



RESEARCH ARTICLE

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Empowering Village Cluster as Task Force in The Normalization of Disaster Victims' Physical Problems

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ABSTRACT

Natural disaster mitigation frequently focuses on the stage of emergency response, while the impacts of the disaster are often ignored. Community empowerment in the normalization of post-disaster physical problems becomes vital to optimally maintain victims' health. The research aims to test the effectiveness of training village clusters with the competencies for disaster volunteers in normalizing post-natural disaster physical problems, using the quasi-experimental pre-post-test with control group design. Two natural disaster prone areas were selected from two different provinces, namely West Java and Banten. Sample was taken purposively, resulting in 23 people for each group. The findings show an increase in the dimensions of knowledge and attitudes of the village clusters in the normalization of post-natural disaster physical problems (p value 0.000). For the dimension of skills competency, there was a significant difference between the intervention and control groups at the end of the second month, including the ability to measure body temperature (p 0.000), calculate pulse rate (p 0.000), measure breath rate (p 0.036), measure blood pressure (p 0.000), provide basic life support (p 0.000), give wound care (p 0.000), splint a fracture (p 0.000), and use walking aids (p 0.000). The research recommends the importance of the formation and training of village clusters as a form of village community empowerment in disaster prone areas in the normalization of disaster victims' physical problems.

Keywords: Attitude, Disaster physical problem, Knowledge, Skills, Training, Village cluster

INTRODUCTION

The geographical and demographic conditions of Indonesia make this country prone to disasters, both the natural and manmade ones. The Center for Health Crisis Management of the Ministry of Health recorded 1,389 occurrences of disasters from 2006-2011, which caused health crisis, or an average of 278 incidents a year. During that period, when averaged each year the death toll reached more than 2,000 people, with seriously wounded/treated victims of 8,000 people, and displaced victims reaching 9,000 unit/year. The impacts of the disasters were not only felt during the disasters, but there were also long-term impacts, including victims' health problems.

The physical and psychological losses due to prolonged trauma cause the personal quality of children to be degraded to a very poor level (Wijoyo, et al., 2012). Women are one of the disaster victims with the risk of experiencing post-disaster health problems. Post Traumatic Syndrom Disorder (PTSD) due to the eruption of Merapi volcano, for instance, showed that women were more prone to the disorder than men, with a ratio of 3:1, in which 20-30% women experienced PTSD at least once in their life, and the majority of the cases happen to women at productive age, with a range of 10.4% to 13.8%. Another risky group is children. Almost 700 babies and toddlers did not get any health mentoring in the post-disaster evacuation of Merapi eruption Srumbung District, Magelang (Amalia, et al., 2012).

Pregnant and delivering women become the priority group, both during the incident and after disaster because saving pregnant women means saving the babies they conceive (Erwing, et al., 2008). Meanwhile, the management of children and adolescents as disaster victims should be given more attention because the physical

and psychological trauma will stay and get prolonged if they are not given appropriate and continuous intervention, and their quality of life will continuously decrease.

The United Nations has stipulated the 1990-1999 period as the “International Decade Natural Disaster Reduction/IDNDR” and conducted various activities to contribute to and promote efforts of reducing the impacts of natural disasters with the theme of “Creating a Culture of Prevention” (WHO-ISDR, 2002). The stipulation emphasizes the importance of efforts of minimizing post-disaster impacts, both physical and psychological ones.

Community empowerment, especially the one in disaster-prone areas, becomes vital and strategic. People have to be equipped with the competencies of disaster management, not only during emergency, but also after the disaster. The formation of disaster task force is one form of community empowerment. The task force should have adequate competencies because they are expected to be the vanguards when disaster occurs in their area, including after the disaster happens.

METHODS

The research aimed to test the effectiveness of training village clusters with the competencies (knowledge, attitudes, and skills) necessary for disaster volunteers in the normalization of post-disaster victims’ physical and psychological problems. The research adopted the quasi experimental pre-post-test with control group design. The dimensions of knowledge and attitudes were measured before and after two months of intervention, while the dimension of skills was measured one month and two months after intervention.

