The Effectiveness of Health Education Program on Knowledge of Coronary Heart Disease (CHD) Among Public in Puncak Alam, Selangor

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KEYWORDS
Health Education; Knowledge; Coronary Heart Disease; Public;

Aim: The aim of this study is to assess the effectiveness of health education program on knowledge of coronary heart disease (CHD) among public in Puncak Alam, Selangor. Methods and results: Quasi-experimental study was conducted by giving out pre and post-questionnaires to 57 respondents. The result of this study showed that in pre-test majority of the participants 66.7% (n=38) had an acceptable knowledge (<70%) regarding CHD whereas 33.3% (n=19) of the participants had a good level of knowledge (70%-100%). In post-test, 73.7% (n=42) of the participants were reported as having a good level of knowledge and the remaining, n=15 (26.3%) had an acceptable knowledge. Pre-test showed that majority of the participants were basically having an acceptable level of knowledge compared to post-test with (p=0.001). However in post-test it was described majority of the participants had a good level of knowledge compared to pre-test with (p=0.001). In addition, there was a relationship between level of knowledge and demographic data including gender (p=0.024), education level (p=0.019) and family history (p=0.024).

Conclusions: This research proved general knowledge of public at an acceptable knowledge during pre-test and increase to a good level of knowledge in post-test after giving health education. Health education provides a major impact to the public by increasing their level of knowledge. Therefore, educational program on cardiac health should be increased because it is one of the best medium to provide an input to the public; at the same time it will increase level of knowledge and awareness towards the disease.

Introduction

Cardiovascular diseases (CVDs) is the major cause of death all around the world. In 2012, about 17.5 million people died globally due to CVD which represents 31%. About 7.4 million of them died due to coronary heart disease (CHD)1. CHD happened due to atherosclerosis process together with progressively increasing fatty acids builds in the coronary arteries walls as cited in Murfin (2010). According to the latest WHO data published in May 2014 Coronary Heart Disease Deaths in Malaysia had reached 29,363 or 23.10% of total deaths.

CHD refers to the formation of plaque inside the coronary arteries which supplies blood to the heart. In time, the plaque may be harden and rupture which may lead to the narrowing of coronary arteries then it will reduce the oxygen-rich with blood supply to the heart as cited in Murfin (2010).

The risk factor of CHD is divided into two which are non-modifiable and modifiable factors. Non-modifiable factors including age, gender and family history of CHD which is cannot be modified. Men suffer CHD earlier than women and it increases the coronary risk with age. He also stated that modifiable factors are smoking; unhealthy diets with decrease intake of vegetables and fruits, decrease physical activity, obesity, hypertension, hyperlipidaemia, psychosocial factors, diabetes mellitus and alcohol consumptions.

Despite of the increasing and widespread number of death due to CHD all around the world annually, knowledge regarding the disease should be increased in order to prevent it. Therefore, health education program on knowledge about CHD should be held as one of the efforts to increase level of knowledge and awareness about the disease. The effectiveness of educational program however depends on level of knowledge about the disease. Success or failure of any educational program needs a clear understanding of the initial level of knowledge.

Hence, basic knowledge regarding the disease should be considered to determine the effectiveness of the educational program.

Nowadays, the study and data regarding the effectiveness of health education program on knowledge about CHD in Malaysia is remain unknown. Generally, it is not known how much our people know and familiar about CHD especially in Puncak Alam, Selangor. Public health programs can be guided by monitoring the people’s knowledge about coronary artery disease (CAD) risk factors.

Problem statement in this research study were death due to CHD, lack of knowledge and CHD is one of the highly expensive treatment. Therefore, the goal and main purpose of the study is assessing the effectiveness of health education program on knowledge about CHD among public in Puncak Alam, Selangor.

Methods

Sample

A quasi-experimental study was applied for this research. The proposed study was conducted at Puncak Alam, Selangor. Simple random sampling method had been chosen for this research to form the participants. Inclusion criteria of this study were (1) residents with good mental status since cognitive impairment negatively affects the results; (2) able to read, write and communicate verbally; and (3) above 18 years old. Exclusion criteria of this quasi-experimental study were (1) foreigner and (2) non-residents of Puncak Alam. Sample size had been computed by using a Sakpal formula adapted from Mwachaka et al. (2014). This formula has been used to recruit the participants. Through Power and Sample Size Program, mean and standard deviation from the previous study; α: 0.05, power: 0.8, standard deviation: 1.16 and mean: 0.44 were

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discovered. The sample size that could be collected was 57 (n=57).

