

WELLNESS AND COPING OF RESIDENTS IN A SKILLED NURSING FACILITY

A Scholarly Project

Submitted to the

Faculty of Liberty University

In partial fulfillment of

The requirements for the degree

Of Doctor of Nursing Practice

By

Christine Mary Larson

Liberty University

Lynchburg, VA

June 10, 2020

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Scholarly Project Chair Approval:

Dr. Lynne Sanders, EdD, MSN, RN, CNE. Date

ABSTRACT

Depression is common among older adults in long-term care (LTC) facilities. As many as 50%-80% of residents will experience depressive symptoms or have a diagnosis of depression.

Depression increases the risk of poor health-related outcomes in older adults. A review of the literature suggests that early intervention using movement-based techniques decreases the risk for depression and improves depressive symptoms. This scholarly project aimed to reduce the risk of depression of residents in an LTC located in a suburban area in Midwestern United States.

The LTC facility and a Doctor of Nursing Practice (DNP) student implemented the Chair One Fitness program for 30 minutes, two times per week, for three months. The facility leadership collected a sampling of residents' Patient Health Questionnaire-9 (PHQ9) scores to evaluate the intervention's effect on the risk for depression. Eleven residents had a PHQ9 score collected before and after the intervention time period. Data analysis using descriptive statistics and a Pearson Correlation Coefficient demonstrated that there was no correlation for the change in PHQ9 scores with intervention attendance. Some residents' PHQ9 scores improved, some worsened, and some stayed the same in both those that attended the intervention and those that did not attend. While it is well documented in literature that there is a correlation between depression and physical activity, the project team was unable to demonstrate that this fitness program had a correlational effect on the risk for depression for these residents.

Keywords: Depression, elderly, long-term care, exercise, fitness

Dedication

I dedicate this manuscript to my husband who has stood by me through all aspects of my education and four degrees. Tom, I am finally a doctor like I said I would be 29 years ago when we met. I could not have done it without you. I love you and am forever grateful God gave me someone as supportive as you.

Acknowledgements

I would first like to acknowledge my Lord and Savior Jesus Christ; without whom I may never have achieved the one long-term goal I have ever set for myself: becoming a doctor.

I would also like to acknowledge my family for their patience and understanding every time I was in my office working on schoolwork and not engaging in life with them.

Finally, I would like to acknowledge Dr. Kennedy and Dr. Sanders. These wonderful and patient professors guided me and gently pushed me through to the end. I would have been lost without their support.

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List of Abbreviations

Minnesota (MN)

Department of Human Services (DHS)

Performance-based Incentive Payment Program (PIPP)

Long-term care (LTC)

Patient Health Questionnaire-9 (PHQ-9)

Collaborative Institutional Training Initiative (CITI)

The Patient Health Questionnaire (PHQ)

Section One: Introduction

Depression is a major health issue in the elderly population and is a leading cause of disability (Jonsson et al., 2016). If not treated, depression leads to emotional distress, decreased quality of life, and death (Anderson, Wickramariyaratne, & Blair, 2016; Krishnamurthy & Telles, 2007; Vankova et al., 2014). In Minnesota (MN), the Department of Human Services (DHS) currently offers a Performance-based Incentive Payment Program (PIPP) to nursing homes that demonstrate improvement and meets quality goals for resident quality of life (MN DHS, 2019a). One of these goals deals with depression. The purpose of this project was to implement and evaluate a wellness program or wellness intervention to improve depression in a long-term care (LTC) area of a nursing home in the Midwest part of the U. S.

Background

In 2015, the estimated number of older adults residing in nursing homes or LTC facilities in Australia, Germany, the United Kingdom, and the United States was 3.2% - 5.3% (Syed Elias, Neville, & Scott, 2015). Malaysia came in low at only 0.08%. In 2015 there were 1.3 million residents in MN nursing homes (Centers for Disease Control and Prevention, 2016).

In nursing homes and long-term care environments, depression is a serious concern that remains persistent (Crespy, Van Haitsma, Kleban, & Hann, 2016, p. e76). Depression often accompanies moving to a long-term care facility (Syed Elias et al, 2015). Fakhari (2017, p. 679) states that approximately 50% of nursing home residents experience mild depression. Other sources have reported it as high as 81.8%% (Syed Elias et al., 2015; Simning & Simons, 2017; Chen, Huang, Cheng, & Chang, 2015). Depression is costly and raises an older adults' risk for poor health-related outcomes, psychological distress, dementia, and functional impairment; it also increases their risk of mortality and suicide (Chen et al., 2015; Taylor, 2014, as cited in

Yoon, Moon, & Pitner, 2018; Wu, Sung, Lee, & Smith, 2015). In the presence of mild cognitive impairment, depression rates range from 36% to 63% (Leng et al., 2018, p. 809). Therefore, this topic is important due to the magnitude of those affected, especially considering that by the year 2025, 20.1% of the population will be 65 years of age or older (Lee et al., 2017, p. 14).

Problem Statement

In the midwestern nursing home of interest, 4.9% of residents displayed depressive symptoms during the reporting year from October 2017 through September 2018 (MN DHS, 2019b). DHS updates this nursing home report card quarterly. The finding from this report ranked the facility 237 of 352 where ranking number one is the best or has the least number of residents who display depressive symptoms. According to the facility's nursing manager, 44% of the population at this facility has a diagnosis of depression (J. A. Smith, Personal Communication, July 22, 2019). When people come to LTC in a skilled nursing facility because they didn't pass their rehabilitation quickly enough after hospitalization, subsequently losing the ability to return home or return to their assisted living, they experience anger and depression and are unable to cope (J. A. Smith, Personal Communication, March 27, 2019). The facility is currently working on a PIPP project centered around "depression symptoms, behavioral symptoms, and quality of life aspects that have to do with relationships" (A. Tong, Personal Communication, March 27, 2019). The intervention in this project fits into the larger PIPP project as a resident-centered care plan intervention. As of the writing of this report, the PIPP project is still continuing for another nine months.

Purpose of the Project

The purpose of this scholarly project was to determine if an exercise-based wellness program or intervention would reduce depression experienced by residents in a long-term skilled

nursing facility. The desired outcome of the project was the reduction in depression or depressive symptoms of the residents, thereby increasing quality of life. Therefore, the project leader partnered with the facility of interest, as well as a consulting organization that was working with a cooperative group of LTC facilities, to implement and evaluate an exercise/movement-based wellness program intervention to reduce depression or the expression of depressive symptoms of the residents.

Clinical Question

Using the PICO format for stating a clinical question, the population of interest (P) is LTC residents in a skilled nursing facility. The intervention (I) for the population was an exercise/movement-based wellness program intervention. This scholarly project did not require a control (C) for comparison. The desired outcome (O) written as the clinical question was: For residents in a skilled nursing facility, would an exercise/movement-based wellness program intervention decrease depression or depressive symptoms?

Section Two: Literature Review

The review of literature for this project A review of the literature focused on exercise-based and movement-based interventions directed towards reducing depression in residents living in an LTC facility. included a search for 25 articles relevant to the clinical question stated above. The 25 articles included in the review appear in appendix A on the evidence table.

Search strategy and analysis follow below.

Search Strategy

For the articles represented in this document, the search strategy included the use of the CINAHL Plus with Full Text, Gale OneFile (Nursing and Allied Health), Medline with Full Text, OVID, ProQuest (Nursing & Allied Health Database) databases accessed using the Liberty

University's on-line Jerry Falwell Library, as well as the "search anything" function. This function searches all databases included in the library and prevents the need to select specific databases. The search parameters included a five-year date range, scholarly and peer-reviewed journal articles, and available on-line access. Search terms for this grouping of articles included "exercise and depression in elderly residents," "chair yoga and depression in elderly residents," "nurse led exercise for elderly depression," and "exercise for elderly depression."

Critical Appraisal

Within the 25 articles reviewed for depression interventions, 21 distinct types of interventions occurred. Some interventions occurred alone while others combined one or more types. The labels used for the exercise interventions were steps/walking/treadmill, floor seated or chair-seated elastic/resistance band, Tai Chi, Yoga, bicycle/cycling, free weights/weight machines, rhythmic, dance, Pilates, stretching, balance, strength, flexibility, Baduanjin (Chinese gymnastics), functional, hand movements, aerobic, and restorative care. Non-specified exercise/activity also occurred.

