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Abstract
Objectives*: To evaluate the effectiveness of an educational intervention on knowledge of cardiovascular disease (CVD) and to increase awareness of risk factors among female patients of a community health center with an on-site 340B pharmacy.* ***Methods****: The program consisted of a 10-minute educational intervention and brief pre-test, post-test, and participant satisfaction survey. Adult female patients at the clinic for any provider visit or prescription fill were eligible to participate. Participants met individually with a student pharmacist or faculty member and verbally completed the pre-test. The participant received education regarding CVD, risk factors, and symptoms of myocardial infarction and were screened for hypertension and/or hyperlipidemia. The post-test was then verbally administered. Participants answered the satisfaction survey privately. Based on individual needs, educational materials and information on available pharmacy clinical services were provided. The university IRB deemed the study exempt.* ***Results****: Eighty-four individuals received educational materials and/or a screening test. Of those, 30 women (mean age 46.9 years) completed the educational intervention. Thirteen (43%) reported smoking; 22 (73%) identified themselves as overweight. Fourteen (47%) indicated a preexisting diagnosis of hypertension. Correct responses for 6 of 8 knowledge-based questions were statistically significantly improved from pre-test to post-test ($p<0.05$). Twenty-nine patients (97%) rated the program as "useful" or "very useful".* ***Conclusion****: CVD is the leading cause of death in U.S. women. Data from this program indicate that through screening and education, pharmacists and student pharmacists can impact female patients' knowledge of CVD risk factors. Continued efforts in this area may help to reduce the public health burden of CVD.*

Introduction

Pharmacists and student pharmacists are becoming increasingly engaged in primary and secondary prevention efforts aimed to improve the public's health. *Primary prevention* aims to prevent or reduce the occurrence of disease. Pharmacists and student pharmacists further primary prevention efforts in numerous ways, including vaccination programs, needle exchange programs, and patient education. *Secondary prevention* refers to activities directed to detect disease at an early stage. The many types of screening programs implemented by pharmacists and student pharmacists are examples of secondary prevention.[1]

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A significant public health initiative, Million Hearts™, has been recently launched by the U.S. Department of Health and Human Services. The goal of this campaign is to prevent 1 million heart attacks and strokes over the next 5 years through public-private partnerships to empower individuals to make heart-healthy choices and to focus on 4 core elements of care for those who need treatment.[2] Pharmacy organizations including the American Pharmacists Association and the American Association of Colleges of Pharmacy, among others, are partnering with the Million Hearts campaign and are encouraging pharmacists and student pharmacists to become involved.[3,4] This paper details the outcomes of an educational program to raise awareness and improve knowledge about cardiovascular disease (CVD) among low income women. The program, titled "Heart-to-Heart", was developed and implemented by pharmacy faculty and student pharmacists and provides a framework that can be replicated or adapted for other programs.

Objectives

The primary objective of this study was to evaluate the effectiveness of a 10- minute educational intervention on improving knowledge of CVD and to increase the awareness of risk factors among female patients of a Federally Qualified Health Center (FQHC). The secondary objective of this study was to measure participant satisfaction with the educational program.

Methods

Research Project Setting

The research project was conducted at Health Partners of Western Ohio (previously named Allen County Health Partners) located in Lima, Ohio. Health Partners of Western Ohio (HPWO) is funded by the U.S. Department of Health and Human Services as a FQHC. HPWO consists of two health centers located in northwest Ohio (Lima and New Carlisle) that provide primary healthcare services to indigent patient populations, regardless of their ability to pay. Prescription services through various programs (340B competitive pricing, Pfizer® Sharing the Care, Astra Zeneca® AZ&ME, and others) are available to help meet the patients' medication needs. Pharmacists meet with patients for medication therapy management (MTM) and chronic disease management through provider referral at both health centers. Clinical services provided by pharmacists include diabetes, cholesterol, asthma, chronic obstructive pulmonary disease (COPD), and hepatitis C.

Study Design

The Ohio Northern University (ONU) Institutional Review Board approved this study as an exempted research project. This prospective study was conducted once a month from December 2009 to April 2010 at the Lima health center of HPWO. Potential study participants were eligible for inclusion if they were 18 years of age or older, female, and currently a patient of HPWO or present at HPWO with a friend or family member who was a patient of the clinic. Any male patients interested in the educational program were permitted to participate; however, data from male patients are not included in the results of this study. HPWO personnel, who include physicians, nurse practitioners, and health center support staff, were educated on the program. During scheduled appointments, clinic healthcare providers encouraged patients to attend the program. Pharmacists also identified potential participants for the study by referring patients who picked up prescriptions for CVD. Women in the waiting room were also informed of the opportunity to participate in the educational program.

The authors designed the pre- and post-tests, 10-minute educational script, and participant satisfaction survey. Student pharmacists participating in the delivery of this pharmacy service attended a seminar where training materials outlining the format and objectives of the program were distributed. Also during the training session, students were educated about the importance of implementing the intervention in a consistent manner and were educated about verbal and non-verbal cues to avoid; the students then practiced delivering the scripts and pre/post-tests. The students also performed blood pressure checks, which were assessed by a faculty member for accuracy.