**Instruments**

Questionnaire that had been chosen for this research was Coronary Artery Disease Education Questionnaire (CADE-Q II) which was adapted from Ghisi (2014). The questionnaire is divided into two parts. In Part A, the question consisted of three questions of demographic data included gender (Male, Female), level of education (SPM/STPM/ Sijil, Diploma, Degree/Master and PhD) and family history of having coronary heart disease (CHD) was asked to choose yes or no. In Part B, there were 28 questionnaires with each of the question has four appropriate and potential answers which have different scores for each answer. There is one answer which is the most accurate would get a score of three, one answer that is closely accurate carried for one score, and two wrong answers got zero scores. All the sum total score was 84.

**Health education**

The slide presentation comprised of the coronary heart disease (CHD) knowledge which is explained about medical conditions, risk factors, exercise, nutrition, and psychosocial risks.

**Pamphlets**

Pamphlets about CHD also had been distributed to the public.

**Data collection methods**

The data was collected at Surau Ar-Rahimah, Puncak Alam Fasa 1, Bandar Puncak Alam on February 2016. Data had been collected through identifying participants which suited the inclusion and exclusion criteria. Consents must be obtained from participants to ensure they are willing to participate in this study. After obtaining consent, pre-questionnaires were distributed to the participants before the health education was given. 15 minutes were given to the participants to complete the pre-questionnaires and the researchers remained with the participants to help them in case they could not understand the questionnaires. After that, all the questionnaire needed to be collected. After collecting pre-questionnaires, health education about CHD was given by a medical officer from Klinik Kesihatan Jeram, Kuala Selangor. After health education was given, post-questionnaires had been distributed to them and they time interval for 15 minutes were given to complete the questionnaire. After participants had completed the post-questionnaires, they were collected back.

**Statistical analysis**

A complete questionnaire were entered in SPSS whereas incomplete questionnaires were rejected. All data were processed and analysed by using IBM Statistical Package for the Social Sciences (SPSS) version for windows version 21.0. Descriptive analysis also has been used to test and analyse objective number one which is to assess level of knowledge on coronary heart disease (CHD) among public in Puncak Alam, Selangor. Study sample of the participant are restricted by followed the classification level of knowledge in Ghisi et al. (2009) due to study design researchers had chosen. Therefore, to find a p-value the collapsing of range needed to be performed in order to classify the level of knowledge which were a good level of knowledge (70%-89%) and an excellent knowledge (90%-100%) has to be combined and considered as a good knowledge (70%-100%). For insufficient knowledge (<30%), little knowledge (30%-49%) and an acceptable knowledge (50%-69%), these had been merged together and considered as an acceptable knowledge with range <70%. Mc Nemar test was used to compare the level of knowledge of CHD pre and post health education program among public in Puncak Alam, Selangor. In addition, non-parametric chi square analysis was used in order to test third objective in this study which is to determine the relationship between levels of knowledge of CHD with demographic data. Non-parametric test was used due to the study that does not normally distributed as stated above. Significance value was set at p<0.05.

**Results**

**Response rate**

The overall response rate was 100%. All the respondents succeeded in completing the pre and post questionnaire.

**Demographic Characteristics**

Table 4.1 Frequency and percentage of demographic characteristics (n=57)

<table>
<thead>
<tr>
<th>Demographic characteristics</th>
<th>Frequency (n)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>20</td>
<td>35.1</td>
</tr>
<tr>
<td>Female</td>
<td>37</td>
<td>64.9</td>
</tr>
<tr>
<td>Education level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPM/STPM/Sijil</td>
<td>29</td>
<td>50.9</td>
</tr>
<tr>
<td>Diploma</td>
<td>14</td>
<td>24.6</td>
</tr>
<tr>
<td>Degree/Master</td>
<td>14</td>
<td>24.6</td>
</tr>
<tr>
<td>Family history of CHD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>20</td>
<td>35.1</td>
</tr>
<tr>
<td>No</td>
<td>37</td>
<td>64.9</td>
</tr>
</tbody>
</table>

