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Attitudes and Barriers of Primary School Children on Cardiopulmonary Resuscitation for Drowning Victims

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A B S T R A C T

Cardiopulmonary Resuscitation is a lifesaving procedure whenever a cardiac arrest victim. Drowning is also one of the factors that can lead to cardiac arrest, especially in coastal areas. Children who live in the coastal community are very at risk for drowning due to the nature of their playground located in the coastal zone. Empowering and educating them to skill on Cardiopulmonary Resuscitation (CPR) is more important to provide effective prevention means in reducing the mortality rate, it would require attitudes and barriers from the public especially. This study aimed to explore attitudes and barriers to CPR in drowning victims for primary school children aged in the coastal community of Malaysia. This study follows a quasi-experimental design with educational videos about CPR pre-and post-intervention. The studied participants were participated in this study through an online google form survey due to the current pandemic situation. All the participants were from primary school children in the coastal area. This study revealed that most of the participants (70.6%) would perform CPR for drowning victims after the intervention given to them compared to pre-intervention, which was 58.8%. As for the "Does the public need to learn CPR?", most of the participants (88.2%) agreed that everyone needed to learn CPR procedures after giving the intervention. 76.5% of the participant want training on CPR for drowning before the intervention, but there is a slight decrease after intervention given, which is (64.7%). Around 58.8% of the participants were confident in initiating CPR for drowning victims before and after the intervention. Moreover, approximately 82.4% of the participant would perform CPR if their friends were in danger after the intervention. The majority of the participants (70.6%) think adults are more suitable for performing CPR in the post-intervention questionnaire than only 52.9% for the pre-intervention questionnaire. Primary school children showed a significant change in their attitudes and barriers after receiving the intervention. Consideration should be given to integrating the CPR training or lesson in the syllabus of primary education would save more lives.

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1. INTRODUCTION

Cardiopulmonary resuscitation (CPR) is well known in clinical settings as a lifesaving technique which requires a person's energy to compress chest and breathe mouth to mouth. This technique is required to provide another person's breathing assistance to ensure continuous blood circulation. Studies have shown that many drowning incidents that were triggered by rescue attempts but failed halfway through (Turgut, Yaman, & Turgut, 2016 & Moran, Webber, & Stanley, (2017). They also further described that rescuer drowning incidents often involve more than one victim due to a lack of lifesaving preparation.

Globally, drowning is the third leading cause of unintentional injury death, accounting for 7% of all injury-related deaths (World Health Organization (WHO), 2021). Furthermore, there are an estimated 236 000 annual drowning deaths worldwide and children, males, and individuals with increased access to water are most at risk of drowning (WHO, 2021). Studies also reported numbers of cases of drowning children in the coastal region, such as tourist beaches and resorts, due to lack of parental control and monitoring of local people (Turgut, Yaman, & Turgut, 2016 & Farizan, Sutan, & Mani, 2019). Besides, drowning is one of the top 5 causes of death for children aged 1–14 years for 48 of 85 countries, with data meeting inclusion criteria (WHO, 2021).

The study also showed that the higher risk for drowning victims were children aged 10 to 19 years old and 50.9 % of all drowning victims are younger children (Turgut, Turgut, Yamen 2016). Within the same report, it was found that within multiple drowning events, 48.4 percent of all 'rescuers' and 80 percent of primary drowning victims were younger than 19 years old. Drowning is one of the top five leading causes of death among children in Malaysia (Farizan, Sutan, & Mani, 2019). Moreover, the increasing fatality and pediatric morbidity due to drowning have caused greater social concern in Malaysia (Farizan, Sutan, & Mani, 2019). Thus, drowning issues become a worrisome problem, therefore, needs urgent consideration and action (Abelairas-Gómez et. al, 2019).

Furthermore, an estimated 302.900 people died from drowning in 2017, and most victims were children (Franklin et al., 2020). Factors contributing to drowning deaths are lack of barriers to regulating water exposure and lack of appropriate supervision for infants and young children (Abelairas-Gómez et. al, 2019). A study also found some barriers to performing CPR, including fear of mouth-to-mouth spread of the virus, doing it incorrectly, or lawful punishment for negligence (Biesbroek, Klostermann, Termeer, & Kabat, 2013). Those are why people do not practice CPR in the community area. Previous research suggested several obstacles to bystander intervention, including distress, general anxiety, concern about the inappropriate performance of CPR, harm to the victim, fear of legal repercussions, and fear of transmission of disease (Bouland et al., 2017).

