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A Mixed Methods Study on the Efficacy of an Ergonomics Training Program with Direct Care Workers in Home Health

A Doctoral Experiential Capstone Project

Presented to the Faculty of Western New England University

In Partial Fulfillment of the Requirements for the

Entry-Level Doctorate

in

Occupational Therapy

by

Allison M. Hemmer

July 2022

A Mixed Methods Study on the Efficacy of an Ergonomics Training Program with Direct Care Workers in Home Health

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By

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July 2022

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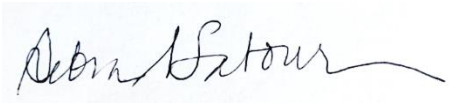

_____ 7/25/2022
Debra Latour, OTD, M.Ed., OTR/L Doctoral Experiential Coordinator Date

Abstract

Direct care workers (DCWs) have little training on lifting, transferring, and repositioning their clients safely, which leads to injuries (Zontek, et al., 2009). A DCW may include a certified nursing assistant (CNA), home health aide (HHA) and personal care assistant (PCA). The focus of this research is to determine the efficacy of an ergonomics training program entitled Ergonomics Training at Work (E.T. at Work) via a pre and post survey. The efficacy of the program was determined by the knowledge of best practice techniques and overall confidence level when lifting, transferring, or repositioning a client prior to and after the program. The researcher used employees (*n=20*) from Comfort Keepers, a home health agency in Enfield, CT. There were four topics covered throughout the program: (1) ergonomics and body mechanics, (2) equipment, (3) transfers, and (4) mental and physical health. The results showed that the knowledge and confidence levels of the participants increased after participating in the four-week E.T. at Work program compared to the participants' knowledge and confidence prior to the program.

Keywords: Direct care workers (DCWs), ergonomics, training, knowledge, confidence

Final Doctoral Experiential Capstone Project Report

A DCW is an individual who receives payment for giving assistance to someone with a disability or illness (Arizona Direct Care Initiative, 2020). The main responsibilities of a directive care worker include bathing, toileting, feeding, housekeeping, running errands, emergency response, mobility and occasional medical needs (PHI, 2021). They may also transfer or lift the patient when necessary. DCWs include home care aide (HHA), personal care assistant (PCA) and certified nursing assistant (CNA) (Arizona Direct Care Initiative, 2020). DCWs are known to work with four different types of individuals. These types include individuals with behavioral health problems, intellectual disabilities, developmental disabilities and physical disabilities (Mental Health Technology Transfer Center, 2020). There is a need for direct care workers in the United States. “From 2019 to 2029, this workforce will add an estimated 1.3 million new jobs to meet rising demand, more new jobs than any other single occupation” (PHI, 2021, p. 1).

There is not enough training required for DCWs, some require no training at all. One unmet need is that there is a lack of training with ergonomics for direct care workers. Not only does the DCW often encounter a hazardous environment, but they also have intense job responsibilities (Quinn, et al. 2021). Many times, the DCWs are lifting and transferring patients which can cause injuries. Data was collected from Washington state worker’s compensation claims from 2012-2016 and found that 259/10,000 DCW reported an injury. According to the study, it is difficult to receive an accurate number of injured DCWs due to the reporting system. Many of these injuries are back related. A survey found that frequently, the DCW does not have lifting or transferring equipment to lift the client properly. Safe patient handling programs are needed to prevent injuries in DCWs.

Every direct care title is different and has different training. In Connecticut, one has to complete a minimum of a 75-hour training course (MFC, n.d.). In the 75 hours, one must complete at least sixteen hours of observing another aid with experience. Lastly, one has to apply for their license. A CNA must complete 100 hours of classroom and clinical training (American Institute of Healthcare & Technology, 2020). After that, one must sit and pass the nurse aide certification evaluation. Connecticut does not require a PCA to obtain a certification and does not require any training except an orientation. Depending on the client that the PCA is assisting, training may be required (New England Health Care Employees Union and the Connecticut nursing homes, n.d.).

