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DNP Final Report: PROMOTING PHYSICAL ACTIVITY IN NURSE STUDENTS

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PROMOTING PHYSICAL ACTIVITY IN NURSE STUDENTS

by

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A DNP Final Report submitted in partial fulfillment
of the requirements for the degree of
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School of Nursing

Cheryl D. Parker, PhD, RN-BC, CNE, Committee Chair

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This is to certify that the Doctoral Scholarly Project Report of

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PROMOTING PHYSICAL ACTIVITY IN NURSE STUDENTS

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Undergraduate nursing students experience educational rigor and challenging clinical experiences that potentially affect stress levels and increase the risk for adverse mental and physical health outcomes. Prolonged stress is associated with emotional exhaustion, unhealthy coping mechanisms, unhealthy behaviors, and impaired functioning. This evidence-based practice project aimed to decrease undergraduate nursing students' perceived stress levels by promoting physical activity.

The PICOT question that led this project was in undergraduate nursing students (P), how does the promotion of physical activity (I) compare to no promotion of physical activity (C) affect perceived stress (O) across one semester (T)? The evidence supports physical activity as a non-pharmacological therapy that can reduce stress and positively impact academic performance and resilience.

During the implementation process, students self-enrolled in an online course, completed the Qualtrics Perceived Stress Scale, and reported their weekly minutes of physical activity before and after the intervention. It included evidence-based strategies to increase physical activity, the Move Your Way® campaign resources, and weekly synchronous online belly dance classes.

The outcomes and evaluation confirmed that various kinds of moderate-intensity activity decrease stress. Following eight weeks, participant’s stress levels reduced significantly, as in the body of evidence. Three ten-minute physical activity study breaks sessions a day can help the students attain the

minimum physical activity guidelines for Americans of 150 minutes per week of moderate physical activity.

Chapter One

Nature of the Problem

Healthy lifestyle behaviors affect individual overall health and well-being. Students establish lifestyle patterns during college that they may maintain throughout their lives. Melnyk et al. (2014) confirmed that physical activity (PA) behavior during senior years in college strongly predicts continuing PA behavior after graduation. The evidence is well-established that regular PA improves overall health and produces long-term benefits. Nevertheless, the American College Health Association (2022) reported that more than 50% of students do not achieve the amount of weekly PA recommended by Physical Activity Guidelines for Americans (PAG, 2018). The annual cost of inadequate PA is estimated to be above $117 billion in health care costs and about 10% of premature mortality (PAG).

Nursing education requires academic rigor and clinical skills that increase stress for students. Prolonged stress can be associated with negative physical and psychological consequences, including emotional exhaustion, unhealthy coping mechanisms, unhealthy behaviors, and loss of functioning (Bischoff et al.,2019). The physical stress experienced by nurses includes long patient care hours and the tasks of moving, standing, and ambulating clients. Meyer and Larson (2017) explained that health promotion efforts on college campuses support student health, and physical activity is one behavior that can reduce stress and impact academic performance. Regular physical activity is a behavior that works as a protective factor against illness, improves self-esteem and body image, decreases stress, improves motor balance, provides social interaction, and is considered non-pharmacological therapy (San Roman-Mata et al., 2020).

To provide excellence in nursing education, promoting self-care practices as a learned approach will show students how to manage their stress during their training and professional life post-graduation. Promoting self-care practices such as physical activity will also empower the students to

teach and encourage self-care practices to their patients, potentially transforming lives. This paper describes an evidence-based practice (EBP) implemented to increase physical activity and decrease stress in nursing students.

Significance of the Problem

External Evidence

The American College of Health Association (NCHA III, 2022) reported the prevalence of mental health disorders in college students. The most common conditions that negatively impact the academic performance of students were stress (43.7%), anxiety (37.3%), depression (27.5%), attention deficit/hyperactivity (12.8%), and post-traumatic stress disorder (4.3%). Unhealthy coping mechanisms identified included the use of alcohol (71%), the use of tobacco or nicotine delivery products (33.1%), and the nonmedical use of cannabis products (41.9 %). Being overweight or obese was reported in 37.9% of students. Unfortunately, only 43.8% of college students met the American Heart Association Guidelines for physical activity (NCHA III, 2022).

According to American Nurses Association's ([ANA], 2017) Health Risk Appraisal data from 2013 to 2016, the health of America's nurses is worse than that of the average American. ANA suggested that nurses are more likely to be overweight, have higher stress levels, and get less than the recommended hours of sleep. Nurses reported low physical activity and leisure time (Bischoff et al., 2019; Torquati et al., 2019). The authors warned that stress could lead to burnout, potentially increasing medication errors, patient falls, infections, and patient and family complaints (Bischoff et al.,2019).

ANA (2017) said 82% of nurses identified workplace stress as the top environmental health and safety risk. It reported that 51% of nurses were experiencing musculoskeletal pain at work, and 45% ranked lifting and repositioning heavy objects as a significant health and safety risk for nurses. Sah et al. (2022) recognized the association between stress and low back pain and noted musculoskeletal injuries

are a significant cause of suffering and disability among nurses. Sah et al. (2022) also stated that it is worrisome that nurses often neglect to seek treatment.

The American Association of Colleges of Nursing (AACN, 2021) published the Essentials Core Competencies for Professional Nursing Education. It provides a framework for nursing education, including areas of competence and domains essential to nursing practice. AACN (2021) domain 10 relates to personal, professional, and leadership development. This domain participates in activities that foster personal health, resilience, and well-being. AACN (2021) stated that new approaches to nursing education are needed to prepare the future nursing workforce. A new approach to nursing education should include prioritizing self-care practices such as nutrition, physical activity, sleep and rest, and stress management interventions.

Internal Evidence

Internal evidence included anecdotal consensus opinion from the nursing faculty that observed perceived stress of students increase exponentially throughout the semester. The faculty leadership group wanted to expose nursing students to stress management interventions. Melnyk and Fineout-Overhold (2019) explained that clients' wishes, and group consensus opinions based on facts and experiences should be considered internal evidence.

The evidence-based practice (EBP) project selected the Perceived Stress Scale (PSS) to validate the need and quantify the intervention (Cohen et al., 1983). The PSS is a list of 10 questions that measure the individual's level of perceived stress. The PSS was administered anonymously before and following the physical activity intervention. The pre-intervention survey was administered at the beginning of the semester when stress was expected to be the lowest. In the preintervention survey result, 17.94% of students scored in the low-stress range, 71.79% in the moderate-stress range, and 10.25% in the high-stress range.

