

Running Head: TECHNOLOGY AND TEACHING

**Technology as a Nursing Intervention to Enhance Patient Learning: the Impact of
Secondary Patient Contact via Email as It Relates to Breast Self-Exam Teaching in
Female College Students**

by

Ainsley Elizabeth Phillips

An Honors Thesis

submitted in partial fulfillment of the requirements

for the Honors Diploma

to

The University Honors Program

of

The University of Alabama in Huntsville

April 24, 2013

Abstract

Background: Breast self-exams are not performed by most women in the United States according to research. Researchers believe one reason is uncertainty of performing them. This study sought to determine if using a secondary intervention via email could increase knowledge of performing a breast self-exam.

Methods: Participants were given a pre-test, then a 20 minute demonstration on the mechanics of performing a breast self-exam. One week later, half at random were emailed to check in and send an information sheet. At two weeks, a post-test was emailed to measure retention.

Results: A paired-samples t-test was conducted to evaluate the intervention's impact on students' scores for the BSE Current Understanding Survey (BCUS). There was no statistically significant difference in the BCUS scores from Time 1 ($M = 7.33, SD = 0.57$) to Time 2 ($M = 7.67, SD = 0.57$), $t(2) = -1000, p < 0.423$ (two-tailed). The mean increase in BCUS scores was -0.34 with a 95% confidence interval ranging from -1.77 to 1.10.

Discussion: Possibilities for non-significance may be small sample size or that 83% were nursing students. Only the control group returned post-tests, so only their data was measured. This could be instructor ambiguity or student college demands.

Honors Thesis Advisor: Dr. Ellise D. Adams PhD, CNM, Clinical Associate Professor

Advisor	April 24, 2013
Department Chair	April 24, 2013
Honors Program Director	April 24, 2013

Acknowledgement

Thank you to Dr. Adams, for encouraging and guiding me, and for spending so many hours working with me to make this project the best it could be.

Introduction

Although the efficacy of breast self-exams is well documented, results have shown that only 8% of women perform them regularly. The cause of the low percentage needs to be determined, and a method for teaching needs to be established so more women may be proactive in their own care. Studies have shown evidence that technology can improve patient education. The purpose this study is to determine if secondary patient contact by a nurse educator, following patient teaching, will help to enhance patient learning related to breast self-exam. The research questions for this study are (1) following breast self-exam teaching, will post-test scores from participants receiving an email contact from the nurse educator be significantly higher than the pre-test scores? and (2) following breast self-exam teaching, will post-test scores of participants receiving an email contact from the nurse educator be significantly higher than the post-test scores of participants who did not receive the email contact? The hypotheses for this study are (1) Post-test scores from participants receiving an email contact from the nurse educator will be significantly higher than pre-test scores. (2) Post-test scores of participants receiving an email contact from the nurse educator will be significantly higher than post-test scores of participants who did not receive the email contact.

Review of Literature

Breast cancer is a major problem in the United States, and around the world. Breast self-exams are a good way for patients to be proactive in their own healthcare, and to detect this issue early on. Multiple studies found that though many women understood the benefits of a breast self-exam, the number one reason why women did not perform one was a lack of confidence in doing it correctly (Shaikha & Salama, 2009). Studies spoke of the idea to utilize technology as a way of approaching health teaching, in order to combat problems like this by making information easily and readily available to those who need it

(Shneerson, Windle, & Cox, 2012). The thought is that in addition to making patients better informed about their own health, it would help healthcare providers by creating better patient outcomes through early detection and optimizing the time spend in office (Johnson, Dickinson, & Patyk, 2011). The decreased time spent in healthcare offices in turn lowers the burden put on health services, decreasing their costs as well, effectively helping both the patient and the provider equally. The internet was the technology suggested to help accomplish this by using the types of communication or social programs found there (Laakso & Tandy, 2011). Although the idea of using emails specifically to contact patients or share information was not discovered in this literature search, their prevalence related to patients and the internet helped create the rationalization for this research study.