Two areas prone to natural disasters were selected from two different provinces, namely Pangalengan in West Java Province, Indonesia which is vulnerable to such natural disasters as landslides and earthquakes, and Panumbang in Banten Province, which is vulnerable to earthquakes. The samples were taken purposively for as many as 23 people for each group, consisting of community leaders, village officials, and members of youth organizations.

The research instruments included (1) questionnaire of respondents’ demographic data; (2) knowledge instrument (r 0.61); (3) attitude instrument (r 0.607); and (4) standard operating procedures/SOP checklist instrument for body temperature measurement, pulse rate calculation, blood pressure measurement, wound care, basic life support, fracture and splint treatment, use of walking aids, and early detection of psychological problems.

This research has obtained the ethical approval for health research from the Health Research Commission of Health Polytechnic of Ministry of Health, Bandung. The researchers ensure the ethical principles of research, including privacy, respect, autonomy, justice, beneficence.

An analysis was conducted to test the difference in mean values before and after intervention on each variable (knowledge, skills, and attitudes). The statistical analysis used independent and dependent t-tests.

RESULTS

Changes in The Disaster Volunteers’ Knowledge Competency

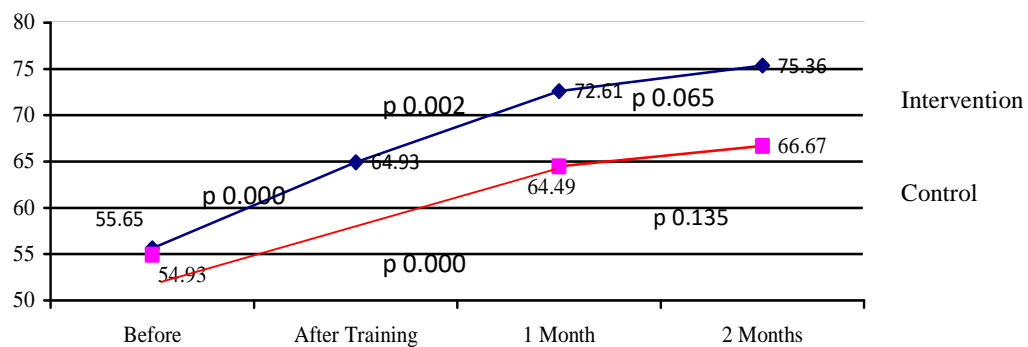


Figure 1. Changes in the village cluster volunteers’ knowledge competency about the normalization of post-disaster physical problems

Figure 1 shows the increased knowledge of the village cluster volunteers about the normalization of physical problems both in the training group and in the module-only group. In the intervention group, a significant increase occurred before the training until after-training measurement (p 0.000), 1 month post-training (p 0.002), and also in the second month after training, namely from 72.61 to 75.36, although statistically the last increase was not really significant (p 0.065). In the control group, the increase in knowledge competency was also statistically significant, where one month after the implementation of the module, the knowledge competency rose significantly from 54.93 to 64.49 (p value of 0.000) and continued to rise to 66.67 in the second month after the implementation of the module, albeit the increase from the first to the second month post-module administration was not statistically significant (p 0.135).

Changes in The Attitude Competency of The Disaster Volunteers

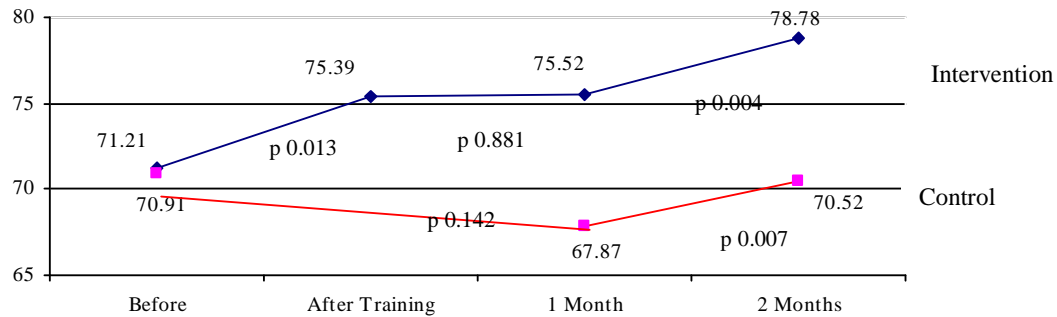


Figure 2. Changes in the Village Cluster Volunteers' Attitude Competency towards the Normalization of Post-Disaster Physical Problems