It is unclear how much ergonomics training DCWs receive, but in general, HHAs receive training on basic life support, medical terminology, medication, and nutrition (Home Health Academy, n.d.). A different company trains HHAs in communication, vitals, how to prevent infections, how to keep a clean environment, how to work with people, how to complete personal hygiene tasks for their client, transfers techniques, positioning, nutrition and how to report changes in the client's skin (HomeHealthAideGuide, n.d.). A CNA's certification requires training on anatomy and physiology, patient care principles and activities of daily living, vital signs and testing, patient communication, infection control, data collection and reporting legal/ethical issues (Staff Writers, 2022). Ultimate Medical Academy curriculum for CNAs include personal care, taking vitals, communication, education on medical equipment and anatomy and physiology (Ultimate Medical Academy, 2018). At Golden Years Staffing Agency, a homecare service, their competency test for their CNAs include communication, hand hygiene, transfer and using equipment and daily tasks and activities (Golden Years Staffing Agency, n.d.).

The study was based on the Model of Human Occupations (MOHO). The model has three aspects which include volition, habituation, and performance. Volition refers to a person's motivation to master their environment. Relating this aspect to the program, a person would have to read the handouts and watch the videos to receive all the benefits from the program. In order for the person to want to read and watch the materials, they will have to be internally motivated to do so because there are no incentives offered. The next aspect is habituation which means that the person needs to be responsible for continuing the behavior. In the program, the person may need to continue to review the handouts and videos to be successful in the occupation. The last aspect of the MOHO is performance. This refers to the person taking all of the skills and applying them to the job (Pawar & Onchiri, 2017).

Doctoral Experiential Project Overview

Experiential Activities

The program was created with a local home care agency, Comfort Keepers in Enfield, CT. The program was developed due to the lack of ergonomics training among Comfort Keepers' staff. The researcher completed a community profile (Appendix A) and a needs assessment (Appendix A) to understand the community and the unmet need. After the research was conducted, the researcher collaborated with Comfort Keepers' administrative staff to develop the Ergonomics Training at Work program (E.T. at Work). There were four topics covered throughout the program: (1) ergonomics and body mechanics, (2) equipment, (3) transfers, and (4) mental and physical health. These topics were based on evidence-based research and the needs of Comfort Keepers' staff.

Scholarly Component

Literature Review

Existing Literature on Injuries. A study found that 11.5% of HHAs reported a work-related injury in the last 12 months (Bercovitz et al., 2011). When comparing health care workers who work in the long-term care setting to other occupations, health care workers experience more musculoskeletal injuries than any other occupation. The Bureau of Labor Statistics in 2001 found that the rate of time lost due to an injury was 8.8/100 in hospitals and 13.5/100 in long-term care workers (Ngan et al., 2010). They found that the leading cause of injuries was incorrect posture. Patient handling was responsible for 60% of musculoskeletal injuries and 55% was due to improper use of equipment.

Another study was completed with nursing, psychiatric and HHAs (Hoskins, 2009). These particular groups of occupations were chosen because they have shown to have 65% of all injuries and illnesses reported in the workplace. Forty-three percent of these injuries including sprains, strains and tears were followed with pain and soreness and almost all the injuries were due to back pain. Fifty-four percent of injuries with nursing, psychiatric and HHAs in 2004 were musculoskeletal disorders.

Unfortunately, CNAs have a significant risk for musculoskeletal disorders or, in other words, ergonomic injuries (Graham & Dougherty, 2012). A study was completed with 35 CNAs, the study required the participants to complete a questionnaire based on their injuries while at work. The surveys showed that 46% of the 35 participants hurt themselves when they were moving or lifting a patient.

Existing Literature on Programs. A study was completed to evaluate a 7-week training program on patient handling (Johnsson et al., 2002). The participants included medical staff who worked around the Stock County Council area. The program's topics included musculoskeletal problems, physical and psychosocial risks, patient's independence and how to be aware of body movements. The program was evaluated based on observation and a questionnaire before and after the program. In conclusion, the program was shown to be effective in increasing patient safety when handling clients.

A program, Transfer, Lifting and Repositioning (TLR) Injury Prevention, was based off of a pre and post study design with a control and intervention group (Black et al., 2011). The participants included 766 injured individuals in 3 different hospitals. Most of the participants were nurses with neck, shoulder and back injuries. The program educated participants on body mechanics, personal health, lifting and handling patients. The overall Workers' Compensation Board decreased claims by 47.7% from the pre and post-test. The most improvement that was seen was with lifting injuries.

