

## Family Empowerment Model Could Enhance Ability to reduce the Impact of Disasters on Pregnant Women

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**Abstract**— Vulnerable groups, such as pregnant women, are a group that is at risk of health problems during a disaster. Weak physical condition due to the impact of the disaster and high anxiety can cause contractions that can lead to miscarriage, premature birth, and labor that is earlier than it should be. Family involvement as community empowerment, so that the family as the smallest unit can recognize as early as possible the risks, disastrous impacts of pregnant women. This research consists of three stages. Stage 1 is an exploratory study, identifying problems through qualitative research with in-depth interviews and focus group discussions. The second stage is model development. A Disaster Response Pregnant Mother Family Empowerment Model was developed and used to increase the ability to face disasters in the context of reducing the risk of pregnant women in disaster conditions. Family mentoring uses the empowerment model for disaster response families twice with a span of one week. The third stage of the research was a quasi-experiment with pre-post test two group designs. Samples per group are 20 people. The sampling technique was the purposive sampling technique. The pre-post test was conducted to determine knowledge and attitudes, using a questionnaire, while the skills used observation. In the control group, only modules were given. The research concludes that the family empowerment model for pregnant women who respond to disasters affects increasing the ability to reduce the impact of disasters.

**Keywords:** Vulnerable groups, family empowerment model, pregnant women.

### Introduction

A disaster is an event or series of events that threatens and disrupts the life and livelihood of the community which is caused, either by natural factors and non-natural factors as well as human factors, resulting in human casualties, environmental damage, property loss, and psychological impacts [1]. Disaster is an unwanted event and usually occurs suddenly and is accompanied by the fall of victims. Victims of natural disasters face very complex situations and conditions, both physical, psychological, and social [2]. Effective disaster management requires a combination of four concepts, namely for all hazards, comprehensive, integrated, and community preparedness [3]. The disaster management cycle is a disaster management process that is essentially a pre-disaster, pre-disaster, pre-disaster, and post-disaster action. Pre-disaster activities include prevention, mitigation, and preparedness. When a disaster occurs in the form of emergency response activities and after a disaster, it includes rehabilitation and reconstruction activities. Factors that affect empowerment by families include economic, socio-cultural, social support, access to information, the situation for action. Community preparedness needs to be seen as an important effort in minimizing disaster risk for vulnerable groups [4]. Disaster Management, vulnerable groups include Babies and children, mothers who are pregnant or breastfeeding, people with disabilities; and the elderly. In addition to the four population groups, the Head of BNPB Regulation Number 7 of 2008 on Guidelines for Fulfilling Basic Needs added 'sick people' as part of vulnerable groups in disaster conditions. Of course, protection efforts need to be prioritized for these vulnerable groups, from rescue, evacuation, security to health and psychosocial services.

Pregnant women are one of the vulnerable groups that must be considered, especially during natural disasters. Pregnant women need special protection and needs beyond the needs of the community/disaster victims in general. Natural disasters such as earthquakes can cause stress to pregnant women. Several studies state that the number of mothers who give birth prematurely increases when earthquakes and natural disasters occur [5][2].

Disasters such as earthquakes, floods can cause anxiety, stress for pregnant women which can increase the hormone cortisol in the amniotic fluid. High levels of cortisol in amniotic fluid can cause premature birth. Research in the United States found that various natural disasters such as earthquakes, snowstorms in 2012 caused stress levels in pregnant women both in the first trimester and in the final trimester of pregnancy [6].

No one can be sure when a disaster will strike. Therefore, the whole community is required to be vigilant. The community is required to be ready at any time to carry out disaster relief. Disaster management training is needed by the community to prevent the impact of disasters. Inviting the community to identify all capabilities that exist in their preparedness to face disasters. The steps taken by the community need to be well organized to deal with disaster situations that will and may occur in their environment. People are invited to be aware and prepare themselves if a disaster occurs. [4].

