

Analysis of Impact of Hands-Only CPR Education on Two Cohorts of Children in an Underserved Community

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Introduction

Out-of-hospital cardiac arrest (OHCA) continues to pose a challenge to public health. According to the American Heart Association, during the COVID-19 pandemic there was a 119% increase in OHCA with a greater percent mortality than previous years¹. Data has consistently shown that bystander cardiopulmonary resuscitation (CPR) has improved survival and long-term outcomes of victims of OHCA^{2,3}. These statistics point to the continued need for community-based CPR education. This study focuses on using a novel approach with a customized pillowcase to teach children CPR.

Aims and Objectives

1. Assess changes in knowledge regarding CPR before and after CPR training
2. Compare opinions and attitudes regarding CPR before and after CPR training
3. Determine feasibility of expanding use of teaching with a customized pillowcase

Methods

In collaboration with a mentorship program for Hispanic elementary school-aged children in an underserved community, we offered hands-only CPR training to two cohorts of students. Participants watched a CPR demonstration and were then guided by medical students to practice CPR on a pillow. A customized pillowcase was used as a teaching tool, which demonstrated hand positioning and emphasized pertinent information. Using a one-group pre/post-test design, participants from two cohorts (n=36) completed questionnaires evaluating CPR knowledge and opinions. A five-point Likert scale was used to assess participants' attitudes toward CPR.

Results

- According to the pre-test, 81% of participants had no CPR training in the past.
- On a five-point scale, 79% of students indicated a 5 on both their pre-test and post-test when asked to rank how important they think it is for all adults to be trained in CPR.

Table 1: What is your willingness to perform CPR on a person?

Pre-Test Frequency Row Pct	Post-Test					Total
	1	2	3	4	5	
1	2 33.33	0 0.00	3 50.00	1 16.67	0 0.00	6 17.65
2	0 0.00	0 0.00	4 50.00	4 50.00	0 0.00	8 23.53
3	0 0.00	1 6.67	3 20.00	10 66.67	1 6.67	15 44.12
4	0 0.00	0 0.00	1 33.33	1 33.33	1 33.33	3 8.82
5	0 0.00	0 0.00	0 0.00	0 0.00	2 100.00	2 5.88
Total	2 5.88	1 2.94	11 32.35	16 47.06	4 11.76	34 100.00

Frequency Missing = 2
P-Value = <.0001

Table 2: How confident are you in your ability to perform CPR?

Pre-Test Frequency Row Pct	Post-Test					Total
	1	2	3	4	5	
1	3 33.33	1 11.11	3 33.33	2 22.22	0 0.00	9 27.27
2	0 0.00	1 14.29	4 57.14	2 28.57	0 0.00	7 21.21
3	0 0.00	1 7.69	6 46.15	6 46.15	0 0.00	13 39.39
4	0 0.00	1 33.33	0 0.00	1 33.33	1 33.33	3 9.09
5	0 0.00	0 0.00	0 0.00	0 0.00	1 100.00	1 3.03
Total	3 9.09	4 12.12	13 39.39	11 33.33	2 6.06	33 100.00

Frequency Missing = 3
P-Value = 0.0002

- There was a statistically significant increase in the students' willingness to perform CPR on a person (p-value<.0001) and in their confidence in their ability to perform CPR (p-value=0.0002).
- Results regarding likelihood to practice CPR were not statistically significant. However, we did see a trend that those who selected responses in the middle of the scale from 2-4 remained willing to practice as indicated by their post-test result at or slightly above their pre-test response.
- Knowledge regarding both CPR compression depth and rate increased. 100% of students that answered the question about compression depth incorrectly on the pre-test, were able to answer correctly on the post-test. The question regarding compression rate was more challenging for the students. Nevertheless, 65% of students that initially answered incorrectly, answered it correctly on the post-test.

Conclusions

Engaging in hands-only CPR training with children using this low-resource method resulted in advancements in knowledge regarding compression depth and rate, as well as statistically significant increases in willingness and confidence in CPR performance. The innovative CPR pillowcase demonstrated feasibility and offers a cost-effective approach for delivering CPR training to community members.

Discussion

We are committed to ensuring ongoing CPR training for elementary school-aged children using this method. Our intention is to continue gathering data on our approach, ensuring the information is taught in a way that is accessible and promotes long-term retention.

References

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Thank you to La Casa Amiga-Catholic Charities of Southeast Michigan and Dr. Claudio Cortes.

IRB: IRB-FY2020-138