Winter 12-15-2022

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NURS 512: Nursing Research and Evidence-Based Practice

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November 17, 2022

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Physical activity is the fountain of youth, strengthening both the physical body as well as the mind, leading to better emotional stability and a general sense of well-being. With as little as 30 minutes of daily physical activity, there will be an increase in positive moods and coping skills for daily life; in essence, it will enhance mental well-being (Callow et al., 2020).

Problem Statement

The population over age 65 is nearing retirement age and are transitioning from a high paced work and family life to a slower and less active "empty nest" lifestyle. Most 65 year old adults have children who have left the home and now the comfort of staying home outweighs the desire to go out. Additionally, as the body ages there begins to be a physical let down and exercise becomes more difficult (Maula et al., 2019). Deterioration in physical abilities is identified as a barrier to physical activity, which includes arthritis, becoming ill and/or the side effects of prescribed medication (Maula et al., 2019). Body breakdown with age is usually predictable as the older one gets, the frailer one becomes. Bones shrink and become less dense, muscles lose their strength and flexibility, and coordination and reflexes aren't as quick as they once were. Musculoskeletal disorders are the most common of the frailties, with advancing age it affects 14% of people over the age of 65 (McPhee et al., 2016).

Some additional reasons for decline in physical activity is that older adults lack the needed support from their primary caregiver, friends, and family (McPhee et al., 2016). The support of a primary care provider is as important as the prescribing of medication. The client should be educated on the benefits of consistent physical fitness and on what exercises would

benefit them the most. Families should encourage their loved ones to go on walks and to stay active, and friends should exercise together to create social interaction (Maula et al., 2019).

There is evidence that physical activity can enhance several mental functions, including cognition, independence in activities of daily living (ADLs), psychological health and increased quality of life (Nuzum et al., 2019). Cognition is essential for daily living as it helps one plan his or her day, make decisions, and improve memory. Studies have shown that individuals who are more physically active have improvements in neuro cognitive functioning compared to those who live a more sedentary life (Nuzum et al., 2019). Sedentary lifestyles with less social engagement are seen more today with the stay-at-home orders during (COVID-19), which is contributing to poor physical and mental health. As research has shown, "sedentary behavior is a significant predictor of all-cause mortality, has shown to negatively affect mood and depressive symptomatology, and is associated with cognitive decline in older adults" (Callow et al., 2020, p.1055). Having a healthy cognitive performance as well as being physically able to take care of oneself increases overall mood and mental wellbeing.

PICO

The research to be conducted will look at the effect of physical activity on mental health with the question being, among adults over age 65, will implementing an exercise program for 30 minutes per day increase mental well-being?

Background and Significance

There are multiple obstacles working against the senior population. It is documented that "an estimated 67% of older adults report sitting for more than eight hours per day, and only 28% to 34% of adults ages 65 to 74 are physically active, according to the department of Health and Human Services" (Solan, 2018, p. 1). With advancing age, physical health begins to fail, with

increased musculoskeletal injuries from exercise, more joint problems, cardiac related disease, and respiratory problems, which can all lead to an increase in mental and mood disorders (McPhee et al., 2017).

Seniors are often encouraged to slow down and be careful by their primary caregivers, the media, their families, and their friends, in an effort to protect them physically (Callow, 2020). In addition, when a local or even global health crisis occurs, it becomes even more vital to emphasize to older adults that they are more susceptible to these negative impacts. As seen with the current COVID-19 pandemic, "due to this increased mortality risk for older adults, the CDC has indicated that older individuals, in particular, should strictly adhere to SDG (social distancing guidelines) and stay-at-home as much as possible" (Callow et al., 2020, p. 1047). This social isolation results in increased sedentary behavior. There is a problematic dichotomy as the older demographic is being cautioned to stay away from social environments that could risk injury or illness yet are also risking the consequences of poor mental and physical health as they isolate and avoid activities that they may have previously participated in (Callow et al., 2020).

A recent cross-sectional study by Callow found that there was a correlation between physical activity and lower anxiety and depression symptoms. Additionally, there were findings that suggest physical activity alleviated negative mental health symptoms of recent social distancing guidelines during the COVID-19 pandemic (Callow et al., 2020). Daily physical activity contributes to better cardiovascular health which is associated with changes in brain health. Decreased blood pressure prevents atherosclerosis and decreases the chance of stroke. Obesity (often a result of a sedentary lifestyle) has been shown to cause inflammation to the brain and reduce cerebral blood flow. Physical activity is known to increase the brain-derived neurotrophic factor (BDNF), a serum that stimulates cell growth and maintains neurons (Nuzum

et al., 2019). The benefits of physical activity will be supported by gathering a group of older adults ages 65 and up from a local retirement community to exercise 30 minutes a day for two weeks. The exercise will be described as walking a dedicated 30 minutes straight at a faster pace than a normal walk. To measure the mood of the patient each participant will use the application on their smart phone, Daylio Journal, where they will track their general mood for the day on a Likert scale. To establish a baseline to the mood and well-being participants will use Daylio for one week prior to the physical activity. To motivate participation, the community club house will have a tracking board where silver sneaker stickers will be placed for daily participation. Creating a supportive and competitive environment with recognized accomplishment will help retain participants (Maula et al., 2019).