Background of the Problem

Description of the Issue

Nurses' well-being is fundamental to America's health (ANA, 2017), and nurses are the most significant subset of healthcare workers. The female gender is predominant in nursing (92% female) (ANA, 2017; Chust-Hernández et al., 2021). Females reported higher stress levels than males and lower physical activity (Chust-Hernández et al., 2021). The ANA (2016) confirmed that nurses are not meeting the 2018 Physical Activity Guidelines (PAG) for Americans of 150 minutes or more of moderate-intensity PA per week, 75 minutes of vigorous-intensity PA, or the equivalent combination. The PAG also recommends two or more days a week of moderate or greater-intensity activities that involve all major muscle groups.

Bischoff et al. (2019) stated that nursing is physically and emotionally demanding. Challenges such as overtime and irregular shifts disrupt the circadian rhythm, leaving little time for self-care practices. Bischoff et al. (2019) warned that stress could cause fatigue, diminished quality of life, substance abuse, and suicide. Davidson et al. (2020) longitudinal analysis of nurse suicide in the United States from 2005-2016 suggested female nurses are at greater risk of suicide than the general population and reported a total of 1,824 nurse suicides and 152,495 non-nurse suicides over those 11 years.

Predictors/Related Factors

Stillwell et al. (2017) explained that undergraduate nursing college students experience educational rigor and challenging clinical experiences that affect their stress and anxiety levels, impacting their mental and physical health. They further explained that students might also have other personal challenges that increase their stress load, including financial needs, family responsibilities, time management, role responsibilities, relationships, and learning how to interact with patients. Li et al.

(2018) suggested that nursing student stress may also include questioning values, exploring religion, and concerns about the professional future, all while dealing with academic competition and clinical experiences.

Barriers to PA in university students included a lack of safe exercise areas and low self-efficacy in exercise (Mehri et al., 2016), lack of time, inconvenient schedules of exercise facilities, exercise not fitting around study or plans, and a lack of social support (Blake et al., 2016). Family responsibilities, financial needs, time management, and relationships were reported as top student priorities (Stillwell et al., 2017). Gender differences in the engagement of PA were apparent in that males may be more active than female students (Rodrigo-Munoz et al., 2020; Mehri et al., 2016). Furthermore, the increased physical inactivity associated with learning during the COVID-19 pandemic may have exacerbated stress levels. The pandemic associated increase in sedentary time, as seen when sitting in front of a computer screen, associated with poor mental health (Dogra et al., 2018).

Organization, Setting, and Culture

The selected population for this project was adult undergraduate nursing students (UGNS) from The University of Texas at Tyler School of Nursing (UTT SON). UTT SON has a shared governance structure with bylaws and several councils that make collaborative decisions for UTT SON. It offers classes throughout the year, including the summer semester, and the students do not have a prolonged break between semesters. The mission statement of the UTT SON is "to empower students to excel as nurse clinicians, leaders, and scholars in a caring, learner-centered, strengths-based environment." The values of the UTT SON are "caring, excellence, the spirit of inquiry, professionalism, integrity, and leadership" (UTT SON, n.d.). The key stakeholders, the students, faculty, UTT SON dean, and associate deans, supported the project. The potential barrier to the project was the lack of student participation.

Demographics of the student population at the UTT SON per gender were 40.68% male, 59.32% female, 54% full-time, and 46% part-time. The student population was 71% undergraduate students. Racial ethnicity was 58% White, 18% Hispanic, 10% Black or African American, and the remainder of the population was of other minorities and races of unknown origin. Most, 72% of students were 18-29 years of age (Univstats, 2021).

Search for Evidence-based Interventions

Background Question

The spirit of inquiry arose with the observation that nursing students perceived stress levels increased exponentially throughout the semester and that students appeared to lack self-care practices, including physical activity. Nursing duties require moving, lifting, and assisting clients in ambulating in a high-stress work environment. Therefore, it is important to include physical activity preparation for future nurses. The problem defined in this project was the UGNS' lack of physical activity and high levels of perceived stress which significantly impacted their education process negatively.

Overview of Interventions

A preliminary review of interventions presented several modalities to reduce stress. Mind and body physical activity (PA) interventions such as yoga, qigong, Tai chi (Bischoff et al., 2019; Stillwell et al., 2017; Li et al., 2018; Pascoe et al., 2020; Strehli et al., 2021) were explored in several levels of evidence. Various modalities of PA can activate the aerobic and anaerobic systems, and moderate stress positively affecting the body, well-being, mental health, learning, and resilience. Examples were self-paced walking, cycling, team sports, dancing, conditioning, stretching, resistance training, and exercises with music (Bischoff et al., 2019; Li et al., 2018).

Dogra et al.’s (2018) systematic review on the association of physical activity with depression and stress suggested that physical activity could reduce stress and anxiety and promote positive

emotional well-being. They further explained that the perception of stress decreases with vigorous physical exercise.

Physical activity interventions varied in duration 10, 20, 30-, 45-, 50-, and 60-minutes (Bischoff et al., 2019; Stillwell et al., 2017; Li et al., 2018; Pascoe et al., 2020; Strehli et al., 2021). The Physical Activity Guidelines for Americans (2018) of 150 minutes of moderate physical activity a week (Schuch et al., 2019; San Roman-Mata et al., 2020) was the target in several of the interventions.

Self-monitoring and reporting of physical activity increased engagement (Bischoff et al., 2019; Conn et al., 2010; Schuch et al., 2019; Thorndike et al., 2014; Meier N. & Welch A., 2016; San Roman-Mata et al., 2020). Both systematic reviews, Dogra et al. (2018) and Torquati et al. (2019), suggested that self-reported physical activity interventions could increase engagement and decrease stress. Torquati et al.'s (2019) systematic review on promoting diet and physical activity in nurses indicated that physical activity intervention strategies should include individual-based exercise and self-monitoring of physical activity. Intervention strategies should consist of lectures and workshops about physical activity, social reinforcement, individual planning, and ongoing motivation.

Delivery of intervention was via access to on-site fitness centers and web-based (Greene et al., 2012; Chan et al., 2018, Bischoff et al., 2019). A meta-analysis by Davies et al. (2012) suggested that internet delivery of physical activity interventions effectively decreased stress. Some interventions were individual, while others were group or team-based, providing opportunities for social interaction, relationship building, and support for physical activity (Thorndike et al., 2014; Pascoe et al., 2020; Bischoff et al., 2019). Other valuable suggestions were to identify and deploy a "nurse champion" who provides on-site exercise classes, information about physical activity, individual-based exercise plans, and walking targets.