The role of the family as the smallest unit has a very large influence in disaster risk prevention and disaster preparation. The handling of pregnant women when a disaster occurs is very different. If not handled properly, the rescue team cannot save 2 lives, namely the mother and the baby she is carrying. For this reason, pregnant women and their families need to know about the impact of disasters and their handling. Freedman (1971) in Suprayitno (2004) states that the duty of the family in overcoming health problems is to be able to recognize health problems, be able to make decisions to take appropriate actions, be able to care for family members who are sick, be able to maintain a home environment that supports health and be able to use resources. in the community to maintain health. Families are expected to be able to carry out their duties in overcoming every health problem. Based on Freedman's concept of family duties, this will be developed into a model of family empowerment for pregnant women who respond to disasters in increasing their ability to reduce disaster impacts. Individual ability is influenced by the knowledge they have. The knowledge they have can usually influence people's attitudes and concerns to be ready and alert in anticipating disasters, especially for people who live in areas prone to natural disasters [7]

## **Methods**

The research is quasi-experimental, with a control group design. It involved a sample of 40 pregnant women assigned to the control group and intervention group, respectively. The selection of sample [9] was done purposively or non-randomly from the pregnant women from August to October 2019.

The first stage of the research is an exploratory study. Qualitative research design. In-depth interview techniques and focus group discussion on problems and efforts to reduce the impact of disasters on pregnant women. There were 12 participants. This qualitative study was conducted on village officials, midwife health workers, nurses, and the disaster health promotion team, families of pregnant women, and pregnant women who are in disaster-prone areas. The second stage is model development. Based on the results of exploratory studies and the integration of family nursing theory models, a family empowerment model is developed in reducing the impact of disasters on pregnant women. The third stage is model testing. The research design used a quasi-experimental quantitative study through a randomized group design approach pre-post-test with control. This research was conducted in the working area of the Bandung District Health Center. The population in this study were pregnant women in the Puskesmas, Bandung Regency. The sampling technique in this study was purposive sampling.

The total sample size is 20 people, so the minimum sample required is 20 respondents from the treatment group and 20 respondents from the control group

The data collection was carried out by a team of 3 students who had been trained and accompanied by researchers. Data collection was carried out by asking the respondent's willingness, explaining the aims and objectives of the research, voluntarily asking the respondent to sign the informed consent. Carry out pre-test measurements in the intervention group and the control group. followed by assisting by applying a disaster response family empowerment model to the intervention group. Each family was assisted 2 times. Measuring post-intervention family's ability to reduce the impact of disasters in the intervention group and control group after using the empowerment model for disaster response families.

**Result.**

Qualitative studies are conducted to explore and obtain initial data regarding the various problems and efforts required by various elements. Problems and efforts are obtained through opinions and input in in-depth interviews and focus group discussions. Exploration efforts were carried out on village officials, health workers (midwives and health center nurses), the health promotion team, as well as the families of pregnant women and pregnant women in earthquake-prone areas.

The results of the theme analysis were obtained from the participants, there were 4 themes. The themes of these themes are: 1) Recognizing disasters and disaster impacts for pregnant women; 2) Capable of making decisions to reduce the impact of disasters on pregnant women; 3) Carry out disaster preparations to reduce the impact of disasters on pregnant women; 4) Using health service facilities for preparation in reducing the impact of disasters

Model of Family Empowerment for Disaster Response Pregnant Women is given twice. The first and second meetings are 1 week apart. The time required for each meeting is 30 minutes. The number of respondents for the intervention group was 20 respondents.

