

Direction of Earthquake Disaster Mitigation Policy for Pregnant Mothers based on Local Wisdom

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ABSTRACT

Various efforts and policies on earthquake mitigation have been carried out by the Government of Pariaman City, but not for pregnant women. Therefore, the direction of the earthquake disaster mitigation policy for pregnant women based on local wisdom is drawn up. This research is analyzed using the Analytical Hierarchy Process (AHP) with Policymaking using human resources, maternal and child health, and local wisdom as criteria used in determining policy. The results of priority policies based on local wisdom are as follows: 1) Socialization and preservation of knowledge; 2) determining safe evacuation routes for pregnant women with the assistance of special teams; 3) Improvement of facilities and infrastructure needed by mothers pregnant and child; 4) trauma healing for religiously-based pregnant women; 5) Compilation of Standard Operational Procedures (SOP); 6) Establishment of monitoring groups for pregnant women; 7) Improved coordination between related institutions and program integration in one command; and 8) Security escort in the delivery and distribution of aid facilities, infrastructure, and logistics based on mutual assistance. The eight (8) policies, making cooperation and kinship the basis for implementation, strengthening the role of Ninik Mamak and Bundo Kanduang as a driving figure, and for promotion and socialization of local wisdom.

Keywords: Earthquakes, Pregnant Women, Local Wisdom, Disaster Mitigation, Pariaman

1. INTRODUCTION

Indonesia is a country well known for disaster laboratories because of its position both geographically and geologically. Geographically Indonesia is located between two continents and two oceans which makes Indonesia have a very dynamic climate so that the potential for

hydrometeorological disasters such as floods, landslides, droughts, tornadoes, and tidal waves (Pratomo & Rudiarto, 2013).

Furthermore, geologically, it becomes the meeting area of active tectonic plates, i.e the Indo–Australian Plate in the south, the Eurasian Plate in the north, and the Pacific Plate in the east. The three plates move and collide with each other, which triggers an earthquake disaster, the emergence of volcanoes, and faults or faults (Hermon, 2015; Arlym *et al*, 2019; Hermon 2019^a). The event has an impact in the form of death, loss of property, destruction of facilities and infrastructure, economic and business disruption, even psychological disorders (traumatic) in society (Pratomo & Rudiarto, 2013).

The earthquake became one of the disasters that often occur in Indonesia, ranging from western Indonesia to the eastern part, with a high level of the earthquake in the world, more than 10 times the level of the earthquake in the United States (Wolfrom & Yokoi-Arai, 2016). From various disaster incidents that occurred in West Sumatra Province, earthquake disasters occur rarely, but if they occur they have the highest number of injuries and damage to infrastructure compared to other disasters.

One area that is threatening earthquakes is Pariaman City, West Sumatra Province. Pariaman City is located on the west coast of Sumatra Island, as well as being a disaster-prone area with a red zone against storms, abrasion, earthquakes, and tsunamis (Gersanandi *et al*, 2016; Hermon, 2019^b; Putra & Mutmainah, 2016), however, it does not make people afraid to remain dependent on the sea and live around the coast. Of all the people affected by disasters, vulnerable groups such as infants, children, pregnant or breastfeeding mothers, people with disabilities, and the elderly based on Government Regulation of the Republic of Indonesia No 21/2008 are the top priority in saving disaster victims (Nour, 2011; Marni *et al*, 2020). Conditions of pregnant women who are unstable and do not get maximum help can result in premature birth, low birth weight babies, or babies who die. Some women have to give birth in hospitals with minimal health facilities, lack of vitamins for pregnancy, medical records that are not available.

The results showed that effective disaster management is through a culture–based approach or local wisdom that has long developed from the mindset of local culture (Rakhman & Kuswardani, 2012). A fairly good public understanding of interactions with the environment can make it an effective disaster mitigation measure (Zamzami, 2014). Overcoming this, the government needs to formulate policies related to disaster mitigation measures that are not only general but are specific so that vulnerable groups such as pregnant women can be saved well by applying local culture as the basis of their policies. This study aims to develop a direction for earthquake disaster mitigation policies for pregnant women based on local wisdom in Pariaman City.