One controversy regarding the necessity of performing breast self-exams was noted in the literature reviewed, however. Even though it has long been accepted that performing a breast self-exam is helpful in detecting early cancer, recent studies argue that it may not affect the number of deaths related to breast cancer (Allen, Van Groningen, Barksdale, & McCarthy, 2010). A literature review found that although breast self-exams empower women to be aware of their own health, it did not have a benefit in preventing breast cancer mortality (McCready, Littlewood, & Jenkinson, 2005). In fact, in one study, it was found that women who self-detected their cancer had longer diagnostic delays than those patients that had healthcare-detected cancer, which actually had the effect of increasing those patients' risks of mortality (Maly et al., 2011). Another study found that 57% of breast cancer was found through self-exam rather than mammograms, highlighting that they felt that self-exams are important (Roth et al., 2011). Mammograms are considered effective, but some researchers argue that they are expensive with a small benefit, while breast self-exams are cheap and raise awareness (Ozmen, 2011). The controversy surrounding this issue is still currently being debated by many healthcare providers, who are not ready to dismiss the

potential benefits of a non-invasive screening test that non-medical people can use to help detect abnormalities that may need attention.

Methods

The sample and setting for this project was six female college students from the University of Alabama in Huntsville. They ranged in age from nineteen to twenty-one years old. All participants were Caucasian and all participants spoke English. Eighty-three% of participants were senior nursing students. Also all participants had a valid email address. Students were recruited through the university via email, flyer, and online announcement. Consent was gained by participants signing the consent form found in Appendix A, and data for the project was collected through use of a pre-test and post-test. Approval for this study was received from the University of Alabama in Huntsville Institutional Review Board on February 5, 2013.

The research project participants were first asked to complete a pre-test survey (see Appendix B) to ascertain their baseline knowledge of the mechanics and steps needed to perform a breast self-exam. Participants were then given a 20 minute demonstration about the correct mechanics and steps for a breast self-exam by a nurse educator. One week later, half of the participants were chosen through randomization and sent an email from the student researcher asking if anyone has questions, and answering them if appropriate. Attached to this email was an information sheet summarizing the information shared in the teaching session (see Appendix C). Two weeks from the day of the pre-test all participants were emailed a post-test with instructions to fill it out and email it back to the researcher. The pre-test and post-test scores were compared using a paired t-test to determine the effectiveness of the intervention.

The pre-test and post-test were the same document. It was hand-scored and had 10 multiple choice questions along with demographical information. It was given at both the

beginning and end of the research project in order to collect data required to answer the specified research questions stated above (see Appendix B). Content validity for this questionnaire was obtained through consultation and review by two nursing faculty who were experts in women's health— Mrs. Ann Bianchi, MSN, RN, and Mrs. Melissa Lonnergan, MSN, RN, IBCLC. After completion of the research study, the data was coded for descriptives and entered into Statistical Packages for the Social Sciences for analysis.

Results

A paired-samples t-test was conducted to evaluate the impact of the intervention of the control group students' scores on the BSE Current Understanding Survey (BCUS). There was no statistically significant difference in the BCUS scores from Time 1 ($M = 7.33, SD = 0.57$) to Time 2 ($M = 7.67, SD = 0.57$), $t(2) = -1000, p < 0.423$ (two-tailed). The mean increase in BCUS scores was -0.34 with a 95% confidence interval ranging from -1.77 to 1.10. Post-test data for the experimental group was unavailable.

Discussion

The original number of participants was hoped to be between ten to fifteen people, but due to attrition rates of those who agreed to participate and those who actually attended, the resultant sample size was six students. It was hoped that the sample would be an ethnically diverse group, but all participants listed Caucasian as their ethnicity. Participants in the control group did not show a significant difference between the pre/post test scores. The information given to this group did not differ between Time 1 and Time 2, as all people in that group were exposed to the same teaching session. It is possible the reason there was no significant difference between pre/post test scores for the control group was due to the small sample size, or the fact that the sample was mainly comprised of nursing students who may have already been taught that knowledge.

Unfortunately there were no post-tests returned by any members of the experimental group, so the research question wishing to compare the pre/post tests of that group or the post-test scores between the control and experimental groups could not be ascertained. This may have been due to unclear or poorly understood instructions given by the researcher at the time of the teaching session. It could also be related to end of semester time demands on the college student. Further analysis may need to be done to determine why participants choose to respond or not to respond to online surveys. Also, more research could be done to determine which type of technological media is best suited for a particular age group – for example, is it better to use texting, Facebook, or email for people in their 20s versus 30s?

This study may suggest more effective methods of nurse-patient communication for patient education related to breast self-exams. This study may prove that utilizing technology as a method of nursing intervention enhances patient learning. Beyond nursing, this study may have application potential to other disciplines and to other content areas. Benefits to the participant included increased knowledge about breast self-exam and the potential to enhance personal health if these measures continue to be implemented.

