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Original Research

# The Influence of Peer Health Education Toward the Decreasing Risk of Heart Disease

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## ABSTRACT

**Introduction:** Heart disease is the number one cause of death in Indonesia. Promotional efforts through the provision of health education and counselling through Peer Health Education is one of the primary prevention strategies that can be undertaken to prevent the occurrence of heart disease. The purpose of this study is to prove the influence of Peer Health Education in reducing the risk of heart disease.

**Methods:** The research method used in this study was quasi-experimental with a pre-test-post-test non-equivalent control group design. The samples were taken from 56 people using the purposive sampling technique. The first group of 28 people was the experimental group and the second group of 28 people was the control group. Before and after treatment, both groups were measured concerning their knowledge, lifestyle behaviour, blood pressure, blood glucose levels, blood cholesterol levels and risk assessment of heart disease. Data analysis was done by using the Friedman Test with a 95% significance level.

**Results:** The results showed that Peer Health Education was able to improve the respondents' knowledge about having a healthy lifestyle, changing the behaviour of the respondents, i.e. behaviour of consuming sweet foods, controlling blood pressure and decreasing the risk of heart disease.

**Conclusion:** Based on the result, health promotion efforts through a Peer Health Educator can continue to be done as one method to improve heart health in the community. Thus, the expectation of morbidity and mortality due to heart disease can be lowered.

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## INTRODUCTION

Heart disease is the number one cause of death in Indonesia and around the world. Based on valid data, each year approximately 17.3 million people die from a heart attack. It is estimated that by 2030, deaths from heart disease will reach 23.6 million inhabitants (Mozaffarian et al, 2015). Based on the basic health research data conducted by the Ministry of Health of the Republic of Indonesia in 2013, it is known that the prevalence of coronary heart disease in Indonesia in 2013, based on doctor/symptom diagnosis, is 1.5% of the total population or about 2,650,340 people. In this data, it is known that most patients come from the East Java Province with a total of 375,127 people. In addition, based on the doctor's diagnosis, East Java Province is also the region with the highest number of heart failure patients in Indonesia (Center for Data and Information Ministry of Health, Indonesian Republic, 2014).

Heart disease is a disease caused by a disorder of the heart or the blood vessels. Several risk factors such as age, gender, family history, and obesity, lack of exercise/lack of exercise, unhealthy diet, stress, hypertension, dyslipidemia and diabetes mellitus can lead to heart disease (Bickley, 2015). Quick and proper treatment is needed for patients in order to prevent the occurrence of morbidity and mortality of patients who have had a heart attack or are at risk of it.

Several attempts can be made to prevent the risk of heart attack. The American Heart Association recommends seven important keys to maintaining heart health, such as by quitting smoking, maintaining

a level of physical activity with regular exercise, maintaining a healthy diet, maintaining normal weight and controlling blood pressure, cholesterol and blood sugar levels in the body (Mozaffarian et al, 2015). The World Health Organisation (WHO) in 2011 developed a framework of reference that can be used to prevent and control the occurrence of heart disease by making efforts to increase public awareness about the importance of heart health, through increased health promotion activities. In terms of reference, it is explained that the age group most at risk for heart disease is 30-70 years old. In this age range, it is very important to maintain heart health through healthy lifestyle behaviours (Chestnov, 2011). Health promotion through education and counselling activities is one of the efforts used to guide someone to undertake the necessary lifestyle changes to maintain heart health (Bickley, 2015).

To assist in the provision of health information, there are a variety of methods available. Peer Health Education is one of the strategies that can be used to provide health education to people with certain characteristics. This activity is carried out by Peer Health Educators, people with the same characteristics as the community groups, considered to have the ability to influence these groups so that efforts to improve knowledge, skills and behavioural changes are easier to produce. From previous research study results, Peer Health Education can effectively be used to improve knowledge, skills and the ability to change one's own health behaviour (Duncanson et al, 2014). In addition, peer education is able to improve attitude (Khosravi et al, 2017; Gurkan & Komurcu, 2017), increase confidence in goal setting ability (Gough & Cassidy, 2017), and reduce anxiety (Homan & Chichester, 2016).

