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The Effect of Basic Life Support Lifesaver+ Training Method Innovation on Knowledge and Willingness to Perform First Aid on Non-medical Responder

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ABSTRACT

Basic Life Support (BLS) training for non-medical groups is essential to increase survival rates in emergency conditions that occur outside health facilities. In conventional methods, training is usually carried out by relying on health workers as instructors, with a limited place and time, and a limited number of participants. The latest innovation carried out by the humanitarian organization IMANICARE is by adopting the “Practice While Watching” (PWW) method in delivering BLS material to lay people. In this method, participants do hands-on training simultaneously with watching training material videos. The aim of this method is to provide more in-depth simulation, gamification and real-time adaptive feedback, with a focus on providing an engaging and more realistic learning experience. This study aims to determine the effect of using the innovative PWW method in providing BLS training to non-medical groups on knowledge, level of confidence and willingness to provide first aid after training. Two-arm community-based randomized trials. The control arm will base the training on the usual non PWW offline. The second arm or intervention arm will base the Basic Life Support (BLS) training PWW offline. BLS knowledge and willingness of all recruited subjects were evaluated by a questionnaire before and after training. Data were analyzed using SPSS 24 for Mac. The training was conducted in 16 provinces with Banten Province having the largest number of training participants with 124 people (28.8%). The majority of participants were female 295 people (68.6%), junior-high school education 289 people (67.2%) and had never attended BLS training before 304 (70.7%). Collaborating partners were 37 institutions with hospitals as the largest institution 11 (29.7%). The BLS PWW Training method significantly increased the knowledge and willingness of participants compared to the non-PWW training method ($p<0.01$, $p<0.01$). The BLS Lifesaver+ program with the offline PWW method and the pentahelix collaboration approach in its implementation is an innovation in BLS training for lay rescuers that can increase knowledge, willingness to act and expand the scope of training. Media involvement is needed to increase cross-sector collaboration.

Keywords: *Basic life support training, innovation, “practice while watching” method.*

INTRODUCTION

Out-of-hospital cardiac arrest incidents occur in 20-140 per 100,000 people with a survival rate of 2%-11% [1]. Providing first aid to out-of-hospital cardiac arrest victims can significantly increase their survival rate. Unfortunately, only a small number of out-of-hospital cardiac arrest victims receive cardiopulmonary resuscitation (CPR) from bystanders [2].

Without immediate CPR, most cardiac arrest victims will die. CPR performed by bystanders around the victim significantly increases the survival rate of cardiac arrest victims, but data shows that only 35% to 45% of out-of-hospital cardiac arrest victims receive CPR before the arrival of emergency ambulances [3]. People who have received CPR training are more likely to provide life-saving assistance to cardiac arrest victims. Additionally, trained individuals are capable of performing high-quality CPR on cardiac arrest victims, thereby increasing their survival rates [2].

Therefore, proficient basic Life Support (BLS) skills are necessary for the non-medical lay community. IMAN Care innovates methods in the "Lifesaver+" Basic Life Support (BLS) Training by implementing a

collaborative "Pentahelix" approach and adopting the "Practice While Watching" (PWW) method, aimed at increasing the coverage and outcomes of BLS training for non-medical personnel. This study aims to determine the impact of using the innovative collaborative Pentahelix approach and offline PWW method on BLS training among non-medical personnel on knowledge and willingness to perform first aid.

RESEARCH METHOD

This study uses a community-based randomized trial method with two groups to compare the control group, which is the non-PWW BHD training conducted in 2018[5], and the intervention group, which is the PWW BHD (Lifesaver+) training conducted in 2023. In the non-PWW BHD training, participants were divided into small groups consisting of 6-8 people with 1 instructor and 1 CPR mannequin. The instructor explained and demonstrated the CPR steps, then the participants took turns performing the CPR steps on the mannequin under the instructor's guidance. In the PWW BHD Training (Lifesaver+), participants watch a video, then practice the steps by following the video. The video used is an Instructional Video for Basic Life Support Training with the Practice While Watching Learning Method [4], guided by an instructor.

Knowledge and willingness to perform CPR from all recruited subjects were evaluated thru a questionnaire before (pre-test) and after (post-test) the training. Data were analyzed using SPSS version 24 for Mac.

RESULTS AND DISCUSSION

A total of 1092 participants in the BHD PWW (Lifesaver+) Training, 430 participants completed the provided questionnaire in full. The analysis was conducted by comparing it with data from the non-PWW BHD training, which had 215 participants.

The distribution of training locations in Table 1 shows that the training was conducted in 16 provinces, with Banten Province having the largest number of training participants, totaling 124 people (28.8%).

Table 1. Distribution of Training Location by Province

Nama Provinsi	Jumlah Peserta	Persentase
Banten	124	28.8
Kalimantan Selatan	103	24
Jawa Barat	75	17.4
Jakarta	70	16.3
Jawa Tengah	21	4.9
NTB	6	1.4
Maluku	6	1.4
Jawa Timur	6	1.4
Papua	4	0.9
Yogyakarta	4	0.9
Aceh	2	0.5
Kalimantan Tengah	2	0.5
Kalimantan Timur	2	0.5
Kepulauan Riau	2	0.5
Sulawesi Selatan	1	0.2
Lampung	1	0.2

Table 2 shows the variation and number of partners collaborating, totaling 37 institutions, with hospitals being the most represented institution, totaling 11 hospitals (29.7%).