Figure 2 shows a significant increase in the village cluster volunteers' attitudes towards the normalization of physical problems in the intervention group before and after training (p 0.013); meanwhile, for the period after training to 1 month after training, there was no significant increase (0.881), and finally an increase was observed in the measurement done 2 months after training (p 0.004). This condition is different from the control group, where the attitudes in fact decreased in the first month since the implementation of the module, although it was not statistically significant (0.142). An increase actually occurred in the measurement carried out two months post-module implementation, namely from 67.87 to 70.52 with significance value or $p = 0.007$.

Changes in The Disaster Volunteers' Skills Competency

Table 1. Differences in the skills competency of the village cluster disaster volunteers in the normalization of post-disaster victims' physical problems in the first and second months after intervention

No	Skills		Intervention			Control		
			Mean	Δ	Sig	Mean	Δ	Sig
1	Body Temperature Measurement	1 st Month	73.91	1.09	0.648	57.61	-1.09	0.660
		2 nd Month	75.00			56.52		
2	Pulse Measurement	1 st Month	75.36	8.51	0.013	55.80	2.9	0.617
		2 nd Month	83.87			58.70		
3	Respiration Frequency Measurement	1 st Month	83.70	- 0.44	0.915	65.00	7.82	0.097
		2 nd Month	83.26			72.82		
4	Blood Pressure Measurement	1 st Month	83.12	1.02	0.567	65.05	- 0.1	0.986
		2 nd Month	84.14			64.95		
5	Basic life support	1 st Month	70/05	1.12	0.669	42.52	7.44	0.003
		2 nd Month	71.17			49.96		
6	Fracture and Splinting Management	1 st Month	80.12	4.66	0.159	52.17	4.44	0.010
		2 nd Month	84.78			56.61		
7	Injury Treatment	1 st Month	76.24	3.42	0.174	54.43	6.92	0.000
		2 nd Month	79.66			61.35		
8	Use of Walking Aids	1 st Month	65.72	8.69	0.002	39.30	8.35	0.014
		2 nd Month	74.41			47.65		

Table 1 shows that all skills trained to the village cluster's disaster volunteers in the intervention group always had higher scores than those of the control group. All skill competencies in the second month after intervention were stable and there were even significant increases in their individual scores. On the other hand, two skills in the control group experienced a decrease in their scores, namely body temperature measurement and blood pressure measurement skills. The scores of the control group were always lower than those of the intervention group in both the first and second months after intervention.

In the intervention group, although statistically significant increases were only found in the skills of pulse rate measurement and use of walking aids, all of the skills were scored above 70 in the second month after intervention. Meanwhile, the scores of the control group in the second month after intervention remained relatively smaller than those of the intervention group, both in the first and second months after intervention.

Table 2. Differences in the village cluster disaster volunteers' skills dimension in the normalization of post-disaster victims' physical problems between the two groups

No	Skills		Month 1 Post Intervention			Month 2 Post Intervention		
			Mean	Δ	Sig	Mean	Δ	Sig
1	Body Temperature Measurement	Intervention	73.91	16.3	0.000	75.00	18.48	0.000
		Control	57.61			56.52		
2	Pulse Measurement	Intervention	75.36	19.56	0.000	83.87	25.17	0.000
		Control	55.80			58.70		
3	Respiration Frequency Measurement	Intervention	83.70	18.7	0.000	83.23	10.41	0.036
		Control	65.00			72.82		
4	Blood Pressure Measurement	Intervention	83.12	18.07	0.000	84.14	19.19	0.000
		Control	65.05			64.95		
5	Basic life support	Intervention	70.05	27.53	0.000	71.17	21.48	0.000
		Control	42.52			49.69		
6	Fracture and Splinting Management	Intervention	80.12	27.95	0.000	84.78	28.17	0.000
		Control	52.17			56.61		
7	Injury Treatment	Intervention	76.24	21.81	0.000	79.66	18.31	0.000
		Control	54.43			61.35		
8	Use of Walking Aids	Intervention	65.72	26.42	0.000	74.41	26.76	0.000
		Control	39.30			47.65		

Table 2 shows the overall skills competencies of the village cluster disaster volunteers. The group receiving the intervention on average had significantly different skill levels than the control group. In the first post-intervention month, the village cluster volunteers trained in the normalization of the physical problems of post-disaster victims had greater scores than the group given only the module (p 0.000).