Based on the above background, the current researchers are interested in conducting a study on the influence of Peer Health Education in relation to the modification of lifestyle against the risk of heart disease in a community at risk. The purpose of this study is to prove the effectiveness of Peer Health Education in relation to the modification of lifestyle and the risk of heart disease in the community.

## MATERIALS AND METHODS

This study used a quasi-experimental with a pre-test-post-test non-equivalent control group design. Research data retrieval activities were conducted in Kepanjen, Kepanjen District, Malang, in June - August 2017. The samples were taken by using the purposive sampling technique. There were 56 people divided into two groups, as the treatment group and control group respectively. The research instruments include questionnaires to measure knowledge, a checklist of healthy lifestyle behaviours, a checklist of the risk of cardiovascular heart disease - the "Jakarta Cardiovascular Score", a sphygmomanometer, blood cholesterol test and blood glucose test.

The data collection process began with pre-test activity by asking the respondents to fill out a questionnaire about their knowledge and healthy lifestyle behaviours, to fill out a checklist of the risk factors for heart disease, and to measure their blood pressure, blood cholesterol and blood glucose. Furthermore, the treatment group was given Peer Health Education by Peer Health Educators, as determined by the researchers. Two weeks after the advent of Peer Health Education, the researchers employed a second re-measurement of knowledge, healthy lifestyle behaviours, the calculation of the risk of heart disease, and blood pressure, blood glucose and blood cholesterol. Two weeks later, a third re-measurement was employed. The questionnaire used in this study had been validity tested using a Product Momen Pearson Correlation and reliability test. The instrument's Cronbach's alpha was 0.852. The three measurements were performed in both the treatment and control group. The data was then analysed using univariate and bivariate tests. In the univariate test, the data was analysed and presented in terms of percentage, mean, standard deviation, median, and minimum and maximum according to the data type. In the bivariate test, the data was analysed using the Wilcoxon, Mann-Whitney or Friedman test according to the type of data distribution related to each variable with a 95% significance level. This research study received ethical clearance approval from the Health Research Commission of Health Polytechnic, of the Health Ministry of Malang (No.002/KEPK-POLKESMA/2017).

## RESULTS

The research was conducted on 56 respondents divided into two groups. The first group was a control group of 28 respondents with an average age of 42.86 years. The second group of 28 respondents had an average age of 43.61 years. Both groups are all female.

### Knowledge of a Healthy Lifestyle to Prevent Heart disease

Knowledge of a healthy lifestyle to prevent heart disease in each group has been listed in Table 1. In Table 1, it was found that in the experimental group, there was a significant difference in the respondent's knowledge between before and after, following the peer health education with a p-value equal to 0.004. In the control group, it was found that there was no knowledge difference between the first measurement and the measured knowledge two weeks after the first measurement with a p- value of 0.172. This is in accordance with the results of the study listed in Table 2, which explains that there is a significant difference in the knowledge of a healthy lifestyle to prevent heart disease in the experimental group and the control group with a p-value of 0.034. Based results, it can be concluded that peer health education can increase one's knowledge about living a healthy lifestyle in order to prevent heart disease.

Table 1. Results of the Wilcoxon test analysis of the knowledge of what is a healthy lifestyle before and after treatment in the experimental and control groups.

| | Knowledge | Median (Minimum-maximum) | p-value |
|---|---|---|---|
| **Experimental Group** | Before treatment | 7 (6 – 10) | 0.004 |
| | Two weeks after the treatment | 8 (6 – 10) | |
| **Control Group** | First test | 7 (4 – 10) | 0.172 |
| | Two Weeks after the first test | 7 (4 – 10) | |

Table 2. Mann Whitney test analysis results: differences in healthy life pattern knowledge between the experimental and control groups.

| Knowledge | Median (Minimum-Maximum) | p-value |
|---|---|---|
| Knowledge of Experimental Group | 8 (6 – 10) | 0.034 |
| Knowledge of Control Group | 7 (4 – 10) | |