A program for nursing assistants was designed by a physical therapist and a nursing educator (Wilson et al., 2011). The program was developed due to the high rates of injuries among nursing assistants. The program included 23 classes, with 19 classes during the day and four classes at night. The topics of the classes included body mechanics, ergonomics, lifting equipment, nursing responsibilities and transfer techniques. By using a pre and post survey method, the program increased the participants' confidence levels and knowledge in handling patients.

Existing Literature on Method. Handouts can be helpful when educating participants (Mikits, 2009; Munyoro, 2014). There have been many debates over whether it is better for students to take notes or for them to receive a handout. The literature shows that handouts can be beneficial when educating students because it gives them the ability to reread the information after the lecture and it gives them more time to pay attention to the lecture instead of taking notes. The handouts should only cover the main topics and more details of the topics should be discussed in another form of education.

A study was completed to show the effectiveness of using online videos to demonstrate a skill used by nurses (Mckenny, 2011). Group 1 included 29 participants and group 2 included 10 participants. Both groups were educated on how to complete a dressing change. Group 1 was shown a video and group 2 had an educator demonstrate the skills. Both groups performed, learned and retained the skills. Therefore, online videos can be equally effective as in person demonstrations when educating participants on a skill.

The full literature review can be viewed in Appendix A.

Research Question

Is the E.T. at Work program based on ergonomics, an effective means to increase confidence and knowledge for the direct care workers at Comfort Keepers in Enfield, CT?

Hypothesis

The E.T. at Work program will increase Comfort Keepers' DCWs' confidence level and knowledge of best practices when transferring, lifting and repositioning clients.

Objectives for the Participants

1. By the end of the E.T. at Work program, Comfort Keepers' DCWs' knowledge with use of best practices in proper ergonomics, transfers and lifting equipment will increase as measured by a pre and post questionnaire.
2. By the end of the "E.T. at Work" program, Comfort Keepers' DCWs' confidence with use of best practices for proper ergonomics, transfers and lifting equipment will increase as measured by a pre and post questionnaire.

Methods

In this article, the researcher describes qualitative and quantitative data from pre and post surveys completed by DCWs about proper ergonomics, body mechanics, equipment and lifting, transferring and repositioning a client. The data was collected from April 2022- June 2022. The study was approved by Western New England University's Institutional Review Board (IRB) in April 2022.

Participants

Participants (*n=20*) were recruited through convenience sampling from Comfort Keepers in Enfield, CT. Inclusion criteria for survey participants includes being 18 years or older and a DCW from Comfort Keepers in Enfield, CT. There are no criteria for the number of years working as a DCW. Exclusion criteria includes being under the age of 18 years and not currently practicing as a direct care worker at Comfort Keepers in Enfield, CT.

Procedure

Participants (*n=20*) completed and signed a consent form prior to participating in the pre-survey, program, and post-survey. Once consent was given, participants were given a hard copy of the pre-survey to be completed and returned to the researcher. Relevant knowledge- based

pre-survey questions were: (1) What is ergonomics? (2) Give an example of using proper body mechanics. (3) What equipment are you familiar with to lift and move clients? Relevant confidence-based pre-survey questions were: (1) I am confident in using the equipment listed above. (2) I am confident when lifting, transferring, or repositioning my patient. (3) I am confident in my ability to not get injured when lifting my client. After completion of the pre-survey, participants were entered into the program.

The program took place over four weeks and included handouts and videos. Each week, participants received an informational handout with an additional link to a video. Each handout had approximately 20 minutes worth of reading material and each video ranged from 15-22 minutes in length. There were four topics covered throughout the program: (1) ergonomics and body mechanics, (2) equipment, (3) transfers, and (4) mental and physical health. Once the participants received all four handouts/videos, they received a hard copy of a post survey to complete and return to the researcher. When participants received the post survey, they were instructed to not use the handouts or videos from the program as post-survey questions were almost identical to pre-survey questions.

Data Analysis

The researcher scored the knowledge-based questions using a point scale. See table 1 for a breakdown on the point scale for each question. The confidence-based questions were scored using a Likert scale from 0-5. The qualitative data was analyzed by inductive content analysis to find three recurring themes (Elo & Kyngäs, 2008).