Interventions & Outcomes Discussion

Compelling evidence reflects the benefits of regular physical activity, including stress reduction. Lack of physical activity and high perceived stress significantly impact the education process. Meyer and Larson (2017) explained that physical activity is one behavior that can reduce student stress and affect academic performance positively. Exercise and acute psychological stressors affect the neuroendocrine system (Bischoff et al., 2019). While stress often harms the cardiovascular system and overall health, exercise training improves the cardiovascular system and can be an efficient physiological way of regulating stress. Regular physical activity protects against illness and risky behaviors, enhances self-esteem and body image, improves motor balance, and provides social interaction (San Roman-Mata et al., 2020).

Various instruments have been used to assess and quantify stress. Examples included the Perceived Stress Scale (PSS), the Chinese version of the Questionnaire on Medical Worker Stress, the Nursing Stress Scale, the Depression, Anxiety, and Stress Scale, the 12-item General Health Questionnaire (GHQ), the ACHA-NCHA II survey, and the Kessler Psychological Distress Scale. Other outcome measurement tools included the International Physical Activity Questionnaire (IPAQ), and measuring the number of steps and the aerobic minutes of PA per week. The intensities of the physical activity interventions were high, moderate, and low. The outcomes results reported in the body of evidence had no commonality or standardized manner of reporting the results, including studies that used the PSS; however the outcomes presented demonstrated an inverse relationship between moderate PA and stress in all studies.

The ANA (HNHN, 2021) has implemented Healthy Nurse and Healthy Nation™ initiative to improve nurse well-being with lifestyle modification challenges throughout the year. These challenges include nutrition, physical activity, mental health, rest, quality of life, and safety. The American

Association of Colleges of Nursing (AACN, 2021) Essentials Core Competencies for Professional Nursing Education include domains and areas of competence essential to nursing practice. AACN (2021) domain 10 relates to personal, professional, and leadership development. This domain has activities that foster emotional health, resilience, and well-being. Promoting physical activity during college is best practice (Pascoe et al., 2020), and it is considered a non-pharmacological therapy (San Roman-Mata et al., 2020).

Conclusion

Nursing programs require acquiring didactic knowledge and clinical skills, which takes time, energy, and resources that progress throughout the semester. Therefore, student-perceived stress appears to increase throughout the semester. Students must manage their unique challenges, which, when combined with student workload, can increase, or worsen their stress levels. Barriers are present in the attempt for nursing students to commit to being physically fit during their academic training; however, nursing educators as role models for future nurses should advocate, support, and demonstrate that they value self-care practices and health. Universities and nurse educators that support and include health-promoting lifestyles during nursing education may instill the importance of self-care practice in a new generation of nurses.

Chapter Two

Body of Evidence

This EBP project began with locating evidence that reflected best practices for addressing perceived stress through physical activity in nursing students before and following physical activity. Melnyk & Fineout-Overholt (2019) recommended using a general appraisal overview (GAO) and a rapid critical appraisal (RCA) to decide which articles to include in the body of evidence. The GAO and RCA appraisal tools helped select the body of evidence for this project.

Intervention Selection

Promoting physical activity to undergraduate nursing students (UGNS) can improve engagement, overall health, and moderate stress. Nursing students should learn how to prioritize self-care as they transition into the novice registered nursing (RN) role. Promoting physical activity may help them transition into the novice RN role with better tools for stress management. Further investigation was needed to build the body of evidence that supported this project.

PICOT Framework

The following PICOT question guided a comprehensive search of the literature: In undergraduate nursing students (P), how does the promotion of physical activity (I) compared to no promotion of physical activity (C) affect perceived stress (O) across one semester (T)?

Fit, Feasibility, and Acceptability

The UTT SON has a fitness center for students to use free of additional charge. It includes several group exercise classes taught by certified fitness instructors throughout the week, exercise machines, and personnel that can instruct proper form and safe use of the equipment. The fitness center also includes basketball, volleyball courts, an indoor walking/jogging track, a heated pool, and a spa. Implementing a health promotion EBP project that includes physical activity was feasible in this

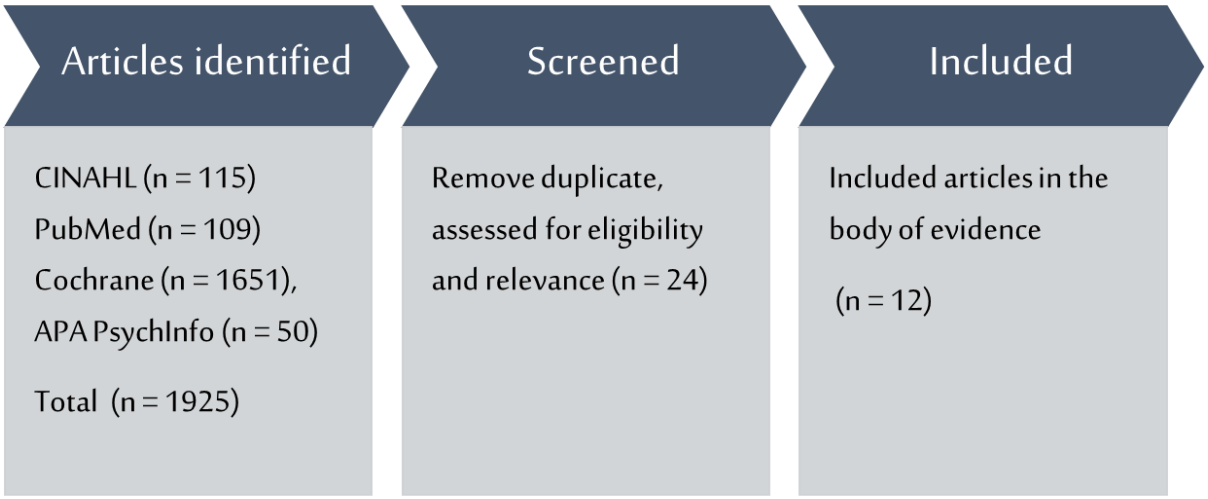
setting. Acceptability of the project implementation during the Covid-19 pandemic required online options other than using the fitness facilities. The UTT SON key stakeholders, nurse students, faculty, UTT SON Dean, and Associate Dean supported the project's implementation.