Table 3. Behaviour of the modification of the experimental-group's lifestyle

| No | The behaviour of lifestyle modification | Pre n (%) | Post-1 n (%) | Post-2 n (%) | p-value[a] |
|---|---|---|---|---|---|
| A | Consumption patterns of fatty foods | | | | |
| | >1 time/day | 8 (28.6) | 6 (21.4) | 4 (14.3) | 0.229 |
| | 1-6 times/week | 16 (57.1) | 18 (64.3) | 21 (75) | |
| | <3 times/month | 4 (14.3) | 4 (14.3) | 3 (10.7) | |
| B | Consumption patterns of sweet foods | | | | |
| | >1 time/day | 11 (39.3) | 12 (42.9) | 3 (10.7) | 0.011 |
| | 1-6 times/week | 14 (50) | 13 (46.4) | 20 (71.4) | |
| | <3 times/month | 3 (10.7) | 3 (10.7) | 5 (17.9) | |
| C | Physical activities | | | | |
| | Active | 6 (21.4) | 3 (10.7) | 4 (14.3) | 0.368 |
| | Less Active | 22 (78.6) | 25 (89.3) | 24 (85.7) | |
| D | Stress/anxiety | | | | |
| | Every day | 2 (7.1) | 1 (3.6) | 7 (25) | 0.308 |
| | Often | 2 (7.1) | 4 (14.3) | 2 (7.1) | |
| | Occasional | 23 (82.1) | 22 (78.6) | 18 (64.3) | |
| | Never | 1 (3.6) | 1 (3.6) | 7 (25) | |
| E | Smoking Habit | | | | |
| | Every day | 0 (0) | 0 (0) | 0 (0) | 1.000 |
| | Occasional | 0 (0) | 0 (0) | 0 (0) | |
| | Ex-Smoker | 0 (0) | 0 (0) | 0 (0) | |
| | Non-Smoker | 28 (100) | 28 (100) | 28 (100) | |
| F | Alcohol consumption | | | | |
| | Every day | 0 (0) | 0 (0) | 0 (0) | 1.000 |
| | Occasional | 0 (0) | 0 (0) | 0 (0) | |
| | Ex-consumer | 0 (0) | 0 (0) | 0 (0) | |
| | Never Consume | 28 (100) | 28 (100) | 28 (100) | |

Note: [a] Result of the Friedman Analysis

**Healthy Lifestyle**

The behaviour of the modification of one's lifestyle to prevent the occurrence of heart disease was measured based on the respondent's behaviour regarding the consumption pattern of fatty foods and sweet foods, participation in activities/sports, stress/anxiety, smoking and alcohol consumption. The description of the respondent's behaviour in the experimental
group and control groups has been listed in Tables 3 and 4 respectively. Based on Table 3, it can be explained that only the pattern of consumption of sweet foods that has a p-value <0.05 can be interpreted to indicate that there is a significant difference in the consumption patterns of the respondents between the first, second and third measurements. The consumption behaviour of fatty foods, physical activity and stress/anxiety show no significantly different results between the first, second and third measurements. In relation to the measurement of smoking habits and alcohol consumption, it has a fixed value between the first, second and third measurements.

Table 4 shows that in the control group, there was no significant difference in the healthy lifestyle behaviour and all of the associated components (consumption of fatty foods, consumption of sweet foods, physical activity, stress/anxiety, smoking habits, and alcohol consumption habits) between the first, second and third measurement.

