



Original Research

Application of the PRECEDE-PROCEED Model in the Development of Community-Based Daily Emergency First Aid Management Training

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ABSTRACT

Background: Emergency conditions in society can occur at any time, posing a threat to society's health and aligning with SDGs ideals. To reduce mortality and morbidity rates, community members need first aid competency and a health promotion model for prepared workers. The aim of this study is assessing the effectiveness of the Application of the Precede and Proceed Model in the Development of Community-Based Daily Emergency First Aid Management Training

Methods: A mixed method of qualitative and quantitative research with research and development (R&D) research was applied to produce a training model for the community. The study was conducted at July-October 2023. The informants for the first stage of training were six people from the Health Service, PSC 119, PSC 119 of partner universities, doctors and nurses at the Community Health Center, village government, and health cadres. In the second stage of research Health Promotion Model was tested in phase two on 50 health cadre who were randomly divided into intervention and control groups. Both group was evaluated with pre-post test.

Results: In the first stage of the study, input was found regarding the development of appropriate training for the community. Meanwhile, the second stage of the study was found Community-Based Daily Emergency First Aid Management Training gives a positive effects in knowledge, skills, and attitude of respondent with sig 0.00.

Conclusion: The conclusion of this research is that the Community-Based Daily Emergency First Aid Management Training Model increases community competence in carrying out first aid for everyday emergency situations. The PRECEDE-PROCEED Model can be applied to develop training for the community in the future.

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INTRODUCTION

The United Nations (UN) has launched the 2016-2030 *Sustainable Development Goals* (SDGs) as the ideals for sustainable development of world society as a

continuation of the *Millennium Development Goals* (MDGs). Emergency conditions that occur in society can occur at any time and anywhere. If this emergency condition is not handled properly, it will result in the threat of death and disability for society, which is certainly not in line with the SDGs ideals that have been proclaimed (United Nation, 2016). First *aid* is immediate assistance given to sick or injured people until professional help arrives at the scene in order to prevent death and disability (Federación Internacional de Sociedades de la Cruz Roja y de la Media Luna Roja (IFRC), 2016) . A person who finds a victim in an emergency condition is known as a *Community First Responder (CFR)*. CFR plays a very important role for victims in emergency conditions in saving lives. CFRs are members of the community who are volunteers who have received training or outreach to help people who experience medical emergencies while waiting for an ambulance to be on its way (Kindness et al., 2014).

First aid services in emergency conditions are regulated by Minister of Health Regulation Number 19 of 2016 concerning the Integrated Emergency Service System. In this regulation, local governments are required to prepare a structured service called *Public Safety Center 119* (Ministry of Health of the Republic of Indonesia, 2016). Regulation of the Minister of Health of the Republic of Indonesia Number 47 of 2018 concerning Emergency Services divides emergency services into pre-facility health services, intra-facility health services and inter-facility health services. Pre-facility emergency services are quick and precise actions to help patients at the scene of the incident, playing a very important role in saving lives and preventing disability with services including triage, resuscitation, initial stabilization and evacuation. In the pre-health care service phase, the role of the community is very important, so the government is obliged to develop the community as first responders to improve the quality of first aid (Indonesian Ministry of Health, 2018).

Literature reporting on the empowerment and development of CFR in Indonesia is still very limited. In developed countries, community empowerment as CFR in providing first aid for emergency victims is very good although it still needs development. The results of a study in the United Kingdom, showed that CFRs' contribution to services increased, felt they were making a valuable contribution and hoped to maintain basic skills while having the opportunity to develop themselves (Phung et al., 2018). Studies in Scotland show that the role of CFR is closely related to volunteerism (Roberts et al., 2014). Based on Minister of Health Regulation Number 47 of 2018, emergency services have not yet shown maximum results and many people complain when they need help. One component in supporting the success of first aid is community participation. The role of the community when finding victims of emergency conditions is to remove objects that could cause more victims, ask for help from local residents, officers and security officers, contact the 119 call center or other help numbers and provide first aid using the 119 call center guide (Indonesian Ministry of Health , 2018).

Based on an interview with the Head of the Emergency Room at a government hospital in Surakarta City at the early of 2023, all patients with emergency conditions who were referred to the hospital had not received adequate first aid from the community as first responders. A preliminary study using *survey* techniques conducted on 22 health cadres who had taken part in the socialization of emergency first aid found that 22 respondents (100%) stated that they had high motivation in providing first aid. The majority of respondents (20 cadres = 90%) have low knowledge in identifying emergency conditions that occur in the community. The majority of respondents (21 cadres = 98%) stated that they did not understand the procedures for asking for help from the health team, either by accessing *call number 119* or the nearest hospital and

how to provide appropriate first aid.