Table 4.1 shows a demographic characteristics of study sample which presented in terms of frequency (n) and percentage (%). Total study sample was 57 participants (n=57). As shown in Table 4.1, more than half of the participant were female which represents the largest group of gender and followed by male which represented the smallest group, (n=37) 64.9% and 35.1% (n=20) respectively. One-half of the participants 50.9% (n=29) were reported as having SPM/STPM/Sijil for their education level. Whereas 24.6% (n=14) were displayed as having a diploma and degree/master. Majority or more than half of the participants 64.9% (n=37) did not have family history of having CHD, while 35.1% (n=20) of them had a family history of having CHD respectively.
Level of knowledge of coronary heart disease.

Figure 4.1 Frequency and percentage for level of knowledge of pre and post-test, (n=57).

Figure 4.1 reveals the result of level of knowledge of coronary heart disease (CHD) of pre and post-test. The level of knowledge was classified into two which were a good knowledge (70%-100%) and an acceptable knowledge (<70%). Based on Figure 4.1 majority of the participants 66.7% (n=38) had an acceptable knowledge regarding CHD with pre-test score range in percentage <70% followed by 33.3% (n=19) from the total participants who is managed to score from 70%-100% which considered had a good knowledge regarding the disease. However, in post-test majority of the participant, n=42(73.7%) had a good knowledge regarding CHD with a score range in percentage 70%-100% whereas remaining of the participants 26.3% (n=15) only managed to score <70% which considered as had an acceptable knowledge.

Comparison of level of knowledge of coronary heart disease pre and post health education program.

Table 4.2 Comparison of pre- and post-knowledge level (n=57).

<table>
<thead>
<tr>
<th>Level of knowledge</th>
<th>Pre-test, n (%)</th>
<th>Post-test, n (%)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceptable (&lt;70%)</td>
<td>38 (66.7)</td>
<td>15 (26.3)</td>
<td>0.001</td>
</tr>
<tr>
<td>Good (70%-100%)</td>
<td>19 (33.3)</td>
<td>42 (73.7)</td>
<td>0.001</td>
</tr>
</tbody>
</table>

Table 4.2 demonstrates the outcomes of comparison of pre and post-level of knowledge among study sample (n=57). There was statistically significance different between pre and post-knowledge level in the study. More than half of the participant, n=42 (73.7%) have reported having higher post-test level compared to pre-test level 33.3% (n=19) (p=0.001). Approximately more than a quarter of the participant, n=15 (26.3%) were also discovered to have an acceptable level of knowledge in post-test compared to pre-test (66.7%) (p=0.001). The level of an acceptable knowledge during pre-test declined in post-test whereas for high level of knowledge or a good knowledge rose in post-test compared to pre-test.

Relationship between levels of knowledge of coronary heart disease with demographic data.

Table 4.3 Relationship between level of knowledge and demographic data (n=57)

<table>
<thead>
<tr>
<th>Demographic characteristics</th>
<th>Mean (SD)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1.15(0.37)</td>
<td>0.024</td>
</tr>
<tr>
<td>Female</td>
<td>1.32(0.47)</td>
<td></td>
</tr>
<tr>
<td>Education level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPM/STPM/Sijil</td>
<td>1.28(0.45)</td>
<td></td>
</tr>
<tr>
<td>Diploma</td>
<td>1.36(0.50)</td>
<td>0.019</td>
</tr>
<tr>
<td>Degree/Master</td>
<td>1.14(0.36)</td>
<td></td>
</tr>
<tr>
<td>Family history</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1.25(0.44)</td>
<td>0.024</td>
</tr>
<tr>
<td>No</td>
<td>1.27(0.45)</td>
<td></td>
</tr>
</tbody>
</table>

*p<0.05 indicates significantly difference

Table 4.3 shows the relationship between level of knowledge and demographic data. There was a relationship between level of knowledge and demographic data including gender (1.32±0.47) for female and male (1.15±0.37) (p=0.024), education level for SPM/STPM/Sijil (1.28±0.45), diploma (1.36±0.50) and degree/master (1.14±0.36) (p=0.019) while for having family history of CHD (1.25±0.44) and without family history of CHD (1.27±0.45) (p=0.024). Therefore, it shows that there was a relationship between level of knowledge and gender. So, it can also be concluded that there was a relationship between level of knowledge and education level. Thus, there was a relationship between level of knowledge and family history.