Strengths, weaknesses, and limitations.

An analysis of the strengths, weaknesses, and limitations of the reviewed articles revealed that only two of the articles specifically listed strengths of their research and results (Leng et al., 2018; Telenius, Engedal, & Bergland, 2015). Identified strengths included selection methods, associations analyzed, high attendance, low dropout rate, basic gym equipment that is simple, inexpensive, and non-threatening, and the use of local physiotherapists. One article was a systematic review (Leng et al., 2018) and the other article was a single randomized controlled study (Telenius, Engedal, & Bergland, 2015).

All but four of the 25 articles listed limitations of the studies conducted. Common themes that emerged from the four systematic reviews included varied protocols/heterogeneity, inclusion/exclusion criteria resulting in the possibility of excluding helpful studies, publication bias and lack of generalizability. Small sample sizes, and different measurement tools also received mention. Common limitation themes emerging from the single study articles included small sample size, lack of generalizability, and sample selection bias. Other limitations receiving mentions included non-blinded study, inability to control all factors, inability to randomize participants, short study period, lack of long-term follow-up, depression not listed as an inclusion criterium, and major depression list as an exclusion criterium.

Methods.

Multiple method types occurred in the 25 reviewed articles. Three of the 25 articles reviewed were systematic reviews (Leng et al., 2018; Simning & Simons, 2017; Yoon et al., 2015). Twelve of the articles were single randomized controlled trials (Arrieta et al., 2018; Chen et al., 2015; Chen, Kuo, Chang, Huang, & Cheng, 2017; Choi & Sohng, 2018; Krishnamurthy & Telles, 2007; Kwon et al., 2017; Lok, Lok, & Canbaz, 2017; Tarazona-Santabalbina et al., 2016; Telenius, Engedal, & Bergland, 2015; Tse, Tang, Wan, & Vong, 2014; Vankova et al., 2014; Xu, Li, & Yao, 2016). Three articles described controlled studies (Ahmed, 2019; Castro Coelho, Goncalves de Mota, Fernandes, Fonseca, Pinto Matos, & Mourao-Carvalho, 2019; Kurdi & Flora, 2019). Five articles were cohort or case-controlled studies (Fakhri, 2017; Lee et al., 2017; Mokhtari, Nezakatalhossaini, & Esfarjani, 2013; Perez-Sousa, Olivares, Gonzalez-Guerrero, & Gusi, 2020; Roh, 2016). All five were pretest-posttest studies. Hutchinson et al. (2016) was the only single descriptive study. The final article was both a systematic review and an expert opinion (de Souto Barreto et al., 2016).

Results.

All 21 single study articles demonstrated a positive effect on depression after the intervention. Eleven of the articles demonstrated a statistically significant effect on depression. Pilates appeared in two of these studies (Mokhtari et al., 2013; Roh, 2016). Elastic resistance bands appeared in three studies (Chen et al, 2015; Chen et al, 2017; Tse et al., 2014). Rhythmic exercise or dance also appeared in three studies (Kwon et al., 2017; Vankova et al., 2014; Xu et al., 2015). Traditional Eastern practices such as yoga, Tai Chi, and Baduanjin appeared in three of the studies (Fakhari, 2017; Krishnamurthy & Telles, 2007; Xu et al., 2015). Ahmed (2019) studied progressive resistance exercise with significant results as well.

The remaining ten studies demonstrated a positive effect on depression although it was not statistically significant. Interestingly, while rhythmic exercises and music noted in the studies above had significant results, Lok et al. (2017) and Castro Coelho et al. (2019) did not. They had positive results that were not statistically significant. Two studies looked at walking (Arrieta et al., 2018; Perez-Sousa et al., 2020). Perez-Sousa et al. (2020) also included intermittent group exercises. Kurdi and Flora (2019) studied treadmill use. Choi and Sohng (2018) studied floor-seated exercises. Finally, three studies used multicomponent interventions (Hutchinson et al., 2016; Lee et al., 2017; Tarazona-Santabalbina et al., 2016; Telenius et al., 2015). The combination article was not a study but a set of recommendations from an expert panel taskforce report after a systematic review and showed mixed results for the interventions in the review (de Souto Barreto, 2016). The results of the three systematic reviews are shown below and are also included in the discussion section of this report.

Of the three systematic reviews, one concluded that individual interventions were more effective than group interventions (multiple types of interventions including exercise-based

interventions) (Yoon et al., 2015). Additionally, they discovered that one study using group exercises did not yield positive results. One systematic review did not specifically state if the exercise intervention was a group or individual intervention, but did conclude that both long-term and short-term, as well as aerobic and mixed type exercise significantly reduced depressive symptoms of cognitively impaired residents (Leng et al., 2018). They also found that the improvement was not significant for mildly cognitive impaired residents. The final systematic review indicated that the exercise and movement/activity-based interventions reduced depression symptoms; however, one of the interventions in the review did not (Simning & Simons, 2017). As for de Souto Barreto et al. (2017), their review also found mixed results, some with significant reduction of depression symptoms and some with no effect.

Length and duration of each intervention also varied by activity. Interventions ranged from 15 to 90 minutes per session, and from one to seven times per week. The durations varied from 28 days to 12 months. For the individual single studies, Kurdi and Flora (2019) had the shortest intervention at 15 minutes daily for 28 days. Castro Coelho et al. (2019) studied the longest daily intervention which lasted 90 minutes three times per week. Hutchinson et al. (2016) and Perez-Sousa et al. (2020) studied the longest intervention duration which was 12 months.

The most common intervention length for the single studies was 50 minutes (Lee et al., 2017; Kwon et al., 2017; Perez-Sousa et al., 2020; Roh, 2016). Other intervention lengths included 40 minutes (Chen et al, 2015; Chen et al, 2017), 60 minutes (Mokhtari et al., 2013; Tse et al., 2014; Vankova et al., 2014), 65 minutes (Tarazona-Santabalbina et al., 2016), 70 minutes (Lok et al., 2017), and 75 minutes (Krishnamurthy & Telles, 2007). Four studies listed a range of

time for their interventions (Ahmed, 2019; Choi & Sohng, 2018; Fakhari, 2017; Telenius et al., 2015).

The most common repetition for the single study interventions was three times per week (Castro Coelho et al. 2019; Chen et al, 2015; Chen et al, 2017; Fakhari, 2017; Mokhtari et al., 2013; Perez-Sousa et al., 2020; Roh, 2016). Other repetitions included daily (Arrieta et al., 2018; Kurdi & Flora, 2019), one time per week (Tse et al., 2014), two times per week (Ahmed, 2019; Kwon et al., 2017; Lee et al., 2017; Telenius et al., 2015; Vankova et al., 2014), four times per week (Choi & Sohng, 2018; Lok et al., 2017), five times per week (Tarazona-Santabalbina et al., 2016), and six times per week (Krishnamurthy & Telles, 2007).

de Souto Barreto et al. (2017) recommended two levels of time and duration. Level one was to get sedentary residents moving. For this level they recommended residents move two to five minutes per day, two to three times per day; this could be something as simple as walking to the dining room versus riding in a wheelchair. Level two was for interventions when needed. For this level, they recommended 35-45 minutes per day, two times per week. They also recommended customizing the program for each resident as needed.

Synthesis

This review of 21 single studies and four systematic reviews identified that implementation of exercise or movement-based interventions decreased depressive symptoms in the elderly regardless of location (community or long-term care), cognitive status, or ambulatory status. The review identified 21 distinct exercises or movement-based activities. While there is some evidence available that demonstrated non-significant improvement or no improvement, the majority of sources contained in this review demonstrated significant improvement in depressive symptoms with a movement-based activity.

Conceptual Framework

The conceptual framework guiding this literature review and scholarly project was *The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care*, or Iowa Model for short. Approval to use this framework is located in appendix B. This framework guided the project by providing “multiphase change process with feedback loops” to aid in making decisions that affected patient outcomes (Melnyk & Fineout-Overholt, 2015, p. 283).