Evidence Search Process and Results

The four databases searched with this technique were CINAHL, PubMed, Cochrane, APA PsychInfo. Keywords from the PICOT question used for the search were stress, physical activity or exercise, no physical activity or no exercise, interventions, and nursing students across all databases. The systematic search included keywords individually using mesh terms and then combined with the Boolean (and/or) to yield the most relevant articles in each database. Inclusion criteria included articles in English from the last ten years, nursing students, stress, physical activity, exercise, interventions, and adults. All levels of evidence were acceptable using the Melnyk and Fineout-Overholt (2019) method. The selected articles were CINAHL – 115, PubMed – 109, Cochrane – 1651, APA PsychInfo – 50, a total of 1925 articles. Following removing duplicate articles and reviewing articles for eligibility and relevance, 24 articles were selected as keeper studies for critical appraisal.

Figure 1

Systematic Search Results



Evidence Appraisal

Appraisal of Level and Quality of Evidence

Critical appraisal of the evidence is the third step in the EBP process and included examining the studies with an additional lens. Melnyk and Fineout-Overholt (2019) stated that EBP aims to use the highest quality of knowledge by selecting valid research evidence to make decisions. The Rapid Critical Appraisal (RCA) examined the level of evidence and helped determine if the research in the selected articles was reliable, valid, and relevant.

Of the twenty-four articles selected as keeper studies for critical appraisal, 12 were chosen following the necessary appraisal process. Level of evidence one included seven systematic reviews or meta-analyses, level two included two randomized controlled trials, level three included one controlled trial without randomization, and level six included two descriptive studies that formed the body of evidence (BOE). These articles contributed to the project's design, planning, and implementation.

Table 1

Synthesis Table Level of Evidence

Level of Evidence	1	2	3	4	5	6	7	8	9	10	11	12	
I	9 of 17	38 of 38	13 of 13	1 of 12	20 of 29	22 of 26	11 of 13						114
II								X	X				2
III										X			1
IV													
V													
VI											X	X	2
VII													

Legend: 1 = Bischoff 2019; 2 = Chan 2018; 3 = Conn 2010; 4 = Li; 5 = Pascoe 2020; 6 = Strehli 2021; 7 = Schuch 2019; 8 = Greene 2012; 9 = Thorndike 2014; 10 = Meier 2016; 11 = Meyer 2017; 12 = Roman-Mata

Outcomes Based on Evidence

The duration and frequency of physical activity reported as helpful in decreasing stress varied in the studies reviewed. Several studies recommended following the US Dept of Health Physical Activity Guidelines (PAG, 2018) and engaging in 150 minutes of moderate physical activity (PA) weekly to reduce stress (San Roman-Mata et al., 2020; Meyer & Larson, 2017; Schuch et al., 2019). Interestingly, even 10 minutes of physical activity has been shown to reduce stress (Chan et al., 2018).

Moderate to high exercise intensity was effective in most studies (Bischoff et al., 2019; Chan et al., 2018; Meyer and Larson, 2017; San Roman-Mata et al., 2020). Some studies suggested that low-intensity PA may not decrease anxiety or affect mood (Chan et al., 2018; Conn et al., 2918). However,

Pascoe et al. (2020) showed possible mental health benefits for depression and anxiety in adults who engage in lower levels of PA. High-intensity training may potentially increase anxiety (Chan et al., 2018; Pascoe et al., 2020). The presentation of outcomes or data in the body of evidence (BOE) outcomes had no commonality in the manner they reported results.; however, the BOE did demonstrate an inverse relationship between moderate PA and stress.

Table 2

Outcomes

Intervention	1	2	3	4	5	6	7	8	9	10	11	12	Total
Low intensity Physical Activity (PA)	NR	NR	↔	↓S	↓S	↓S	↓S	NR	NR	NR	NR	NR	4
Moderate intensity PA	↓S	↓S	NR	↓S	↓S	↓S	↓S	↓S	↓S	↓S	↓S	↓S	11
High PA intensity	NR	↓S	NR	NR	↓S	NR	NR	↓S	NR	↓S	↓S	↓S	6
Length/ week	6 - 12	8	NR	12	NR	3,6, 8, 12,2 4	NR	10	6 - 12	NR	NR	NR	6-24
Duration/ time/minute	20-60	10-60	NR	20-24	NR	10, 15, 30, 45, 55, 60	150 / wk	NR	NR	10	20, 30	150/ wk	10-60
Self-monitoring	↓S	NR	↓S	NR	NR	NR	↓S	NR	↓S	NR	↓S	↓S	6

Legend: S = stress; ↓= decrease; ↑= increase, NR = not reported, ↔ = no effect; wk = week; 1 = Bischoff 2019; 2 = Chan 2018; 3 = Conn 2010; 4 = Li; 5 = Pascoe 2020; 6 = Strehli 2021; 7 = Schuch 2019; 8 = Greene 2012; 9 = Thorndike 2014; 10 = Meier 2016; 11 = Meyer 2017; 12 = San Roman-Mata

Recommendations for Change

A variety of physical activities (PA) of moderate intensity were effective in reducing stress. Examples were self-paced walking, yoga, cycling, dancing, Tai Chi, conditioning, stretching, resistance training, and exercising to music. The recommended PA duration should be 10-60 minutes per day, and 150 min per week. The recommended PA intensity was moderate. Brief ten-minute periods of exercise were also known to decrease stress. The PA interventions were both individual and group, with group exercising particularly effectively for building relationships and increasing community support. Self-monitoring was a tool to increase engagement, and the delivery was web-based during the Covid-19 pandemic. As demonstrated in the BOE, as physical activity increases, perceived levels of stress decrease.

Conclusion

A health promotion project to increase physical activity during nursing education should support the development of a resilient nurse physically and emotionally. Training nursing students to carry out their academic duties, care for others, and care for themselves should be the standard of practice. Nursing faculty should encourage and promote self-care practice as physical activity training. Three ten-minute study breaks a day could help the students attain the Physical Activity Guidelines for Americans (2018) recommendation of 150 minutes (about 2 and a half hours) of moderate physical activity per week and better manage their perceived stress.

Chapter Three

Project Plan

This chapter highlights Rosswurn and Larabee's model (1999), which guided this project from assessing the need for change to integrating the EBP. The authors constructed this model from theory and research related to EBP, research utilization, and change theory. The project design included the Plan, Do, Study, Act (PDSA) cycle to facilitate change (Institute for Healthcare Improvement, 2021). The EBP project intended to replicate the effect of moderate PA on stress reduction in nursing students.