Discussion

According to the research findings, it demonstrated that basically most of the participants has only an acceptable level of knowledge on CHD. However, after receiving health education program their level of knowledge regarding the disease has improved from an acceptable to a good knowledge. A cross-sectional study, level of knowledge of participants regarding the disease was also at a medium level. Differing from the consistent previous study also used cross-sectional survey showed that overall study population has a low level of knowledge on causes of cardiovascular disease (CVD). However, in research that was nearly similar with this study that used pre-test and post-test study found that level of knowledge improved after receiving intervention program regarding cardiac health and established higher level of knowledge compared to control group.
The differences of findings between the researchers might happened due to the questionnaire utilized in their study, population sample, settings and study design. Firstly, the questionnaire used by the researcher in this study might have a good validity and reliability compared to other researchers. Questionnaire that has been utilized in this study was Coronary Artery Disease Education Questionnaire (CADE-Q II) which has been psychometrically validated and proved with Cronbach’s Alpha (α=0.91). The questionnaire used to measure knowledge and attitude has also showed a good validity and reliability with Cronbach’s Alpha (α=0.941) and (α=0.824) respectively. However, the level of knowledge regarding the disease is still limited. In this case, the differences of the findings happened might be due to sample population that has been recruited. The sample size was superior to this research with 777 respondents compared to this study with 57 participants involved. Therefore, the mean knowledge have demonstrated a huge difference for both studies. The difference between level of knowledge in this study and Vaidya et al. (2013) study might happen due to a study setting. Puncak Alam, Selangor which is a main township in district of Kuala Selangor with complete facilities. Therefore, in this study sample participants might have received a better education due to an easy access towards education compared to Vaidya et al. (2013) that has been conducted at Kathmandu Valley.

In addition, the differences of a study design between this study and Andsoy et al., (2015) also affected. Andsoy et al. (2015) used cross-sectional studies to assess level of knowledge whereas in this study researchers used quasi-experimental to evaluate level of knowledge by holding an interventional program but cross sectional study assessed the baseline level of knowledge about a subject matter. The level of knowledge remained in moderate level because there was no interventional program held to improve knowledge. The similarities between this research and Eshah et al. (2010) was the level of knowledge improved to a better knowledge. Eshah et al. (2010) had a control group whereas this study did not have control group.

Level of knowledge CHD can be assessed and improved through an interventional program such as health education program and cardiac rehabilitation program. Cardiac rehabilitation programs encompases of health talk and education and counselling services in order to increase physical fitness among heart patients, lessen cardiac symptoms, improve health and decrease the risk of future heart problems, including heart attack. In order to increase level of knowledge on CHD among public in Puncak Alam, researchers conducted a health education program regarding the disease similar to Eshah et al. (2010) study which also conducted an interventional program about cardiac health. There were evidences from previous studies that have been conducted by demonstrated that by providing educational programs regarding cardiac health led to significant improvements in the subjects’ knowledge regarding cardiac risk factors as cited in Eshah et al. (2010). In addition, cardiac rehabilitation (CR) was a thorough prevention program in which patient’s education was a fundamental component. Therefore, it can be concluded that besides providing health education and cardiac rehabilitation program, in order to assess and improve level of knowledge it can also be used to prevent the risk factors the disease.

A study in Puncak Alam, Kuala Selangor had applied a pre-test and post-test study design by using instruments consisted of a self-administered questionnaire and a health education program about coronary heart disease (CHD) with majority of the participants (73.7%) having a good knowledge level which carried a score range 70 % - 100 % during the post-test data collection and showed an approximately significant result (p < 0.001). A recent study had approximately carried a similar study design with the researcher at West Midnapore, India demonstrated an increase of score after carried out the post-test data collection. Despite this important debate, this research towards students with the mean age of 14.7 years old and was located at the rural district area with mostly the citizens worked in agriculture field. Contrarily, the inclusion criteria for study in Puncak Alam was 18 years old and above with majority of the residents in Puncak Alam not majored in agriculture field.

