

## MANAGEMENT DISASTER IN MATERNITY AREAS

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### ABSTRACT

Indonesia is one of the countries in the world that is often affected by natural disasters. The disaster has broad-impact such as infrastructure damage, loss of material, and impacts on residents who live in the disaster area including pregnant women, postpartum women, and newborns. The impact that often occurs is stress in pregnant women and postpartum. Also, babies born also may have low birth weight and premature. The purpose of this literature study was to review disaster management in the maternity area in various countries. The electronic database included EBSCO hosts, PubMed and google scholar. Keyword for searching articles was "management disaster", " disaster preparedness " and "maternity area". A total of 859 articles were found and only 15 articles were chosen for analysis. Based on the literature analysis, it was found that there was a need to prepare for a disaster situation, especially women and infants in the maternal period (antepartum, intrapartum, postpartum and neonatal care) in Indonesia. Disaster management divide into three periods, first, before a disaster the government should provide a referral hospital to accommodate maternal patients and teams to deal with maternal problems. When the disaster occurred, identification of disaster victims using the triage OB TRAIN. After a disaster, maternal patients may experience stress and depression. Prenatal depression intervention includes interpersonal therapy, music therapy, and maternal relaxation. Preventing postpartum depression in postpartum mothers is done by breastfeeding their child. There is a need for a design disaster management for maternal patients in Indonesia that consist of three periods: pre-disaster, during disasters, post-disaster.

**Keywords:** Management disaster, disaster preparedness, maternity areas

### INTRODUCTION

Indonesia is one of the countries in the world that often affected by natural disasters. According to BNPB data in 2018, there were 1,134 disasters in Indonesia. The disasters that often hit Indonesia are floods and tornadoes. The flood forced people to leave their homes and stayed in camps or shelters. The flood disaster victims were the largest compared to other natural disasters about 655,866 people were affected by this disaster in 2018.

The government of Indonesia is usually provided services for refugee in general for example food, clothes, accommodations, and health services. However, some victims' groups need special services because of their health conditions, for example, maternal patients. Maternal patients include prenatal, intra-natal, postnatal, and new-borns care (Daniels, Oakeson, & Hilton, 2014a). In each period, mother and fetus may have health risks, and require specific treatment from health workers.

Maternity patients need to deal with any conditions that affected by disaster and may risky for their health and babies. One problem that faces by pregnant women and post-partum women as the impact of a natural disaster is stress. According to Hibino et al.'s (2009) study, the earthquake caused stress on pregnant and postnatal women. The stress experienced in pregnant women would cause depression

of post-partum. Women in depress situation would withdraw from social interaction and refuse to take care of their babies. The baby may be experiencing malnutrition, verbal developmental disorders, behavioral disorders and delays in scholastic development (Clark, Tluczek, & Wenzel, 2003). Psychological counseling is necessary to prevent post-natal depression.

The natural disaster also has an impact on new-borns. Pregnant women of natural disasters victims have a higher risk of premature birth and having low birth weight babies. The frequency of low birth weight was higher in women with storm exposure (14.0%) than women without storm exposure (4.7%). In addition, the frequency of preterm births was higher in women who were victims of hurricanes (14.0%) than women without exposure (6.3%) (Xiong et al., 2007). This is also supported by Torche & Kleinhaus's (2012) study that mothers who experience disasters at the age of 2 and 3 months gave birth to premature babies. Experiencing a disaster during the maternal period would cause risk to mother or fetus. Therefore, it is necessary to manage disaster management in maternity patients to prevent morbidity and mortality in mothers and children. This literature review aimed to assess disaster management articles especially in maternal periods from many countries around the world.

## **METHODS**

The articles searched from electronic databases including EBSCO hosts, Pubmed, and google scholar. Keywords for searching articles were "management disaster", " disaster preparedness " and "maternity area". A total of 859 articles were found and then researchers filtered those articles based on several criteria including the last 5 years, English language, and primary study. Authors evaluated and screened those articles using instrument article reviews. Finally, 15 articles were chosen for analysis.