Project Models

The Rosswurm and Larrabee Practice Model

The Rosswurm and Larrabee model (1999) recognized the organization's influence on the EBP process, and it has six steps that resemble the nursing process. The first step in this model was assessing the need for change, stimulated by the awareness of the challenges of nursing education and the nursing profession. The assessment included stakeholders and internal and external data collection, which showed that nursing students have elevated levels of perceived stress and low levels of physical activity, potentially affecting their educational process adversely.

The second step linked the problem and identified the potential interventions and the outcome indicators (Rosswurm & Larrabee, 1999). The interventions included the promotion of moderate-intensity physical activity (PA), and the outcome indicators were the student's perceived stress, their weekly engagement, and minutes of PA. The Perceived Stress Scale (Cohen et al.,1983) assessed their levels of perceived stress. The students reported their weekly minutes of PA via an online survey.

The third step included synthesizing the best evidence, including the search, critique of the evidence, and assessing the feasibility, benefits, and risks (Rosswurm & Larrabee, 1999). The project's body of evidence reflected best practices for addressing perceived stress through physical activity in

nursing students. A nonstructured weekly online belly dance class offered a novice exercise mode to the previous semester's stakeholders, faculty, and staff. It received tremendous support, and several stakeholders participated and informally voiced the desire to repeat this type of intervention. Using belly dance classes to build a supportive and physically active community was feasible and acceptable.

Step four was the project's design, which included planning the implementation process to meet identified outcomes and resource allocation (Rosswurm & Larrabee, 1999). The project was implemented during the Covid-19 pandemic when no in-person or online physical activity interventions were available to the students. The practice setting was an online platform using the Canvas Instructure and Zoom. The UTT SON had free access to the technology, and all nursing students were invited to participate in the intervention.

The Move Your Way® (MYW®) campaign from the US Department of Health and Human Services, Office of Disease Prevention and Health Promotion (2022) was a resource for this project. The goal of the MYW® campaign was to increase physical activity, and it was encouraged to be used by communities, educators, and health professionals. The MYW® campaign translates into plain language the benefits of meeting the PA Guidelines for Americans (2018) and supported the project by providing tips, education, and graphics for how to meet the recommendations (MYW®, 2022). The MYW® campaign interactive planner helped the students build their weekly physical activity plan. Student incentives included a weekly drawing of belly dance hip scarves. Some of the clinical instructors supported the project by allowing eight clinical hours, one hour a week, for student participation. All the UGNS levels participated in the project. The MYW® campaign posters were attached to strategic places at the UTT SON. The Canvas project platform included a didactic portion about fitness, goal setting, overcoming barriers to PA, and various pre-recorded moderate intensity beginning belly dance classes to be accessible anytime. It had links to the synchronous weekly Zoom belly dance class, surveys, and

the MYW® campaign PA planner and interactive tools. The project connected the weekly reporting of PA links on Canvas and associated it with the application Badgr (2022). The students reported their weekly minutes of PA and received a Badgr as an incentive to participate.

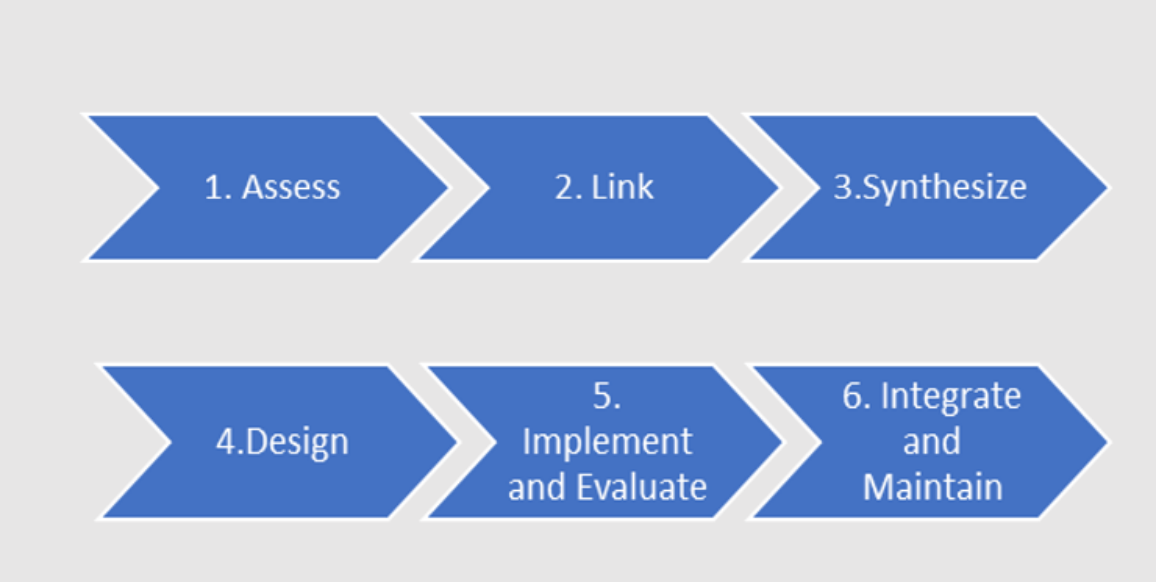
The students could select from several types of moderate physical activity that supported their personal PA goals. A certified physical activity and belly dancer instructor taught a weekly synchronous online belly dance class, bringing the group together and building a PA community. Moderate-intensity belly dance can be an effective mode of exercise that promotes physical and mental health. It has been used since ancient times to help people cope with emotions, reduce stress, and to prepare for childbirth (Leite et al., 2021). Belly dance also improves body awareness, body acceptance, and self-esteem. It strengthens the core muscles, abdomen, pelvis, and back, improving posture, balance, tone of arms, and digestion. It has been shown to decrease fatigue and depressive symptoms and improve the quality of life in women who have breast cancer (Leite et al., 2021).

Step five included implementing and evaluating the pilot project before being reproduced on a larger scale (Rosswurm & Larrabee, 1999). The authors advised reviewing the pilot project's feedback and assessing the process, outcomes, and costs for minor implementation adjustments. After the pilot phase, the data was collected, analyzed, and compared to the baseline for the decision to adapt, adopt, or reject the practice change.

Step six was integrating and maintaining the change through communication, in-services, and education and sharing the recommendations with the stakeholders. When the approval is granted, Rosswurn & Larrabee (1999) suggested educating others about the new practice via in-service and external dissemination with presentations to professional organizations and conferences.

