survivors also lost their jobs and access to business and capital to continue life. In those conditions, they should be able to get up soon and start everything from a zero point, even so, they should start from a minus condition.

Padang City government still does not make psychological problems such as trauma as a priority in disaster prevention. Whereas post-disaster trauma, if left untreated in the long run can lead to more serious problems, such as stunted children's growth, impaired psychiatric or PTSD, decreased intellectual power, emotional changes and behaviours [37], even often endangering lives or life-threatening [38].

Therefore, to make the community alert and have a strong person to live a post-disaster life, it is necessary for *trauma healing* as a solution. *Trauma healing* or a *trauma healing* attempt is a step to move three things, from a feeling of danger to a feeling of comfort and safety, from a feeling of resisting conditions to the acceptance of the condition, and from an isolated feeling to the ability to build social relationships [39]. According to Boone's ultimate goal of *trauma healing* is to make a person be able to accept and unite the experience of trauma, sadness, and shaping a new life with new beliefs and understandings [40].

In drafting the policy of *trauma healing*, it is necessary to study from the area that has suffered a tsunami disaster, one of which is closest to West Sumatra is Aceh. Hartini mentions the low PTSD in Aceh caused by a) The long journey of Acehnese society with war and conflict made them able to develop positive expectations of wisdom behind the tsunami disaster; b) Values and beliefs that are internalized by Acehnese leaders can make acceleration process to receive tsunami as God's destiny that will give good and happiness for Aceh community after a disaster; c) The great family culture and community culture in Aceh society contributed positively to the children of Aceh to quickly obtain protective figures and parents ' surrogates for children who lost their parents; And felt not alone in the face of post-tsunami suffering [41]. Based on the results of the literature study, then to develop a model of policy *trauma healing*, it takes 3 criteria, i.e: human resources, education, and values in the community. Human resources explain the competence or ability of a psychiatrist/counsellor/therapyhis in curing trauma that belongs to the disaster victims. Furthermore, education is associated with the involvement of schools or universities in assisting *trauma healing* program, while the values in society are indispensable in accelerating the process of *trauma healing*. Of these three criteria, each resulted in the following alternative policy:

1) *Improving the ability of resource psychiatrist/Counsellor/Therapyhis:* A counsellor should be able to provide trauma counselling services through the creation of a sense of security, and individual counselling with the use of systematic desensitization techniques preceded by the release techniques [42], therefore, the ability of the resource is crucial to improve.
2) *Involvement of family and school citizens in the trauma healing program*: The recovery process will depend on the social factors of the environment, individuals and events [43]. Parents as the head of the Family Act to understand and learn trauma management techniques so that they can monitor children and other family members to cope with the trauma that occurs in the family [37], while schools such as teachers and principals can help the trauma recovery process faster. Through education, It is hoped that disaster risk reduction efforts can achieve broader objectives and can be introduced early to all learners, who can ultimately contribute to individual and community preparedness [44].
3) *Increased coordination of institutions related to the community:* Coordination of local government with BPBD, Office of Education, Office of Health by involving various elements, especially teachers, volunteer community leaders from non-governmental institutions (NGO) engaged in the field of *trauma healing* has a commitment, responsibility, and hopefully can coordinate synergistically.
4) *Mentoring disaster victims:* The mentoring activity is to do a recovery to the individual in the form of crisis intervention if there are individuals experiencing crisis problems, conducting individual counselling and the necessary if group, and prevention efforts to prevent those with trauma (their fellow

victims) mutually provide support assistance [45]. Also, it functions in controlling the psychological development of disaster victims after *trauma healing*.

5) *Increase of social, religious and cultural values in the process of trauma healing:* In the process of *trauma healing*, the social, religious and cultural values are internalized by the leader or figure who becomes the role of community. Tucking these values can be social support for disaster victims who are instrumental in post-traumatic growth [46].
6) *Conducting a combination of pharmacological treatment with psychotherapy against disaster victims* [47]: In the psychological treatment of disaster victims using pharmacotherapy means using the drug as a therapeutic tool (especially for victims who have experienced trauma or stress before). This therapy accompaniments psychotherapy therapy through the relaxation of disaster victims. However, the introduction of the analytic or the drug may provide side effects and feelings of pain that are not subjugated as well as the dangers of complications such as dependence, nausea, vomiting, and constipation [48], so there needs to be safer intervention [49].
7) *The application of non-Farmalogi therapy program is targeted for disaster victims tailored to the needs of* Non-pharmacological action is a therapy that implements healing of *trauma healing* without using drugs but instead uses a physical and cognitive approach [49]. The therapeutic Program offered in a diverse but must be adjusted to the needs of the target or disaster victims.
8) *Regular and ongoing trauma healing program preparation: Trauma healing* Program in stacking to be able to conduct monitoring and evaluation of psychological or trauma suffered by disaster victims. This program will continue until the disaster victims are completely recovered without fear or anxiety if you see, hear or experience the earthquake followed by a tsunami.

