

RURAL-BASED HEALTH SERVICE SYSTEM IN SERAYULARANGAN VILLAGE PURBALINGGA REGENCY

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ABSTRACT

Community-Based Disaster Risk Reduction (CBDRM) is a collaborative effort by Pentahelix in disaster risk reduction. Serayu Larangan Village is one of the tourist villages in Purbalingga Regency which has tourism potential with a high intensity of visits from various regions. Emergency conditions can happen to anyone, anytime and anywhere. The existence of the potential of this tourist village requires a model of village community empowerment in a systematic and planned health service system so that it can provide health services in a comprehensive, swift, precise and plenary manner. This study aims to develop a model of village community empowerment in a rural-based health service system by forming a tourism village disaster preparedness team that involves all components of the village community. The research design is a quasi-experimental design with a quasi-experimental pretest-posttest design without a control group design. Quantitative research method with quasi-experimental pretest-posttest design without control group design to evaluate the level of knowledge and skills of the community in disaster preparedness and daily emergencies in tourist areas. The results of this research is the increased knowledge ($p < 0.05$), and the skills of village volunteer ($p < 0.05$) regarding disaster risk reduction. Disaster preparedness training for village volunteers could improve the knowledge and skills of volunteers in disaster risk reduction. Village volunteers have tough tasks and duties, so special volunteers are needed in disaster risk reduction, called village disaster preparedness teams

Keywords: Volunteers, rural based, disaster preparedness

INTRODUCTION

Disaster management has undergone a responsive paradigm shift to become prevention, multi-sectoral, decentralized and a shared responsibility of all components of society. Thus, disaster management is a joint responsibility of the government, the community and other parties such as the business world and so on. One manifestation of this paradigm shift is the existence of a Community-Based Disaster Risk Reduction (CBDRM) program by optimizing the mobilization of resources that are owned and controlled by the local community and become an integral part of the life and daily life of the community. CBDRM has proven to be effective in increasing community awareness and participation in disaster risk reduction. Some previous research is the existence of VDPO (Volunteer

Disaster Preparedness Organization) which was formed in Japan since 2007 can also increase community preparedness and community participation in disaster risk reduction (1). Next is CERT (Community Emergency Response Teams), this institution is also proven to be able to improve preparedness and handling emergency conditions at the community level (2)

There are several models for implementing CBDRR in Indonesia such as disaster resilient villages which are programs of BNPB, disaster prepared villages from the Indonesian Ministry of Social Affairs and active standby villages which are programs from the Indonesian Ministry of Health and several other names from various versions of non-governmental organizations and the government and donor agency. Everything is still in the stage of looking for the best form. CBDRR trials in various places are considered to have died young due to the implementation of the program which is not continuous and integrated, although some have shown encouraging results (3).

Volunteers are one component of the community that has great potential in empowering rural communities, therefore it becomes an obligation for the government to provide strengthening and empowerment of health volunteers in improving community health status. The intended volunteers strengthening is a multidimensional process that helps maintain / develop benefits for their lives, communities and social life by acting / acting on issues / issues that they consider important. It can be concluded that everyone has their own strengths. Therefore the best way to improve each person's ability is to involve them to improve their abilities with sufficient knowledge, skills and facilities (4). Strengthening volunteers means providing knowledge and skills to volunteers to become skilled volunteers in disaster preparedness. In this program, increasing the capacity of volunteers is needed in the context of community-based disaster risk reduction.

Emergency condition can happen to anyone, anytime and anywhere, so the handling of emergency patients must be carried out by people closest to the victim, such as ordinary people, special lay people, and health workers according to their competence. The concept of handling emergency patients is "time saving is life and limb saving". Due to the very limited response time to save the patient's life and/or limbs, treatment must be systematic and on a priority scale. Actions taken must be fast, precise and accurate according to standards. Currently there is a trend of increasing emergency cases that occur in households, workplaces and what needs to be considered is crowded places such as tourist attractions. If an emergency occurs at the workplace, household or

tourist attraction, the quickest helpers who can provide assistance are those closest to the victim, not just health workers. So it is clear that in order to minimize mortality and disability due to medical emergencies, the response time must be shortened. To achieve the target response time of less than 10 minutes, the Ministry of Health at the district/city level has developed a Public Safety Center (PSC) as the spearhead of a safe community which is a public facility that combines elements of an emergency ambulance¹¹⁸, police¹¹⁰ and firefighters. ¹¹³. Whereas at the village level, in accordance with the concept of a standby village which prioritizes community empowerment through Polkesdes with officers who have acquired the knowledge and skills to perform first aid in accidents (first responders) before the sufferer gets further assistance at the nearest health agency (Puskesmas and/or Hospital) (5)