Figure 2

The Rosswurm and Larrabee Practice Model

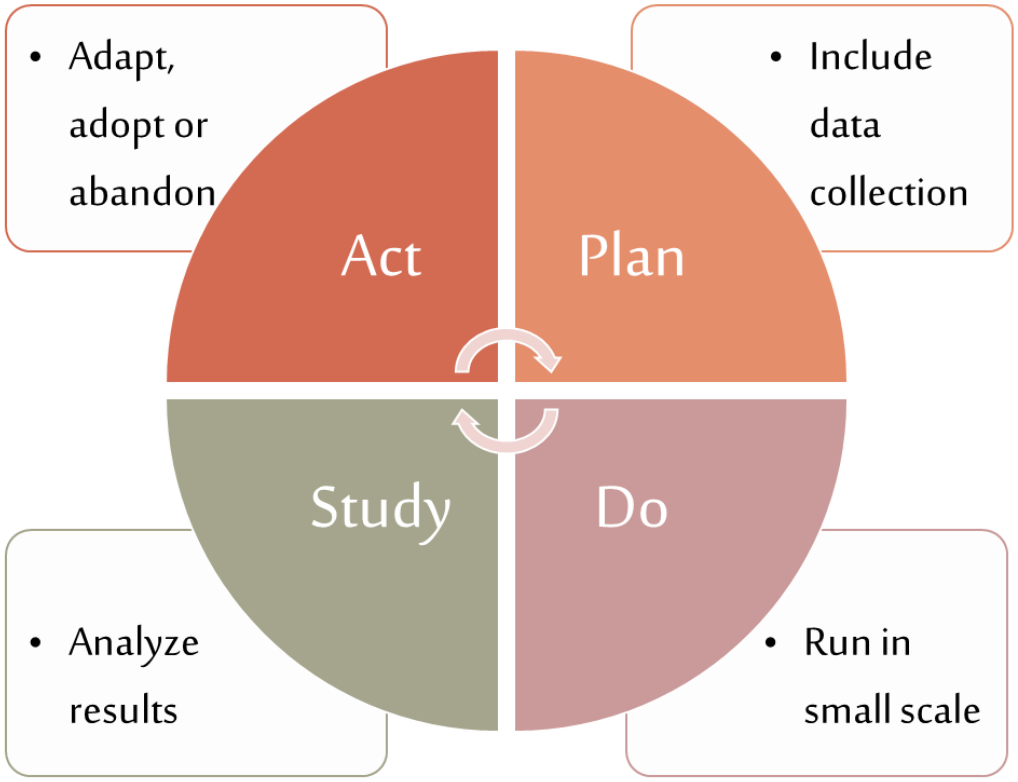


The Model for Improvement: PDSA

The Plan, Do, Study, Act (PDSA) cycle assisted the change model (Institute for Healthcare Improvement, 2021). It was a helpful tool for testing and documenting the planned change (Plan), including data collection. The plan was carried out (Do) on a small scale. Problems were identified, recorded, and the results were analyzed, compared to the predictions, and summarized to reflect what was learned from the Pilot (Study). Based on what was known from the test, plans were made for the next cycle (Act). The Act portion was based on what was learned and included the decision to adapt or abandon the change idea.

Figure 3

Change Model: Plan-Do-Study-Act (PDSA)



Action Plan for Translation

Ethical Considerations

The target population was undergraduate nursing students (UGNS) from the University of Texas at Tyler due to heightened risk factors in this population post-graduation that could be reduced with a PA program established during college years. The participants joined the project voluntarily, self-enrolled on the project Canvas platform, and provided informed consent to participate. The UT Tyler Institutional Review Board (IRB) approved the project. Recruitment was made via a general announcement from the UTT SON, and the students saw the advertisement posters in the UTT SON building.

Project Risk Assessment

A risk analysis matrix guide and a stakeholder power-interest grid helped analyze and mitigate threats. The risks to the project included low student motivation to participate and their lack of time, which was a known barrier to exercise. Other risks were poor internet connectivity and possible musculoskeletal injuries. Project risk mitigation included social reinforcement messages to the students and encouragement to engage in short bouts of exercise. The initial project modules had education about exercise clearance, safe exercise progression, proper warm-up, and cool-down. These project modules were discussed didactically and reinforced during the synchronous weekly group exercise belly-dance class.

Plan for Communicating Changes

Communication with stakeholders about the project was via Zoom and Canvas Instructure. The students received bi-weekly reminders, encouragement, and social reinforcement cues posted in strategic areas in UTT SON.

Implementation Plan

The intervention implementation plan used a checklist and a Gantt chart to organize the project. The project collected the internal and external data during the assessment phase, the Spring 2021 semester, and compared the data to support the need for the project. The problem was identified, UGNS inactivity and high-stress level, and it linked to the intervention, increasing physical activity. The literature search and synthesis were during the Spring and Summer semester of 2021. The project design was during the Fall 2021 semester, the pilot's implementation was during the Spring 2022 semester, and the project implementation was during the Summer 2022 semester. Evaluation of the outcomes, what worked and what did not, and the decision to adapt, adopt or reject the project

occurred during the Fall 2022 Semester. Integration and maintenance of the project were discussed and communicated to the stakeholders.

Table 3

Implementation Checklist

Phase	Date	People involved	Resources needed	Budget	Other issues to consider
Assessment	Spring 2021	Stakeholders: students, faculty, administration	Collect internal and external data		↑ awareness needs to buffer stress with ↑ PA
Link problem intervention & outcomes	Spring 2021	Project manager	Computer and library access		Outcomes, effective interventions
Synthesis	Spring 2021	Project manager	Rapid critical appraisal, General appraisal overview		Removing ambivalence, identify activities of interest
Design	Fall 2021	Project manager & stakeholders	Permission to use Canvas, In-kind donations, Allocate certified fitness instructor, Use MYW® free campaign materials.	Budget: $400 Fitness instructor & incentives, posters	Joyous activities, personalize audit of PA time, Identify barriers and solutions, use plan, do study act (PDSA) cycle
Implement & Evaluate	Spring 2022 & Summer 2022	Project manager & stakeholders	Evaluate outcomes, Decide to adapt, adopt, or reject the practice change		Develop skills to maintain change, Evaluate PSDA
Integrate & maintain	Fall 2022	Project manager & stakeholders	Communicated and recommended change, integrate into standards of practice		Present Inservice and education on the change practice, Monitor outcomes

Data Collection Plan

Students self-enrolled, read the instructions, signed informed consent, and followed the link to complete the anonymous Qualtrics survey. They submitted their survey, Perceived Stress Scale (PSS), and reported their minutes of PA a week at baseline and eight weeks. The project considered population preference in the collection of self-management data. Students were encouraged to use a watch, paper, pen, or digital application.