During the measurement of the same skills in the second post-intervention month, the skills of the disaster volunteers who received training were still scored higher than those of the control group (p 0.000 - p 0.036).

DISCUSSION

Indonesia as a country that has a high risk of natural disasters is certainly faced with a high risk of post-disaster health problems. The responsibility for managing this problem does not only lie in the government, but it is necessary to empower the wider community. Community empowerment in the context of health services is a process undertaken by the community (with or without outside interference) to improve the condition of the environment, sanitation, and other physical aspects that directly or indirectly affect public health (Adisasmito, 2007).

The formation of village clusters as a forum for disaster volunteers is one form of community empowerment in disaster management. These volunteers should certainly have the necessary competencies. Hence, training for volunteers is a form of responsibility to prepare competent resources.

The role of nurses who are active in the field of disaster management as educator, care giver, facilitator, and advocator becomes vital. The role includes efforts of empowering and encouraging independence of the communities in disaster prone areas during the disaster, and especially in the post-disaster or rehabilitation period as an effort to minimize casualties. Agustiana, Wibawa, and Tika (2012) revealed that disaster learning

model for the community has been proven to be able to improve community understanding compared to the conventional learning method.

The important elements of community engagement are partnership, participation, empowerment, and togetherness of the local community (Rajeev, 2014). The community is the front line in the event of disaster. They are not only victims but also actors whose roles can be optimized in the management of the disaster, including in the normalization of physical problems after the disaster.

Community empowerment in the form of village cluster disaster volunteers is an implementation of the 2002 UNCRD program of “sustainability in community-based disaster management”. Village cluster disaster volunteers in disaster prone areas are expected to become the grassroots with competencies in disaster management during the pre-disaster, disaster, and post-disaster phases.

In most disasters, the management of the emergency phase tends to be massive. After this phase is considered to be completed, attention to the recovery phase tends to decrease, while actually during this phase long-term effects of disaster are frequently encountered. Included in the lack of attention given to the management of health problems is the attention for the phase of physical normalization. Kapucu, (2008) asserted that the recovery phase basically restores the condition to its normal condition as it was before the disaster.

Community empowerment becomes a form of community participation that is very useful in normalizing physical problems after a disaster. Hossain (2013) affirmed community participation will motivate people to work together, where they feel as a whole and get the benefits from their involvement.

As the grassroots of the community, disaster volunteers formed in the form of village clusters should be equipped with disaster management competencies, especially in the normalization of post-disaster physical problems. Selection of training design becomes important to enable them to attain and maintain the required level of competency in disaster management, ultimately in the normalization of post-disaster physical problems.

Disaster volunteer training with practical-based concepts, simulations, and demonstrations has a better impact than merely equipping the volunteers with a module of post-disaster management. With the training, volunteers are able to improve and maintain the simulated competencies. The post-training mentoring from healthcare professionals, in this case disaster nurses, becomes an important point. The mentoring is aimed to provide reinforcement of training outcomes so that volunteers can maintain their competencies in the detection and normalization of the physical problems of post-disaster victims.

The learning experience gained in the village cluster training as a disaster task force through demonstrations, simulations, and interesting and educative discussions has had an effect of internalization. This model offers explicit guides on how to help people learn and grow better. This type of learning and development includes the cognitive, emotional, and social aspects.

Rinanda (2013) revealed that simulations of behaving like a person being exemplified have a deeper learning effect on how the person feels and does something; thus, disaster simulation is basically a strategy in disaster-relief teaching that is adopted from the reality of life that can be seen and practiced directly by volunteers as trainees.

The researchers' exploration of the needs of communities in normalizing post-disaster physical problems has identified some of the skills they needed: (1) The ability of early detection of physical problems which is translated into the ability to measure vital signs as early indicators of health problems; (2) basic life support, although these skills are not dominant in post-disaster victim management, the community still considers these skills as competencies necessary to be mastered throughout the entire cycle of disaster management; (3) Injury treatment; (4) Management of fracture and splinting; and (5) The use of walking aids for victims with disturbance in their lower extremities.