Meanwhile, studies indicate that taking a CPR training class will alleviate anxiety and that learning how to do CPR increases the probability that CPR will be done in emergencies (Laosee, 2014). Notably, the obstacles discussed in this study to bystander CPR were focused on conducting CPR on strangers. Given the pre-and post-training difference in recorded probability of performing CPR on strangers versus family, there could be a specific set of obstacles that might inhibit bystander CPR on members of the family, but not strangers. For example, when doing CPR on a family member, there may be more fear of hurting the victim but less fear of transmitting the disease or

being sued. Considering that most out-of-hospital cardiac arrests (OHCAs) occur at home, future research will discuss the potential of group CPR training to reduce barriers to CPR on family members. Previous CPR training or qualification had little effect on reported obstacles to bystander CPR or reported probability or trust in CPR performance; thus, reaching out to these individuals is as important for community CPR programs as it is for individuals without training at all.

In Malaysia, there is no study that emphasized on school children, especially for primary school children, in educating about CPR. Most of the studies conducted were among secondary and higher levels of education for school children. Many of Malaysia's initial establishments were scattered around the shore. All of Malaysia's major cities and all the 14 state capitals are now located in the coastal zone. Coastal communities who live in the coastal area, especially children, are prone to be drown because of their location. Thus, empowering and educating CPR for saving a drowning victim's life is one of the essential skills for community wellbeing. Furthermore, introducing early CPR education for children will benefits for the nation. Therefore, this study aimed to explore attitudes and barriers on CPR in drowning victims for primary school children aged in the coastal community of Malaysia.

2. METHOD

Research Design

This study used a quasi-experimental design using the pre- and post- intervention with educational videos about performing Cardiopulmonary Resuscitation (CPR) rescue technique for drowning victims.

Population and Sample

Primary school children currently studying in the coastal area of Kuantan, Pahang, who fulfill the inclusion criteria, are included in this research study. The sample is calculated using Raosoft Sample Size Calculator with a margin error of 5%, confidence interval of 95%, and response rate of 80%. There were eight primary schools from Kuantan agreed to participate in this study. The recommended sample size for this study was 120. However, due to the current COVID-19 pandemic, this study was unable to conduct face-to-face, and seven schools were withdrawn from the initial plan. Thus, we recalculated the sample size, and the recommended sample size was 15 for this study.

Instruments

The validation process involved in this study are content and face validity which are measured by Content Validity Index (CVI). The instruments were evaluated by the experts from the Nursing and Medicine field. There are 7 experts involved to validate the questionnaires and the video developed by the researcher and the team. The cumulative scores of the questionnaire were divided by the number of validators and the average score obtained was 0.88. The cumulative scores of the video were divided by the number of validators, and the average score obtained was 0.81.

The internal consistency of the questionnaire was determined by using the Cronbach's Alpha test. For this pilot study, the Cronbach's Alpha obtained was 0.72, showing strong internal consistency.

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The researcher and the teams have developed educational videos about CPR for drowning victims and questionnaires for pre and post-evaluations for the study instrument. The questionnaires were available in English and Malay language

Data Analysis

The data were recorded as predefined categorical values, and individual scores for each section were calculated. The data of this research study was coded and entered into IBM Statistical Package Social Science (SPSS) Version 25 for data analysis. The descriptive statistical method, frequency, and percentage was conducted to analyze categorical data.

Ethics Approval

Ethical approval was obtained from the International Islamic University Malaysia Research Ethics Committee (IREC2020-KON2) and Ministry of Education Malaysia (KPM 600-3/2/3-eras (8557)) to conduct this study. The researcher also attained approval from school principal, and once permission was granted, a consent form for participation was given to the schoolteachers to be distributed to participant's parent. It was due to this study's participants being between 10-12 years old. At the beginning of the study, the participants were also informed that participation was voluntary, results were confidential, and they have the right to withdraw at any time without penalty. All responses were recorded anonymously.

3. RESULTS

Sociodemographic characteristics

Data were collected from February 2021 until March 2021; 17 students were involved in this study, although the sample size requirement was 15 with a response rate of 100%. Pre and post-intervention were carried out for one month in this study. The majority of the participants are female (64.7%) and male with (35.3%). Most of the participants are 11 years old with (70.6%) and 10 years old (29.4%). All the participant that was involved are Malays. Regarding swimming ability, 41.2% did not have swimming ability, 35.3% did have swimming ability, and 23.5% were not sure about swimming ability. In terms of drowning experience, 58.8% have no experience in drowning and 41.2% have experience in drowning. In terms of learning CPR, most of the participant have not learned CPR before with (88.2%) and have learned CPR with (11.8%). In terms of a witnessed incident of CPR for drowning victim, most of the participants did not witness the incident of CPR for drowning victim with (58.8%), the participant did witness the incident of CPR for drowning victim with (35.3%) and (5.9%) answered not sure for witnessed the incident of CPR for drowning victim.