Table 1

1. What is ergonomics?	**2. Give an example of using proper body mechanics.**	**3. What equipment are you familiar with to lift and move clients?**
0 Points = Did not state the words ‘safety/efficiency’ or ‘environment/workplace’ in their answer	0 Points = Did not list a proper body mechanic technique	0 Points = No equipment listed
1 Point = Stated either ‘safety/efficiency’ or ‘environment/workplace’ in their answer	1 Point = Listed a proper body mechanic technique	1 Point = Listed one type of equipment
2 Points = Stated both ‘safety/efficiency’ and ‘environment/workplace’ in their answer		2 Points = Listed two types of equipment
		3 Points = Listed three types of equipment
		4 Points = Listed four types of equipment
		5 Points = Listed five types of equipment
		6 Points = Listed six types of equipment

Results

Sixty-five percent of participants read and watched 7-8 of the informational handouts and videos. See table 2 for more information. Overall, the knowledge and confidence levels of the participants increased after participating in the four-week E.T. at Work program compared to the participants’ knowledge and confidence prior to the program. The average percentage of knowledge increased was 27%. See Table 3 for more information. The average percentage of confidence level improvement was 57%. See Table 4 for more information.

Table 2

Questions Seven and Eight: How many handouts did you receive and read? How many of the videos did you watch?					
	Read or watched 0 total videos during the program	Read or watched 1-2 total videos during the program	Read or watched 3-4 total videos during the program	Read or watched 5-6 total videos during the program	Read or watched 7-8 total videos during the program
Participants		5%	5%	25%	65%

Table 3

Accuracy of Knowledge			
	Accuracy Prior to Program	Accuracy After the Program	Change in Knowledge Accuracy
Question One: What is ergonomics?	20%	60%	40%
Question Two: Give an example of using proper body mechanics	50%	70%	20%
Question Three: What equipment are you familiar with to lift and move clients?	15%	35%	20%
Average Percent of Knowledge Increased			27%

Table 4

Confidence Level			
	Very Confident Prior to Program	Very Confident After the Program	Change in Confidence Level
Question Four: I am confident in using the equipment listed above.	20%	75%	55%
Question Five: I am confident when lifting, transferring, or repositioning my patient.	25%	80%	55%
Question Six: I am confident in my ability to not get injured when lifting my client.	25%	85%	60%
Average Percent of Confidence Level Increased			57%

At the end of the post survey, participants were asked if there was anything else they would've liked to see in the program. Three themes were found throughout the question. The themes that emerged from the twenty post surveys included (1) Hoyer lift (2) more confident (3) informative.

Theme 1: Hoyer Lift (n=3). During the program, participants received a handout describing different types of equipment to use to lift, transfer or reposition the client, including the Hoyer lift. The Hoyer lift was also demonstrated over a video clip. Participants responses included, “I have faith I can do

Gait belt but using a voyer [Hoyer] lift I would have to do hands on can't watch video” (Participant A) and “I think the only thing I am not 100% confident with is actually using the Hoyer lift because I've never had to use one. But after watching the video, I am much more confident than I was before.” (Participant I).

Theme 2: More Confident (n=4). Confidence increases the ability to perform different tasks. Quotes from post surveys included “More confident then [than] before, with lifting Hoyer lifts etc.” (Participant C), “After completing the ergonomics training, I know more about different concept [concepts] watching the videos I can tell I am confident, so now I will have to practice it to know” (Participant O) and “Very confident to do my job” (Participant L).

Theme 3: Informative (n=5). Quotes from participants included “The training was very informative and well done” (Participant D), “I have had training in school for medical assistant and this was a really great refresher course” (Participant F), “No I feel the videos were very informative and the demos were awesome” (Participant Y) and “No. The program was very well done” (Participant R).

Discussion

DCWs receive minimal training on lifting, transferring and repositioning clients. The research shows that after the participants engaged in the E.T. at Work program, their accuracy on knowledge-based questions increased and their confidence increased in confidence-based questions. The data agrees with previous research. Previous programs have shown that educating

individuals on ergonomics, body mechanics, transfers, equipment and physical and mental health will increase their education, confidence and prevent injuries.

Limitation

One limitation was the amount of people that could engage in the program due to the researcher having to drive to the participants and COVID-19 concerns. Another limitation was that there was no way to regulate how many videos or handouts participants utilized because they completed the training on their own time. In addition, surveys were handwritten and therefore, the researcher could have made a mistake when analyzing the results. Lastly, the participants were given a different script when receiving the pre and post survey. The different scripts could have impacted how the participants interpreted the questions on the surveys.