Table 5 shows that there were differences in the behaviour of the healthy lifestyle undertaken to prevent heart disease between the experimental group and the control group. The difference is in the pattern of consumption of fatty foods with a p-value of 0.041. The pattern of consumption of sweet foods, physical activity, stress/anxiety, smoking habits and alcohol consumption habits did not show any

Table 4. Behaviour of modification of the control group's lifestyle patterns

| No | The behaviour of Lifestyle Modification | Pre n (%) | Post-1 n (%) | Post-2 n (%) | p-value[a] |
|---|---|---|---|---|---|
| A | Consumption patterns of fatty foods | | | | |
| | › 1 time/day | 13 (46.4) | 5 (17.9) | 9 (32.1) | 0.078 |
| | 1-6 times/week | 11 (39.3) | 20 (71.4) | 19 (67.9) | |
| | ‹ 3 times/month | 4 (14.3) | 3 (10.7) | 0 (0) | |
| B | Consumption patterns of sweet foods | | | | |
| | › 1 time/day | 14 (50) | 7 (25) | 5 (17.9) | 0.084 |
| | 1-6 times/week | 12 (42.9) | 20 (71.4) | 22 (78.6) | |
| | ‹ 3 times/month | 2 (7.1) | 1 (3.6) | 1 (3.6) | |
| C | Physical activities | | | | |
| | Active | 6 (21.4) | 6 (21.4) | 2 (7.1) | 0.264 |
| | Less Active | 22 (78.6) | 22 (78.6) | 26 (92.9) | |
| D | Stress/anxiety | | | | |
| | Every day | 0 (0) | 0 (0) | 0 (0) | 0.441 |
| | Often | 4 (14.3) | 1 (3.6) | 1 (3.6) | |
| | Occasional | 20 (71.4) | 23 (82.1) | 26 (92.9) | |
| | Never | 4 (14.3) | 4 (14.3) | 1 (3.6) | |
| E | Smoking Habit | | | | |
| | Every day | 0 (0) | 0 (0) | 0 (0) | 1.000 |
| | Occasional | 0 (0) | 0 (0) | 0 (0) | |
| | Ex-Smoker | 0 (0) | 0 (0) | 0 (0) | |
| | Non-Smoker | 28 (100) | 28 (100) | 28 (100) | |
| F | Alcohol consumption | | | | |
| | Every day | 0 (0) | 0 (0) | 0 (0) | 1.000 |
| | Occasional | 0 (0) | 0 (0) | 0 (0) | |
| | Ex-consumer | 0 (0) | 0 (0) | 0 (0) | |
| | Never Consume | 28 (100) | 28 (100) | 28 (100) | |

Note: [a] Result of the Friedman Analysis

Table 5. Mann Whitney test analysis results - differences in the healthy lifestyle behaviour between the experimental and control groups

| Lifestyle Pattern | | p-value |
|---|---|---|
| Consumption patterns of fatty foods | Experimental Group<br>Control Group | 0.041 |
| Consumption patterns of sweet foods | Experimental Group<br>Control Group | 0.114 |
| Physical activities | Experimental Group<br>Control Group | 0.392 |
| Stress/anxiety | Experimental Group<br>Control Group | 0.221 |
| Smoking Habit | Experimental Group<br>Control Group | 1.000 |
| Alcohol consumption | Experimental Group<br>Control Group | 1.000 |

significant differences between the experimental and control groups.

### The Measurement of Blood Pressure, Blood Cholesterol and Blood Glucose

The results of the measurement of blood cholesterol, blood glucose and blood pressure levels between the experimental group and the control group have been listed in Table 6. It can be explained that the results of the blood cholesterol and blood glucose level tests in both the experimental and control groups did not differ significantly between the measurements taken pre-test, post-test-1 and post-test-2. However, in relation to the blood pressure measurements in both the treatment and control groups, there was a significant difference between the measurements of pre-test, post-test-1 and post-test-2. From the measurement of blood pressure, the p-value of the treatment group was smaller than that of the control group, so it can be concluded that the change in blood pressure in the treatment group is more meaningful.