Table 1. The socio-demographic characteristics of participants (N=17)

N=17	Variables	Frequency (n)	Percentage (%)
Gender	Male	6	35.3
	Female	11	64.7
Age	10 Years	5	29.4
	11 Years	12	70.6

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Race	Malay	17	100.0
	Indian	0	0
Do you know how to swim?	Yes	6	35.3
	No	7	41.2
	Not Sure	4	23.5
Have you ever experience drowning before?	Yes	7	41.2
	No	10	58.8
Have you learned CPR before?	Yes	2	11.8
	No	15	88.2
Have you witnessed incident of CPR for drowning victim?	Yes	6	35.3
	No	10	58.8
	Not Sure	1	5.9

The attitudes on CPR for drowning

On the first question, 58.8% of the participants before the intervention choose "Yes" followed by "Not Sure" (29.4%) and "No" (11.8%). After the intervention, most of the participants choose "Yes" (70.6%) followed by "Not Sure" (17.6%) and "No" (11.8%). On the second question, majority of the participants choose "Yes" (82.4%) before the intervention followed by "Not Sure" (17.6%) and no participant choose "No". After the intervention, majority of the participants answered "Yes" (88.2%) followed by "Not Sure" (11.8%) and no participant choose "No".

Table 2. The attitudes on CPR for drowning (N=17)

Question		**Pre**	**Post**
Would you perform CPR for drowning victim?	Yes	10 (58.8%)	12 (70.6%)
	No	2 (11.8%)	2 (11.8%)
	Not Sure	5 (29.4%)	3 (17.6%)
Does the public need to learn CPR?	Yes	14 (82.4%)	15 (88.2%)
	No	0 (0%)	0 (0%)
	Not Sure	3 (17.6%)	2 (11.8%)
Do you want training on CPR for drowning? If you answer YES, go to question 4, if you answer NO, go to question 5	Yes	13 (76.5%)	11 (64.7%)
	No	4 (23.5%)	5 (29.4%)
	Not Sure	0 (0%)	1 (5.9%)
What is the reason you need CPR training for drowning?	Wish to avoid unnecessary death	7 (41.2%)	6 (35.3%)
	Want to engage in saving drowning victim life	8 (47.1%)	6 (35.3%)
	Other reason or no answer	1 (5.9%)	1 (5.9%)
	Lack of time	1 (5.9%)	3 (17.6%)

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What is the reason you had no previous CPR training?	Lack of interest	2 (11.8%)	1 (5.9%)
	Lack of promotional information	5 (29.4%)	7 (41.2%)
	No answer	5 (29.4%)	4 (23.5%)

The barriers on CPR for drowning

On the first question, 58.8% of the participants before the intervention choose "Yes" followed by "Not Sure" (23.5%) and "No" (17.6%). After the intervention, 58.8% of the participants choose "Yes" followed by "No" (23.5%) and "Not Sure" (17.6%). On the second question, most of the participant choose "Yes" (76.5%) followed "Not Sure" (17.6%) and "No" (5.9%). After the intervention, majority of the participant choose "Yes" (82.4%) followed by "Not Sure" (11.8%) and "No" (5.9%). On the third question, 52.9% choose "Yes" before the intervention followed by "Not Sure" (29.4%) and "No" (17.6%). After the intervention, 47.1% of the participants choose "Yes" followed by "Not Sure" (29.4%) and "No" (23.5%).

Table 3. The barriers on CPR for drowning (N=17)

Question		**Pre**	**Post**
Do you think that you are confidence in initiating CPR?	Yes	10 (58.8%)	10 (58.8%)
	No	3 (17.6%)	4 (23.5%)
	Not Sure	4 (23.5%)	3 (17.6%)
Would you perform CPR if your friends are in danger?	Yes	13 (76.5%)	14 (82.4%)
	No	1 (5.9%)	1 (5.9%)
	Not Sure	3 (17.6%)	2 (11.8%)
Is there any syllabus of teaching and learning related to CPR in your school?	Yes	9 (52.9%)	8 (47.1%)
	No	3 (17.6%)	4 (23.5%)
	Not Sure	5 (29.4%)	5 (29.4%)
Do you think adults are more suitable to perform CPR?	Yes	9 (52.9%)	12 (70.6%)
	No	4 (23.5%)	2 (11.8%)
	Not sure	4 (23.5%)	3 (17.6%)
What is the reason that you cannot perform CPR?	Afraid of harming the person	10 (58.8%)	10 (58.8%)
	Afraid of mouth-to-mouth resuscitation	2 (11.8%)	2 (11.8%)
	Afraid of getting infectious disease	1 (5.9%)	3 (17.6%)
	No reason	4 (23.5%)	2 (11.8%)

4. DISCUSSION

This study showed that most of the participants would perform CPR for drowning victims after the intervention was given to them. Besides, the rate of answering "Not sure" about CPR also decreased post-intervention compared to pre-intervention. As for the "Does the public need to learn CPR?", most participants agreed that everyone needs to learn CPR after giving the intervention. Meanwhile, it is similar to the study from, more than 80% of the survey felt that "everyone" should have basic knowledge of First Aid. 76.5% of the participants want CPR training

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for drowning before the intervention. Still, there is a slight decrease after intervention given (64.7%) (Bouland et.al, 2017).