The pre- and post-tests were adapted from a published cross-sectional survey developed by pharmacists to assess knowledge of CVD among community residents.[5] The tests were then piloted in a group of eleven randomly-selected HPWO patients to evaluate face-validity. The finalized pre-test (Appendix 1) consisted of eight knowledge-based questions that assessed participants' awareness of CVD risk factors and lifestyle modifications, and 12 questions to collect participant characteristics (family history, social history, demographics). The post-test (Appendix 2) was immediately administered following the educational intervention, and contained the identical knowledge-based questions from the pre-test.

An ONU pharmacy faculty member and three to five student pharmacists set up the program in a semi-private room of the clinic each month. A ratio of one student: one participant was utilized during the program, and students verbally administered the pre-test before the intervention. Students then provided 10 minutes of scripted information to each participant, focusing on the prevention and management of CVD. The program script (Appendix 3) was developed utilizing recommendations from the U.S. Preventive Services Task Force;[6] Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7);[7] and the American Heart Association evidence-based guidelines for prevention of CVD in women.[8] The script was written at an appropriate literacy level, and the use of medical jargon was avoided. In addition, approaches to patient education and counseling about CVD specifically for women[9,10] and ethnically-diverse, low-income women[11] were incorporated. Educational topics included modifiable and non-modifiable risk factors and lifestyle modifications such as nutrition, physical activity, and smoking cessation. Participants were informed that women may experience one or multiple "traditional" (e.g., discomfort or pressure in the chest; shortness of breath; pain in one or both arms, the upper back, neck, jaw, or stomach) and/or "non-traditional" (e.g., nausea and vomiting; breaking out in a cold sweat; dizziness or lightheadedness; anxiety) symptoms of a myocardial infarction (MI). Women were also educated

about steps to take if experiencing these symptoms (e.g., calling 911 immediately but no later than 5 minutes). Blood pressure measurements were taken and recorded on a wallet-sized card during the educational session if participants voluntarily chose to have it measured. In addition, during two sessions students offered free cholesterol screenings (lab panel including total cholesterol, LDL, HDL, triglycerides, and glucose).

Following the intervention, students verbally administered the post-test. Participants were then provided additional counseling and educational pamphlets (on topics such as hypertension, stroke, diabetes, cholesterol management, and smoking cessation) that targeted the participant's identified risk factors. Participants were also referred to other pharmacy services at HPWO, such as smoking cessation, if appropriate. The satisfaction survey developed by the authors (Appendix 4) was completed independently by each participant to elicit more frank feedback; the form was sealed in an envelope before being submitted.

Participants were numbered sequentially as they enrolled into the study. Pre-test, post-test, and satisfaction surveys were numbered to facilitate matching and allowed for the assessment of change in knowledge; these numbers were not linked to identifiable information. All test and survey data were collected via Scantron® computer scan forms. Data were scanned into an Access 2003® database. Microsoft Excel 2007®, Microsoft Access 2007® and Minitab Version 15® were utilized to calculate all statistical analyses. Descriptive statistics were calculated for multiple parameters. The paired t-test was utilized to assess whether differences in pre-test results and post-test results were statistically significant. Alpha was set *a priori* at <0.05.

Results

Eighty-four individuals participated in some aspect of the program. Forty-four received only educational materials or a screening test due to time constraints. Forty participants initiated the educational intervention; 10 were omitted from the final analysis due to incompletion of the entire intervention (n=7) or male sex (n=3). Therefore, 30 total women were included in the analysis.

Baseline demographics and clinical characteristics of the 30 women who completed the educational intervention are outlined in Table 1. Most reported risk factors for CVD, and many had two or more risk factors and/or co-morbidities.

Test Scores: A perfect score on both the pre-test and post-test was 34 points. Individual and mean pre- and post-test scores are displayed in Figure 1. The mean pre-test score per participant = 25.7 +/- 4.9 points (range 15-32 points). The mean post-test score per participant = 30.3 +/- 2.4 points (range 25-34 points). There was a statistically significant increase in mean test scores between the pre- and post-test ($p<0.001$).

Table 2 shows the difference in the mean pre- and post-test scores for each question on the pre- and post-test. There was an improvement in post-test scores for each question. Correct responses to six questions were statistically significant for improved post-test scores: identification of foods high in sodium; identification of a "healthy" blood pressure reading; identification of a "healthy" total cholesterol value; identification of MI warning signs; identification of correct action to take if experiencing MI symptoms; and identification of risk factors for CVD in women.

Test Scores for Identification of Warning Signs of MI: Figure 2 illustrates the changes in pre- vs. post-test scores for correct identification of MI warning signs in women. The number of correct responses on the post-test was greater than the pre-test for every sign or symptom with the exception of feeling faint which dropped from 23 to 21.

Relationships between Disease States and Demographics vs. Changes in Total Scores: No changes were demonstrated when the data was analyzed comparatively for the presence of co-morbidities and cardiovascular risk factors in relation to changes in total test scores.

Satisfaction: All participants privately completed the satisfaction survey (n=30). Satisfaction data demonstrated that 22 participants (73.3%) learned cardiovascular risk factors of which they were previously unaware. Twenty-nine (97%) participants rated the program to be either useful or very useful and indicated they would recommend the program to others. Twenty-five (83%) participants planned to discuss their results with their physician.