Based on the results of research by Kamaluddin et al (2021) regarding the village-based Integrated Emergency Management System (SPGDT), that in providing health services in emergency conditions at the village level, regulations and priorities are needed in the management of health assistance, transportation regulations in the village-level referral system, the need for a special team in the regulation and management system for providing health assistance as well as health service standards in the emergency response system at the village level. The existence of a high and “original” sense of gotong royong and shoulder to shoulder at the village level is a cultural spirit in building village-based SPGDT. The gotong royong character possessed by residents as social capital overcoming problems is evident from the nature of spontaneity, extending labor or material assistance, thinking about what they can contribute and immediately implementing it (6,7)

The formation of a village disaster preparedness team requires regulation and support from the village to district governments. The formation of this team is expected to become a "pilot project" or pilot for other villages. The nature of kinship and hand in hand that has been built in providing assistance to people who are sick in the village is the main capital so that social capital and local wisdom become more optimal and beneficial both in terms of humanity, life saving, administration and rural socio-economic aspects (8).

The preparation of rural-based SPGDT requires a regulation and communication system that is fast, precise and easily accessible by the community in reporting emergency cases and first aid needs. Transportation regulations and referral systems at the village level are important in the

implementation of village-based SPGDT. Therefore, the formation of a village disaster preparedness team and supported by the creation of a communication application and referral system that is fast, precise and easily accessible by the village community is expected to be a solution in implementing village-based SPGDT in order to realize Rural-Based Disaster Risk Reduction (PRBBK) towards safe community conditions.

Serayularangan Village is one of the villages that has the potential to develop and progress which has been developed since 2017 in Purbalingga Regency. Serayularangan Village has several potentials that can be developed to optimize. This village has the strength of a tourist attraction in the form of the Loh Jinawi Market and natural landscapes. In addition, the unique culture and history of the community is also an attraction for urban communities. In Serayularangan Village there is also a home industry village that has the potential to be developed as a means of learning for the younger generation from the surrounding village environment, culinary tours for making palm sugar, home-based batik industries and also Outbound. With the potential and uniqueness that exists, Serayuban Village is a tourist village that has the potential to invite visitors both domestic and foreign. Therefore, as a village that has a lot of tourism potential, of course the provision of health services to local residents and visitors is one of the priorities in village government service management planning. This is very supportive in forming a village-based integrated emergency response system.

Based on the above background, a community empowerment model is needed in a rural-based health service system which is a synchronization of several CBDRM programs in order to create a rural-based safe community. The community empowerment model in a rural-based health care system can also be applied to dealing with everyday emergencies in the village community as an integrated village-level emergency management system.

METHODS

This research used quasi eksperiment non equivalent pre and post test group without control design. This quantitative research used to assess the effectiveness of disaster preparedness training on the level of knowledge and skills of health volunteers in community-based disaster risk reduction. The population in this study were all health volunteers residing in disaster prone areas desa Serayularangan. The total population of health volunteers are 85 people. The number of samples to

be respondents is calculated using the calculation of the hypothesis test for two population means formula. The selection of volunteers samples was calculated using WHO sample size determination in health studies program. Based on research by Alim et al. (2014), the standard deviation was 0.5312, the mean of the intervention group was 4.87 and the control group was 4.09; in order to obtain the results of a minimum sample calculation of 15 samples. To add an effect design, the number of samples is multiplied by two so that the number of samples is 30. To anticipate the drop out the researchers added samples so that the minimum sample for the intervention group was 32 people. The sample selection uses a proportional random sampling technique with consideration of representatives of each cluster in the village.

Samples were taken proportionally in each cluster in the village. It takes 32 volunteers, so that each cluster will be selected 3-4 volunteers in each village who will be the target sample. The instrument used to measure the knowledge level of volunteers in disaster preparedness was the Disaster Preparedness Knowledge Instrument for Health Volunteers (9)

This training is in collaboration with the Banyumas Health Department and the Banyumas Regional Disaster Management Agency (BPBD). After the training is completed, the next step the researcher collects and analyzes is discussing with the observer regarding the implementation of the new training. After discussing with the observer and getting notes during the implementation of the training activities that have been carried out, the researchers then evaluated using the Kirkpatrick theory.