2. METHODS

The research conducted in Pariaman City is descriptive quantitative research. The data used were collected using in-depth interviews with experts or experts. Results of this interview were processed and analyzed using AHP. In this analysis the pairwise comparison method developed by Saaty (1990); Armaita *et al*, (2020); Yanti *et al*, (2020)^a; Yanti *et al*, (2020)^b as shown in Table 1 below.

Table 1. Paired Comparison Scale

Score	Information
1	Equally important
3	Somewhat more one to the other
5	Quite important
7	Very important
9	Extreme interest
2, 4, 6, 8	A middle value between two adjacent decisions

Source: Saaty (1990); Saaty (1993); Armaita et al, (2020); Yanti et al, (2020)^a; Yanti *et al*, (2020)^b.

3. RESULTS

The threat of earthquake has made the government Pariaman City have undertaken various policies, but have not paid attention to the needs of pregnant women in mitigating earthquake disasters. Preparation of the direction of earthquake disaster mitigation policies for pregnant women is a solution that can be applied by the government Pariaman City. In the preparation of disaster mitigation, based on local wisdom or local knowledge or indigenous knowledge (indigenous) (Murdiati, 2015) that is formed and developed from the mindset of the people of Pariaman City.

Local or traditional wisdom can help people in doing or acting when managing the environment and natural resources (Stanis, 2007) including disaster mitigation. This is following the AGIL Talcott Parson concept (Ritzer & Goodman, 2008), which states the maintenance of patterns of local wisdom values in the social system of society, can be used as an alternative to reducing disaster risk through the use of knowledge, innovation, and education in developing a culture of safety and resilience. Therefore, in the formulation of policies, criteria are determined as the basis for policy development, i.e human resources, maternal and child health, and local wisdom.

Of the criteria, 8 alternative policies are produced that can be applied as a policy measure for earthquake disaster mitigation for pregnant women based on local wisdom, i.e: 1) Security guards in sending and distributing aid, infrastructure, and logistics in health based on mutual assistance (Rakhman & Kuswardani, 2012); 2) Establishment of a monitoring group for pregnant women (Wardyaningrum, 2015); 3) Determination of safe evacuation routes for pregnant women with the assistance of a special team; 4) Improvement of facilities and infrastructure needed by pregnant women and children (Marni & Yanti, 2019; Nuruniyah, 2014); 5) Promulgation and preservation of local knowledge or wisdom (Maryani, 2008); 6) Preparation of family-based earthquake SOP (Susilowati, 2017); 7) Trauma healing for religion-based women (Rusmiyati & Hikmawati, 2012); and 8) Improved coordination between related institutions and program integration in one command *Mamak Niniak* and *Bundo Kandung* to be effective and efficient. The purpose of preparing earthquake disaster mitigation for pregnant women based on local wisdom is used as a goal in setting policies, which is then followed by criteria and alternative policies. The hierarchy of policy formulation can be seen in Fig. 1. Three criteria and eight alternative policies are conducted in a paired analysis to produce policies that are highly needed by the people of Pariaman

City. The inconsistency index of the ratio produced during pairwise comparisons should not exceed 0.1. The inconsistency index ratio produced in the study is 0.04 as shown in Fig. 2. This means that in determining policy priorities, the expert considers the level of consistency of the criteria and alternative policies.