Discussion

The Million Hearts™ campaign has made raising awareness and providing education about CVD a priority for healthcare professionals to improve their patients' health. CVD is the leading cause of death for men and women in the United States (U.S.).,[12] and the lifetime incidence of CVD is nearly 1 in 2 women.[8] However, data have shown that 55% of women know that CVD is the leading cause of death for both sexes in the U.S., and nearly 40% do not perceive themselves to be at risk.[10] Twenty-five percent of women surveyed indicated that their healthcare provider had not emphasized that heart health was important, and 20% relayed that they had not

been clearly told how they can change their risk status.[10] Data indicating that many women may not realize that they are at risk for CVD has led to the development of programs such as "The Heart Truth®"[13] and "Make the Call: Don't Miss a Beat"[14] to personalize and deliver information on these risks specifically to women. On a local level, the need for access to free information and screening for CVD among female residents of Lima, Ohio (where 30.3% of the residents have incomes below the federal poverty level[15]) spurred the development of this program.

The data from the Heart-to-Heart program support recently published studies showing that pharmacists and/or student pharmacists can have a positive impact on patient assessment of CVD and satisfaction with such services in clinic, community pharmacy, and community center settings in the United States.[5,16-19] A strength of the Heart-to-Heart program was the pre- and post-test design, as these previous studies did not collect participant knowledge both before and after the intervention. Another strength was the student training session to review the standardized script and pre/post-test materials, which helped to ensure consistency in the delivery of the program. The fact that women received specific, personalized information and recommendations at the conclusion of the session was another benefit of the program design. Based on risk factors identified during the program, women received specific referrals and /or patient education materials after they had taken the post-test.

Limitations to this study include the small sample size and voluntary participation; participants may not be representative of the overall female clinic population due to self-selection bias. The data on intention to follow-up with physician was self-reported; the design of the study did not allow for tracking of patient appointments or for the evaluation of long-term retention of knowledge. Finally, another limitation to the study design is the lack of a control group.

Programs like Heart-to-Heart can be incorporated into introductory or advanced pharmacy practice experiences (IPPE or APPE), providing opportunities for student pharmacists to be exposed to primary and secondary prevention concepts and to impact patient knowledge and assessment. Public health is emphasized in pharmacy education,[20,21] and these types of programs enable student pharmacists to augment their didactic education with experiential learning. Additionally, the implementation of these programs allows for further study of the impact of such interventions in larger numbers of women in different patient care settings. Future studies may be designed to collect information on long-term knowledge retention, behavior change, and/or clinical outcomes among participants of the educational intervention to provide insight regarding its clinical significance. Through education and screening for CVD, pharmacists and student pharmacists can fulfill an important role in public health activities while advancing the pharmacy profession's provision of patient-centered care.

Conclusion

CVD is the leading cause of death in U.S. women. The data from this program indicate that through screening and education, pharmacists and student pharmacists can impact female patients' knowledge of cardiovascular risk factors. Additionally, most program participants found this type of program to be useful and would recommend it to others. Continued efforts in this area may help to reduce the public health burden of CVD in women.

References

1. Farris KB, Johnson KA. Pharmacists in public health: it's a good start! J Am Pharm Assoc. 2010;50:128-130.
2. Centers for Disease Control and Prevention. Million Hearts.™ Accessed at http://millionhearts.hhs.gov/index.html, April 26, 2012.
3. New public-private sector initiative aims to prevent 1 million heart attacks and strokes in five years. U.S. Department of Health and Human Services Press Office, September 13, 2011. Accessed at http://www.hhs.gov/news/press/2011pres/09/20110913a.html, April 26, 2012.
4. New Million Hearts™ tools announced by partners. Centers for Disease Control and Prevention press release, November 3, 2011. Accessed at http://millionhearts.hhs.gov/docs/MH_Partners_Press_Release_11-3-2011.pdf, April 26, 2012.
5. Mooney LA, Franks AM. Evaluation of community health screening participants' knowledge of cardiovascular risk factors. J Am Pharm Assoc 2009;49(4):529-37.
6. The Pocket Guide to Clinical Preventive Services, 2010-11. Recommendations of the US Preventive Services Task Force. Agency for Healthcare Research and Quality. Accessed at http://www.ahrq.gov/CLINIC/uspstfix.htm#pocket, December 10, 2009.
7. The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure 2004. Accessed at http://www.nhlbi.nih.gov/guidelines/hypertension/jnc7full.pdf, April 26, 2012