### The Risk of Heart Disease

The risk of cardiovascular disease in the experimental and control groups has been shown in Tables 7, 8 and 9. Table 7 shows a description of the risk of heart disease in the experimental and control groups. Based on the above table, it shows that at the end of the measurement period, more than half of respondents in the experimental group - equal to 53.6% -have a low risk of heart disease. the respondents who experienced a high risk decreased from 25% to 21.4%. In the control group, it showed

Table 6. Results of blood cholesterol level, blood glucose and blood pressure in the experimental and control group

| **Blood Cholesterol Levels** | **Pre Mean (SD)** | **Post-1 Mean (SD)** | **Post-2 Mean(SD)** | **p-value** |
|---|---|---|---|---|
| Experimental Group | 195 (48.901) | 204.86 (46.865) | 212.14 (36.209) | 0.291[a] |
| Control Group | 203.57 (52.907) | 204.04 (63.093) | 202.71 (69.967) | 0.995[a] |
| Blood Glucose | Pre Median (Min-Max) | Post-1 Median (Min-Max) | Post-2 Median (Min-Max) | p-value |
| Experimental Group | 106 (63-397) | 102 (44-244) | 102.5 (55-211) | 0.503[b] |
| Control Group | 111.5 (78-416) | 109 (70-341) | 105.5 (70-478) | 0.756[b] |
| Blood Pressure | Pre n (%) | Post-1 n (%) | Post-2 n (%) | |
| Experimental Group | | | | |
| Normal | 9 (32.1) | 7 (25) | 13 (46.4) | 0.010[c] |
| Pre-Hypertension | 9 (32.1) | 13 (46.4) | 8 (28.6) | |
| Hypertension Stage 1 | 6 (21.4) | 3 (10.7) | 5 (17.9) | |
| Hypertension Stage 2 | 4 (14.3) | 5 (17.9) | 2 (7.1) | |
| Control Group | | | | |
| Normal | 10 (35.7) | 14 (50) | 14 (50) | 0.045[c] |
| Pre-Hypertension | 10 (35.7) | 9 (32.1) | 10 (35.7) | |
| Hypertension Stage 1 | 6 (21.4) | 4 (14.3) | 3 (10.7) | |
| Hypertension Stage 2 | 2 (7.1) | 1 (3.6) | 1 (3.6) | |

Note: [a] Result of Repeated ANOVA Analysis,
[b, c] Result of Friedman Analysis

Table 7. Risk of heart disease in the experimental and control group

| **Risk of Heart Disease** | **Pre n (%)** | **Post-1 n (%)** | **Post-2 n (%)** |
|---|---|---|---|
| Experimental Group | | | |
| Low Risk | 15 (53.6) | 16 (57.1) | 15 (53.6) |
| Medium Risk | 6 (21.4) | 6 (21.4) | 7 (25) |
| High risk | 7 (25) | 8 (21.4) | 6 (21.4) |
| Control Group | | | |
| Low Risk | 14 (50) | 16 (57.1) | 13 (46.4) |
| Medium Risk | 8 (28.6) | 7 (25) | 9 (32.1) |
| High risk | 6 (21.4) | 5 (17.9) | 6 (21.4) |

Table 8. The result of Friedman's test analysis score of the risk of heart disease in the experimental group

| **Heart Disease Risk Score** | **Median (Minimum-Maximum)** | **p-value** |
|---|---|---|
| Pre-Treatment | 1 (-3 – 9) | 0.060 |
| Two Weeks after the Treatment | 0.5 (-5 – 9) | |
| Four Weeks after the Treatment | 0.5 (-5 – 9) | |

Friedman test. P value on post hoc Wilcoxon: Before Treatment and Two Weeks after Treatment 0.204; Before Treatment vs. Four weeks After Treatment of 0.150; two weeks vs. Four weeks after treatment 0.679.

Table 9. The result of the Friedman test analysis score on the risk of heart disease in the control group

| **Heart Disease Risk Score** | **Median (Minimum-Maximum)** | **p-value** |
|---|---|---|
| **First Test (Pre)** | **1,5 (-4 – 9)** | **0.098** |
| **Two Weeks after the First Test** | **1 (-6 – 9)** | |
| **Four Weeks after the First Test** | **2 (-3 – 8)** | |

Friedman test. P value on post hoc Wilcoxon: Before Test vs. Two weeks After the First Test 0,516; Before Test vs. Four weeks after the First Test 0.414; Two weeks after the First Test vs Four weeks after the First Test 0.059

that at the end of the measurement period, the number amounted to 46.4% who had a low risk of heart disease. This indicates a decrease in the number of respondents with a low risk, while those at moderate risk increased between the first measurement and the third measurement from 28.8% to 32.1%.