RESULTS

Research data was obtained through pre-test and post-test assessments in the intervention and control groups. Furthermore, the data collected was analyzed using paired t test and independent t test. This sub-chapter presents the results of the study consisting of the characteristics of respondents, the results of the paired t test for volunteers knowledge, the independent t test for volunteers knowledge, the paired t test for volunteers skills and the independent t test for volunteers skills.

1. Description of respondent characteristics

The following is the result of univariate analysis of the characteristics of respondents based on their level of education, age and length of time as volunteers

Table 1. Distribution of respondent characteristics by level of education

Variable	Intervention	
	f	%
Education level		
Elementary	11	34.4
Junior High School	5	15.6
Senior High School	16	50

Table 1 shows a description of the characteristics of respondents based on the level of education of health volunteers. The education level of the respondents was dominated by high school (50%).

Table 2 Distribution of respondent characteristics based on age and length of time as health volunteers

Variable	Intervention Group				
	Mean	Sd	Me d	Min	Max
Age	40.56	6.42	41	27	52
Time being volunteers	10.75	6.29	9	4	29

Table 2 Based on the table it can be seen that the average age of respondents in the intervention group was 40.56 with a standard deviation of 6.420. Based on the length of time being a health volunteers, the average length of time being a volunteers was 10.75 years with a standard deviation of 6.299.

2. Differences in the value of pre-test and post-test volunteers knowledge

Table 3 Results of analysis of paired t test for pre-test and post-test knowledge scores

Variable	Mean	SD	Median	Min	Max	<i>P</i>
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Knowledge pre test scores	82,76	5,50	82.9	70.7	90.2	0.000
Knowledge post test scores	90,91	3,67	90.2	80.5	97.6	

Table 3 shows a significant increase in the volunteers's knowledge of disaster preparedness from 82.76 to 90.91. The results of paired t test analysis on knowledge scores in the two groups showed different results, p values obtained 0,000 ($p < 0.05$). This shows that did differences in knowledge occur before and after treatment.

3. Differences in the value of pre-test and post-test volunteers skills

Table 4 Results of analysis of paired t test for pre-test and post-test volunteers skills

Variable	Mea n	SD	Medi an	Mi n	Max	P
Pre test score of lifting skills	44,5 3	16,7 6	45	20	75	0,00
Post test score of lifting skills	81,4 0	13,0	82.5	60	100	0
Pre test score of basic life support skills	41,8	13,3	42	21	66	0,00
Post test score of basic life support skills	84,3	8,19	85	66	96	0
Pre test score of stop bleeding skills	45,4	16,8 8	44	20	74	0,00
Post test score of stop bleeding skills	82,1	11,6	84	60	100	0
Pre test score of dressing and splint skills	43,0 0	14,2 5	40	20	70	0,00
Post test score of dressing and splint skills	82,7	10,0 4	84	64	100	0

Based on table 4 above it can be seen that all skills increased significantly between before and after training. The lifting skill was originally 44.53 increasing to 81.40. The skills to provide basic life support from 41.8 increased to 84.3. The skill to stop bleeding increased from 45.4 to 82.1. Likewise, the skill in dressing and splinting showed an increase in average from 43.00 to 82.7.

The results of paired t test on all skills obtained a value of $p = 0,000$ ($p < 0.05$). This shows that all disaster preparedness skills differed between before and after the training.

DISCUSSION

Village health volunteers are one of the nation's development assets. Village health volunteers have many roles both formally and informally. Not only in accordance with its name, village health volunteers play a role not only in terms of the health sector, especially the degree of health in the community but the various roles and functions of other sectors attached to the village health volunteers or often called "bu kader". Health volunteers are one of the spearheads in the field of health because health volunteers are considered to be the closest figures to the community who are expected to do their work voluntarily without demanding compensation (10). This day, health volunteers have quite a number of tasks and activities such as being a volunteers of Posyandu for toddlers, elderly Posyandu, volunteers of Toddler Family Development (BKB), PSN volunteers (Eradication of Mosquito Nest), Volunteers of Adolescent Family Development (BKR) and so on.