Limitations

The actual sample size was only six students due to the attrition rate of those who agreed to participate and those who actually participated. There was a limited geographical area from which participants were used, and 83% of participants were senior nursing students, so had similar background knowledge about breast self-exams prior to this study. The students that actually participated were Caucasian, so the sample did not reflect an ethnically diverse group and the results may not be able to be generalized to the population at large. Also the post-tests were only returned by the control group who did not receive the

intervention of the email contact, so the comparison between the control and experimental groups could not be made.

References

- Allen, T. L., Van Groningen, B. J., Barksdale, D. H., & McCarthy, R. (2010). The breast self-examination controversy: What providers and patients should know. *The Journal for Nurse Practitioners – JNP*, 6(6). Retrieved from http://ac.els-cdn.com/S1555415509006643/1-s2.0-S1555415509006643-main.pdf?_tid=e632f3ca-091d-11e2-9b67-00000aab0f6c&acdnat=1348803659_8ace744e86ae5f0cea96f85aaa46753b
- Johnson, S. C., Dickinson, J. D., & Patyk, M. C. (2011). Don't get left behind: iPads making strong inroads with patient education. *AHC Media: Patient Education Management*, 18(5). Retrieved from <http://ehis.ebscohost.com.elib.uah.edu/eds/pdfviewer/pdfviewer?sid=f8a4c9d9-7ae2-47a1-ac1f-f22cdbc65340%40sessionmgr11&vid=9&hid=300>
- Laakso, E. L., & Tandy, J. (2011). Use of technology as an adjunct to improve health outcomes for survivors of cancer. *Physical Therapy Reviews*, 16(1). Retrieved from <http://ehis.ebscohost.com.elib.uah.edu/eds/pdfviewer/pdfviewer?sid=f8a4c9d9-7ae2-47a1-ac1f-f22cdbc65340%40sessionmgr11&vid=5&hid=6>
- Maly, R. C., Leake, B., Mojica, C. M., Liu, Y., Diamant, A. L., & Thind, A. (2011). What influences diagnostic delay in low-income women with breast cancer? *Journal of Women's Health*, 20(7). Retrieved from <http://ehis.ebscohost.com.elib.uah.edu/eds/pdfviewer/pdfviewer?sid=d035a369-ea54-43b7-9638-d3b47772a1ae%40sessionmgr12&vid=3&hid=116>
- McCready, T., Littlewood, D., & Jenkinson, J. (2005). Breast self-examination and breast awareness: A literature review. *Journal of Clinical Nursing*, 14. Retrieved from <http://ehis.ebscohost.com.elib.uah.edu/eds/pdfviewer/pdfviewer?sid=d035a369-ea54-43b7-9638-d3b47772a1ae%40sessionmgr12&vid=9&hid=5>

- Ozmen, V. (2011). Breast cancer screening: Current controversies. *The Journal of Breast Health*, 7(1). Retrieved from [http://ehis.ebscohost.com.elib.uah.edu/eds/pdfviewer/pdfviewer?sid=d035a369-
ea54-43b7-9638-d3b47772a1ae%40sessionmgr12&vid=4&hid=116](http://ehis.ebscohost.com.elib.uah.edu/eds/pdfviewer/pdfviewer?sid=d035a369-
ea54-43b7-9638-d3b47772a1ae%40sessionmgr12&vid=4&hid=116)
- Roth, M. Y., Elmore, J. G., Yi-Frazier, J. P., Reisch, L. M., Oster, N. V., & Miglioretti, D. L. (2011). Self-detection remains a key method of breast cancer detection for U.S. women. *Journal of Women's Health*, 20(8). Retrieved from [http://ehis.ebscohost.com.elib.uah.edu/eds/pdfviewer/pdfviewer?sid=d035a369-
ea54-43b7-9638-d3b47772a1ae%40sessionmgr12&vid=3&hid=116](http://ehis.ebscohost.com.elib.uah.edu/eds/pdfviewer/pdfviewer?sid=d035a369-
ea54-43b7-9638-d3b47772a1ae%40sessionmgr12&vid=3&hid=116)
- Shaikha, S. A., & Salama, R. (2009). Knowledge and attitude towards breast cancer and breast self-examination among women attending primary health care centres in Doha, 2009. *Middle East Journal of Family Medicine*, 9(6). Retrieved from [http://ehis.ebscohost.com.elib.uah.edu/eds/pdfviewer/pdfviewer?sid=d035a369-
ea54-43b7-9638-d3b47772a1ae%40sessionmgr12&vid=3&hid=2](http://ehis.ebscohost.com.elib.uah.edu/eds/pdfviewer/pdfviewer?sid=d035a369-
ea54-43b7-9638-d3b47772a1ae%40sessionmgr12&vid=3&hid=2)
- Shneerson, C., Windle, R., & Cox, K. (2012). Innovating information-delivery for potential clinical trials participants. What do patients want from multi-media resources? *Patient Education Counsel*. Retrieved from [http://ac.els-
cdn.com/S0738399112002613/1-s2.0-S0738399112002613-
main.pdf?_tid=fd59f0f6-091a-11e2-8aa1-
0000aacb360&acdnat=1348802409_12e66b3b7d83fb19b4d45326e5d93587](http://ac.els-
cdn.com/S0738399112002613/1-s2.0-S0738399112002613-
main.pdf?_tid=fd59f0f6-091a-11e2-8aa1-
0000aacb360&acdnat=1348802409_12e66b3b7d83fb19b4d45326e5d93587)