Using the framework, the facility hosting this scholarly project identified a priority trigger. The facility is participating in a state initiative, which was one of the identified triggers on the model (Iowa Model Collaborative, 2017). This identified trigger was determined to be a priority of the organization, leading to the formation of a team to address the concern. The next step in the Iowa model was to state the question or purpose (Iowa Model Collaborative, 2017). The stated question for this trigger was outlined in the PICO question: For resident in a skilled nursing facility, would an exercise/movement-based wellness program intervention decrease depression or depressive symptoms? This led to the assemblance and synthesis of the preceding literature review. According to the framework, the results of the synthesis determined there was sufficient evidence to move ahead with a change in practice (Iowa Model Collaborative, 2017). Descriptions of desired outcomes, baseline and final data, intervention design, implementation, and evaluation appear in future sections.

Summary

There was some conflicting evidence on using exercise interventions to reduce depressive symptoms in residents of long-term care. However, a comprehensive view demonstrated that exercise, in general, resulted in a statistically significant positive effect on depression. This limited review did not include other intervention studies that exist in the literature. The findings

from this review indicated that there is enough evidence to support implementing an exercise/movement-based intervention for the reduction of depressive symptoms in the LTC facility hosting this scholarly project. The purpose statement was to determine if a wellness program or intervention would reduce depression in residents of a long-term skilled nursing facility. Following the recommendations from the literature, this scholarly project aimed to evaluate the effectiveness of a wellness program on depression in residents at a long-term care facility.

Section Three: Methodology

Design

This project was an evidence-based practice improvement project or scholarly project. According to Melnyk and Fineout-Overholt (2015), an evidence-based practice implementation project is a clinical project created in response to the identification of a clinical problem that uses existing research findings to improve care. As mentioned in section two, this project utilized the guidance of the Iowa Model framework. After determining sufficient evidence to move ahead with a change in practice, the Iowa model indicated piloting a practice change as an essential next step in the process (Iowa Model Collaborative, 2017; Melnyk & Fineout-Overholt, 2015). Therefore, this was a scholarly project implementing a wellness program in a long-term care facility with baseline and follow-up data, as well as outcome measures. The facility measures these outcomes and data on a regular basis.

The wellness program was open to all residents residing at the facility and followed some of the second-level recommendations of de Souto Barreto et al. (2017) to establish specific guideline for exercise training for long-term care facility residents. Following these recommendations, the chosen established fitness program consisted of two days of chair

exercises lasting 30 minutes, including a warm-up and a cool-down. The program chosen did not include a strength component but was set to music. Appendix C is a copy of the program formula for the class. The desire of the facility leadership was that facility staff would sustain the long-term translation of the intervention after the conclusion of the project.

Measurable Outcomes

In this project, baseline data included residents' current level of risk for depression on a standard depression tool. The current tool used by the facility is the Patient Health Questionnaire-9 (PHQ-9). The primary outcome of interest was a drop of the PHQ-9 score. The facility administers the PHQ-9 on a quarterly basis with each residents' minimum data set (MDS) or more frequently on an as-needed basis.

Setting

The setting for this project was an LTC nursing home located in a suburban area of the Midwest. As noted in the introduction, depression affects many of the residents residing in LTC. As previously indicated, 44% of the residents from this facility have a diagnosis of depression. This project aligns with the mission of the facility as they participate in a PIPP project funded by a grant from the MN DHS. The project centers around "depression symptoms, behavioral symptoms, and quality of life aspects that have to do with relationships" (A. Tong, Personal Communication, March 27, 2019). The facility provided a letter of support for the project which is located in appendix D.

Population

The population of focus for this scholarly project were long-term care residents located in the chosen facility. The facility has 120 beds designated for long-term care use and 40 beds for short-term care use. This was a convenience sample of only the long-term care residents as they

live in the facility where the project occurred. This population was ideal for this type of project because an estimated 50% of nursing home residents receive medication to treat depression (Rosen, 2014).

Ethical Considerations

The protection of human subjects is of utmost importance in any scholarly project. For the purposes of this project, an evidence-based practice improvement project, the project leader obtained IRB approval with exempt status as the project did not involve human subjects research. The IRB approval letter is located in appendix E. The project leader had completed the research ethics training through the Collaborative Institutional Training Initiative (CITI), and the certificate is located in appendix F. The facility collects the outcome measures on a scheduled basis, which the project leader used to report success or failure of this scholarly project; therefore, there was no need to obtain consent from the residents. All collected data were not for public viewing and were kept confidential. Any data reported in this document are void of identifying resident information.

Data Collection

Data collection for this scholarly project consisted of historical PHQ-9 reports. These same reports provided post-intervention data to identify success or failure of the practice change. The team leader did not have access to pull data from the electronic health record system, so the facility nursing manager provided data and the facility granted permission to have access to this data. See appendix D for the permission statement provided by the facility located within the letter of support.

Tools

The PHQ-9 is a tool used to assess and monitor the severity of depression (Blackwell & McDermott, 2014). There is no permission requirement to use the PHQ-9 (Pfizer, 2010). A copy of the tool is located in appendix G.

The PHQ-9 began as a three-page self-administered questionnaire known as The Patient Health Questionnaire (PHQ) (Kroenke, Spitzer, & Williams, 2001). From this larger document, the depression module, now known as the PHQ-9, measures the nine criteria for depression from *Diagnostic and Statistical Manual of Mental Disorders (4th ed.)* (Blackwell & McDermott, 2014; Kroenke et al, 2001). The tool has a specificity score and sensitivity score of 88% (Kroenke et al, 2001). However, Blackwell and McDermott (2014) stress that while the tool has established itself as a practice tool for monitoring depression severity, the tool alone is not sufficient to confirm a diagnosis of depression and a follow-up must occur.

Intervention

As mentioned above, this project ran concurrently to a larger PIPP project in which the facility, as a part of a larger collaborative, introduced a new depression protocol into practice. This also included new care plans for depression utilizing person-centered interventions. The intervention for this scholarly project was the Chair One Fitness program. According to the program creator, “Chair One Fitness is a comprehensive chair exercise program designed for individuals who have complications standing during a fitness regimen” (Chair One Fitness, n.d.b., para. 1). This program has received accreditation from five fitness and activity certification organizations. The accrediting bodies are National Certification Council for Activity Professionals, National Council for Therapeutic Recreation Certification, National Academy of Sports Medicine, Aerobic and Fitness Association of America, and National

Certification Council for Dementia Practitioners (Chair One Fitness, n.d.a.). The owner of the Chair One Fitness program requires certification to teach this program. The teaching certificate obtained by the team leader after attending the training course is located in appendix H. The intervention fit into the larger PIPP project as part of the care-planning process for those individuals identified as moderate or high-risk for depression. The intervention was available to all residents, regardless of risk for depression, and the PHQ-9 continued for all residents in their normal frequency.

The step-by-step process for this scholarly project began with the state initiative as a trigger in the facility using the Iowa model, along with the need to improve the residents' quality of life. A literature search occurred to identify evidence-based exercise and movement-based interventions known to successfully reduce depression and depressive symptoms in nursing home residents. The project received IRB approval, and facility leadership collected pre-intervention data. The scholarly project student leader and two recreational therapists received training to become certified Chair One Fitness instructors at the expense of the facility. The implementation of the fitness program occurred twice a week for three months.

Timeline.

The timeline of events are as follows. Successful defense of the project proposal occurred August 18, 2019 and IRB approval occurred August 22, 2019. Baseline data collection occurred October 1, 2019 by the activity director; however, the team leader did not receive the data. Implementation of the intervention occurred October 26, 2019. The nursing manager pulled another set of data on November 7, 2019 and presented this to the team leader as pre-intervention data instead of the October data. The intervention occurred a total of 3 times before obtaining that data. Included in the November 7th data were PHQ-9 scores obtained after

October 26th; however, it is unknown if those residents attended the intervention as the project did not follow specific residents. Implementation of the fitness intervention occurred for three months and the nurse manager obtained post-intervention data on February 3, 2020. The historical and follow-up data underwent data analysis to determine the effect on depression or depressive symptoms beginning February 3, 2020, and dissemination of the results occurred summer of 2020. Translation into permanent practice was the last step and occurred immediately as the other two team members are facility recreation therapists and obtained certification to teach the intervention with the DNP student. Final project defense occurred summer of 2020.