8. Mosca L, Banca CL, Benjamin EJ, et al. Evidence-based guidelines for cardiovascular disease prevention in women: 2007 update (American Heart Association Guidelines). J Am Coll Cardiol. 2007;49:1230-1250.
9. Mosca L, Mochari-Greenberger H, Dolor RJ, et al. Twelve-year follow-up of American women's awareness of cardiovascular disease risk and barriers to heart health. Circ Cardiovasc Qual Outcomes. 2010;3:120-127.
10. Mosca L, Mochari H, Christian A, et al. National study of women's awareness, preventive action, and barriers to cardiovascular health. Circulation. 2006;113:525-534.
11. Gettlemen L, Winkleby MA. Using focus groups to develop a heart disease prevention program for ethnically diverse, low-income women. J Comm Health. 2000; 25(6): 439-453.
12. Centers for Disease Control and Prevention. Leading causes of death in females, United States, 2007. Accessed at http://www.cdc.gov/women/lcodc, April 26, 2012.
13. Office on Women's Health. The Heart Truth.® Accessed at http://www.womenshealth.gov/heart-truth/about-us/#b, April 26, 2012.
14. Office on Women's Health. Make the call. Don't miss a beat. Accessed at http://www.womenshealth.gov/heartattack/, April 26, 2012.
15. U.S. Census Bureau. State and county quick facts, Lima (city), Ohio. Accessed at http://quickfacts.census.gov/qfd/states/39/3943554.html, April 26, 2012.
16. Miller SW, Darsey E, Heard TJ, et al. Outcomes of a multidisciplinary partnership to improve cardiac wellness: an opportunity for pharmacists. Consult Pharm. 2010;25:105-116.
17. Olenak, JL, Calpin M. Establishing a cardiovascular health and wellness program in a community pharmacy: screening for metabolic syndrome. J Am Pharm Assoc. 2010;50:32-36.
18. Garrison GD, Lubowski TJ, Miller SM, et al. Multi-site heart disease risk assessment service provided by pharmacy students. Am J Pharm Educ. 2010;74(3):41.
19. Liu YF, Mentele LJ, McDonough RP. Community pharmacist assessment of 10-year risk of coronary heart disease for union workers and their dependents. J Am Pharm Assoc. 2008;48:515-517.
20. Accreditation Council for Pharmacy Education. Accreditation standards and guidelines: Professional degree program in pharmacy leading to the doctor of pharmacy degree. Accessed at www.acpe-accredit.org/standards/default.asp, April 26, 2012.
21. Center for the Advancement of Pharmaceutical Education. 2004 educational outcomes. Accessed at http://www.aacp.org/resources/education/Documents/CAPE2004.pdf, April 26, 2012.

Appendix 1 – Pre-Test

Knowledge Questions

How much do you feel you know about risk factors for heart disease?

- ☐ A little
- ☐ Some
- ☐ A lot

Which of the following foods are high in sodium? Please mark all that apply.

- ☐ fresh vegetables ☐ fresh fruit ☐ canned soup
- ☐ frozen dinners ☐ potato chips ☐ lean meat

Which of the following foods has high fat/cholesterol content? Please mark all that apply.

- ☐ biscuits ☐ hamburger ☐ cheese
- ☐ french fries ☐ plain turkey sandwich ☐ skim milk

How many servings of fruits and vegetables should a person have in one day? Please choose one answer.

- ☐ 0 (not necessary to eat fruits or vegetables every day)
- ☐ at least 1-2
- ☐ at least 3-5

What is considered a "healthy" blood pressure reading? Please choose one answer

- ☐ 70/40 ☐ 120/80
- ☐ 150/90 ☐ 160/100 ☐ Don't know / Not sure

A "healthy" fasting (haven't eaten recently) total cholesterol is: Please choose one answer

- ☐ Less than 50 ☐ Less than 100 ☐ Less than 200
- ☐ Less than 400 ☐ Don't Know / Not Sure

As a woman, which of the following warning signs of a heart attack should you watch for? Please mark all that apply.

- ☐ Chest pain or discomfort ☐ Anxiety
- ☐ Pain in the arm, back, neck, jaw, or stomach ☐ Trouble sleeping
- ☐ Feel unusually tired and weak ☐ Shortness of breath (feeling like you can't get enough air)
- ☐ Nausea
- ☐ Breaking into a cold sweat
- ☐ Feeling faint or woozy

If you think you have any symptoms of a heart attack, what should you do? (choose one answer)

- ☐ Call 911 immediately but no later than 5 minutes
- ☐ Call your doctor immediately but no later than 5 minutes
- ☐ Wait to see if the symptoms go away before calling for help

Which condition(s) increase a woman's risk for heart disease? Please mark all that apply.

- ☐ High blood pressure ☐ Heartburn ☐ Age over 55 years
- ☐ Diabetes ☐ Family history ☐ Lack of activity
- ☐ High cholesterol ☐ Smoking ☐ Obesity/overweight

Demographic Questions

Why are you at the clinic today? (Please mark all that apply)

- ☐ to see a doctor ☐ pharmacy
- ☐ to see a dentist ☐ Other – specify _____
- ☐ to take a family member for an appointment

Other than during pregnancy, have you ever been told by a doctor, nurse, or other healthcare provider that you have hypertension, also called high blood pressure?

- ☐ Yes
- ☐ No
- ☐ I've been told I have borderline high blood pressure (also called pre-hypertensive)
- ☐ I don't know or I'm not sure

Other than today, about how long has it been since you last had your blood pressure checked by a healthcare provider?

- ☐ Never
- ☐ Less than 1 year
- ☐ Between 1 – 2 years
- ☐ Between 2 – 5 years
- ☐ More than 5 years
- ☐ I don't know or I'm not sure

Are you currently taking prescription medication for high blood pressure?

- ☐ Yes
- ☐ No
- ☐ I don't know or I'm not sure

Other than during pregnancy, have you ever been told by a doctor or other healthcare provider that you have diabetes or high blood sugar?