## **RESULT AND DISCUSSION**

### ***Before disaster***

Before a disaster, some things need to be prepared regarding maternity patients. The American College of Obstetricians and Gynecologists (ACOG) made several recommendations for disasters preparation, including preparing a referral health care institution that will deal with patients quickly in a disaster situation and prepare a team that acts quickly to help the victims especially women in maternal periods and their babies.

According to Bonner (2015) to improve disaster preparedness, especially for vulnerable populations such as pregnant, postpartum and family women, proactive planning is needed to ensure that their needs are met during and after a disaster. However, limited studies in Indonesia has been done relating to the anticipation and preparation of pregnant women, post-partum and family to deal with natural disasters. The impact of disasters to pregnant and post-partum women would be reduced by health educations in particularly related to preparation for giving birth during disasters, give birth,

and also preparation for assisting childbirth when a disaster occurs to health workers. Nurses can also play an important role in disaster preparedness in pregnant and post-partum women.

Health education prepared based on a study from Delphi before the disaster includes four main topics, namely a) preparation for giving birth and postpartum care, b) preparing a place to live and support the family, c) evacuation routes in emergencies and d) communication, and information sources during an emergency. Six themes for giving birth preparations include a) referral and team to help babies, b) delivery people daily needs, (c) water, blankets, and food, (d) transportation to refer, (e) information cards about give birth and post-partum, and (f) water / sanitizer (Bonner, 2015).

The health education themes above can be further developed into health education activities for pregnant women and families, and developing lists for giving birth and postpartum preparation. Development of monitoring cards and information to anticipate emergency births, postnatal care, breastfeeding, and an agreement with family to assist women in maternal periods during natural disasters. Nurses should take valuable roles in education and disaster preparation (Bonner, 2015). In addition, preparing for disaster via health education programs also increases family and community awareness. Based on research by Yasunari et al (2011) in Japan, an effective educational program to increase awareness in primiparous pregnant women and those who have never experienced a disaster. The awareness in question is "knowing the clinic/hospital around the residence", "knowing the location of evacuation in the neighborhood", and "could explain the latest pregnancy and medical assessment that has been done".

According to Landrigan et al., (2008) who did a study in New York, found future disaster response preparation, whether natural or a result of human negligence, including first, resource preparedness before a disaster to deal with the unavoidable impact on physical health and health mentality of exposed populations, especially vulnerable groups. These resources should include human resources with trained personnel and strong organizations capability, funding sources such as saving funds that can be quickly used if there is a disaster. Second, long-term and ongoing follow-up is needed to assess and address the health impacts of disasters, including the follow-up of the condition of the fetus in the womb, and mapping the impact of disasters on health. Clear design arrangements for maternal and neonatal services during disasters, cooperation between regional hospitals so that services are available to maternal patients with adequate facilities in the right place and time.

### ***During a disaster***

When a disaster happens, it is possible for pregnant women not be able to get the clinic and hospital. Fast and accurate assessment of the situation is needed. OB TRAIN (Obstetric Triage by Resource Allocation for Inpatient) is a triage system that can be used in patients who will give birth (Daniels et al., 2014a). This system can be used in antepartum and postpartum patients. System triage developed

by ACOG (American College of Obstetricians and Gynecologists), which is described in tables 1 and 2.

Table 1 triage for antepartum and intrapartum patients.

**Table 1. OB TRAIN Antepartum and Labor and Delivery**

Transport	Car (Discharge), Blue	Basic Life Support (Ambulance), Green	Advanced Life Support (Ambulance), Yellow	Specialized,* Red
Labor status	None	Early	Active	At risk for en route delivery
Mobility	Ambulatory <sup>†</sup>	Ambulatory or nonambulatory	Nonambulatory	Nonambulatory
Epidural status	None	Placement greater than 1 h <sup>‡</sup>	Placement less than 1 h <sup>‡</sup>	Not applicable
Maternal or fetal risk	Low	Low or moderate	Moderate or high	High

OB TRAIN, Obstetric Triage by Resource Allocation for Inpatient.