Appendix A**Consent Form:**

Title: Technology as a Nursing Intervention to Enhance Patient Learning: the Impact of Secondary Patient Contact via Email as It Relates to Breast Self-Exam Teaching in Female College Students

You are invited to participate in a research study about the effects of using email as a secondary contact method to enhance patient learning. This study is designed to help us better understand how patients retain information.

The primary investigator is Ainsley Phillips, from The University of Alabama in Huntsville.

PROCEDURE TO BE FOLLOWED IN THE STUDY: Once written consent is given, you will be asked to complete a pre-test survey to ascertain your baseline knowledge of the mechanics and steps needed to perform a breast self-exam. You will then be given a 20 minute demonstration about the correct mechanics and steps for a breast self-exam by a nurse educator. An information sheet detailing the procedure will be provided. One week later, half of the participants will be chosen through computer randomization and sent an email from the student researcher asking if anyone has questions, and answering them if appropriate. The information sheet provided at the initial teaching session will be attached. Two weeks from the day of the pretest, all participants will be sent another copy of the questions used in pre-test, only this time it will be used as a post-test. This time commitment will be 4 or 5 hours depending on the group to which you are assigned.

DISCOMFORTS AND RISKS FROM PARTICIPATING IN THIS STUDY: Loss of confidentiality is possible with electronic transmission. Participants will be advised of this risk. The precaution would be to only use the emails for this specific contact purpose and no other.

EXPECTED BENEFITS: Personal benefits of the study include increased knowledge about breast self-exam and the potential to enhance personal health if these measures are implemented.

CONFIDENTIALITY OF RESULTS: Participant numbers will be used to record your data, and these numbers will be made available only to those researchers directly involved with this study, thereby ensuring strict confidentiality. This consent form will be destroyed within 12 months. The data from your session will only be released to those individuals who are directly involved in the research and only using your participant number.

FREEDOM TO WITHDRAW: You are free to withdraw from the study at any time. You will not be penalized because of withdrawal in any form. Investigators reserve the right to remove any participant from the session without regard to the participant’s consent.

CONTACT INFORMATION: If any questions should arise about this study or your rights as a participant, you may contact the Principal Investigator at any point in the research process. You may contact Ainsley Phillips from The University of Alabama in Huntsville, at (256) 417-9442 or at aep0001@uah.edu, Dr. Ellise Adams, Research Faculty Advisor, at ellise.adams@uah.edu, or Dr. Pamela O’Neal, IRB Chair, in Morton Hall 332, at irb@uah.edu or at 824.2338.

If you agree to participate in our research please sign and date below. If you are under the age of 19, please provide your parent or legal guardian’s signature indicating consent.

This study was approved by the Institutional Review Board at UAH and will expire in one year from February 5, 2013.