- ☐ Yes
- ☐ No
- ☐ I've been told I have borderline diabetes or pre-diabetes
- ☐ I don't know or I'm not sure

Have you ever been told by a doctor, nurse, or other health professional that your blood cholesterol is high?

- ☐ Yes
- ☐ No
- ☐ I don't know or I'm not sure

Including living and deceased, was your father, mother, sisters or brothers, ever told by a health professional that they had heart disease (including a heart attack or stroke)?

- ☐ Yes
- ☐ No
- ☐ I don't know or I'm not sure

Do you currently smoke or use tobacco products?

- ☐ Yes
- ☐ No

IF NO,
Have you ever smoked?
☐ Yes ☐ No
IF YES,
How long ago did you quit smoking? _____ months

Do you consider yourself now to be:

- ☐ Overweight
- ☐ Underweight
- ☐ About the right weight
- ☐ don't know or I'm not sure

How old are you today? _____ years

{Note to interviewer: record the patient's sex– do not ask unless necessary}
Patient's sex
- ☐ Male
- ☐ Female

Which one or more of the following would you say is your race or ethnicity? (Mark all that apply)
- ☐ White
- ☐ Black or African American
- ☐ Hispanic
- ☐ Asian
- ☐ Other [specify] _____

What is the highest grade or year of school you completed? Please choose one answer.
- ☐ Never attended school or only attended kindergarten
- ☐ Elementary school (grades 1 through 8)
- ☐ Some high school
- ☐ High school graduate
- ☐ Some college or technical school
- ☐ College graduate
- ☐ Graduate or Professional School (Masters, Doctorate, or Professional Degree)

Reference: Mooney LA, Franks AM. Evaluation of community health screening participants' knowledge of cardiovascular risk factors. J Am Pharm Assoc 2009;49(4):529-37.

Appendix 2 – Post-Test

Knowledge Questions

How much do you feel you know about risk factors for heart disease?

- ☐ A little
- ☐ Some
- ☐ A lot

Which of the following foods are high in sodium? Please mark all that apply.

- ☐ fresh vegetables ☐ fresh fruit ☐ canned soup
- ☐ frozen dinners ☐ potato chips ☐ lean meat

Which of the following foods has high fat/cholesterol content? Please mark all that apply.

- ☐ biscuits ☐ hamburger ☐ cheese
- ☐ french fries ☐ plain turkey sandwich ☐ skim milk

How many servings of fruits and vegetables should a person have in one day? Please choose one answer.

- ☐ 0 (not necessary to eat fruits or vegetables every day)
- ☐ at least 1-2
- ☐ at least 3-5

What is considered a "healthy" blood pressure reading? Please choose one answer

- ☐ 70/40 ☐ 120/80
- ☐ 150/90 ☐ 160/100 ☐ Don't know / Not sure

A "healthy" fasting (haven't eaten recently) total cholesterol is: Please choose one answer

- ☐ Less than 50 ☐ Less than 100 ☐ Less than 200
- ☐ Less than 400 ☐ Don't Know / Not Sure

As a woman, which of the following warning signs of a heart attack should you watch for? Please mark all that apply.

- ☐ Chest pain or discomfort ☐ Anxiety
- ☐ Pain in the arm, back, neck, jaw, or stomach ☐ Trouble sleeping
- ☐ Feel unusually tired and weak ☐ Shortness of breath (feeling like you can't get enough air)
- ☐ Nausea
- ☐ Breaking into a cold sweat
- ☐ Feeling faint or woozy

If you think you have any symptoms of a heart attack, what should you do? (choose one answer)

- ☐ Call 911 immediately but no later than 5 minutes
- ☐ Call your doctor immediately but no later than 5 minutes
- ☐ Wait to see if the symptoms go away before calling for help

Which condition(s) increase a woman's risk for heart disease? Please mark all that apply.

- ☐ High blood pressure ☐ Heartburn ☐ Age over 55 years
- ☐ Diabetes ☐ Family history ☐ Lack of activity
- ☐ High cholesterol ☐ Smoking ☐ Obesity/overweight

Reference: Mooney LA, Franks AM. Evaluation of community health screening participants' knowledge of cardiovascular risk factors. J Am Pharm Assoc 2009;49(4):529-37.

Appendix 3 – Educational Program/Script

#1) Introduce self

Hi, my name is _____ and I am a pharmacy student at Ohio Northern University. We are working on this project to find out how much patients know about heart disease and how it affects their life. When the project is finished, we will find out if patients do or do not have a good understanding of heart disease; this will help us educate more patients in the future. First I will give you a survey; I will read it to you and I want you to answer the questions as best as you can. The survey is completely voluntary, and you may end the survey at any time without penalty. We are not collecting your name; any information obtained in the survey will be confidential and you will never be identified.

#2) Administer pre-test

Read to participant and record answers on pre-test

#3) Ask to take participant's blood pressure

If participant declines, move onto next step.

Take blood pressure. Record reading on card and give to participant.

Your blood pressure reading is _____. This is considered as **very high** (≥140/90)/ **a little high** (121-139/81-99)/ **normal** (120/80 or below), but we cannot diagnose you. Please be sure to share this piece of paper with your doctor, and he or she will tell you if there is anything you need to do.