The Canvas project platform had a module related to PA intensity, which was subjective to the person engaging in it. Students were encouraged to use the Talk Test to measure their intensity. Moderate intensity allows a person engaging in physical activity to talk while moving.

Data Analysis Plan (statistical analysis)

This project measured levels of perceived stress before and after PA using the Perceived Stress Scale (PSS). The PSS is a free instrument with high validity and reliability, $\alpha = .78$ (Cohen et al.,1983). The PSS assessed how people perceived their lives as stressful. PSS scores were stratified into groups, low-stress (0-13), moderate-stress (14-26), and high-stress (27-40).

Changes in perceived stress were seen immediately after engagement in physical activity. During the synchronous online class, students rated and reported their perceived stress on a Likert scale from 0 (no stress) to 5 (high stress). These Likert ratings before and after physical activity increased the student's awareness of the effects of physical activity on stress, as suggested by the end-of-project feedback. The data analysis plan included the student narrative post-survey with the following questions: "Did this initiative help you increase your weekly physical activity minutes?", "Did this project help decrease your perceived stress level?" and "What can we do differently next time to achieve better outcomes?”

Final Budget

The US Department of Health and Human Services (PAG, 2018) explained that lack of physical activity is linked to approximately $117 billion in annual healthcare costs and about 10 percent of premature mortality in the United States. The costs of adopting recommendations for physical activity are minimal and related to the needs of each country (WHO, 2010). The budget for implementing the PA interventions usually includes personnel costs, access to fitness equipment, physical fitness instruction, team members' time, and internet use, among other expenses. Budget considerations also include PA staff labor rate per hour, volunteer personnel time, printing costs per sheet, equipment packs, and any incentives utilized. (Sutherland et al., 2016)

This EBP project's budget included the cost of a licensed instructor, the purchase of incentives (hip scarves) for participation, the printing of advertising materials (posters), and an online project platform, totaling $440.00. In-kind donations and support from the UTT SON, which printed the posters and allowed the use of the Canvas Instructure educational platform, allowed the project to stay within the budget.

Sustainability Plan

In Rosswum Larrabee Model for EBP (1999), step six included the facility integrating and maintaining the change into the standards of practice. This step happens after the outcomes of the pilot study support and enhance stakeholder confidence in the effectiveness of the change and the feasibility of making change in their environment. The authors encouraged stakeholder participation in various steps to increase support, including staff in-service, continuous monitoring, and communication about the outcomes.

Dissemination Plan

The dissemination plans included inviting Internal stakeholders to an oral report via Zoom for the project presentation and a poster presentation submission to the UT Tyler (University of Texas at Tyler) annual Lyceum Research Showcase. A written dissemination was submitted to a peer-reviewed journal.

Conclusion

The Rosswurm and Larrabee Model (1999) guided this EBP project which intended to replicate the effect of moderate PA on stress reduction in college students. The model was a practical framework to apply EBP in the educational setting. The administrators provided the infrastructure for the EBP project to develop and supported its diffusion throughout the organization. Melnyk and Fineout-Overhold (2019) explained that the revised version of this model is the current Iowa Model. It integrates principles of quality improvement and translation strategies to assist in adopting the new practice with a handbook available to help apply the model.

Chapter 4

Project Results

This chapter includes the project outcome results, population size, and the participant demographics of this intervention. Melnyk and Fineout-Overhold (2019) stated that measuring EBP project outcomes enables a comparison of traditional practices with the new evidence. The results should be consistent with the body of evidence. A percentage change in the conventional approach should help with the decision-making process to adopt or abandon the change.

Results

Population Size

The UT Tyler student population for the 2021-2022 academic year included 9,687 total students, and 7,185 were undergraduate students (Univstats, 2023). The Spring semester's group (pilot group and group 1) had 67 students self-enrolled at the Canvas project platform. Of these 67, 38 completed the physical activity surveys, 17 completed the pre-Intervention PSS survey, and 22 completed the post-intervention PSS survey. The Summer semester's group (group 2) had 62 students enrolled. Of these, 62, 29 completed the physical activity survey, 22 completed pre-intervention PSS surveys, and 15 completed the post-intervention survey.

Table 4

Population size and completed surveys

	Group 1 (Pilot)	Group 2
Student self-enroll @ Canvas project platform	67	62
Completed PA surveys	38	29
Pre-intervention PSS	17	22
Post-intervention PSS	22	15

Demographics

The age range of the participants was 71% between 19-29 years of age and 29% between 30-44. Gender distribution was 6% male and 94% female. Race was 66% Caucasian, 24% Black or African American, 6% Asian, and 6% other. Most students were first-degree undergraduate nursing students.

Outcome Results

The results of the PSS and the weekly reported time of PA from the first and last week of the intervention mirrored the BOE. Changes in perceived stress were seen immediately after PA engagement during the synchronous belly dance class. Participants rated their perceived stress on a Likert scale from 0 as no stress to 5 as high stress at the beginning of the group exercise, during the belly dance class, and at the end. Participants reported an average decrease of 2 to 3 points in perceived stress immediately after the intervention.

The project results were similar to the expected change seen in the BOE, which demonstrated a 4.64% - 27.73% reduction in stress following physical activity. The Group 1 project resulted in a percentage change (decrease) in perceived stress; following eight weeks of PA. The percentage of participants in the low-stress group increased from 11.76% to 22.73%, a 93.3% increase. The percentage of participants in the moderate-stress group decreased from 76.47% to 68.18%, a 10.84% decrease. The percentage of participants in the high-stress group decreased from 11.76% to 9.90%, a 15.82% decrease group. Group 1's PSS total percentage change (decrease) ranged from 10.8% - 22.7%.

The Group 2 project also demonstrated a percentage change (decrease) in the perceived stress. Following eight weeks of PA, the percentage of participants in the low-stress group increased from 22.73% to 26.67%, a 17.33% increase. The rate of participants in the moderate-stress group decreased from 68.18% to 66.67%, a 2.21% decrease. The percentage of participants in the high-stress group decreased from 9.09% to 6.67%, a 26.62% decrease.