Data Analysis

The data analysis for this scholarly project included statistical analysis of PHQ-9 scores before and after implementation of the intervention. Data analysis occurred using the Excel software from Microsoft.

One of the appropriate data analysis techniques for this type of data set is a paired t-test (Marshall, Boggis, Patel, Emmett, & Owen, n.d.). A paired t-test compares before and after paired data. In this situation, examination of PHQ-9 data occurred before and after an intervention. Additionally, the paired t-test determines if statistically significant changes occur post-intervention. Other statistical analysis techniques employed were the mean, median, and mode of the baseline and post-intervention PHQ-9 scores of the residents. Finally, the Pearson correlation coefficient with T statistic and p value determined if there was a correlation between the number of times a resident attended class and their post-intervention PHQ-9 score.

PHQ-9 Outcomes.

The initial PHQ-9 data included scores for 28 residents. A PHQ-9 score ranges from 0-27, with zero indicating no depression and 27 indicating severe depression. The lowest score recorded in this data set was zero, and the highest score recorded in this data set was 8, indicating this data set included residents in the depression severity ranges of no depression, minimum depression, and mild depression. No residents included in the pre-intervention data had moderate, moderately severe, or severe depression.

After the intervention, the facility provided 101 residents' post-intervention PHQ-9 scores. When obtaining post-intervention data, some of the residents no longer appeared on the list. Additionally, some of the residents who did appear on the both lists did not have a post-intervention PHQ-9 score because it was not time for their routine evaluation. Removal of these residents' scores from the pre-intervention data resulted in 19 scores remaining. The use of unblinded resident data ensured the availability of appropriate data to pair.

Measurable Outcome

The PHQ-9 assessment tool for depression measured the level of depression experienced by each resident before and after the three-month implementation of the Chair One exercise class. This is a well-established tool for monitoring the risk for depression and/or depression severity. This provided concrete measurable resident data to perform quantitative data analysis as demonstrated in the following section.

Section Four: Results

Using the pre- and post-intervention PHQ-9 scores described above, the team leader used select descriptive statistics to further analyze the data. Descriptive statistics describe the

information collected (Sullivan, 2018). Also included below is some inferential statistics which allowed for some generalizations about the population based on the same data.

Descriptive Statistics

As described above, there were originally 28 resident data points for the PHQ-9 scores. All data analysis described below occurred using Microsoft Excel. The first analysis performed on this data were the mean, median, and mode scores. The mean, median, and mode scores were 2.5, 2, and 0, respectively. Upon collection of the post-intervention data, as well as discovering the need to alter the data 28 to 19 residents for reasons described above, the new pre-intervention mean, median, and mode scores were 2, 1, and 0, respectively. Post-intervention data for the 19 residents for mean, median, and mode were 2.11, 2, and 0, respectively. To run a paired T test, selection of pre- and post-intervention scores for the 19 residents occurred. The paired T test results were 0.82 demonstrating a non-significant negative change. In fact, the mean PHQ-9 scores went up by 0.11.

When analyzing the change in the residents' depression scores, nine residents had no change in their PHQ-9 scores, five residents had positive changes in their PHQ-9 scores, and five residents had a negative change in their PHQ-9 score. Score changes ranges from 1 to 4 points in either direction. Residents that had no change in their PHQ-9 scores attended Chair One class 0, 2, 5, 8, 11, 13, of 15 times. Residents that had a positive change in their PHQ-9 scores attended 0 or 1 times. Residents with a negative change in their PHQ-9 scores attended class 1, 2, 10, or 19 times. Figure 1 shows the PHQ-9 scores before and after the intervention along with the recorded attendance.

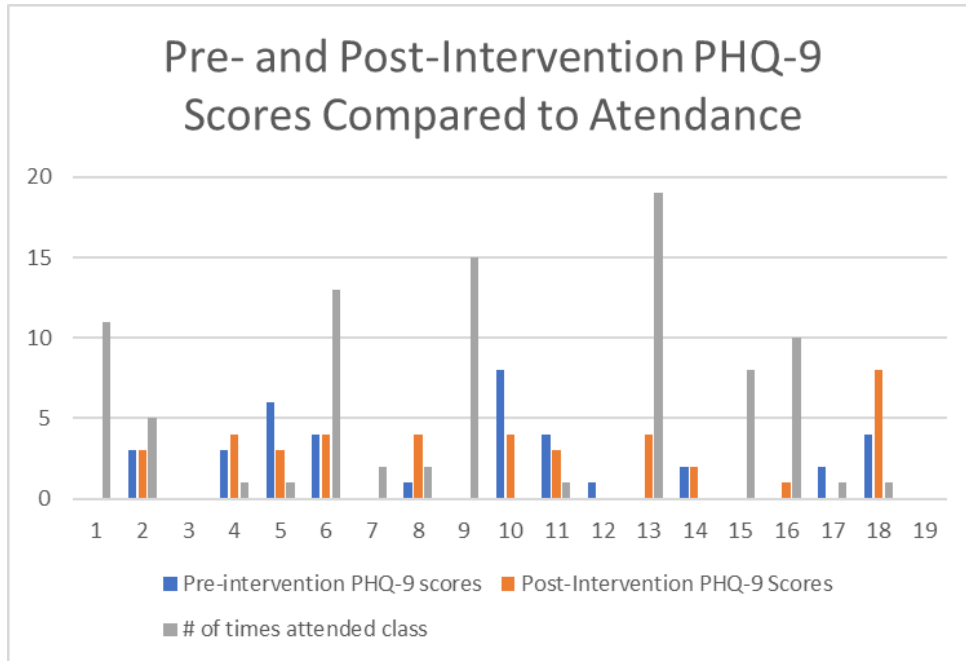


Figure 1. Comparison of PHQ-9 data. The absence of a blue or orange line indicates a PHQ-9 score of zero. The absence of a grey line indicates the resident did not attend the intervention.

This prompted analysis of a Pearson Correlation Coefficient to determine if any correlation between intervention attendance and post-intervention PHQ-9 scores occurred. The Pearson Correlation Coefficient was -0.04. This indicates there is little to no correlation between attending the intervention and the post-intervention PHQ-9 score of the residents. What small correlation that may exist was a negative correlation; the p value of 0.86 confirms this.

Analysis of the PHQ-9 score changes by sub-group resulted in the following descriptions. Eight of the residents began the intervention time-period with no depression. Of those residents, all but two residents had no change in their score. Both residents that did have score changes had a negative score change and moved to the minimal depression range. Nine residents began the intervention time-period with minimum depression. Three residents had no change in scores, two residents had a positive change in score and moved to the no depression range, one resident had a positive change in score and remained in the minimal range, two residents had a negative change in scores but remained in the minimal range, and one resident had a negative change in

score and moved to the mild depression range. Only two residents began the intervention time-period in the mild depression range. Both residents had a positive change in the PHQ-9 score moving to the minimal depression range. Interestingly, one resident did not attend the Chair One class during the intervention time-period and the other attended one time.

Measurable Outcome

The desired outcome for this scholarly project was a decrease in PHQ-9 scores of residents that participated in the Chair One intervention. A decrease in this score indicates that the resident's risk of experiencing depression is improving. As noted above, some residents improved, some worsened, and some stayed the same. During this three-month intervention time period, viable pre-and post-intervention data were available for 19 residents. Data demonstrated that PHQ-9 scores increased on average by 0.11 points and no correlation or an exceedingly small negative correlation existed between the number of times a resident attended the intervention and their post-intervention PHQ-9 score.

Section Five: Discussion

The purpose of this scholarly project was to determine if an exercise-based wellness program or intervention would reduce depression experienced by residents in a long-term skilled nursing facility. Unfortunately, the team was unable to demonstrate that the Chair One Fitness program, implemented as a practice change project, had a correlational effect on depression scores of residents in a midwestern long-term nursing care facility. Despite the findings, the facility continued to sustain the fitness program beyond the study period.