Table 1.characteristic of Resonden (n=40)

No	Variable	Intervention		control		Ket
		Frequency	(%)	Frequency	(%)	
1	Parity					
	a.Primigravida	7	35	8	40	
	b.Multigravida	13	65	12	60	
		20	100	20	100	
2	Education					
	Elementary	16	80	15	75	
	Junior high	3	15	5	25	
	Senior high	1	5	0	0	
		20	100	20	100	

Table 1 shows that most respondents' education is an elementary school. Most of the respondents (65%) already had 1 or more children, some of whom were primigravida

**Table 2. Respondents' abilities (knowledge, attitudes, and skills) before and after Model Implementation in the intervention group and the control group (n = 40).**

Variable	Intervention		control		p value
	Mean	SD	Mean	SD	
knowledge					
Pre Test	58,25	6,608	56,40	4,147	0,296
Post Test	75,60	6,065	57,20	3,533	0,000
Attitude					
Pre Test	50,55	3,9	49,90	2,9	0,553
Post Test	71,15	5,659	50,75	2,531	0,000
Skill					
Pre Test	4,85	1,268	4,45	0,887	0,255
Post Test	7,35	0,875	4,6	0,754	0,000

The analysis of the difference in the mean knowledge showed no significant difference in the pre-test with a p-value = 0.296. Likewise, the analysis of the mean differences in attitudes and skills showed no significant difference in the pre-test with p = 0.553 and p = 0.255, respectively. This shows that the two groups are equal, there is no difference between the intervention group and the control group. The analysis of the difference in the mean knowledge showed that there was a significant difference in the post-test with a value of p = 0.000. Likewise, the analysis of the difference in the mean attitude and skills showed that there was a significant difference in the post-test with p = 0.00 and p = 0.00, respectively. This shows that there is a difference between the intervention group and the control group. The statistical test results obtained p-value = 0.000, it can be concluded that there is a significant difference in the post-test knowledge score between the intervention group and the control group. The statistical test results obtained p-value = 0.000, it can be concluded that there is a significant difference in the mean post-test attitude score between the intervention group and the control group. The statistical test results obtained by the value of p = 0.000, it can be concluded that there is a significant difference in the post-test skill scores between the intervention group and the control group.

**Table 3. Changes in Mean Value of Knowledge, Attitudes, and Skills before and after Model Implementation**

Variable	Intervention (n=20)				control (n= 20)			
	Pre	Post	diff	P	Pre	Post	diff	P
Knowledge	58,25	75,60	17,35	0,000	56,40	57,20	0,800	0,002
Attitude	50,55	71,15	20,6	0,000	49,90	50,75	0,850	0,001
Skill	4,85	7,35	2,500	0,000	4,45	4,60	0,15	0,083

The mean of pre-test knowledge in the intervention group was 58.25 and the post-test knowledge was 75.60. It can be seen that the mean value of the difference between the pre-test and post-test is 17.35. The results of the statistical test showed that the value of p = 0.000, it can be concluded that there is a significant difference between the knowledge before and after the application of the model. So it can be concluded that there is an effect of the application of the model on the respondent's knowledge, p-value <math>\alpha (0.05)</math>, so statistically there is an effect of the application of the empowerment model for pregnant women who respond to a disaster on the respondent's knowledge.

The mean of the pre-test attitude in the intervention group was 50.55 and the post-test attitude was 71.15. It can be seen that the mean difference between the pre-test and post-test is 20.6. The results of the statistical

test showed that the value of  $p = 0.000$ , it can be concluded that there is a significant difference between the attitudes before and after the application of the model,  $p\text{-value} < \alpha (0.05)$ , so statistically there is a significant effect of implementing the family empowerment model for pregnant women who respond to disasters. the attitude of the respondent.

The mean of the pre-test skills in the intervention group was 4.85 and the post-test skills were 7.35. It can be seen that the mean difference between the pre-test and post-test is 20.6. The results of the statistical test showed that the value of  $p = 0.000$ , it can be concluded that there is a significant difference between the skills before and after the application of the model,  $p\text{-value} < \alpha (0.05)$ , so statistically there is a significant effect on the family empowerment model for pregnant women who respond to a disaster on reduction skills. disaster impact.