Table 2. Lifesaver+ Training Partnership

Jenis Instansi	Jumlah Instansi	Persentase
Universitas	2	5.4
Organisasi Mahasiswa	10	27
Pondok Pesantren	1	2.7
Masjid	1	2.7
Rumah Sakit	11	29.7
Klinik	6	16.2
Lembaga Sosial	1	2.7
Organisasi Profesi	3	8.1
Perusahaan	1	2.7
Instansi Pemerintah	1	2.7

Table 3 shows that the majority of participants are women, 295 people (68.6%), with an education level of junior high to senior high school, 289 people (67.2%), and have never attended BHD training before, 304 people (70.7%).

Table 3. Proportion of Pre-Test and Post-Test Scores Based on Basic Data

Karakteristik	n (%)	Nilai PreTest		Nilai Post Test	
		median (min-maks)	*p*	median (min-maks)	*p*
Jenis Kelamin					
Laki-laki	135 (31.4%)	7 (1;10)	0.39*	8 (8;10)	).06*
Perempuan	295 (68.6%)	7 (1;10)		9 (7;10)	
Pendidikan					
SD	2 (0.5%)	2 (1;3)	).02**	9	.37**
SMP-SMA	289 (67.2%)	7 (1;10)		9 (7;10)	
Diploma-S1	132 (30.7%)	7 (3;10)		9 (8;10)	
S2-S3	7 (1.6%)	6 (3;8)		8 (8;10)	
Pelatihan BHD sebelumnya					
Pernah	126 (29.3%)	7 (3;10)	).009*	9 (8;10)	).39*
Belum Pernah	304 (70.7%)	6 (1;10)		9 (7;10)	

*uji Mann Withney
**uji Kruskal Wallis

The BHD PWW training method significantly increases participants' knowledge and readiness compared to the non-PWW training method (p<0.01, p<0.01) as shown in Tables 4 and 5.

Table 4. Comparison of Pre-Test and Post-Test Scores in BHD PWW and Non-PWW BHD Training

Metode Pelatihan	n (%)	Pre Test	Post Test	Perbedaan Post-Test
		median (min-maks)	median (min-maks)	
BHD PWW	430 (79.7%)	6 (1;10)	9 (7;10)	<0.001*
BHD Non PWW	215 (20.3%)	3 (0;7)	5 (0;10)	

*uji Mann Withney

Table 5. Comparison of Willingness to Provide Basic Life Support in PWW and Non-PWW BHD Training

Metode Pelatihan	Sebelum Pelatihan n (%)	Sesudah Pelatihan n (%)	*p**
BHD PWW	328	390	<0.01
BHD Non-PWW	123	196	3 (-4;10)

*uji Chi Square

The BHD Lifesaver+ training was conducted across 16 provinces from Papua to Aceh. If compared to the previous activities in 2018, there is an increase in the number of participants and an expansion of coverage from the Jabodetabek area to 16 provinces, achieved thru the collaboration of many partners. The most numerous collaboration partners are from the business sector, namely hospitals, clinics, and private companies. Then there are community elements such as mosques, students, social institutions, and professional organizations. Next are the education/academic elements, namely universities and Islamic boarding schools, and the government element, which is the Fire Department. Utilization of media by publishing on social media before the event aimed at recruiting partners and participants, and publishing after the event.

Efforts to improve basic life support skills in Indonesian society have involved collaboration among elements of the pentahelix, namely the community, education, business, and government [6]. The use of new media in the form of publications on social media requires increasing the involvement of mass media and social media influencers.

The characteristics of the participants are diverse, and it appears that the majority of the participants have never received BHD before. These demographic characteristics do not seem to affect the training outcomes. This shows that although participants have differences in gender, education, and previous training, the BHD Lifesaver+ training has a significant impact on improving participants' knowledge, making it a potential method for teaching various groups.

The PWW BHD Training Method significantly influences participants' knowledge and willingness to provide assistance compared to the non-PWW training method. Several references indicate the advantages of the video-based practice-while-watching method in training psychomotor skills and reducing teaching variability by instructors, allowing the training to be conducted according to standards[7]. Further research is needed to determine the impact of the PWW BHD training on skills and the extent to which knowledge and willingness to help as a result of the training can be maintained. The low number of trained first responders in the community creates a need for effective training, which is crucial for improving the survival of cardiac arrest victims [8,9]. Community-based PWW BHD training with pentahelix collaboration can be a solution to increase the number of trained first responders in the community.

CONCLUSIONS

The BHD Lifesaver+ program with the PWW method and a pentahelix collaboration approach in its implementation is an innovation in BHD training for non-medical rescuers that can enhance knowledge, willingness to act, and expand the scope of training. Further research is needed regarding the long-term impact of the training, and there is a need to enhance media involvement to strengthen cross-sector collaboration.

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