

The Effectiveness of a New Dispatcher-Assisted Basic Life Support Training Program on Quality in CPR Performance During Training and Willingness to Perform Bystander CPR: A Cluster Randomized Controlled Study

Young Min Kim¹, Gwan Jin Park¹, So Yeon Joyce Kong², Kyoung Jun Song³, Sang Do Shin³, Tae Han Kim³, Young Sun Ro³, Helge Myklebust², Tonje Soraas Birkenes²

Department of Emergency Medicine, Chungbuk National University Hospital, Cheongju, Korea¹, Laerdal Medical, Stavanger, Norway², Laboratory of Emergency Medical Services, Seoul National University Hospital Biomedical Research Institute³

Introduction

A new dispatcher-assisted basic life support (DA-BLS) training program, called “Home Education and Resuscitation Outcome Study (HEROS)” was developed with a goal to provide high-quality DA-CPR training, with a focus on untrained home bystanders.

Objective

The aim of this randomized trial was to assess the effectiveness of the HEROS training program compared to other BLS training programs on trainee’s CPR quality and willingness to perform bystander CPR.

Methods

This was a prospective, clustered randomized trial conducted in three district health community centers in Seoul. Intervention group was trained with the HEROS program and control group was trained with non-HEROS program. The primary outcome was overall CPR quality, measured as total CPR score. Secondary and tertiary outcomes were other CPR quality parameters and post-training survey results. Difference in difference (DID) analysis was performed to analyze the outcome data.

Results

Among total 1,929 trainees, 907 (47.0%) were trained with HEROS program and 1,022 (53.0%) were trained with non-HEROS program. Overall, compared with the non-HEROS group, the HEROS group showed higher quality of CPR performances and better maintaining of their CPR quality throughout the course (Total scores of 84% vs. 80% for first session and 72% vs. 67% for last session; DID of 12.2 vs. 13.2). Other individual CPR parameters also showed similar results ($p < 0.01$ for all). In the post-training survey, disagreement rate in voluntariness about bystander CPR was significant lower in the HEROS group.