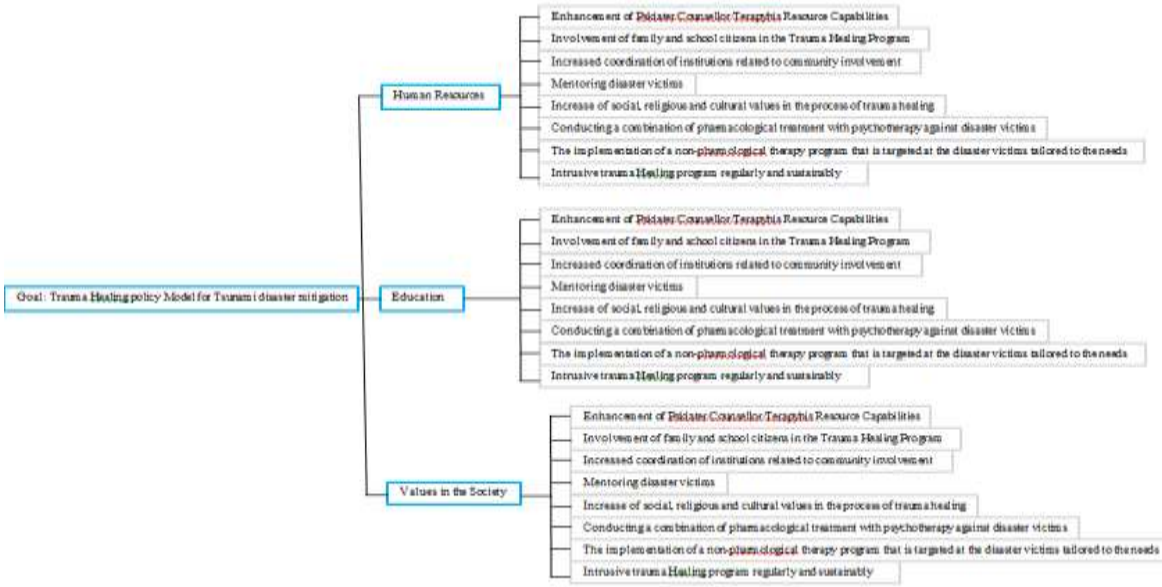

Fig. 1. *Trauma healing* policy hierarchy in Tsunami mitigation

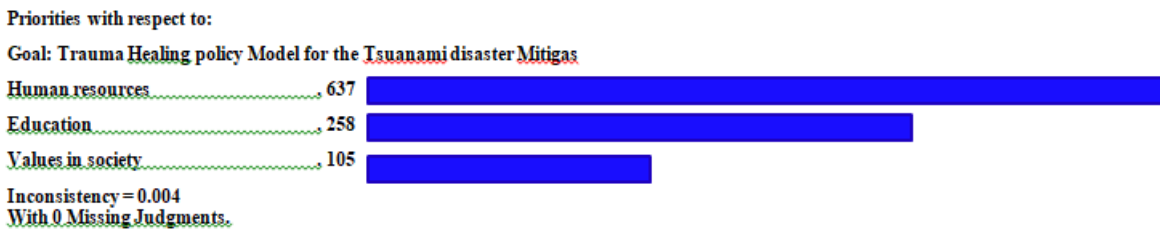

Fig. 2. Consistency values for *trauma healing* criteria in tsunami disaster mitigation

The purpose of research to develop a model of *trauma healing* policy in the mitigation of tsunami disasters using 3 criteria and 8 alternate policies appear in the policy hierarchy in Fig. 1. Before determining the policy to be a priority, please be aware of the Inconsistency ratio value resulting

from expert assessment. Based on Fig. 2 It is known that the value of Inconsitensy ratio is small from 0.1 or by 0.04.That is, the assessment given by the expert in determining the priority of the policy is consistent[54], so the results obtained later can be trusted.