Thus, around 47.1% of the participants want to save drowning victims' lives because they need CPR training although the intervention was not yet introduced to them. Around 41.2% of the participant wish to avoid unnecessary death and 5.9% have no answer in reason of need CPR for training. Meanwhile, after the intervention given to them, 35.3% of the participant thinks "wish to avoid unnecessary death" and "Want to engage in saving drowning victim life" is the reason of why they need CPR training for drowning and "No reason" remain the same (5.9%). Majority of the studied participants were confident in initiating CPR for drowning victims before and after the intervention. This finding is in contrast with previous study which they found that after the theoretical training in the research, the students were not confident conducting realistic bystander CPR on the manikin (Li et. al, 2018). Moreover, majority of the participant would perform CPR if their friends were in danger after the intervention.

Most of the studied participants agreed that there should be syllabus of teaching and learning related to CPR in their school. Some of the public schools in Western, consistently ranked in the center of favored locations for CPR preparation, with non-college graduates preferring them the most (Turgut, 2016 & Fratta, 202). Majority of the participants thinks adults are more suitable to perform CPR in post-intervention questionnaire compared to the pre-intervention in this study. Most of the studied participant afraid of harming the person when performing CPR even though intervention has been given. This is also support by a previous study where the author stated that lack of expertise, fear of causing harm, and lack of trust were described as common barriers to conducting CPR (Li et.al, 2018 & Pei-Chuan, 2019). Another study also found that obstacles mainly fear of causing unnecessary injury, fear of transmission of disease, poor victim hygiene, and presence of vomit or blood were previously also recorded as factors affecting bystander CPR (Shams et al., 2016).

There was a significant difference in attitudes and barriers on CPR for drowning victim between pre-intervention and post-intervention among primary school children in this study. Although this study was conducted online, the studied participants were able to capture the importance of learning CPR and saving the drowning victim. Studies have suggested that wisely using the internet can improve the person's studies and future career benefit (Jamaludin et.al, 2017, Jamaludin et.al, 2018). The researcher and the team hope to conduct the similar studies with bigger sample size in the future for the benefits of school children in the coastal area to save more lives if they encounter with drowning situation.

In this study, the participants' attitudes towards CPR for drowning victims changed after post-intervention. According to a previous study, attitudes may be recalled in the context of expectations for action, as when contemplating a behavioral target reminds us of what we like and dislike about the behavior's implementation and performance (Crano & Prislin, 2011). A previous study also found that more than 80% of the survey felt that "everyone" should have basic knowledge of live saving course, and more than 95 % of their studied participants believed that First Aid or live saving course should be a mandatory subject in school and university curricula (Abelairas-Gómez et al., 2020).

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5. CONCLUSIONS

Although this study was small, we believed that this study's findings will be the baseline data for future study in educating CPR for drowning victims among school children. Several limitations that could be extracted from this present study are that the result of this finding could not really be implemented generally since this study only focuses on primary school children who live in the coastal area. Other limitations faced by the researcher, especially for data collection due to the current Covid-19 pandemic situation. The study should be conducted physically, and questionnaires should be disseminated face to face to the participants. However, the researcher had to obey to the National Security Council and University authorities' regarding the implementation of Movement Control Order (MCO) instruction.

It was found that the primary school children who participated in this study have decent amount of knowledge on CPR for drowning after intervention was introduced to them. The findings displayed that majority of the participant in this study does not learn CPR before. This study identified that most of the participants have a different view on CPR for drowning victims after receiving the intervention. Thus, proper education on CPR should be given to the students considering the level of education starting from primary until university level and as well as to the public despite the sociodemographic background to bridge the gap of knowledge. In order to incorporate a good attitude even practice, basic level of knowledge and practice should be inculcated in every level of education for the benefits of community. Therefore, consideration should be given to integrate the CPR training or lesson in primary education syllabus to save more lives in the community.

6. CONFLICT OF INTEREST

The authors declared that there are no conflicts of interest.

7. ACKNOWLEDGMENT

This study is the preliminary study for the future study which will be conducted with CPR for household members. Thus, authors would like to express sincere appreciation to the Ministry of Higher Education Malaysia (FRGS21-209-0818).

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