Based on Table 8, the difference in the risk of heart disease in the first, second and third measurements in the experimental group receiving peer health education showed a p-value of 0.060, which statistically means that there is no difference in risk of heart disease before and after the respondent underwent Peer health education. However, when viewing the median and minimum values of each measurement period, positive changes from the first measurement to the last measurement indicate that the respondent tended to experience a decrease in the

risk of heart disease, from the lowest score of -3 to -5 and from the median value of 1 to 0.5.

The results listed in Table 9 focused on the difference in the risk score of heart disease in the control group in relation to the three measurements obtained a p-value of 0.098. Statistically, this shows that there is no significant difference between the first, second, and third measurements. However, when viewed from the median value achieved at the beginning of the measurement, it showed that the risk of heart disease increased from the score of 1.5 to a score of 2 at the end of the measurement period. In addition, the minimum score also increased from -4 to -3. This suggests that the control group respondents tend to have an increased risk of developing heart disease at the end of the measurement period.

## DISCUSSION

The behaviour of a person living a healthy lifestyle is influenced by several factors, one of which is the knowledge and understanding possessed by a person (Mindy & Alyson, 2015). Therefore, to improve one's knowledge, it can be provided through health education. Health education activities aim to increase one's knowledge and understanding so that they will be able to transform their behaviour into a healthier one (Marianne et al, 2001). There are many methods used in health education, one of which is Peer Health Education. Peer Health Education involves a person who is considered to be able influence the community around them. By using the Peer Health Education method, it is hoped that the communities around them will find it easier to understand and implement the knowledge that they have acquired (Duncanson et al, 2014).

This is in accordance with the results of the research as shown in Table 1, which shows that Peer Health Education can increase the knowledge of the respondents on what makes a healthy lifestyle to prevent heart disease (p-value 0,004). It also showed that for the respondents who did not get Peer Health Education, their knowledge about utilising a healthy lifestyle to prevent heart disease tended to show no difference between the first measurements and the second measurement (p-value 0.172). So, from the analysis of both groups, it showed that there is a difference in the knowledge about using healthy lifestyles to prevent heart disease between the groups who underwent Peer Health Education and those who did not get Peer Health Education access (p-value 0.034). Peer Health Education is an effective method in health education that is used to provide health information to a group of people with special characteristics, with the aim of achieving certain knowledge and skills used to achieve a health goal. A Peer Health Educator is also able to motivate and facilitate members of their group to behave healthily in accordance with the expected goals. A Peer Health Educator is also able to share information in an applicable, practical and appealing way to the audience and therefore it is often easier for them to produce behavioural changes (Duncanson et al, 2014).

Good knowledge, an understanding of the community and an awareness of the attitude to healthy lifestyles in order to prevent heart disease will be able to affect their behaviour in daily life. The results of the research in Table 3 shows that Peer Health Education can influence the consumption pattern of sweet foods in the community group who are at risk of heart disease (p-value 0.011). In the first measurements, the Peer Health Education action was given, and the pattern of the excessive consumption of sweet foods was more than once per day for as many as 39.3% of respondents. At the end of the measurements, the number decreased to 10.7% of the respondents. This shows that the pattern of the excessive consumption of sweet foods is one of the risk factors for heart disease. Consuming excess sweet foods will increase the risk of increased blood pressure. The results of another study indicate that there is a significant relationship between the pattern of consumption of sweet foods with the occurrence of increased systolic blood pressure in patients with hypertension (Fikriana, 2016). This happens because the consumption of excessive sweet foods will cause the levels of glucose and fructose in the blood to increase, which will affect the metabolism of a person's body, causing damage and the homeostasis of the blood vessel walls, affecting insulin disturbance in the body as well as increasing the occurrence of the lipogenesis process (Siervo et al, 2013).