Figure 4

Outcome Results – Perceived Stress Scale (PSS)

	PSS range	Low Stress Group
Actual Change (%)		
Group 1 (%)	↓ 10.8 – 22.7%	↑ 93.2%
Group 2 (%)	↓ 2.21 – 26.62%	↑ 17.3%
Expected Change (%)	↓ 4.64 – 27.73%	

The secondary outcome was physical activity. The body of evidence demonstrates an indirect relationship between stress and physical activity. Pre-intervention and post-intervention outcomes of this project demonstrated a percentage change (increase) in students who met the physical activity guidelines for Americans of 150 minutes of moderate intensity a week (PAG, 2018). Group 1 post-intervention results show a 37.5% increase in students meeting physical activity guidelines. Group 2 post-intervention results show a 9.09 % increase in students meeting the physical activity guidelines.

Figure 5

Secondary Outcome – Physical Activity

	150 min + PA/Week	Student # Pre-Intervention	Student # Post Intervention
Change (%)			
Group 1	↑ 37.5	9	13
Group 2	↑ 9.09	13	14

The data analysis plan included an anonymous narrative survey that addressed three questions. Question 1 asked if the initiative helped them increase their weekly physical activity minutes. There was a yes response from 100% of the students in groups 1 and 2. The second question asked if the project helped them decrease their stress level. Again, there was a 100% yes response from both groups. An open-ended question asked about what we can do differently next time. The students suggested adding an in-person session so the members could dance together. Another suggestion was to add more weekly reminders, variety in exercise mode, and a more intense mode of exercise. A couple of students stated that the first days were challenging because of their inactivity and that it became easier to follow later. Other students said they enjoyed dancing and the ability to access exercise videos anytime. Others said planning and incorporating PA into their schedule was fun and monitoring their weekly PA motivated them toward their individual goals. Several students stated it was a fun, convenient, and effective experience. This data is illustrated in Table 5.

Table 5

Summary of Narrative Survey

Questions	Group 1	Group 2
Project helped increase physical activity (PA)?	Yes 100%	Yes 100%
Project helped decrease stress level?	Yes 100%	Yes 100%
What can we do differently next time?	Add an in-person session More weekly reminders Variety in mode of exercise	Add an in-person session More intense exercises Variety in mode of exercise

Conclusion

The results of the PSS and the weekly reported time of PA from the first and last week of the intervention mirrored the BOE. Promoting and encouraging PA during college years is beneficial and wise. In addition to stress reduction, the reported benefits of PA include improvements in mood, sleep, blood pressure, cognitive function, insulin sensitivity, cardiorespiratory fitness, and muscular strength (Physical activity guidelines for Americans [PAG], 2018). Universities should promote physical activity as a learned, teachable approach to address modern stressors during training and professional life following graduation. Nurses should be role models and examples to their patients in self-care practices supporting resilience and wellness. Promoting self-care practices such as physical activity can empower the students to teach and encourage others, potentially transforming lives, careers, and professions.

Chapter 5

Project Discussion

This chapter explored outcomes, process evaluation, project limitations, and internal and external sustainability of the project. The Physical Activity Guidelines for Americans (2018) suggested that healthcare professionals' partner with other sectors to promote PA. The guidelines recommended that educational sectors lead in providing access to and opportunities for age-appropriate PA. The PAG also suggested that attention is needed for underserved population groups and with barriers to PA.

Discussion

Outcomes Evaluation

Promoting physical activity during nursing school increases student engagement and decreases perceived stress. Furthermore, promoting PA, engaging in PA, and sustaining PA may help students moderate and maintain a lower stress level. The results from group 1 (pilot study) from the Spring semester were within the expected outcome range in the BOE. In the Summer semester, group 2 had a lower percentage change; nevertheless, both groups demonstrated improvement or decreased levels of perceived stress. These results pose questions about the time of the year and physical activity engagement differences, where the weather may have affected the results. Group 1 was during the Spring semester (winter) when engaging in outside physical activity is usually cold and non-inviting. Group 2 was during the summer semester when the weather was more amenable for outdoor activities. Another question raised with this project was the possible snowball effect of the health promotion project. The student's awareness of the need to become active may have started a wave of physical activity in the nursing student community, increasing participation and commitment to engaging in physical activity.

Process Evaluation

The project implementation followed the planned phases and stayed within the budget. The evaluation began as soon as the project started and was ongoing. The project was acceptable and accessible to the target population. The outcomes were consistent with the body of evidence.

Limitations

The project limitation was flexibility. Students could self-enroll within the first two weeks of the project opening. After the first enrollment week, there were several enrollment requests; therefore, there was no strict enrollment or ending date. The project design allowed the students to join and complete the eight-week project at their own pace. Anonymous surveys were encouraged. These surveys were not mandatory and resulted in a different number of pre-survey and post-surveys that may have impacted the interpretation of findings and the ability to generalize from the results. Another limitation was time, a known barrier to exercise for students.

Sustainability

The university already had an infrastructure to support these health promotion activities. Sustainability includes integration into standards of practice and maintenance of the change by communication, in-services, and education (Melnyk & Fineout-Overhold, 2019). The University supported the project, and the university-wide work group on student wellness suggested adopting it as an online PA resource for all other students.

Internal Implications

The university has the potential to sustain this project with minimal investment. The fitness facility is accessible for the students, and they have fitness instructors of various exercise modes available to engage them. The university offers Yoga, Zumba, and other group exercises; however, there are no online or hybrid fitness courses provided. The equipment needed for this project was already

available at the university. Healthy promotion materials from the Move Your Way® campaign were free and encouraged to be used to increase physical activity.

Promoting physical activity during undergraduate nursing education can build a community of professionals who understand the importance of and can prioritize self-care. Facilitating, promoting, holding space, and having opportunities for the students to challenge themselves in self-care practices such as physical activity has the potential graduate nurse students that can prepare themselves to be physically fit to practice. They can learn the importance and how to prioritize and solidify their healthy self-care practices while becoming nurses and can be well prepared for the profession with skills, knowledge, and physical fitness.

External Implications

Nursing education that promotes self-care practices, including physical activity, supports the AACN (2021) domain ten core competencies that foster well-being, resilience, and personal health. It can potentially improve mental health by supporting healthy coping mechanisms to deal with daily stress. Students aware and trained to engage in moderate physical activity to decrease stress can build healthier lifestyles that last.

Nurses are a significant number of healthcare workers and can be role models for their clients. Teaching and promoting physical activity during nursing training may improve healthcare costs related to inadequate physical activity (PAG, 2018).

Conclusion

In the effort to provide excellence in nursing education, promoting self-care practices as a learned approach can show students how to manage their stress during their training and professional life post-graduation. Universities that support health promotion projects, such as PA, support student

life. It will help them establish healthy lifestyles, support healthy coping mechanisms to stress, improve mental health, and build a resilient workforce.

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