For participants with diabetes, encourage them that their blood pressure should be below 130/80

In the event a participant's blood pressure exceeds 180/110 or is symptomatic (chest pain, heart palpitations, short of breath, dizzy, sweating) stop immediately and find a faculty member.

#4) Provide educational intervention[1-6]

Heart disease is important for women to learn more about because 1 in 2 women will develop heart disease sometime in her life. There are things that women may do that increase their chances of developing heart disease. These include: being overweight, unhealthy eating habits, smoking, having high blood pressure, high cholesterol and high blood sugar.

There are also some things women can't change, but it is very important to know that it may impact whether or not someone develops heart disease.

- **Age**
    - You cannot change your age and just being over the age of 55 increases your risk of developing a heart problem.
- **Family history**
    - You also cannot change your family history and if your parents, grandparents, brothers and sisters, or even your children have ever been diagnosed with heart disease, your risk for developing it is greatly increased.

Fortunately, there are things you can change

- First is, **nutrition and weight**
    - Maintaining a healthy weight is very important because being overweight greatly increases your risk of developing heart disease.
    - Eating 3-5 servings (1 serving is about ½ cup) of fruits and vegetables every day can help you maintain a healthy weight and keep your body healthy.
    - Avoid eating a lot of salt. This can be done by not using the salt shaker to salt food at mealtime and avoiding foods such as canned soup, frozen dinners and potato chips.
    - Try to limit foods that are high in fat in order to keep your cholesterol low. Avoid foods such as: French fries, biscuits, hamburgers and donuts.
- Second is, **activity**
    - Try to exercise for about 30 minutes 3-4 times per week.

- Even a quick walk around the block every day or taking the stairs instead of the elevator can help your heart!
- Talk to your doctor before any starting any major changes to your daily activity level.

- Third is, **blood pressure**
  - Try to keep your blood pressure at or below the normal level of 120/80 in order to reduce your risk for developing heart problems.
- Next is, **cholesterol**
  - Try to keep your total cholesterol at or below the normal level of 200 mg/dL to help protect your heart. There are two types of cholesterol: good cholesterol, HDL and bad cholesterol, LDL.
- You also want to **manage your blood sugar**
  - It is very important to keep your blood sugar controlled, especially if you have diabetes, in order to keep your body healthy.
- Last is, **smoking.**
  - *If participant **DOES NOT** currently smoke:*
    - I'm happy to hear that you do not smoke, because smoking increases the chances of developing heart disease.
    - Be sure to avoid smoking in the future as well.
  - *If participant **DOES** currently smoke:*
    - Quitting smoking is the best thing you can do for your health.
    - It is especially important not to smoke if you take birth control pills!

You should recognize signs/symptoms of a heart attack and know what to do. By taking the right action, it may save your life or help reduce long-term damage.

- Signs/symptoms of heart attack
  - The signs of a heart attack can be different in women than in men. While men often have chest pain or pressure, women may or may not experience chest pain during a heart attack. There are a number of signs of a heart attack that are more likely to occur in women and these are: discomfort or pressure in the chest; pain in one or both arms, the upper back, neck, jaw, or stomach; nausea and vomiting; breaking out in a cold sweat; dizziness or lightheadedness; anxiety; trouble breathing or shortness of breath; and pale or clammy skin.
- What to do – call 911 immediately
  - Do not wait longer than 5 minutes. Call 911 directly rather than your doctor's office.
- It is so important to be informed about your health, especially when it comes to your heart! Taking steps today in order to reduce your risk can help you live a much healthier life in the years to come.

#5) Administer post-test

Read to participant and record answers on post-test

#6) Based on participant's risk factors listed below, provide the appropriate educational materials and information regarding referrals (ex: clinic services, Ohio Tobacco Quit Line, etc)

- Participant has high blood pressure based on reading
- Participant is overweight/obese
- Participant smokes
- Participant is currently taking medications for blood pressure or diabetes
- Participant is over 50 years old

#7) Give satisfaction survey and envelope and explain how to complete it (Form labeled Satisfaction Questions)

Have participant complete the form in the room before she leaves. Take participant to separate area of room; be sure to give her privacy. Instruct the participant to put the form into envelope and seal it before turning it in.

References

1. The Pocket Guide to Clinical Preventive Services, 2010-11. Recommendations of the US Preventive Services Task Force. Agency for Healthcare Research and Quality. Accessed at http://www.ahrq.gov/CLINIC/uspstfix.htm#pocket, December 10, 2009.
2. The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure 2004. Accessed at http://www.nhlbi.nih.gov/guidelines/hypertension/jnc7full.pdf, April 26, 2012
3. Mosca L, Banca CL, Benjamin EJ, et al. Evidence-based guidelines for cardiovascular disease prevention in women: 2007 update (American Heart Association Guidelines). J Am Coll Cardiol. 2007;49:1230-1250.
4. Mosca L, Mochari-Greenberger H, Dolor RJ, et al. Twelve-year follow-up of American women's awareness of cardiovascular disease risk and barriers to heart health. Circ Cardiovasc Qual Outcomes. 2010;3:120-127.
5. Mosca L, Mochari H, Christian A, et al. National study of women's awareness, preventive action, and barriers to cardiovascular health. Circulation. 2006;113:525-534.
6. Gettlemen L, Winkleby MA. Using focus groups to develop a heart disease prevention program for ethnically diverse, low-income women. J Comm Health. 2000; 25(6): 439-453.