Figure 1. Policy Hierarchy

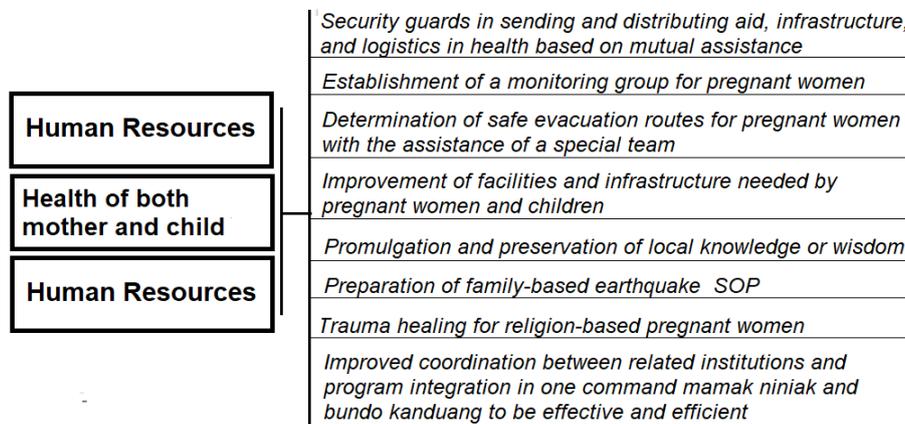
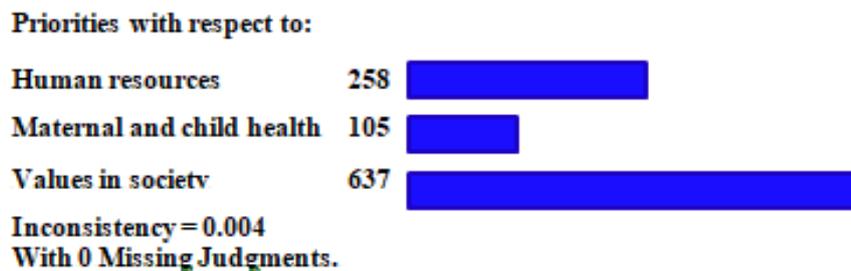


Figure 2. Inconsistency Ratio

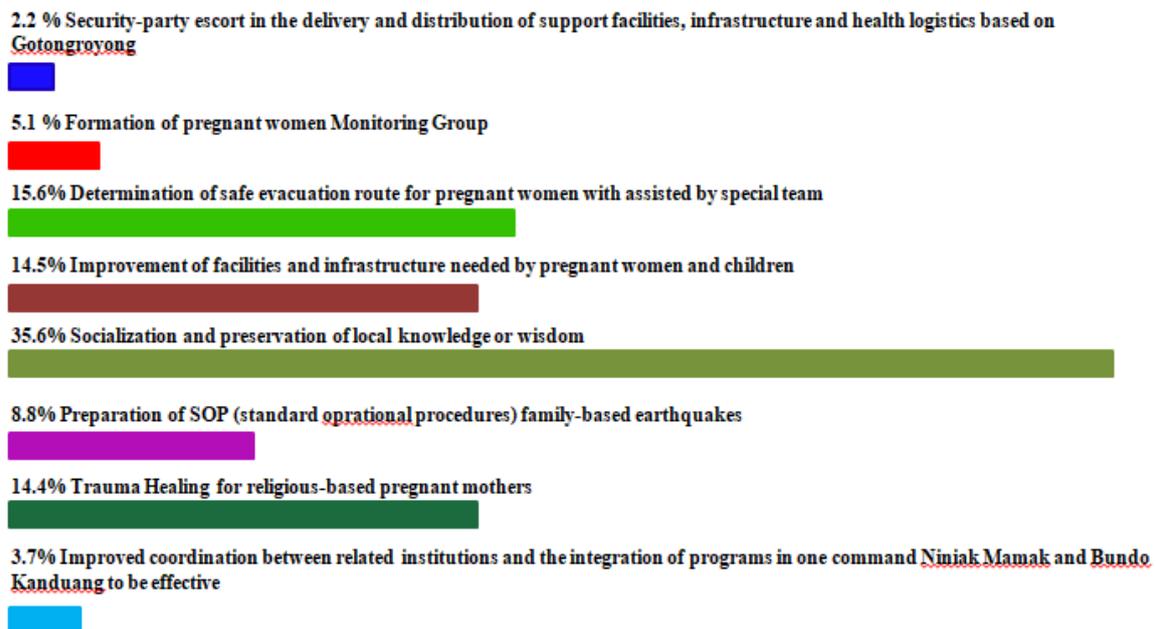


The 4th policy priorities produced in the pair analysis can be applied by the government Pariaman City through the implementation steps as following:

- 1) Socialization and preservation of local knowledge or wisdom (35.6%), a) Dissemination and discussion with all community leaders in Pariaman City; b) Self-habit and giving examples in applying local wisdom; and c) Identification of local wisdom (Maharani *et al*, 2019).
- 2) Determination of safe evacuation routes or routes for pregnant women with the assistance of a special team (15.6%), a) Periodically identify vulnerable groups; b) Discussions with the community and local government regarding the making of evacuation route maps; c) Improvements to the quality of roads that are utilized for evacuation; d) Preparation and management of transportation resource mobilization (Kailes & Enders, 2007); e) Coordination between groups in the RT and RW circles regarding the community that is prioritized in handling disasters; f) Work with the TNI to make the elderly, pregnant women and toddlers a priority (Akbar *et al*, 2017); g) Outreach to vulnerable groups including pregnant women is carried out by *Bundo Kundang* and monitoring groups; h) Special team selection from personnel who are experienced in the field of rescue; i) The formation of a special team; j) Assisting pregnant women in conducting evacuations; and k) Training on ways of first aid and how to deal with pregnant women.

- 3) Improvement of facilities and infrastructure needed by pregnant women and children (14.5%), a) Arrangement of health service program; b) Arrangement of the ambulance for each evacuation post; c) The availability of adequate food and nutrition; d) Increased availability of health equipment; e) Preparation of necessary tools if needed an emergency labour process; and f) Work with local governments.
- 4) Trauma healing for religion-based pregnant women (14.4%), a) Pariaman City people who are close to religion; b) Inviting disaster victims to pray in the congregation; c) Inviting the visit of guests who provide social services; d) Providing entertainment and activities for pregnant mother; e) Tracing and reunification of separate families; and f) Counselling services, social guidance, advocacy and facilitation activities.

Figure 3. Policy Priorities



Pregnant women who are classified as vulnerable groups will be a priority in handling at the time of the disaster, so it will be a priority and will be secured in advance at a safe point and in a place separate from the general public and cleaner. The distance that must be taken by the people of Pariaman City to the gathering point or higher area, requires the community to be able to recognize the symptoms or signs of nature related to the impending disaster. This shows that the local wisdom of the community is very important in anticipating or reducing disaster risks.

Local wisdom applied in earthquake mitigation is the atmosphere of kinship and cooperation, where people help each other especially in dealing with disasters and are not greedy in utilizing natural resources. Also, in the preservation of local wisdom in earthquake disaster mitigation, there is the cultivation of wild talk and strengthening the role of *Mamak Niniak* (Alhadi & Sasmita, 2014). The identical "*Ciloteh lapau*" conducted in *lapau* or shops is a place visited by almost all age groups to discuss topics that are developing in the wider community. Therefore, in disaster mitigation, *lapau* silhouette which is one of the local wisdom of Pariaman City (Alhadi & Sasmita, 2014), is used as a place for socialization and promotion of local knowledge or culture that can reduce the risk of earthquake disasters,

where *lapau* owners and community leaders move as the main characters, so there is an effort to instil public awareness about the importance of disaster mitigation. Also, in the implementation of earthquake disaster mitigation for pregnant women, the role of *Mamak Niniak* and *Bundo Kanduang* is very necessary, because the concept of family is not limited to nuclear families but rather extended families³¹. The involvement of *Ninik Mamak* and *Bundo Kanduang* in the implementation of mitigation based on local wisdom is easily implemented in the community. Thus, all the knowledge or local culture that exists in Pariaman City that can be an earthquake disaster mitigation needs to be passed down through the generations in the community and socialized.

4. CONCLUSIONS

Pariaman City is a city in West Sumatra Province which is also an area prone to earthquake disasters, but not yet specifically for disaster-prone groups such as pregnant women. Therefore, the direction of earthquake disaster mitigation policy for pregnant women based on local wisdom is based, with successive policy priorities as follows: 1) Socialization and preservation; 2) determining safe evacuation routes; 3) Improvement of facilities and infrastructure needed; 4) trauma healing for religiously based pregnant women; 5) Compilation of SOP for family-based earthquakes; 6) Establishment pregnant women monitoring groups; 7) Improved coordination between related institutions and integrated programs; and 8) Security escorts for the delivery and distribution of aid, infrastructure and health logistics based on mutual assistance. The eight policies, making cooperation and kinship as the basis for implementation, strengthening the role of *Ninik Mamak* and *Bundo Kanduang* as a driving figure, and lifting speech as a forum for promotion and socialization of local wisdom.

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