Table 6 shows that there was a difference in blood pressure before treatment and after treatment (p-value 0.010). Before the treatment was obtained, the number of respondents who had normal blood pressure was as many as 32.1%. After treatment, there was an increase in the number of respondents who had normal blood pressure, up to 46.4%. The respondents who had not had the treatment had blood pressure that fit the classification of hypertension stage 2, which decreased the number of respondents from the previous 14.3% to 7.1%. This shows that the Peer Health Educator can motivate the respondents to control their blood pressure. The results of this study are in line with the research conducted by Mindy & Alyson (2015), which states that knowledge will affect a person's ability to control his or her blood pressure.

The pattern of the excessive consumption of fatty foods, stress/anxiety and a lack of exercise are also risk factors that can cause heart disease. However, the results of this study indicate that there is no difference in the behaviour pattern of fast food consumption (p-value 0.078), physical activity (p-value 0.268), and stress/anxiety (p-value 0.441) in the group receiving Peer Health Education. This is in line with the results of the study in Table 6, which shows no difference in blood cholesterol levels before treatment and after treatment (p-value 0.291). The increased knowledge obtained by the respondents does not directly affect the behaviour of the

respondents in relation to the pattern of fat consumption, stress/anxiety and exercise. Knowledge and an understanding of what a healthy lifestyle is, is not balanced with the ability and awareness to change behaviour to generate a healthy life pattern (Kaplan et al, 2006). The results of this study are not in line with the research that has been done by Mindy & Alyson (2015), which showed that there is a positive relationship between knowledge and the behaviour of someone doing physical activity/sports, healthy food consumption, and with a sensible blood glucose and blood cholesterol level.

The lack of the influence of knowledge already gained from Peer Health Education on the respondent's behaviour can be caused by several factors. This can include individual internal factors such as self-awareness, self-motivation and habits. A person will tend to behave more carefully to live a healthy life if they are under threat of health problems. However, if a person is not actively having a health threat, they tend not to behave healthily. This is in accordance with the results of the research conducted by Mosca et al (2006), which showed that the awareness of the threat of risk of heart disease in a person becomes a factor that determines whether or not a person will live a healthy life. The results of other studies explain that the susceptibility to and seriousness of heart disease as well as self-motivation will affect the way that a person to behaves in a healthy lifestyle (Ali, 2002).

Several steps can be used to screen for heart disease, including screening for common risk factors, calculating the risk of heart disease for ten years and long-term risk calculation using an online calculator. Risk calculations can be done using the Framingham Score (Bickley, 2015). In addition, there are also other guidelines used to calculate the risk of heart disease in the next ten years, which is in relation to using the Jakarta Cardiovascular Score. The Jakarta Cardiovascular Score is a modification of the Framingham Score developed in Indonesia (Kanjilal et al, 2008). The results of the research shown in Table 8 describe the median and minimum scores of the risks of heart disease, which shows a decrease in risk in the treatment group from median 1 to 0.5 and a minimum value of -3 to -5. This decline in risk scores suggests that Peer Health Education reduces the risk of heart disease in risky people. While in a group and when not treated by Peer Health Education, the risk of developing heart disease tended to increase in relation to the median and minimum values, which means that people who do not get Peer Health Education tend to have an increased risk of heart disease.

## CONCLUSION

Peer Health Education is an effective method used for health promotion in order to reduce the risk of heart disease. Peer Health Education can increase knowledge about healthy lifestyles to prevent heart disease, to improve healthy life behaviours especially the sweet food consumption pattern, control blood pressure and reduce the risk of heart disease in risky groups. Good knowledge of healthy lifestyles is accompanied by proper behaviour, maintaining a balanced pattern of food consumption and controlling the risk factors such as stress/ anxiety, smoking habits, sports activities and the consumption pattern of alcohol, which is a major factor that plays a role in the prevention of heart disease. Therefore it is necessary to for all of the components to work together and to provide support so that people can learn how to live a healthy lifestyle in order to reduce the risk of heart disease.

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