Appendix 4 - Satisfaction Questions

Did today's program identify any risk factors for heart disease that you were not aware of before?

☐ No
☐ Yes
☐ I don't know or I'm not sure

Do you plan to talk to a doctor to follow up on what you learned today? Please choose one answer.

☐ No
☐ Yes, I will do this today
☐ Yes, I will do this within 1-3 months
☐ Yes, I will do this but it will take longer than 3 months
☐ I don't know or I'm not sure

How useful was today's program for increasing your understanding of each of your risk factors for heart disease? Please choose one answer.

☐ Not useful
☐ Somewhat useful
☐ Useful
☐ Very useful

Would you recommend this program to a friend or family member?

☐ No
☐ Yes

Figure 1. Individual and Mean Pre- and Post-Test Scores

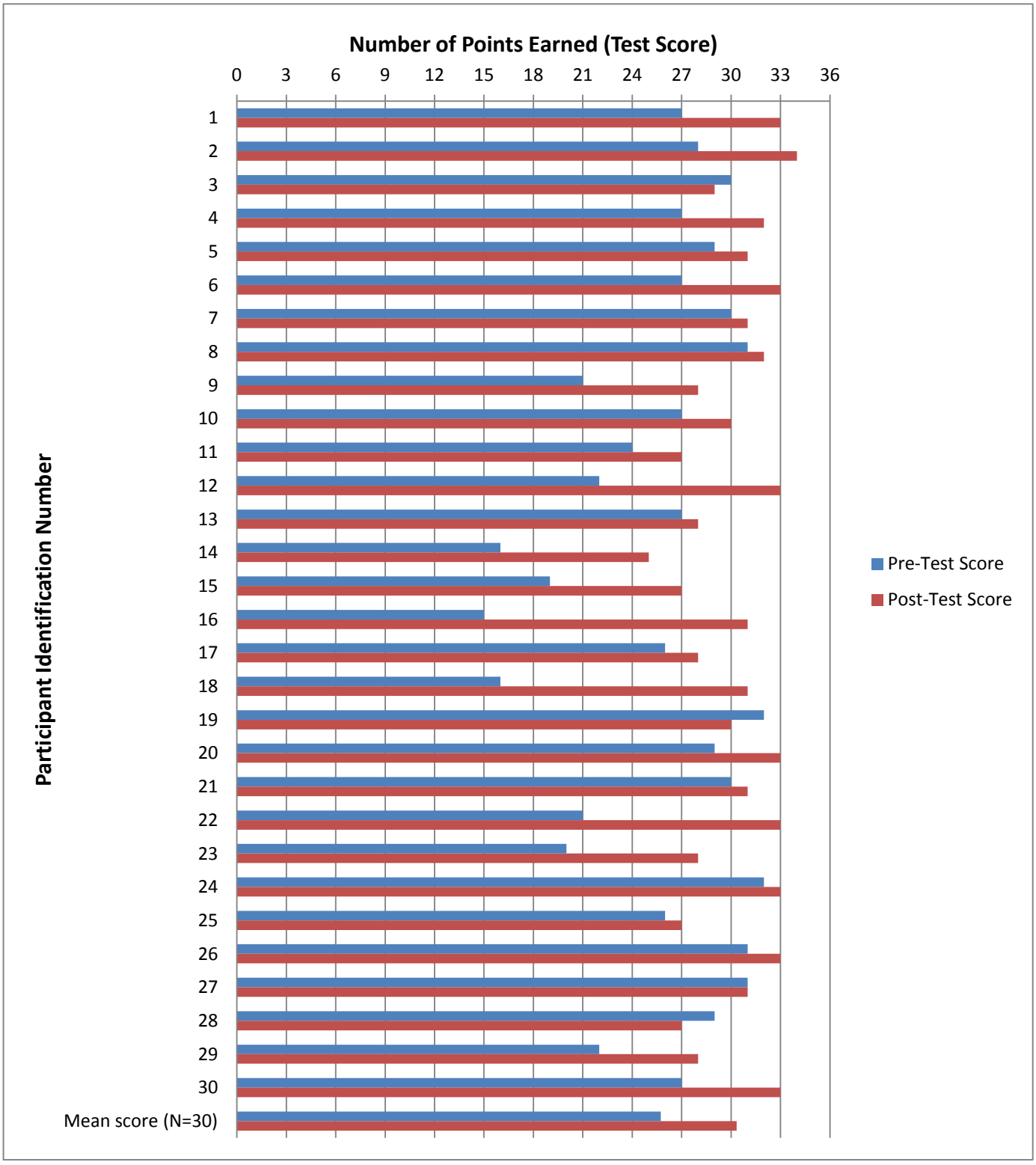
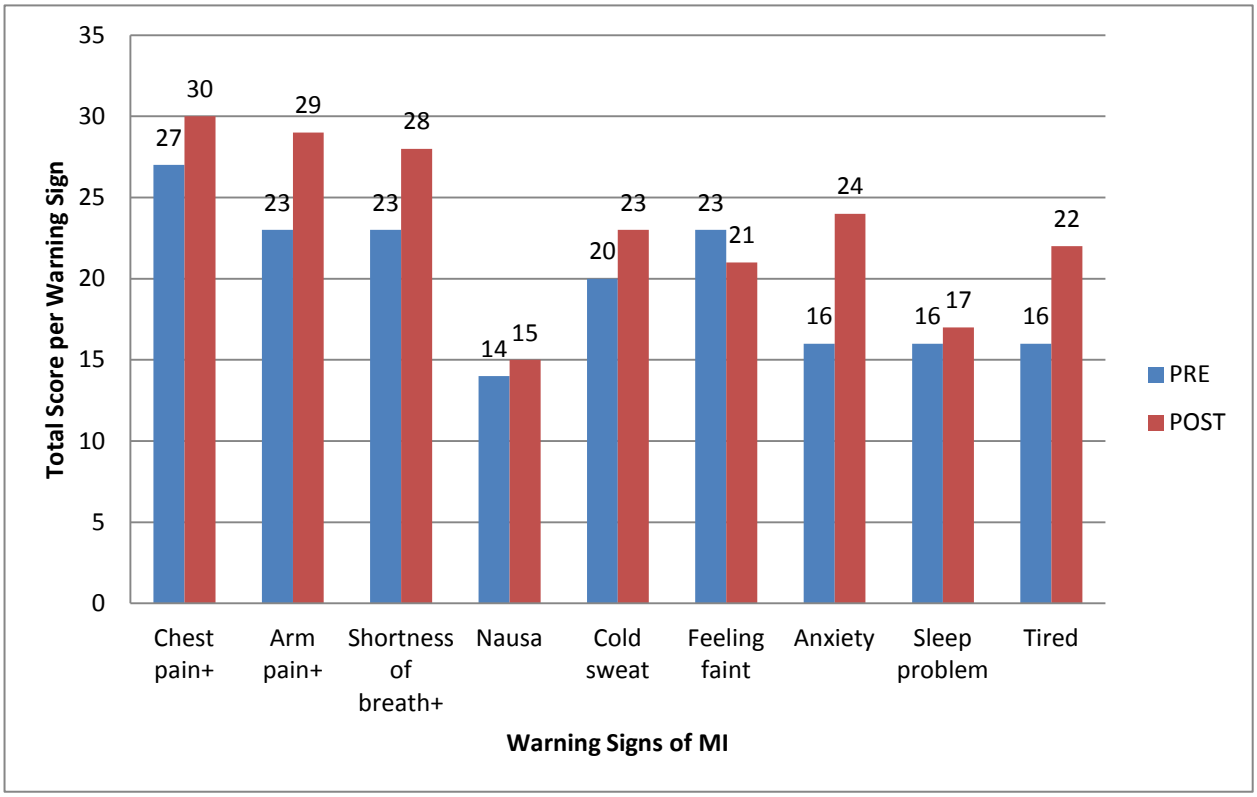