Conclusion

The study was conducted to prevent work related injuries and fill the need of minimal ergonomics training for DCWs. By educating DCWs on proper ergonomics and body mechanics, equipment, transfers and mental and physical health, the E.T. at Work program was able to fill the need in developing an ergonomics training program that increased DCWs' knowledge and confidence of lifting, transferring and repositioning a client. The research will be able to be used to train DCWs in proper ergonomics and body mechanics, equipment, transfers and mental and physical health.

Impact to occupational therapy

This study indicates that occupational therapists have a unique skill set that can be used in research and education. Occupational therapists are able to educate DCWs on ergonomic and body techniques, transfer techniques, how to use different lifting equipment and how to improve one's physical and mental health. The profession is able to bring awareness to these topics by

educating DCWs through holistic and client centered ideologies. In addition, occupational therapists work in an interprofessional team and by educating the DCWs, they are promoting the primary preventive method (Institute for Work & Health, 2015).

The poster presentation for this study can be viewed in Appendix F.

Learning Outcomes

The researcher was able to increase communication, knowledge, technology and leadership skills during the study. The researcher met with the community partner personnel frequently, promoted a diverse system of service delivery by developing a program that was able to be understood by the targeted population and created an ergonomic training program via online and an in-person platform. Lastly, the researcher was able to take a leadership role by demonstrating success in the role as temporary Staff Education Liaison.

Comments/Additional Information

Community DEx Site: Comfort Keepers

Comfort Keepers is a non-skilled home health agency located in Enfield, CT (Comfort Keepers, 2022). The employees include HHAs, PCAs, and CNAs. The administrative staff includes the owner, the external manager and the internal manager. Services include meal preparation, errands, light housekeeping, basic hygiene and more.

Research Team

Allison Hemmer, OT/s
Primary Researcher

Allison Hemmer, OT/s is currently an occupational therapy doctorate student at Western New England University in Springfield, MA. She is expected to graduate in August 2022. She earned her Bachelor of Science in wellness management with a minor in psychology from the State University of New York in Oswego, NY.

She is currently a graduate assistant for the Occupational Therapy Department at Western New England University. At the University, Allison was the co-chair of a therapeutic art group that works with individuals that have survived a traumatic brain injury. In addition, she was the president of Pi Theta Epsilon, the occupational therapy honor society at Western New England University. She also was a member of Student Occupational Therapy Association, secretary of the ethics board at Western New England University's College of Pharmacy and Health Sciences, a member of the Interprofessional Students Alliance and a member of the Pre-OT committee at Western New England University. She is currently a member of the American Occupational Therapy Association. Allison's current research involves training direct care workers in the home health setting. During her down time, she enjoys spending time with her family and partaking in outdoor activities.

Dr. Michael Salemi, OT, OTD, OTR
Faculty Mentor

Michael Salemi graduated from American International College with a Bachelor of Science in Occupational Therapy in 2001. Prior to his work at Western New England University, Michael practiced occupational therapy in the adult and aging population, where he has worked in acute care, outpatient rehabilitation, inpatient acute rehabilitation, skilled nursing care and home health care. Additionally, Michael has practiced occupational therapy around the country in Massachusetts, Connecticut, Pennsylvania, Colorado, Wyoming, Oregon and California.

Michael completed a Post-Professional Doctor of Occupational Therapy degree from Boston University in May 2019. The focus of his doctoral work is on promotion of healthy living and occupational engagement for homebound senior citizens and disabled persons.

Michael is an involved member of the Massachusetts Occupational Therapy Association and the American Occupational Therapy Association. He has presented at the national and state conferences for both professional organizations. Michael is also an active researcher within the realm of occupational therapy practice. Current research pursuits include investigating the effectiveness of occupational promotion in the homebound population.

Audra Lauf, BSW
Site Mentor

Audra S Lauf graduated from Marist College with a Bachelor of Science in Social Work with a minor in Psychology in 1993. Audra is a certified Dementia Support Group Leader, and a certified Train the Trainer for Dementia through the CT Alzheimer's Association. Audra also has her CT certificate in Therapeutic Recreation from MCC. Audra has 29 years' experience in health care including skilled nursing facility, visiting nurse, and private duty care. Audra is an active member of the North Central Connecticut Chamber of Commerce, The Breakfast Club, Community Hands 413, and Western MA Senior Services Providers. Audra is a proud mom of two beautiful daughters Michaela and Alexandra.