Implication for Practice

Literature demonstrates increased activity/movement will help decrease depression, and that increased depression typically leads to a decrease in activity/movement. Aktürk, Aktürk, &

Erci (2018) reported that depression score alone had the greatest effect on the level of physical activity in the elderly. In addition to the literature already mentioned in the literature review section above, McDowell, Dishman, Hallgren, and MacDonncha (2018) and de Oliveira et al. (2018) also found that physical activity had a positive effect on depression, especially for men.

While this particular intervention needs further direct research to determine its effectiveness on depression scores, there are still important implications for nursing. Specifically, it is important for nurses to be knowledgeable about the link between depression and activity/movement, and how each affects the other. Nurses should also share this knowledge and educate their residents about this link as part of care planning. Additionally, educating residents on the diverse types of activity and movement available provides an opportunity for residents to participate in making choices; this is an important part of patient-centered care and care planning. When residents have a variety of activity/movement-based options to choose from based on desires, preferences, and capabilities, there is greater adherence and joy in participating in the activity. When depression decreases, quality of life increases.

Sustainability

Chair One certified instructors teach the Chair One fitness class. To become certified in Chair One Fitness, one must attend an all-day training session conducted by the Chair One founder or another instructor. The project leader and two of the team members attended this course prior to the implementation of the Chair One intervention. This certification as a Chair One fitness instructor is good for one year and then requires renewal. The two team members who obtained certification in Chair One Fitness work for the facility where the project occurred, which allows for long-term sustainability of the fitness course at this facility. The facility added

the fitness course to the activities schedule as a permanent activity available to the residents twice per week.

Dissemination Plan

The plan of dissemination for this scholarly project and the results include publication in the Scholarly Crossings at Liberty University and a manuscript publication in a gerontological nursing journal. Additional dissemination options considered were poster and podium presentations at conferences on the elderly. Finally, the participating facility and the founder of the intervention received the results.

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Appendix A

Evidence Table

Name: Christine M Larson

Clinical Question: For resident in a skilled nursing facility, would an exercise/movement-based wellness program intervention decrease depression or depressive symptoms?

Article Title, Author, etc. (Current APA Format)	Study Purpose	Sample (Characteristics of the Sample: Demographics, etc.)	Methods	Study Results	Level of Evidence (Use Melnyk Framework)	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
Ahmed, M. A. (2019). The effects of home based progressive resistance exercises on depression of elderly adults. <i>Indian Journal of Physiotherapy and Occupational Therapy, 13</i> (2), 100-104. doi:10.5958/0973-5674.2019.00054.6	To determine if serotonin-induced neurogenesis promoted recovery from depression	A recruited sample of 30 older adults from community dwelling homes	An experimental study	Both active range of motions (control group) and progressive resistance exercise (experimental group) showed significant decreases in	Level 3: Controlled trial	Those with major depressive disorders were not included, sample size is small, and long-term follow-up was not completed.	Does provide some evidence that exercise and movement are effective in reducing signs and symptoms of depression

				depression. However, the findings demonstrated that resistance exercise was more effective in decreasing depression			in older adults
Arrieta, H., Rezola-Pardo, C., Echeverria, I., Iturburu, M., Gil, S. M., Yanguas, J. J., . . . Rodriguez-Larrad, A. (2018). Physical activity and fitness are associated with verbal memory, quality of life and depression among nursing home residents: Preliminary data of a randomized controlled trial. <i>BMC Geriatrics</i> , 18(1), 80-80. doi:10.1186/s12877-018-0770-y	To evaluate the association between physical fitness and physical activity, and cognitive performance, quality of life, and risk of depression in long-term care residents	A sample of 114 residents from ten nursing homes	A randomized study	Findings indicate that muscle strength and physical activity are factors associated with better performance on a depression scale	Level 2: Randomized study	Failed to consider other variables of depression; limited by being only a cross-section, and not generalizable to all nursing home residents	Does provide evidence for implementing interventions to increase strength and physical activity in nursing homes to improve emotional functioning
Castro Coelho, E. M., Goncalves de Mota, M. P., Fernandes, Fonseca, S. C., Pinto Matos,	To examine the effects	A sample of 42 residents	A longitudinal and	Findings indicate that music and	Level 3: Controlled trial	Small sample size and	Does provide evidence

<p>A., & Mourao-Carvalho, M. I. (2019). Exercise with music: An innovative approach to increase cognition and reduce depression in institutionalized elderly. <i>Journal of Sport Psychology</i>, 29(1), 49-56.</p>	<p>of music plus movement and cognitive training on cognition and depression in the elderly</p>	<p>from two nursing homes</p>	<p>quasi-experimental design</p>	<p>movement was more effective in reducing depression than cognitive training.</p>		<p>representation; lack of randomized groups with double-blind interventions,</p>	<p>that movement mixed with music significantly reduces depression in nursing home residents</p>
<p>Chen, K., Huang, H., Cheng, Y., Li, C., & Chang, Y. (2015). Sleep quality and depression of nursing home older adults in wheelchairs after exercises. <i>Nursing Outlook</i>, 63(3), 357-365. doi:10.1016/j.outlook.2014.08.010</p>	<p>To test the effect of elastic-band exercises on depression (and sleep) of wheelchair-bound adults in nursing homes</p>	<p>A convenience sample of 114 resident from ten nursing homes</p>	<p>A cluster randomized controlled trial</p>	<p>Findings indicated a significant drop in depression scores in the wheelchair-bound senior elastic band exercise program group</p>	<p>Level 2: Randomized study</p>	<p>A convenience sample was used; randomizing was done by clusters versus true participant randomization and not all in the cluster participated; no significant difference in participant demographics, but there was</p>	<p>Does provide evidence that elastic band exercises decrease depression in wheelchair-bound older adults in nursing homes.</p>

						significant differences in outcome variables which may have affected statistical results	
Chen, K., Kuo, C., Chang, Y., Huang, H., & Cheng, Y. (2017). Resistance band exercises reduce depression and behavioral problems of wheelchair-bound older adults with dementia: A cluster-randomized controlled trial. <i>Journal of the American Geriatrics Society</i> , 65,356–363. doi:10.1111/jgs.14526	To test the effects of a resistance band exercise program on depression and behavioral problems of wheelchair bound older adults with dementia	A convenience sample of 120 wheelchair-bound residents from eight nursing homes	A single-blind, cluster randomized controlled trial	Findings demonstrated that the Wheelchair-bound Senior Elastic Band exercise program were significantly less depressed than the control group after both stage 1 (six months with live instructor) and after stage 2 (9	Level 2: Randomized controlled trial	A convenience sample was used; after some participants dropped out, an unequal cluster size weakened the reliability; Safety became a concern in the DVD stage based on how the DVD was projected; possible biased intra-rater	Does provide evidence that a movement program using resistance band decreases the depression of wheelchair bound nursing home residents with dementia.

				months with a DVD).		reliability, during stage two; decrease in depression became less but remained significant	
Choi, M., & Sohng, K. (2018). The effects of floor-seated exercise program on physical fitness, depression, and sleep in older adults: A cluster randomized controlled trial. <i>International Journal of Gerontology</i> , 12(2), 116-121. doi:10.1016/j.ijge.2017.06.003	To determine the effect of a floor-seated exercise program (adapted from a sitting yoga program for wheelchair-bound nursing home residents) on depression (along with physical strength	A convenience sample of 63 older adults from six senior community centers	A cluster randomized controlled study with pre-posttest design	Finding indicate that the mean depression scores were reduced in the exercise group	Level 2: Randomized study	Flexibility of non-dominant shoulder and wrist could not be improved; unable to control for confounding factors; 90% of participants were women so unable to generalize to men; larger study needed to reduce seasonal effects	Does provide evidence that a yoga-based floor-seated exercise program reduces depression scores.