In both groups, both the intervention and control groups showed an effect on the application of the family empowerment model and the provision of modules alone without assistance, but the intervention group (applying the model) showed a very significant increase which can be seen in the value of a fairly large difference (quite significant) in the group. intervention. The intervention group showed an influence on all three aspects of knowledge, attitudes, and skills. The control group only showed an influence on the knowledge and attitude aspects, while the skills aspect did not show any influence.

## **Discussion**

Vulnerable groups, such as pregnant women, are a group that is at risk of health problems during a disaster. Weak physical condition due to the impact of the disaster and high anxiety can cause contractions that can lead to miscarriage, premature birth, and labor that is earlier than it should be. Ignorance of the problems that occur and the delay in making decisions can have fatal impacts. Limited health personnel requires the involvement of health cadres as community empowerment so that people can recognize as early as possible the risks, dangerous signs of pregnant women so that they can help prevent complications.

The earthquake was not only resulting in several deaths, injured people, and damaged health facilities, but it was also creating public health problems, for example, disaster-related diseases, the broken water supply, and sanitation facilities, traumatic issues among the victims, and the limited access to the health reproductive services for women and couple [8]

Factors that influence empowerment by families include economic, socio-cultural, social support, access to information, the situation for action. Individual internal factors, namely: characteristics of pregnant women (age, parity, education, work, motivation, intention, personal autonomy, knowledge, and attitudes). The risk approach begins with the idea that a risk measure is a description of the need for intensive and adequate and complete promotional, preventive, and treatment services. This need can be predicted based on existing problems/risk factors, namely before obstetric complications occur at the time of delivery.

Researchers provide assistance and education to families using booklets. Active family involvement is needed in improving behavior in reducing the impact of disasters. Although pregnant women and their families can receive information through various sources. Assistance is still very much needed because it can increase motivation and share experiences so that it can increase positive behavior, in this case, increasing the ability to reduce the impact of disasters on pregnant women. In both groups, both the intervention and control groups showed an effect on the application of the family empowerment model and the provision of modules without assistance, but the intervention group (application of the model) showed a very significant effect on the three aspects of knowledge, attitudes, and skills. The control group only

showed an influence on the knowledge and attitude aspects, while the skills aspect did not show any influence.

In the intervention group, the mean knowledge of attitudes and skills experienced a significant increase. Family support and dal accompaniment are needed by pregnant women who physiologically experience several changes that can cause stress. Disaster conditions with unpredictable time will certainly cause excessive concern if not properly prepared.

Communities in areas prone to / who have experienced disasters and displacement can be played a role, especially in efforts to prevent the emergence of health problems, especially vulnerable groups such as pregnant women, before a disaster occurs, by being prepared or empowered. Communication is the key to disaster risk reduction. Knowing the threat means we can know what to prepare for. For this reason, collaboration from many parties is required in conveying disaster risk reduction

Increasing awareness, knowledge, attitudes, and skills of the family as the smallest unit of society is part of community preparedness, disaster risk prevention. One of the factors that influence a person's behavior, in this case, disaster risk prevention, is knowledge and attitude.

As a vulnerable group, pregnant women need to get knowledge about threats, how to avoid threats, and save independently during disaster conditions. Empowerment and independence of families in the pre-disaster phase are very important as mitigation and preparedness efforts. Inviting the community to identify all capabilities that exist in their preparedness to face disasters. The steps taken by the community need to be well organized to deal with disaster situations that will and may occur in their environment. People are invited to be aware and prepare themselves if a disaster occurs [4].

Active family involvement is needed to improve behavior. Empowerment and independence of families in the pre-disaster phase are very important as mitigation and preparedness efforts [10].

## Conclusion

The conclusions that can be drawn from the research are: (1) The mean of the respondents' abilities (knowledge, attitudes, and skills) in the intervention group increased. (2). The family empowerment model affects the abilities (knowledge, attitudes, and skills) in reducing the impact of disasters on pregnant women

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