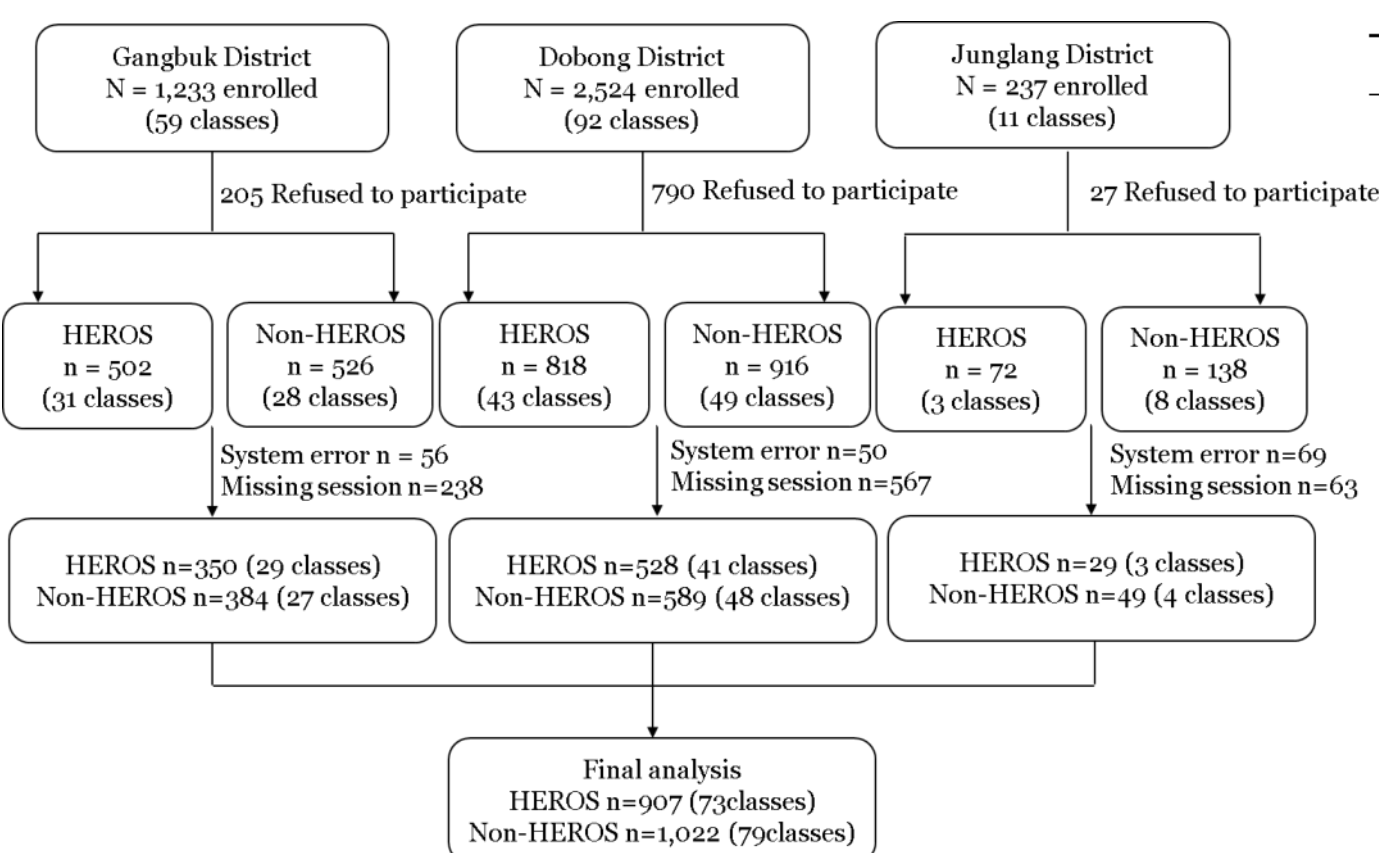


Figure. Flow of participants through the trial

	HEROS (n = 907)	Non-HEROS (n = 1,022)	Between Group Difference (DID, 95% CI)	p-value
Average total number of chest compressions, mean (SD)	604 (158)	431 (186)	---	<0.01
Total Score				<0.01
First session, mean (SD)	84 (20)	80 (22)	2.9 (0.2 to 5.5)	
Last session, mean (SD)	72 (36)	67 (38)	3.9 (1.3 to 6.6)	
Δ First to last session (95% CI)	-12.2 (-14.9 to -9.4)	-13.2 (-15.8 to -10.6)	1.0 (-2.7 to 4.8)	
Average Compression Rate (per minute)				<0.01
First session, mean (SD)	110 (9)	110 (9)	-1.4 (-4.4 to 1.5)	
Last session, mean (SD)	98 (45)	92 (47)	4.9 (2.0 to 7.9)	
Δ First to last session (95% CI)	-12.2 (-15.2 to -9.2)	-18.6 (-21.4 to -15.8)	6.4 (2.2 to 10.5)	
Average Compression Depth (mm)				<0.01
First session, mean (SD)	57 (9)	57 (10)	0.1 (-1.5 to 1.8)	
Last session, mean (SD)	51 (24)	48 (25)	2.9 (1.3 to 4.6)	
Δ First to last session (95% CI)	-6.1 (-7.8 to -4.4)	-8.9 (-10.5 to -7.3)	2.8 (0.5 to 5.2)	
Percent Adequate Depth (%)				<0.01
First session, mean (SD)	75.2 (31.7)	74.1 (31.3)	0.5 (-2.7 to 3.7)	
Last session, mean (SD)	73.5 (39.0)	66.7 (41.0)	6.2 (3.0 to 9.3)	
Δ First to last session (95% CI)	-1.7 (-5.0 to 1.6)	-7.4 (-10.4 to -4.3)	5.7 (1.2 to 10.1)	
Percent Acceptable Release (%)				<0.01
First session, mean (SD)	77.1 (30.5)	76.3 (29.8)	0.5 (-2.7 to 3.6)	
Last session, mean (SD)	64.4 (39.5)	60.1 (40.5)	4.0 (0.9 to 7.2)	
Δ First to last session (95% CI)	-12.6 (-15.9 to -9.4)	-16.2 (-19.2 to -13.1)	3.5 (-0.9 to 8.0)	

Abbreviations: SD=standard deviation; CI=confidence interval; Δ=change; DID=difference in difference

Table. Quality of CPR performance outcomes during the training period

Conclusions

The HEROS training program helped trainees to perform and maintain high quality CPR throughout the course and enhanced their willingness to provide bystander CPR.