	and sleep) of older adults in senior community centers						
de Souto Barreto, P., Morley, J. E., Chodzko-Zajko, W., Pitkala, K. H., Weening-Djiksterhuis, E., Rodriguez-Mañas, L., . . . Rolland, Y. (2016). Recommendations on physical activity and exercise for older adults living in long-term care facilities: A taskforce report. <i>Journal of the American Medical Directors Association, 17</i> (5), 381-392. doi:10.1016/j.jamda.2016.01.021	To define strategies to increase physical activity and establish exercise guidelines for residents in long-term care facilities (LTCFs)	Systematic reviews	Results of a taskforce of experts	Findings specific to depression included an overall positive effect of exercise on depressive symptoms for those living in LTCFs; some results were mixed. Recommendations were organized into two groups: first-level recommendations to reduce sedentary behaviors	Level 1: Systematic review and Level 7: Expert opinion	None listed; however, authors recommend further random-controlled studies to confirm the recommendations	Does provide some evidence that exercise has a significant effect on depressive symptoms and gives recommendations to implement an exercise program

				and second-level recommendations to establish specific guidelines for sub-groups.			
Fakhari, M. (2017). Effects of tai chi exercise on depression in older adults: A randomized controlled trial. <i>Bali Medical Journal</i> , 6(3), 679-683. doi:10.15562/bmj.v6i3.706	To investigate the effect of Tai Chi on depression of elderly nursing home residents	A sample of 62 older adults in a single nursing home	A pre-test, post-test experimental study	Tai Chi significantly reduced depression scores compared to the group only doing activities of daily living. Possible related to the social interaction, not improvement of fitness.	Level 4: Case-control or cohort study	The sample only contained healthy residents who were able to exercise; types of depression were not determined; residents took medications known to contribute to depression, which were not controlled for in the study.	Does provide evidence that Tai Chi had an effect on reducing depression.

<p>Hutchison, S. L., Terhorst, L., Murtaugh, S., Gross, S., Kogan, J. N., & Shaffer, S. L. (2016). Effectiveness of a staff promoted wellness program to improve health in residents of a mental health long-term care facility. <i>Issues in Mental Health Nursing</i>, 37(4), 257-264. doi: 10.3109/01612840.2015.1126774</p>	<p>To determine the impact of a health promotion program on physical and mental health outcomes</p>	<p>A sample of 43 volunteer adults from three long-term care facilities</p>	<p>A prospective descriptive study</p>	<p>Findings indicate that the health promotion program increased physical activity and decreased depression in long-term care residents with serious mental illness.</p>	<p>Level 6: Single descriptive study</p>	<p>Small, non-randomized sample and trial; sample was predominantly male; no information on sustained behaviors</p>	<p>Does provide some evidence that working with a professional trainer to set physical activity goals can reduce depressive symptoms.</p>
<p>Krishnamurthy, M. N., & Telles, S. (2007). Assessing depression following two ancient Indian interventions: Effects of yoga and Ayurveda on older adults in a residential home. <i>Journal of Gerontological Nursing</i>, 33(2), 17-23.</p>	<p>To evaluate the effects of a yoga program (and an Ayurveda herbal preparation) on depression scores.</p>	<p>A stratified sampling of 69 older residents of a single residential home for the aged.</p>	<p>Randomized study</p>	<p>Findings indicate the yoga group had a significant decrease in depression scores</p>	<p>Level 2: Randomized study</p>	<p>Small sample size; single ethnicity group with no chronic health problems affects generalizability</p>	<p>Does provide evidence that yoga reduces depression in older people in an institution</p>
<p>Kurdi, F. N., & Flora, R. (2019). Physical exercise increased brain-derived neurotrophic factor in elderly population with depression. <i>Macedonian</i></p>	<p>To assess the role of physical exercise on the</p>	<p>A sample of 70 women in an elderly community</p>	<p>An experimental study</p>	<p>Findings indicate that physical exercise increased</p>	<p>Level 3: Controlled trial</p>	<p>None listed</p>	<p>Does provide some evidence that physical</p>

<p><i>Journal of Medical Sciences</i>, 7(13), 2057-2061. doi:10.3889/oamjms.2019.574</p>	<p>Brain-Derived Neurotrophic Factor (BDNF) of the elderly with depression</p>	<p>, 35 with depression and 35 without depression</p>		<p>BDNF levels in both groups, but the percent of increase was more significant in the depressed group</p>			<p>exercise can raise BDNF which, when low, is a contributing factor of depression in the elderly.</p>
<p>Kwon, I., Song, J., Kim, D., Son, J., Shim, Y., & Shin, W. (2017). Comparison of rhythmic and non-rhythmic aerobic exercises on depression and balance in the elderly. <i>Physical Therapy Rehabilitation Science</i>, 6(3), 146–151. https://doi.org/10.14474/ptrs.2017.6.3.146</p>	<p>To investigate the effect of rhythmic exercise on depression and balance in the elderly</p>	<p>A sample of 19 independently living elderly women who could also walk independently</p>	<p>A randomized controlled trial</p>	<p>Findings indicated both rhythmic and non-rhythmic exercises significantly improved depression</p>	<p>Level 2: Randomized controlled trial</p>	<p>Only included females</p>	<p>Does provide evidence that exercise, whether rhythmic or non-rhythmic, helps to improved depression</p>
<p>Lee, P., Yang, Y., Huang, C., Hsiao, C., Liu, T., & Wang, C. (2017). Effect of exercise on depressive symptoms and body balance in the elderly. <i>Educational Gerontology</i>, 43(1), 33-44. doi:10.1080/03601277.2016.1260905</p>	<p>To investigate the effect of an exercise intervention on depression (and body-balance) in</p>	<p>A purposive sample of 21 male veterans in a single nursing home</p>	<p>A quasi-experimental pre and posttest study</p>	<p>Finding indicated a trend of decreasing depression in the exercise group but not to the</p>	<p>Level 4: Case-control or cohort study</p>	<p>Small purposive sample size; not generalizable to women; could not provide a science-</p>	<p>Does provide evidence that an exercise program will reduce depression scores</p>

	institutionalized elderly people			level of significance		based exercise prescription ; long-term follow-up study needed	
Leng, M., Liang, B., Zhou, H., Zhang, P., Hu, M., Li, G., . . . Chen, L. (2018). Effects of physical exercise on depressive symptoms in patients with cognitive impairment: A systematic review and meta-analysis. <i>The Journal of Nervous and Mental Disease, 206</i> (10), 809-823. doi:10.1097/NMD.0000000000000887	To examine the effect of physical exercise on depressive symptoms in older adults with cognitive impairment	Random controlled studies of patients with mild cognitive impairment receiving a physical activity intervention with depressive symptoms measured in the outcomes	Systematic Review	Findings indicated physical activity had a positive effect and improved depressive symptoms. Aerobic exercises showed greater benefit than mixed type exercises as well as long-term exercises over short-term exercise.	Level 1: Systematic review	Studies exhibited differences in type, frequency, and duration of exercises; patients included had low level of depressive symptoms; there were differences in measurement tools; lack of focus on the association between depressive symptoms	Does provide evidence to suggest that physical activity has positive effects on depressive symptoms and improves quality of life, activities of daily living, and neuropsychiatric symptoms

						and type of cognitive impairment	
Lok, N., Lok, S., & Canbaz, M. (2017). The effect of physical activity on depressive symptoms and quality of life among elderly nursing home residents: Randomized controlled trial. <i>Archives of Gerontology and Geriatrics</i> , 70, 92-98. doi:10.1016/j.archger.2017.01.008	To determine the effects of a Physical Activity Program on depression (and quality of life) of elderly individuals in a nursing home	A sample of 80 elderly people in a single nursing home	A randomized control experimental pretest-posttest study trial	Findings indicated that the depression scores of the Physical Activity Program group decreased	Level 2: Randomized study	Convenience sample and interaction with the program individuals because they also worked at the facility	Does provide evidence that a Physical Activity Program (warm-up, rhythmic exercise, cool down, and free walking time) reduces depression scores
Mokhtari, M., Nezakatalhossaini, M., & Esfarjani, F. (2013). The effect of 12-week Pilates exercises on depression and balance associated with falling in the elderly. <i>Procedia - Social and Behavioral Sciences</i> , 70, 1714-1723. doi:10.1016/j.sbspro.2013.01.246	To investigate the effect of Pilates exercise on depression (and balance) in the elderly	A random sample of 30 elderly women from a rehabilitation center	A quasi-experimental pretest-posttest study	Findings indicated that Pilates reduced depression levels by 19.801%, which is significant	Level 4: Case-control or cohort study	Women only and small sample size	Does provide evidence that Pilates reduces depression scores