The ability to measure vital signs (body temperature, pulse rate, respiratory rate, and blood pressure) was trained in this study to the volunteers as a competency to detect simple physical problems experienced by post-disaster victims. This ability allows volunteers to find referrals for health workers or health-care facilities to follow up on physical changes seen from the vital signs they measure. Measurements of vital signs trained and successfully mastered by volunteers in this study included blood pressure measurement, pulse rate measurements, measurement of respiratory frequency, and body temperature measurement. The aspects of knowledge, attitudes, and skills during the measurement of vital signs were demonstrated by volunteers as a basic ability in providing assistance to victims of natural disasters that experienced physical trauma.

The ability to provide basic life support is a basic ability that was also trained to disaster volunteers. The material presented in this study was adjusted to the limited authority of the volunteers as “common people”. A simple understanding of the early efforts to rescue survivors who suffer from breath holding, detect pulse rate, and observe circulatory disorders was shown by the community volunteers as the trainees. At a simple level, the community's practice was directed to the ability to quickly ask for help and assistance when finding a case of breath holding or cardiac arrest quickly and precisely.

The ability of wound care was trained to the community disaster volunteers in order for them to be able to provide assistance to victims with physical injuries quickly and appropriately, so that the victims' condition will not get severe as a result of chronic sorrow. At the end of the training, the participants could perform wound care well, as evidenced by the identification of one of the victims who had an infection after a landslide disaster. The victim's wound was successfully healed by the volunteers after 5-7 days of treatment.

The ability in fracture and splinting management was trained to the trainees and could be well understood by the participants. Physical trauma in the form of a fracture often refers to bodily injury or shock resulting from a sudden physical injury, such as from violence or accident. It can also be described as a physical injury or wound, such as a broken bone or a blow. The injury frequently occurs on the musculoskeletal tissues/muscles and bones. The results of the training that demonstrated the participants' ability to perform simple bandages and splinting on specific body parts (especially on the extremities) indicated that this capability was relevant to the needs of disaster-affected communities.

The ability to use walking aids trained to the volunteers was focused on using crutches correctly and appropriately. The ability was trained, considering the improper use of aids often leads to further health problems that interfere with the quality of life of the post-disaster victims, such as contractures and decreased functions of specific muscles. The training results show that this skill could be mastered and was interesting to be learned by the volunteers.

Basic life support, injury treatment, and management of fractures and splinting are indeed skills that must be mastered by disaster volunteers. These skills are actually more necessary during the emergency response phase of the disaster. Nevertheless, physical trauma during a disaster may have an extended impact such as traumatic injury or trauma to the bone, causing the fracture. Simple wound care could be done by volunteers in this study. The volunteers were also equipped with the ability to assess wound conditions that require referral to the nearest health care facilities, such as community health center (Indonesian, Puskesmas) or hospitals.

Physical trauma due to disasters can also cause the loss of parts of the body that support the body's mobilization, in this case the lower extremities. The use of walking aids is one of the skills that must be mastered by volunteers. The skill can be used by volunteers to assist post-disaster victims who have physical trauma to their lower extremities. The volunteers in this study were taught to use sticks and crutches as walking aids for victims who have limited physical mobility due to lower extremity disturbances.

Research Limitation

This research was not able to assess the competence of disaster volunteers in normalizing the physical problems of post disaster victims directly in the clinical setting. Instead, it only assessed the competence of disaster volunteers from their simulations of using phantom or demonstrations among fellow volunteers. However, the assessment during the first and second month after training is expected to demonstrate the consistency of volunteers in performing the skills that have been trained to them.

CONCLUSION

The people affected by disasters, in addition to being victims of the disasters, have the potential to be involved in disaster management. They have experienced disasters in all cycles, so their identification of what is needed during disasters can be made into consideration in an effort to empower the community. The formation of village clusters as a forum for disaster volunteers to gather is expected to strengthen the management of disaster, which is an integration of disaster management between the government and society. Disaster volunteers should be provided with adequate skills to help themselves and the community, including in the normalization of the physical problems of post-disaster victims.

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