\* Must be accompanied by physician or transport registered nurse.

<sup>†</sup> Modified Bromage scale 6=patient is able to perform a partial knee bend from standing.

<sup>‡</sup> Epidural catheter capped off.

Tabel 2 triage for postpartum patients.

**Table 2. OB TRAIN Postpartum**

Transport	Car (Discharge), Blue	Basic Life Support (Ambulance), Green	Advanced Life Support (Ambulance), Yellow	Specialized,* Red
Delivery	Vaginal delivery greater than 6 h or cesarean delivery greater than 48 h	Vaginal delivery, 6 h or cesarean delivery less than 48 h	Complicated vaginal delivery or cesarean delivery	Medically complicated
Mobility	Ambulatory <sup>†</sup>	Ambulatory or nonambulatory	Ambulatory or nonambulatory	Nonambulatory
Postoperative	Noncesarean delivery surgery greater than 2 h <sup>‡</sup>	Greater than 2 h from cesarean delivery	Less than 2 h from cesarean delivery	Medically complicated
Maternal risk	Low	Low or moderate	Moderate or high	High

OB TRAIN, Obstetric Triage by Resource Allocation for Inpatient.

\* Must be accompanied by physician or transport registered nurse.

<sup>†</sup> Modified Bromage scale 6=patient is able to perform a partial knee bend from standing.

<sup>‡</sup> If adult supervision is available for 24 h.

Antepartum patients were assessed using four parameters, including give birth status, mobility, epidural status, and the risk of pregnancy or fetus. Post-partum patients also use four parameters to assess triage using the OB TRAIN system, including the delivery process, mobility, postoperative, and risk of pregnancy. Each score is given a color identifier that matches the sharpness, starting from blue, green, yellow and red. Color coding is used so that communication is received more quickly by the recipient of the message, either another officer or the receiving hospital. The blue turns patients can be discharged, green needs basic life support, yellow needs advanced life assistance, and red needs specialist help (Daniels, Oakeson, & Hilton, 2014b).

For pregnant women, health workers will triage patients based on risk status. Pregnant women are identified and divided into 3 groups: normal pregnancies that need basic services, groups that may need more supervision, and groups of high-risk pregnant women who need special services (Pfeiffer et al., 2008).

**Post Disaster**

After a disaster, pregnant women may experience fear, anxiety, stress and can be post-traumatic stress disorder (Hibino et al., 2009). The results of the study identified that prenatal maternal stress plays a major role in the development of general intellectual and specific language skills of babies during early infancy (Bergman, Sarkar, & Connor, 2007; Laplante et al., 2004). Interventions to reduce stress include:

1. Interpersonal therapy (Spinelli & Endicott, 2003), music therapy (Ventura, Gomes, & Carreira, 2012) and relaxation of mothers that have been shown to increase fetal neurobehavior indices (Dipietro, Costigan, Nelson, Gurewitsch, & Laudenslager, 2008) in mothers prenatal.
2. Breastfeeding therapy provides benefits for the health and well-being of newborns and contributes to maternal health and well-being.

## **CONCLUSION**

A design of disaster management is needed for maternal (antepartum, intrapartum, postpartum and neonatal care) services at the disaster scene in Indonesia. Before a disaster happens, national or local governments need to prepare a referral hospital that can accommodate maternal patients and teams to deal with maternal problems. When a disaster happens, handling maternal patients would be identified by a triage of OB TRAIN. After a disaster occurs, the possibility of maternal patients experiencing stress and depression. The intervention of prenatal care can be in the form of interpersonal therapy, music therapy, and maternal relaxation. Preventing postpartum depression in postpartum mothers can be done by breastfeeding their child.

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