<p>Perez-Sousa, M., Olivares, P., Gonzalez-Guerrero, J., & Gusi, N. (2020). Effects of an exercise program linked to primary care on depression in elderly: Fitness as mediator of the improvement. <i>Quality of Life Research.</i>, 29(5), 1239–1246. https://doi.org/10.1007/s11136-019-02406-3</p>	<p>To analyze the effects of an exercise program on depression level and physical fitness in middle-aged and older adults in the community</p>	<p>A sample of 377 identified and referred adults, 50 years of age and older, from 67 municipalities who had at least mild depression, no medical or cognitive conditions, and functionally independent</p>	<p>A pre- and post-test exploratory analysis</p>	<p>Findings showed a considerable decrease in depression scores for those in the exercise group and compared to the control group</p>	<p>Level 4: Case-control or cohort study</p>	<p>Not a randomized controlled trial; large difference between group sizes; no randomization in assigned participants to a group</p>	<p>Does provide evidence that the fitness program used does decrease depression in older adults</p>
<p>Roh, S. (2016). Effect of a 16-week Pilates exercise program on the ego resiliency and depression in elderly women. <i>Journal of Exercise Rehabilitation.</i>, 12(5), 494–498. https://doi.org/10.12965/jer.1632704.352</p>	<p>To examine the effect of a Pilates exercise program on ego resiliency and</p>	<p>A sample of 148 women aged 60 years and older who were recruited from</p>	<p>A pre- and post-test study</p>	<p>Findings demonstrated a statistically significant decrease in depression after the testing</p>	<p>Level 4: Case-control or cohort study</p>	<p>None listed</p>	<p>Does provide evidence that Pilates decreases depression in elderly women and is supported</p>

	depression in elderly women	multiple Pilates programs		period of 16 weeks			by the conclusions from the Mokhtari, Nezakatalhossaini, & Esfarjani, (2013) study listed above
Simning, A., & Simons, K. V. (2017). Treatment of depression in nursing home residents without significant cognitive impairment: A systematic review. <i>International Psychogeriatrics</i> , 29(2), 209-226. doi:http://dx.doi.org.proxy.liberty.edu/10.1017/S1041610216001733	To evaluate random control trials in nursing facilities targeting depression of residents without dementia	Random control trial articles published in English and conducted in nursing homes that evaluated the treatment of depression of residents 65 years and older with mild to no cognitive impairment	Systematic Review	Findings indicate that the following interventions help reduce depression in residents of skilled nursing facilities: Cognitive behavioral therapy, reminiscence, interventions to reduce social isolation, and exercise-based	Level 1: Systematic review	Lack of high-quality studies; only studies written in English were included; did not include non-random controlled trials	Does provide evidence that exercised-based interventions reduce depression

				interventions			
Tarazona-Santabalbina, F. J., Gómez-Cabrera, M. C., Pérez-Ros, P., Martínez-Arnau, F. M., Cabo, H., Tsaparas, K., Salvador-Pascual, A., ... Viña, J. (2016). A Multicomponent Exercise Intervention that Reverses Frailty and Improves Cognition, Emotion, and Social Networking in the Community-Dwelling Frail Elderly: A Randomized Clinical Trial. <i>Journal of the American Medical Association</i> , 17(5), 426–433. https://doi.org/10.1016/j.jama.2016.01.019	To ascertain if an exercise program improves frailty, functionality, cognitive and emotional status, social networking, and biological markers of frailty in older persons	A sample of 100 sedentary and frail older adults aged 70 and older with slow gait, who lived in the community	An interventional, controlled simple randomized study	Findings demonstrate the multicomponent exercise program reduces depression scores.	Level 2: Randomized study	Limited follow-up time; intervention group had a higher prevalence of arthrosis	Does provide evidence that a multicomponent exercise program reduces depression
Telenius, E. W., Engedal, K., & Bergland, A. (2015). Effect of a high-intensity exercise program on physical function and mental health in nursing home residents with dementia: An assessor blinded randomized controlled trial. <i>PLoS ONE</i> .10(5), e0126102.	To investigate the effect of a high intensity functional exercise program on balance in nursing home	A sample of 170 nursing home residents from 18 locations, aged 55 and above, with mild or	An assessor blinded randomized controlled trial	Findings demonstrate a reduction in depression scores; however, the discussion of mental health	Level 2: Randomized study	Limited to residents who could stand independently or with assistance from one person and walk 6 meters	Does provide some evidence that the high intensity functional exercise program decreases

doi:10.1371/journal.pone.0126102	residents with dementia, and to explore any effect of physical functional exercise on performance of muscle strength, mobility, activities of daily living, quality of life, neuropsychiatric symptoms, and depression	moderate dementia who could stand up and walk		centered on the reduction of apathy which, contributes to depression.		independently or with a walker only; nursing staff may have completed some questionnaires	depression scores
Tse, M. M. Y., Tang, S. K., Wan, V. T. C., & Vong, S. K. S. (2014). The effectiveness of physical exercise training in pain, mobility, and psychological well-being of older persons living in nursing homes. <i>Pain</i>	To investigate the effect of a physical exercise program (PEP) on	A sample of 396 older persons from ten nursing homes	A randomized-controlled study	Findings indicate that the PEP (15-minute warm-up and 45-minute exercise	Level 2: Randomized study	Program was only delivered once per week for eight weeks; no measure of	Does provide evidence that an exercise program reduces depression

<p><i>Management Nursing</i>, 15(4), 778-788. doi:10.1016/j.pmn.2013.08.003</p>	<p>psychological function (as well as pain and mobility) of older residents of nursing homes</p>			<p>training of different types: elastic bands, balancing, towel dance, self-administered acupressure, and massage) significantly reduced depression scores</p>		<p>resident activity outside of class; personal attention to the experimental group but not the control group</p>	
<p>Vankova, H., Holmerova, I., Machacova, K., Volicer, L., Veleta, P., & Celko, A. M. (2014). The effect of dance on depressive symptoms in nursing home residents. <i>Journal of the American Medical Directors Association</i>, 15(8), 582-587.</p>	<p>To evaluate the effect of a dance intervention designed for a long-term care center on symptoms of depression of older adults</p>	<p>A sample of 162 residents from seven nursing homes</p>	<p>A randomized controlled trial</p>	<p>Findings indicate the dance intervention significantly reduced depression scores</p>	<p>Level 2: Randomized study</p>	<p>Most participants were women, limiting generalizability to men; lack of delayed follow-up to determine maintenance over time; sample selection</p>	<p>Does provide evidence that a dance intervention can decrease depressive symptoms in nursing home residents</p>

						was not random; cognitively impaired residents were excluded	
Xu, W., Li, M., & Yao, J. (2016). Intervention of collective exercise on the mental health of elderly hypertensive patients. <i>Iranian Journal of Public Health</i> , 45(3), 314-321.	To provide a reference of the rehabilitation on treatment of hypertension, to formulate social pension services, and to improve the mental health of the elderly (collective exercise interventions of Baduanjin (Chinese gymnastics) and	A random sample of 115 hypertensive elderly patients identified from a cardiovascular internal medicine department of a hospital.	A random controlled study	Findings indicate the depression scores of the intervention group were significantly lowered	Level 2: Randomized study	None explicitly listed	Does provide some evidence that exercise reduces depression in elderly patients with hypertension

	elderly ballroom dancing.						
Yoon, S., Moon, S. S., & Pitner, R. (2018). Effective treatments of late-life depression in long-term care facilities: A systematic review. <i>Research on Social Work Practice, 28</i> (2), 116-130. doi:10.1177/1049731515621165	To identify systematic studies that examine the effects of interventions designed to reduce the depressive symptoms in depressed older adults living in long-term care settings	Intervention studies within the last eight years that focused on depression of older adults in nursing homes and assisted living homes.	Systematic Review	Findings indicated no universal intervention for the non-pharmacological treatment of depression in residents of nursing homes and long-term care facilities was identified. Instead, when treated early, several approaches had outcomes that reported significant decreases in depression	Level 1: Systematic review	This review was limited in its ability to “generalize the appropriateness of effective interventions” (p. 128).	Does provide evidence to support the idea that making a change using any evidence-based intervention will reduce depression in resident of nursing homes and long-term care facilities when enacted early.