One model that is widely used as a theoretical basis for developing a health program is the *Precede-Proceed Model*. is a *Precede-Proceed Model* for planning and evaluating health programs widely taught and used in Anglophone health promotion practice, with over 1000 published applications (Green et al., 2005). This study showed that people with better knowledge are more likely to engage in health-related behaviors. Therefore, the PRECEDE-PROCEED Model can be used as a theoretical framework for health promotion interventions in different populations, and these interventions are particularly effective in terms of improving knowledge (Kim et al., 2022).

Previous studies show the effectiveness of applying the PRECEDE-PROCEED Model to increase knowledge and skills of community in the health sector. The results of the previous study confirmed the effectiveness of the PRECEDE-PROCEED model-based educational program for the prevention of LBP by improving a number of model structures (Pourhaji et al., 2020). Another previous research shows the "Precede-Proceed Health" health promotion model impacts child growth, nutritional status, and quality of life. To plan community empowerment programs, comprehensive needs assessments using literature reviews and surveys are essential. Quality of life is assessed based on education, economic status, social capital, and environment (Wahyuningsih et al., 2022). What this research has in common with previous studies is that they both examine the application of the PRECEDE-PROCEED Model, but this research focuses on the field of emergency situations in the community.

It is necessary to increase the number of community members who have first aid competency so that it can reduce mortality and morbidity rates. In an effort to increase the number of first aid workers who are prepared to provide first aid, a health promotion model is needed in first aid in emergency cases. Based on the background description above, it is deemed necessary to conduct research with the theme "Application of the Precede & Proceed Model in the Development of Community-Based Daily Emergency First Aid Management Training".

MATERIALS AND METHOD

A mixed method of qualitative and quantitative research with research and development (R&D) research was applied to produce a training model for the community. The first phase (qualitative research) was carried out to explore and analyze problems and develop a health promotion model design. The second phase (quantitative research) consisted of testing the model on a limited group, refining the model, and implementing the program on a larger group using a pre-posttest with control group experimental method approach. The main output of this research is the production of a community empowerment model in the form of training to increase community readiness in providing first aid for cardiac attacks and cardiac arrest patient.

The first phase of research was carried out from July 2023 in Surakarta. The research sample was selected using a purposive sampling technique to obtain informants who have policies and are involved in developing health promotion programs, especially in developing training for communities to increase readiness to provide first aid for victims of cardiac attacks and cardiac arrest. Informants in this first research

stage consisted of six people from the Health Service, PSC 119 staffs, doctors and nurses at the Community Health Center, village government, and health cadres. Data at the exploration and analysis stage was obtained from problem identification through in-depth interviews, documentation studies, and observations followed by analysis of more specific problem determinants, identification of factors that support community readiness in providing assistance to victims, as well as regulatory analysis. Researchers then developed a first aid training model for emergency victims based on the needs and characteristics of the community with reference to the results of the analysis in the first stage.

The second phase of research consisted of testing the model in a limited group was carried out from July-October 2023 in Surakarta.. Samples came from community groups consisting of health cadres who had received education from the Surakarta City Health Office/PSC-119 and/or partner institutions regarding first aid for daily emergency conditions. The number of samples in the first small trial group was 50 people who were randomly divided into two groups; 25 people in the intervention group and 25 people in the control group. All respondents were asked to do a pretest before being given the intervention. The intervention group was given the health promotion model developed in the first phase of the research, while the control group was given a model that had been previously developed by the health service. After being given the intervention, all respondents were again asked to take the post test.

The resulting training model is training that is preceded by an assessment of learning needs. The training curriculum is prepared based on the results of the learning needs study. Learning methods in the form of theory, demonstration and role-play are prepared with complete tolls. Complete media and learning aids to facilitate theoretical, practical and role-play learning. Evaluation tools include test sheets to assess knowledge, skills checklists to assess skill domains and scenario guides to assess role-play results. The trainers in this training are a combination of lecturers and practitioners who were previously provided with training in the training of trainers. Training is carried out once and evaluation activities are carried out directly after the training is completed.

Ethical clearance for this research was obtained from the Health Research Ethics Committee of the Regional General Hospital, dr. Moewardi with the registration number 1.304/VII/HREC/2023.

RESULTS

In-depth interviews from the first phase of research based on interview guidelines which referred to the stages of developing training for the community provided the results as presented in table 1.