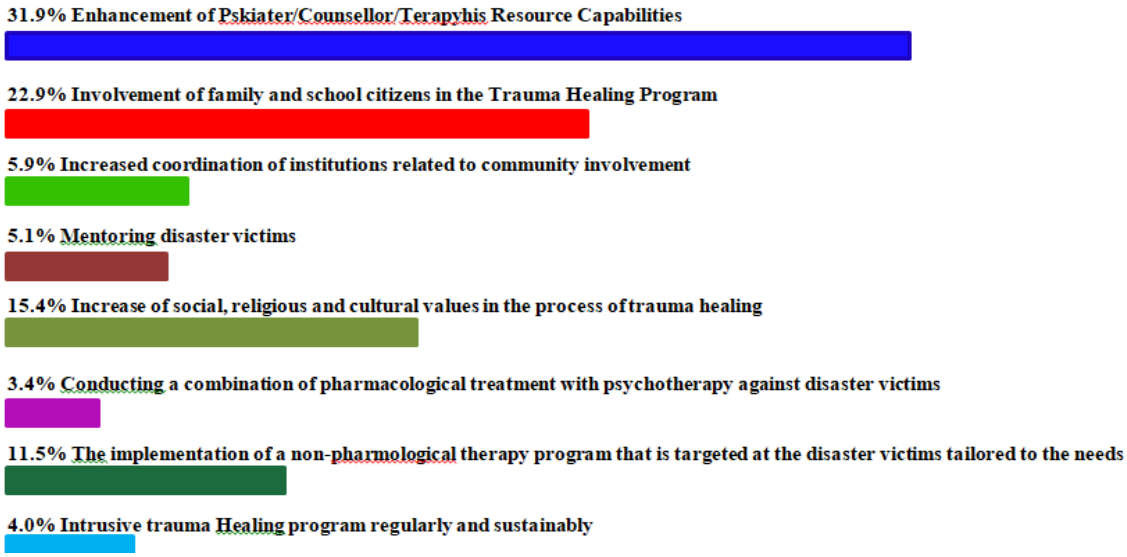

Fig. 3. The priority of *trauma healing* policy in tsunami disaster mitigation

Fig. 3 above shows policy priorities based on the percentage value, with 4 priorities of *trauma healing* policy in the mitigation of tsunami disaster in the Padang City, as follows: a) improving the ability of resource psychiatrist/counselor/ therapyhis; b) Involvement of family and school citizens in the *trauma healing* Program; c) The increase of social, religious and cultural values in the process of *trauma healing*; and d) the implementation of non-farmalogi therapy programs that are targeted to disaster victims tailored to the needs. These four priorities can be applied amid society with the following steps:

1) *Improving the ability of resource psychiatrist/counsellor/therapyhis*
   a. Increase human resources as a counsellor or psychologist by conducting supervision first.
   b. Conduct training to improve the culture and habits of children provided during counselling through adaptation and understanding of psychological conditions.
   c. Conduct training to have the ability to meet the minimum standards required in the counselling process [50].
   d. Identify trauma symptoms suffered by the tsunami victims
   e. Training a wide range of therapeutic techniques for *trauma healing*
2) *Involvement of family and school people in Trauma healing program*
   a. Cooperate with schools to improve the knowledge and skills of all the school citizens to save themselves from existing disasters or zero victims provide trauma recovery assistance to students
   b. The learning process should be immediately restored as it was so that the psychological needs of the primary tsunami victims can be fulfilled, i.e continuity of the education process to support the development of the Power
   c. Conducting body-oriented approaches such as mindfulness, yoga and others can also be a useful tool to help the mind and body reconnect
3) *Increase of social, religious and cultural values in the process of trauma healing*
   a. Debrief for community communities, during post-disaster, accidents, bombing or other traumatic events [51, 52]
   b. Involvement of community leaders in *trauma healing*
   c. Play therapy tailored to the local culture
   d. Emphasizes the importance of high awareness about the existence of others. It is in because the right people will always be in touch with others from a different environment [53]
4) *Application of non-farmalogi therapy program appropriate target for disaster victims tailored to the needs of*
   a. Emotional Freedom Therapy & Hypnotherapy therapy focused on self-empowerment and optimization of human subconscious as well as mind intervention
   b. Pranic healing and Spiritualist Therapy spiritual awareness (Zikir, prayer and worship) and subtle energy management
   c. Cognitive Behavioral therapy *trauma therapy* (CBT) teaches people to be more concerned about their thoughts and beliefs

about trauma and allows them to help them react to emotional triggers in a healthier way

d. Exposure Therapy is a form of the cognitive behaviour of therapy used to reduce the fear associated with emotional triggers caused by trauma. Talk Therapy (Psychodynamic Psychotherapy) is a verbal communication method used to help people find their way out of emotional pain and reinforce adaptive ways to manage existing problems. Life Coaching is one that is used in talk therapy
e. Family Therapy is a way to unite the whole family in the treatment of students. Parental support and their reactions to children/adolescents will greatly influence the development of symptoms in children/adolescents.

4. CONCLUSION

Padang City is one of the cities threatened by tsunami hazard in Indonesia. This threatening tsunami disaster requires immediate mitigation measures to suppress its resulting impacts, such as casualties, physical destruction of development, and the psychological problems of survivors. There have been many government efforts to reduce casualties and physical damage to development, the effects of disasters; whereas indirect losses have long-term effects on society such as loss of income, loss of input and business output, income reduction, loss of knowledge (education), psychiatric illness, to death [55] But there has not been a focus mitigation step discussing the *trauma healing*. *Trauma healing* is one way to eliminate the trauma that occurs in survivors of a disaster. Trauma if not immediately resolved, can adversely affect health and psychic. Therefore, the policy model of trauma healing for the mitigation of tsunami disaster in Padang city, resulting from three criteria i.e resources, education, and social value, religion and culture of society. These three criteria, in a succession of 4 policy priorities, i.e a) the enhancement of the resource psychiatrist/ counsellor/therapyhis; b) Involvement of family and school citizens in the *trauma healing* Program; c) The increase of social, religious and cultural values in the process of *trauma healing*; and d) the implementation of non-farmalogi therapy programs that are targeted to disaster victims tailored to the needs. The priority of these policies can be achieved by implementing various program activities taking into account the implementation time and budget cost.

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