In 2010, the Ministry of Health of the Republic of Indonesia issued decision number 1529 / MENKES / SK / X / 2010 regarding general guidelines on developing active alert villages. This is defined as a village that is able to provide basic health care services and clean water, basic sanitation services, community-based disease control, clean and healthy living behavior (PHBS) and community empowerment to respond to emergencies and natural disasters (11). With the existence of the active alert village program, the role of health volunteers should be needed in the success of the program and one of the indicators or tasks of health volunteers is in the field of emergency and disaster preparedness.

Based on the results of research that has been done, disaster preparedness training can improve the level of knowledge and skills of health volunteers in disaster risk reduction. The results of the paired t test analysis on the score of knowledge of the two groups showed different results. In the intervention group p values were $0,000$ ($p < 0.05$) while in the control group p values were 0.794 ($p > 0.05$). This shows that only in the intervention group did differences in knowledge occur before and after treatment. The results of the analysis using the independent t test also

showed a significant difference between the intervention and control groups on the knowledge score about disaster preparedness before and after the training of health volunteers in the Banyumas Regency ($p = 0,000$).

Disaster volunteers who get more information from training and education about emergencies and disasters will get more information and knowledge than those who have never been exposed to training at all. Based on literature review conducted by Kamal, Songwathana & Sia (2012)(12), it was found that training related to emergencies was one of the factors that could increase the knowledge of community health volunteers about emergency relief during disasters. Kano, Siegel & Bourque (2005)(13) also argue that training and education are an important part of the preparation of skills for community health volunteers to be active contributors in the provision of emergency assistance. An information obtained by an individual will stimulate his mind and abilities which will then increase the individual's knowledge (14).

Village volunteers consist of people who live in the community who contribute to primary health care to improve health status. Volunteers play an important role in the crisis phase or the emergency phase because many victims can be saved in the first hours after the crisis (15). Evidence shows that disaster volunteers can play an important role in the development and achievement of emergency management (16). Disaster volunteers are classified in the category of trained lay people who will be the main focus, because they are the first responder in preventing exposure to local hazards to the community. Their role depends on the level of training that has been followed (17,18) .

Disaster volunteers can play an important role in improving disaster response and recovery because of their potential and effectiveness in improving community health, increasing disaster preparedness, "mastering the terrain" (getting to know their own residential areas), and of course the relationship of trust between all parties concerned. These activities build social capital and significantly increase community resilience in anticipating future disasters (19) There are several aspects of knowledge and skills that must be mastered by a disaster volunteers in the emergency phase during a disaster including early warning, first aid, disaster triage, logistics and communication, search and rescue and organizing teams (12,20).

Early preparedness is very necessary for the community members, especially those in disaster prone areas or areas. Knowledge in early preparedness can increase understanding of disaster risk so that it can know how to respond in an emergency situation (21–23). Early warning is important in disaster risk reduction systems, disaster volunteers must be prepared to understand the situation and characteristics of disaster events and have attention about early warning, mobilization and evacuation. This is the first action in the emergency phase or response phase during a disaster that must be communicated to the public (24,25). In addition, volunteers also need to identify available resources and equipment that can be used for early detection and send notifications to inform the public (26,27).

First aid and basic life support are very important actions that can be taken when a disaster occurs, such as clearing the airway, pulmonary resuscitation, stopping bleeding, managing shock and musculoskeletal stabilization (13). In emergency situations, airway obstruction, bleeding, and shock often cause death. The top priority for disaster volunteers to perform airway clearance manually, control bleeding, and shock management are basic actions in first aid (2,28)

Disaster volunteers can provide first aid measures to victims in the impact zone and help other volunteers to provide directions / directions for victims and evacuation routes (29). Disaster volunteers can work together with other teams in the process of finding and rescuing disaster victims. Disaster volunteers can act as informants and directions in the search and rescue of victims.

Disaster volunteers are considered more in control of their own regions or communities and must know transportation plans and know where transport vehicles will be located (30). Immediately after the evacuation or removal of the victim, the disaster volunteers can conduct an assessment to the victim by providing simple actions according to his competence in order to assist the medical team in providing first aid to the disaster victims. The next action is to help prepare transportation for the victims to the nearest health center or hospital using the prepared ambulance (31,32).