Table 1. Analysis of Qualitative Research Results

Themes Of Study	Informant's Statement
Needs analysis	A needs assessment has never been carried out for any training carried out for the community. Indirectly, nurses who accompany community empowerment activities carry out training needs assessments based on health problems that arise in an area. The theme of the training carried out was not a suggestion from the community/health cadres, the resource person immediately

Themes Of Study	Informant's Statement
	<p>received a letter of assignment to provide certain training. Never been assigned to carry out a training needs assessment for the community. Cadres have never been directly involved in training planning. Cadres take part in training activities based on invitations and assignments from sub-district heads.</p>
Setting training goals	<p>Training objectives are determined based on the program holder's suggestions. Most training objectives are formulated based on findings of health problems in an area. The aim of the training is to follow the assignment warrant. Have never read the training objectives document other than the training assignment letter. Cadres know the purpose of the training from the invitation letter and explanation from the resource person. Feeling that they have never been involved in formulating training objectives.</p>
Training Design	<p>The training carried out for the community is not yet equipped with a curriculum and tools. The training for the community that has been carried out so far is still just a socialization program based on the latest government programs and current health problems. There is no curriculum for training for the community. Never read or found a training curriculum for the community. Cadres have never received a training curriculum for the community. Lack of understanding that training must be equipped with a curriculum and tools.</p>
Implementation of Training	<p>The training is mostly program based and is carried out only in a short time (on average half a day of activity). The implementation of the training seemed lacking in proper planning, carried out in a short time, carried out on weekdays so that participants were less than optimal. The training was carried out in only a very short time (half a day). The training implementation time is adjusted to the budget and SPj activities so that it is less than optimal. A lot of training is carried out on weekdays so that working cadres find it very difficult to follow, training in a short period of time is less than optimal in terms of results. Implementation is less than optimal because time is very limited.</p>

Themes Of Study	Informant's Statement
Training Evaluation	<p>Evaluation is only carried out using a very simple method, namely through a feedback process during training implementation, no follow-up on training results is carried out within a certain period of time.</p> <p>There are no effective evaluation methods that have been implemented, for example pretest-posttest for the cognitive domain and action checklists for the psychomotor domain.</p> <p>Evaluation is carried out by means of questions and answers during training only.</p> <p>A good evaluation model has not been implemented when implementing training.</p> <p>There is no evaluation process during training and follow-up on training results from the organizer.</p> <p>Only ask questions about the material during the training, there are no tests or measurements of skills during the training with demonstrations/simulations.</p>
Training Funding	<p>Most of the funding from local governments comes from university community service activities.</p> <p>Funding from city government.</p> <p>Based on office budget.</p> <p>Funding sources are obtained from annual programs.</p> <p>Training is funded by the government.</p> <p>Training receives funding allocation from the government.</p>
Enter improvements	<p>Training development is based on the stages of <i>training needs assessment, setting training objectives, designing training, implementing training and evaluating training</i>. People prefer training with simulation or <i>roleplay models</i>.</p> <p>Training was developed based on training development theories starting from need assessment to good evaluation, interactive and interesting learning media were prepared, such as short and not boring learning videos.</p> <p>Adding interesting learning media for the community.</p> <p>People prefer simulation and roleplay methods.</p> <p>The cadres proposed increasing the number of simulations and rehearsals.</p> <p>The realm of practice is expanded rather than theories because cadres need skills to be applied directly.</p>

Based on the results of the interview, a model was prepared which was then tested in a small groups respondents. Results of univariate analysis on the characteristics of small group respondents is shown in table 2.

Table 2. Respondent Characteristics

Characteristics	Intervention Group (n = 25)		Control Group (n = 25)	
	n	%	n	%
Sex				
Male	12	48.0	8	32.0
Female	13	52.0	17	68.0
Total	25	100.0	25	100.0
Age (years old)				
<20	3	12.0	3	12.0
20-30	6	24.0	9	36.0
31-40	6	24.0	3	12.0
41-50	5	20.0	7	28.0
>50	5	20.0	3	12.0
Total	25	100.0	25	100.0
Educational Background				
Junior High School	2	8.0	0	0
High School	11	44.0	16	64.0
Diploma/bachelor	12	48.0	8	32.0
Postgraduate	0	0	1	4.0
Total	25	100	25	100
Occupation				
Government officials/soldiers/police	3	12.0	3	12.0
Entrepreneur	8	32.0	12	48.0
Farmer	2	8.0	0	0.0
private sector employee	3	12.0	8	32.0
housewife	9	36.0	2	8.0
Total	25	100	25	100
Length of Cadre				
<3 years	3	12.0	3	12.0
3-6 years	8	32.0	12	48.0
7-9 years	8	32.0	9	36.0
>10 years	6	24.0	1	4.0
Total	25	100.0	25	100.0

Table 2 shows that the majority of respondents were female, of which there were 13 people (52.0%) in the intervention group and 17 people (68.0%) in the control group. Based on age, the majority of respondents in the intervention group were 20-30 years old (25%), as were those in the control group (36%). Based on educational background, most of the respondents in the intervention group had a diploma/bachelor's degree (48%), while those in the control group had high school (64.0%). Based on occupation, the intervention group was dominated by housewives (36%), while the control group was self-employed (48%). Meanwhile, based on the length of time they have been a cadre, the majority of respondents in the intervention group have been cadres for 3-6 years (32%), as have those in the control group (48%).