Jessica Winter, OT/s
Researcher

Jessica is a current candidate of Doctor of Occupational Therapy at Western New England University in Springfield, MA. She is expected to graduate in 2022. She graduated from Point Park University in 2016 earning her BFA in Dance and AS in Business Management. Upon graduation Jessica took a job traveling the world performing on an international cruise line. She continues to share her passion for dance with students at two dance studios within Western MA.

Jessica is the inaugural co-chair and founder of the Western New England Interprofessional Student Alliance. This alliance promotes unity and collaboration among

graduate students through wellness events, volunteer opportunities and social gatherings. She is also the secretary of Pi Theta Epsilon, Western New England Occupational Therapy Honor Society, as well as a member of SOTA, AOTA, and Inspired Minds. In her free moments, she enjoys spending time with her beloved husband and guinea pigs. Jessica's research focuses on the efficacy of online courses with the nurse population.

Kayla Just, OT/s
Researcher

Kayla is a current Doctor of Occupational Therapy candidate at Western New England University in Springfield, MA. She is expected to graduate in 2022. She earned her Bachelor of Science from University of Hartford in 2018 with a major in Health Science. Kayla has always had a strong interest in the rehabilitation sciences and has been working as a rehabilitation technician at a physical therapy clinic in West Hartford, CT since 2018.

At Western New England University, Kayla is a member of Pi Theta Epsilon, the National Occupational Therapy Honor Society. She is also a part of SOTA, AOTA, and is the student representative for the Curriculum Committee for the WNE OTD program where she worked with professors to help design and implement a summer course that will be offered to students to receive hands-on skills that were missed due to COVID. In her free time, Kayla enjoys running, spending time with friends and family, and dog walking. Kayla's research focuses on aging in the home with the geriatric population.

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Appendix A

Community Profile, Needs Assessment Part I and II, and Literature Review

Please scan the QR code with your smartphone device to view the community profile, needs assessment part I and II, and the literature review	
Community Profile	
Needs Assessment Part I	
Needs Assessment Part II	
Literature Review	

Appendix B

Institutional Review Board Approval Form

WESTERN NEW ENGLAND UNIVERSITY | WNE
COLLEGE of PHARMACY and HEALTH SCIENCES

Subgroup of the IRB & Human Subjects Committee
FWA00010736 Approval Form&

Responsible Director: _____Dr. Diptiman Bose
_____

Title of Project: _____*A mixed methods study on the efficacy of an ergonomics training program with direct care workers in home health*
College Proposal Number: ___COP-IRB#154_____

_X____ This research proposal is exempt under Federal Regulation _*46.104. d.2* _____.
It is deemed acceptable according to the Belmont Principles and the American Psychological Association's Ethical Guidelines for the Use of Human Participants for a period of one year.*

_____ This research proposal has undergone an expedited review under Federal Regulation _____. It is deemed acceptable according to the Belmont Principles and the American Psychological Association's Ethical Guidelines for the Use of Human Participants for a period of one year.*

_____ This research does not qualify for exemption or expedited review and will need to be reviewed by the entire board.

Signature__ _____Date_____5/9/2022_____

Renewal requests due before _____5/8/2023_____

& Note: Authority to approve exempt or expedited research originating within the College of Pharmacy.

* Note: It is your responsibility to notify the IRB of any adverse events that occur during your research. You must also request an additional review before you introduce changes to the proposed protocol. Maintain a copy of your original application, any requested changes, and this signed approval form. You will need to submit these if you apply for a renewal.

Appendix C

Recruitment methods, Consent Form and Surveys

Please scan the QR code with your smartphone device to view the recruitment methods, consent form and surveys	
Recruitment Email, phone call and text message	
Consent Form	
Pre-Survey	
Post-Survey	

Appendix D

Educational Handouts

Please scan the QR code with your smartphone device to view the handouts	
Week of the Handout	QR Code
Week One Handout	
Week Two Handout	
Week Three Handout	
Week Four Handout	

Appendix E

Tables

Please scan the QR code with your smartphone device to view the changes in knowledge and confidence level for each relevant question	
Tables 5-15	

Appendix F

Poster Presentation

Please scan the QR code with your smartphone device to view the poster presentation	
QR Code for Poster