Figure 2. Pre- vs Post-Test Comparison of Correct Identification of Myocardial Infarction (MI) Warning Signs in Women



+ indicates "Traditional" Warning Sign

Table 1. Characteristics of Study Participants (N=30)

Parameter		Number (%)[a]
Sex	Female	30 (100)
Race/Ethnicity	Caucasian	18 (60)
	Black	10 (33)
	Hispanic	0 (0)
	Asian	0 (0)
	Other	1 (3)
	Multiple choices selected	1 (3)
Self-reported cardiovascular disease risk factors[b]	Overweight	22 (73)
	Family history of heart disease	18 (60)
	Hypertension	14 (47)
	Smoking	13 (43)
	Antihypertensive medication	12 (40)
	Hypercholesterolemia	10 (33)
	Diabetes	7 (23)
Education	Some high school	7 (23)
	High school graduate	10 (33)
	Some college	8 (27)
	College graduate	3 (10)
	Graduate/professional school	1(3)
	No response	1 (3)
		Mean± Standard Deviation (Range)
Age (yrs)		46.9 ± 14.1 (18-78)

a. Total percentage may not equal 100% due to rounding
b. Total percentage exceeds 100% as some participants reported ≥ 2 risk factors

Table 2. Score Summary By Individual Question (N=30)

Question	Perfect Score for Question	Mean Pre-Test Score	Mean Post-Test Score	Change in Mean Score[a]	p value[b]
High sodium foods	6	5.40	5.76	0.36	0.025*
High fat foods	6	5.13	5.33	0.20	0.20
Recommended number of servings of fruits/vegetables per day	1	0.66	0.86	0.20	0.056
Healthy blood pressure reading	1	0.76	1.00	0.24	0.006*
Healthy total cholesterol reading	1	0.26	0.93	0.67	<0.001*
Myocardial infarction (MI) warning signs in women	9	5.93	7.30	1.37	0.007*
Action if MI symptoms	1	0.86	1.00	0.14	0.043*
Risk factors for cardiovascular disease in women	9	6.70	8.13	1.43	0.003*

a. Calculated by Mean Post-Test Score minus Mean Pre-Test Score
b. Calculated by paired t-test; asterisk (*) indicates statistical significance