Respondents in both groups were evaluated through pre-test and post-test which results is shown in table 3.

Table 3. Pretest-Post Test Comparison

	Domain	Intervention Group	Control Group	T-Test Sig.
Knowledge	Mean Pretest	62.76	62.00	0.0
	Mean Posttest	86.80	73.88	
	Mean Difference	24.04	11.88	
Skills	Mean Pretest	63.16	64.64	0.0
	Mean Posttest	85.80	84.12	
	Mean Difference	22.04	19.48	
Attitude	Mean Pretest	65.60	65.60	0.0
	Mean Posttest	85.08	76.00	
	Mean Difference	19.48	10.40	

Table 3 shows that both groups show an increase in scores of knowledge domain. The increase in the score in the intervention group was 24.04, while the difference in the increase in the control group was 11.88. The results of the difference test show Sig 0.00 so it can be concluded that there is a significant difference in the increase in scores between the intervention group and the control group. As in skills domain, the table shows that both groups show an increase in scores in the skills domain. The increase in the score in the intervention group was 22.64, while the difference in the increase in the control group was 19.48. The results of the difference test show Sig 0.00 so it can be concluded that there is a significant difference in the increase in scores between the intervention group and the control group. Both groups also shows an increase in scores for the attitude domain. The increase in the score in the intervention group was 19.48, while the difference in the increase in the control group was 10.4. The results of the difference test show Sig 0.00 so it can be concluded that there is a significant difference in the increase in scores between the intervention group and the control group.

DISCUSSION

The results for both groups showed an increase in scores in the domains of knowledge, skills and attitudes. However, the difference between pre-test and post-test scores in the intervention group was significantly higher than in the control group. This shows that the health promotion model developed by researchers is more effective in increasing the knowledge, skills and attitudes of cadres in providing first aid to patients experiencing daily emergency condition. The results of this study are in line with the results of research that used educational programs based on this model and provided results in the form of improved knowledge and attitude in patients with chronic heart failure (Wang et al., 2017). Research that provides health promotion to hypertensive patients using educational programs based on this model also shows improvements in knowledge and attitude scores (Hosseini et al., 2014). Likewise, other research results state that the PRECEDE-PROCEED model can significantly increase in the respondents' knowledge, attitude, actions, family support, health worker supports, and cultural support (Fitriani et al., 2020). This study found an increase in community attitudes in providing assistance to victims of emergency situations. This confirms previous studies found that there was an increase in community confidence in accessing PSC-119 services after first aid training was carried out for victims with significant emergency conditions (Sunarto & Harnanto, 2021).

A systematic review of several research articles that applied this promotion model

stated that interventions using the PRECEDE-PROCEED model significantly improved knowledge (Kim et al., 2022). Increasing knowledge, skills, and attitudes by providing the PRECEDE-PROCEED model can occur because this model provides the opportunity to apply theoretical frameworks, interventions, and evaluations in health promotion strategies (Green et al., 2005). Improvements in knowledge, skills and attitudes can also be supported by an increase in interest in participating in health promotion activities. A study that applied a similar model gave results that the health promotion application using the PRECEDE-PROCEED model gave positive results on interest, confidence, and willingness to participate in health promotion programs for populations in the community (Tapley & Patel, 2016). Precede-Proceed connect health promotion goals with public health objectives, providing an ethical guide for democratic and participatory health promotion (Porter, 2016).

The education provided in this research was carried out in the form of groups in the community. This can encourage increased motivation to take part in educational programs. Health education given in group discussion is an appropriate method to teach adults due to its communicative atmosphere (Sumitro et al., 2019). Health promotion given in group discussion can also increase interactions among group members (Cole et al., 2019). Group discussions can increase mutual understanding between group members so that they become an effective means of health education (Riyadi & Ferianto, 2021).

CONCLUSION

This research shows that both groups show an increase in scores. The results of the difference test in all domains (knowledge, skills, attitudes) show Sig 0.00 so it can be concluded that there is a significant difference in the increase in scores between the treatment group and the control group. The conclusion of this research is that the Community-Based Daily Emergency First Aid Management Training Model increases community competence in carrying out first aid for everyday emergency situations. This Model can be applied to develop training for the community in the future.

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