What must be well understood by community disaster volunteers is knowledge of disaster triage. In disaster conditions, priority and selection of disaster victims is needed to improve the quality and accuracy of the assistance done to disaster victims. In providing assistance to disaster

victims, a disaster volunteers can sort out disaster victims according to his ability so that it can help other health workers in providing health assistance. According to CERT (2011), the triage system is to classify patients in each medical condition. The classification uses the principle of Simple Triage and Rapid Treatment (START) by using a color coding system which is divided into four levels, namely: 1) immediate medical care, 2) delayed care, 3) non urgent or minor, 4) died or almost died.

Disaster volunteers must also have a good understanding of logistics and communication. In post-disaster conditions, disaster volunteers can play a role in delivering important logistics such as clean water, sanitation and hygiene to disaster victims (33). This is important because after an area is hit by a disaster, many aid donors are constrained in providing logistical assistance due to infrastructure damage that occurs, such as roads, bridges or airports. This can cause delay in assistance received by disaster victims (34). Displacement techniques in disaster conditions can be carried out by disaster volunteers in collaboration with other disaster volunteers such as fire fighting, emergency medical services, police and so on. The priority of the search and rescue team is to find and evacuate victims from the impact zone and move them to the medical post after triage.

Based on the research, after conducting disaster preparedness training for disaster volunteers, the researchers found an increase in village disaster volunteers skills in disaster preparedness which included how to move victims or lifting ($p = 0,000$), perform basic life support ($p = 0,000$), stop bleeding ($p = 0,000$) and dressing splints on victims with musculoskeletal trauma ($p = 0,000$). But this did not occur in the control group without intervention in the form of disaster preparedness training. Of the four skills that were tested in the control group, there were two skills that significantly improved, namely basic life support skills ($p = 0,000$), and splint dressing ($p = 0.008$). While the other two skills, namely how to move the victim / lifting and stopping the bleeding, did not increase significantly ($p > 0.05$).

In the implementation of disaster preparedness training for village disaster volunteers carried out by several methods, namely lectures and questions and answers, practice, case studies and role play (mini simulation). The use of appropriate methods and training instructors in learning activities is very necessary because to facilitate the learning process so that it can achieve optimal

results. Without a clear method, a licensed and certified instructor, the learning process will not be directed so that learning objectives that have been set are difficult to achieve optimally. Skills in disaster preparedness are applied by practical methods. This method provides a way for disaster volunteers to apply, test and adapt theories to actual conditions through practice so that they will get excellent lessons for developing and perfecting the skills needed.

The practice of disaster preparedness skills is carried out and demonstrated one by one by all trainees. So, when taking the post test data of volunteers skills, qualitatively and the observations made by the examiner, it was very apparent that there was confidence in the volunteers carrying out these actions. Then the next method is role play or mini simulation. The role playing learning model is a way of mastering learning materials through the development of imagination and appreciation in which there are rules, goals, and elements of pleasure in conducting the teaching and learning process (35).

Role playing activities or disaster simulations are positive activities, and provide interesting experiences to the participants (36) and can increase knowledge and skills in disaster preparedness (37). Simulation technique is one method that can equip participants in facing disasters (38) and can demonstrate skills with situations approaching actual conditions (39,40). This method is one alternative in learning that can help trainees to be better prepared in facing disasters and by knowing how to handle situations if disasters occur (41) According to the results of research by Morrison and Catanzaro (2010) in Nadian et al., (2014) 79.5% of the methods of using simulations in training have helped trainees understand the actual situation when faced with danger (42). Disaster preparedness training also increases knowledge, skills and behavior in training simulations (43)

Training and education in disaster preparedness is an important element in disaster risk reduction. Therefore the method and formulation of disaster preparedness training must be comprehensive and well targeted to all components of the nation. An increase in the knowledge and skills of disaster volunteers in disaster preparedness, shows the importance of disaster preparedness training for village disaster volunteers in the context of community-based disaster risk reduction and as one of the supporting factors for the establishment of an active alert village.

The village disaster alert team can be formed from the participation of village communities, government support, the health department, BPBD and other stakeholders who are involved in disaster preparedness and emergency response. Of course the realization of this team is one component in order to create a rural-based safe community that will support the optimization of safe communities at the national level. That is a condition / condition that is expected to guarantee a sense of security and health of the community by involving the active role of the whole community, especially in the handling of daily emergencies and during disasters (48).

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