There was also a change in the mean knowledge scores with the highest mean change was 0.39 (SD: 1.41) for the pathophysiology at one month after the cardiac educational program. Tawalbeh and Ahmad (2014) had demonstrated the study towards patients with angina after percutaneous coronary intervention and post-acute myocardial infarction in a teaching hospital in Irbid, Jordan. There was a big difference between patients in hospital and public in Puncak Alam because patients in the hospital had been exposed to the cardiovascular disease (CVD) meanwhile Puncak Alam residents had not been traced by the researcher whether they were having a follow-up or having any diseases.

A quasi-experimental study design compared the differences between men and women with 52 and 71, for men and women respectively during post-test data collection. Attitudes towards cardiac related symptoms had statistically significant better scores for experimental group for post-test data contrarily to the beliefs about CHDs that were not changed significantly for women. In Puncak Alam, the study carried out towards male and female with 20 and 37 participants respectively portrayed that female (1.32 ± 0.47) had improved level of knowledge compared to male (1.15 ± 0.37).

Moreover, Eshah and colleagues (2010) had utilized a program comprised of a group education, an individual counselling and a behavioural skill-building technique. During conducted the program, the author presented a modified Active Partnership Program to the experimental group and this program had been consented by American Heart Association (AHA) which was under AHA programs which is “Active Partnership for the Heart of your Heart”. In contrast, the researcher prepared a health education program that had been approved by Ministry of Health Malaysia and presented by a medical officer with a grade of U41 and is an accredited medical officer. Data collection carried out by the researcher had shown a large difference which was an immediate post-test data but he assembled the data collection twice, during the baseline and 10 weeks later.

A previous study in India showed the post-test mean knowledge score had a slight improvement than the mean of the pre-test knowledge score. He also utilized a structured self-rating scale about coronary artery disease (CAD) and a structured knowledge questionnaire when conducting his
research by prepared the post-test questionnaire on the eighth day after the program. While in Puncak Alam, more than one-fifth of the participants showed an increase level of knowledge during post-test data collection towards public. Moreover, the researcher applied only a CHD education questionnaire towards the participant and collected them immediately after the health education by giving an amount of time to answer them.

As cited in Tawalbeh & Ahmad (2014) in the present study demonstrated a strong association between level of knowledge with demographic characteristic including gender, education level and family history of heart disease. This finding is consistent positive with the results of many researches, which proved that the coronary heart disease (CHD) educational program significantly increased knowledge of the heart disease. An explanation for this study could be a higher tendency of women to gain more public relations, curiosity and information. They also always spend more of their time watching TV programs as cited in Mahmoodi et al. (2015). Women significantly had better score for health responsibility and men had significantly better score for beliefs.

The education levels in this study were opposite with Dodani et al. (2004) study which was 60 percent of participants had 10 years formal education of matriculation or above. Despite the exceptionally higher literacy rate, respondents had little knowledge about the causes of heart disease, including the major risk factors. Respondent that working with more education level knew more knowledge than those with less education and unemployment. The findings of the study about the association between level of knowledge and education level was accurately consistent with Vaidya et al. (2015) and Dallongeville et al. (2000).

Family history of heart disease actually played an important role for a person’s health due to the disease may be genetically passed from their parents or blood-related family members. Family history was un-new concept in medicine as well as public health. It was listed as one of the risk factors for a prevalence number of chronic disease of public health significance including asthma, CHD, cancers, and osteoporosis. Many studies had approved that family history was one of the non-modifiable risk factors.

Conclusion

Result of the first objective regarding the level of knowledge on CHD among public in Puncak Alam, Selangor generally was at an acceptable level in pre-test. However, in the post test level of knowledge of the public was at a good level. For the second objective, it was reported that there was an improvement in the level of knowledge after an immediate post-test data which from an acceptable knowledge to the good level of knowledge compared to pre-test data. Lastly, there was a strong association and relationship between socio-demographic data (gender, level of education and family history of CHD) and the level of knowledge of CHD among public in Puncak Alam, Kuala Selangor.

Thus, we can conclude that the health education regarding CHD is very crucial to increase the level of knowledge and awareness toward prevention of the disease. Furthermore, with high level of knowledge regarding the CHD, the public will take an early preventive measure and precautionary action to avoid the wide spread of the disease. Therefore, this educational program of CHD should be held and expose more to the public.

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References