				(including exercise and physical activity interventions).			
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*Appendix B***Approval to Use the Iowa Model Revised: Evidence-Based Practice to Promote Excellence
in Health Care****Larson, Christine**

From: Kimberly Jordan - University of Iowa Hospitals and Clinics <noreply@qualtrics-survey.com>
Sent: Monday, July 22, 2019 9:28 PM
To: Larson, Christine
Subject: Permission to Use The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care

You have permission, as requested today, to review and/or reproduce *The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care*. Click the link below to open.

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Citation: Iowa Model Collaborative. (2017). Iowa model of evidence-based practice: Revisions and validation. *Worldviews on Evidence-Based Nursing, 14(3)*, 175-182. doi:10.1111/wvn.12223

In written material, please add the following statement:
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Please contact UIHCNursingResearchandEBP@uiowa.edu or 319-384-9098 with questions.

Appendix C

Chair One Program Formula

CHAIR ONE FITNESS

FORMULA

The Chair One Fitness formula includes song selection, breakdown of choreography, mastering a playlist, what should be included in each playlist, and the "how" and "why" we keep a class fun and effective.

- 1. upper body Dominant
 - 2. lower body Dominant
 - 3. Combo - Both
 - 4. Interactive - *clapping, responses, singing, stamping*
- High Intensity
Low Intensity
- watch for PSD + sensory disturbances

Class Format

- Warm-up
- Workout
- Cooldown
- 45 min Session
- Warm-Up 10min
- Workout 25min
- Cool Down 10min
- 30 min Session
- Warm-up 8min
- Workout 17min
- Cool Down 5min

ADLS
Cardio
ROM

Can extend to 60min
Do not decrease to less than 30min

* Interactive/Student Engagement

This MUST be included in every class.
Examples: Clapping, Call and Response

Music

Music selection should cater to the demographic being taught

Music Volume

Timeless + of their time or Gospel

*See next page for sample class breakdown and music breakdown.

Modifications

- Increase Reps
- Decrease Reps
- Lower Volume
- Decrease ROM
- Change direction
(cut to side to straight out front)

* Double knee lifts + touching floor are only for independent active adults

*Appendix D***Letter of Support**

6/3/2019

Liberty University,

Ramsey County Care Center is delighted to welcome Christine Larson DNP student to our facility to complete the scholarly project *Wellness and Coping of Residents in a Skilled Nursing Facility*. This project fits well with our current Minnesota Department of Human Services (MN DHS) Resident Centered Behavioral Health project which focuses on the implementation of behavioral health strategies for residents residing in long-term care facilities. Ramsey County Care Center supports this project as it aligns with the Minnesota DHS quality indicators which measures depressive symptoms, as well as aligning with the depressive symptoms protocol step of developing care plans that address socialization, opportunities for exercise, and meaningful activities.

To accomplish this project at our facility, we give permission for Christine to access needed data. Internal data is accessed through our electronic health record and external data which is accessed through the MN DHS website will be provided to her on a monthly basis.

, Administrator

Ramsey County Care Center

2000 White Bear Ave.
Maplewood, MN 55109
Phone (651) 777-7426
Fax (651) 777-1426
www.co.ramsey.mn.us

*Appendix E***IRB Approval Letter****LIBERTY UNIVERSITY.**
INSTITUTIONAL REVIEW BOARD

August 22, 2019

Christine M Larson
IRB Application 3960: Wellness and Coping of Residents in a Skilled Nursing Facility

Dear Christine M Larson,

The Liberty University Institutional Review Board has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study does not classify as human subjects research. This means you may begin your research with the data safeguarding methods mentioned in your IRB application.

Your study does not classify as human subjects research because evidence-based practice projects are considered quality improvement activities, which are not considered "research" according to 45 CFR 46.102(d).

Please note that this decision only applies to your current research application, and any changes to your protocol must be reported to the Liberty IRB for verification of continued non-human subjects research status. You may report these changes by submitting a new application to the IRB and referencing the above IRB Application number.

If you have any questions about this determination or need assistance in identifying whether possible changes to your protocol would change your application's status, please email us at irb@liberty.edu.

Sincerely,

Administrative Chair of Institutional Research
Research Ethics Office

LIBERTY
UNIVERSITY.
Liberty University | Training Champions for Christ since 1971

*Appendix F***CITI Training Certificate**

Completion Date 19-May-2019
Expiration Date 18-May-2022
Record ID 31651328

This is to certify that:

Christine Larson

Has completed the following CITI Program course:

Biomedical Research - Basic/Refresher (Curriculum Group)
Biomedical & Health Science Researchers (Course Learner Group)
1 - Basic Course (Stage)

Under requirements set by:

Liberty University

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?wa9d798aa-ea08-4ee4-a216-9d73781ddcb0-31651328

Appendix G

Patient Health Questionnaire-9

PATIENT HEALTH QUESTIONNAIRE (PHQ-9)

NAME: _____ DATE: _____

Over the last 2 weeks, how often have you been bothered by any of the following problems? (use "✓" to indicate your answer)

	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself—or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed. Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead, or of hurting yourself	0	1	2	3

add columns + +

(Healthcare professional: For interpretation of TOTAL, TOTAL: please refer to accompanying scoring card).

10. If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?	Not difficult at all	_____
	Somewhat difficult	_____
	Very difficult	_____
	Extremely difficult	_____

PHQ-9 Patient Depression Questionnaire

For initial diagnosis:

1. Patient completes PHQ-9 Quick Depression Assessment.
2. If there are at least 4 ✓s in the shaded section (including Questions #1 and #2), consider a depressive disorder. Add score to determine severity.

Consider Major Depressive Disorder

- if there are at least 5 ✓s in the shaded section (one of which corresponds to Question #1 or #2)

Consider Other Depressive Disorder

- if there are 2-4 ✓s in the shaded section (one of which corresponds to Question #1 or #2)

Note: Since the questionnaire relies on patient self-report, all responses should be verified by the clinician, and a definitive diagnosis is made on clinical grounds taking into account how well the patient understood the questionnaire, as well as other relevant information from the patient.

Diagnoses of Major Depressive Disorder or Other Depressive Disorder also require impairment of social, occupational, or other important areas of functioning (Question #10) and ruling out normal bereavement, a history of a Manic Episode (Bipolar Disorder), and a physical disorder, medication, or other drug as the biological cause of the depressive symptoms.

To monitor severity over time for newly diagnosed patients or patients in current treatment for depression:

1. Patients may complete questionnaires at baseline and at regular intervals (eg, every 2 weeks) at home and bring them in at their next appointment for scoring or they may complete the questionnaire during each scheduled appointment.
2. Add up ✓s by column. For every ✓: Several days = 1 More than half the days = 2 Nearly every day = 3
3. Add together column scores to get a TOTAL score.
4. Refer to the accompanying PHQ-9 Scoring Box to interpret the TOTAL score.
5. Results may be included in patient files to assist you in setting up a treatment goal, determining degree of response, as well as guiding treatment intervention.

Scoring: add up all checked boxes on PHQ-9

For every ✓ Not at all = 0; Several days = 1;
More than half the days = 2; Nearly every day = 3

Interpretation of Total Score

Total Score	Depression Severity
1-4	Minimal depression
5-9	Mild depression
10-14	Moderate depression
15-19	Moderately severe depression
20-27	Severe depression

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A2662B 10-04-2005

Appendix H

Chair One Teaching Certificate

CHAIRONE
F I T N E S S





Presented to

Christine Larsen

OFFICIAL CHAIR ONE FITNESS INSTRUCTOR

Chair One Fitness established through Chair One Fitness LLC
This document certifies that the above named person has successfully participated in an official Chair One Fitness 8 HOUR Instructor Training and is authorized to offer Chair One Fitness classes, for so long, as the Instructor is a Chair One Instructor Member in good standing. Go to www.chaironefitness.com/findaninstructor to verify that instructor license is valid.

10/12/2019
DATE


Alexis Perkins
ALEXIS PERKINS
CREATIVE DIRECTOR

LOCATION OF TRAINING: Cannon Falls Library 305 Mill Street, West Cannon Falls, Minnesota 55009
ALL RIGHTS RESERVED BODY BY ALEXIS LLC. CHAIRONE FITNESS