Name (Please Print)

Signature

Date

Parent/Guardian Signature (if younger than 19)

Appendix B**BSE Current Understanding Survey**

Please fill out the following information:

Age _____ Ethnicity _____ I am a Freshman Sophomore Junior Senior

Have you been taught about breast self-exams before? Yes No If so, where? _____

Have you ever performed a self-breast exam before? Yes No If so, how often? _____

Do you know someone who currently has, or has had, breast cancer? Yes No

Please read the following questions, and mark the best answer:

1. What part of your hand should you use when conducting a breast self-exam?
 - Your palm
 - The tips of your fingers
 - The pads of your fingers
 - Your thumb

2. How wide of an area should be checked during a breast self-exam?
 - The entire breast and collarbone area
 - The entire breast only
 - The entire breast and armpit area
 - The entire breast and sternum area

3. In what order does a breast-self exam need to be performed?
 - In front of a mirror, in the shower, then lying down
 - Lying down, then in front of a mirror, then in the shower
 - In the shower, in front of a mirror, then lying down
 - In the shower, lying down, then in front of a mirror

4. What is the first thing to do when standing in front of a mirror during a self-breast exam?
 - Visually inspect your breasts with your arms at your sides
 - Visually inspect your breasts with your arms raised high overhead
 - Visually inspect your breasts turned to one side
 - Visually inspect your breasts with your hands on your hips

5. True or false: Left and right breasts will not exactly match up on a woman.
 - True
 - False

6. True or false: Dimpling and puckering are normal variations, and nothing to be concerned with if seen
 - True
 - False

7. What is the correct form when performing the lying down portion of the breast self-exam?
- Place a pillow under one shoulder and put the arm on the same side overhead
 - Place a pillow under one shoulder and put the arm on the opposite side overhead
 - Place one arm overhead without any pillows
 - Place a pillow under both shoulders and put one arm overhead
8. What amount of pressure should you apply when conducting a breast self-exam?
- Light and medium pressure
 - Firm pressure only
 - Light, medium, and firm pressure
 - Light pressure only
9. How often should you perform a breast self-exam?
- Once per day
 - Once per year
 - Once per week
 - Once per month
10. Why should you perform a breast self-exam?
- Self-screening is a key way to protect yourself through early detection
 - So women can better know their bodies and more easily tell when things are abnormal
 - To be able to notify your healthcare provider if there are any changes
 - All of the above

Appendix C

Breast Self-Exam Research Study Information Handout

HOW SHOULD A BREAST SELF-EXAM BE PERFORMED?

In 3 steps:

1) IN THE SHOWER

Using the pads of your fingers, move around your entire breast in a circular pattern moving from the outside to the center, checking the entire breast and armpit area. Check both breasts each month feeling for any lump, thickening, or hardened knot. Notice any changes and get lumps evaluated by your healthcare provider.

2) IN FRONT OF A MIRROR

Visually inspect your breasts with your arms at your sides. Next, raise your arms high overhead. Look for any changes in the contour, any swelling, or dimpling of the skin, or changes in the nipples. Next, rest your palms on your hips and press firmly to flex your chest muscles. Left and right breasts will not exactly match—few women's breasts do, so look for any dimpling, puckering, or changes, particularly on one side.

3) LYING DOWN

When lying down, the breast tissue spreads out evenly along the chest wall. Place a pillow under your right shoulder and your right arm behind your head. Using your left hand, move the pads of your fingers around your right breast gently in small circular motions covering the entire breast area and armpit.

Use light, medium, and firm pressure. Squeeze the nipple; check for discharge and lumps. Repeat these steps for your left breast.

ONCE A MONTH

Adult women of all ages are encouraged to perform breast self-exams at least once a month. Johns Hopkins Medical center states,

“Forty percent of diagnosed breast cancers are detected by women who feel a lump, so establishing a regular breast self-exam is very important.”

While mammograms can help you to detect cancer before you can feel a lump, breast self-exams help you to be familiar with how your breasts look and feel so you can alert your healthcare professional if there are any changes.

CAN I RELY ON BREAST SELF-EXAMS ALONE TO BE SURE I AM BREAST CANCER FREE?

Mammography can detect tumors before they can be felt, so screening is key for early detection. But when combined with regular medical care and appropriate guideline-recommended mammography, breast self-exams can help women know what is normal for them so they can report any changes to their healthcare provider.

If you find a lump, schedule an appointment with your doctor, but don't panic — 8 out of 10 lumps are not cancerous. For additional peace of mind, call your doctor whenever you have concerns. Just like wearing a seatbelt can save your life, regular screenings, clinical exams, and breast self-exams can help you to detect cancer early.