Motivation is one of the keys of getting participation in physical activity. Successful motivation comes from perceived convenience, measurable activity, organized goals and incorporating technology. Measurable activity with pedometers and tick charts were mentioned as motivational factors in the study “Use It or Lose It” (Maula et al., 2019). Along with technology, social support is important, as friends and family can encourage daily physical activity and accountability.

Some barriers to physical activity are witnessing a physical deterioration in others, physical and mental health problems, other responsibilities, extreme weather, safety fears, a lack of support and finances (Maula at al., 2019). Participants will be encouraged to listen to their bodies, talk to their primary care physician as needed and walk indoors at the recreation center if the weather is poor. Participants will be reminded the prize is not for how fast they walk, but for being consistent with their daily walks. Making the study a social activity will offer greater support and activity.

Educating the public to the benefits of increased mental well-being with daily physical activity is important for preventive medicine. From the studies cited, there is overwhelming data supporting the benefits of 30 minutes of physical activity for mental health. Overcoming barriers of lack of support and or motivation can be assisted by organizing walks, providing a means for accountability and follow up, and teaching those 65 and older during the current quarantine how to do exercises at home. Using pedometers to kick start physical activity showed an increase in walking in ages 45-74 as well as continued use for long term physical activity (Harris et al., 2017). Looking for options for affordable technology, social programs, primary care provider education and family and friend support will increase the success of getting everyone 65 and older to exercise 30 minutes a day and enjoy the benefit of increased mental health.

Theory

Physical activity (PA) is one of the most effective strategies to promote healthy aging, by improving functional fitness, preventing chronic disease, and improving metal capacity (Jimenez-Zazo et al., 2020). Older adults exercise adherence is influenced by many factors including habit formation, self-efficacy, skills training, and functional gains (Boulton et al., 2019). When the participants change their behavior to integrate physical activities into everyday life, mental wellbeing can be enhanced. Self-care theory encourages the individual to practice activities as their own agent to maintain health and wellbeing. social cognitive theory (SCT) proposes that personal, environmental, and behavioral factors reciprocally influence behaviors (Boulton et al. 2019). By addressing internal and external obstacles using self-care theory and SCT, the participant will experience the maximal benefits of 30 minutes of physical activity. Physical activity is considered one of the most effective strategies to promote healthy aging (Jimenez-Zazo et al., 2020), which leads to the question among adults over age 65, will

implementing an exercise program for 30 minutes per day increase mental well-being?

Theory I Social Cognitive Theory

Social cognitive theory (SCT), developed by Albert Bandura, articulates the causal mechanisms through which efficacy beliefs, outcome expectations, sociostructurally factors, and goals influence behavior (Beauchamp et al., 2019). Social cognitive theory describes how social influences can affect an individual's response to a situation and how behavior is acquired and maintained. There are six constructs that make up SCT, which includes self-efficacy, expectations, behavioral capability, observational learning, reinforcement, and reciprocal determinism (Boulton et al. 2019). Self-efficacy is a key construct of SCT as it is a set of beliefs held about one's ability to complete a particular task, and is the product of past experiences, behaviors, and emotions. According to Bandura, people envision certain positive outcomes emanating from their behaviors only if they have the perceived capabilities to perform those behaviors in the first place (Beauchamp et al., 2019). The theory can be used to understand and guide behavior change interventions, and setting realistic goals, like beginning a physical activity routine for aging adults of walking for 30 minutes a day to improve mental health.

Theory II Self-Care Nursing Theory

The self-care theory by Dorothea Orem focuses on the practice of activities that individuals perform on their own behalf, including developing and improving one's physical and/or mental wellbeing, or correcting a health deviation or condition (Younas, 2017). Using the theory of self-care, outside support from a healthcare provider can influence the individual to make changes to one's physical activity through education, goals and follow up. The self-care theory provides an opportunity for the APRN to establish a relationship with the client by getting to know their physical health goals, along with any physical or financial barriers and what

support system they have or can use to succeed at their goal. Assisting patients with their goals helps them become adequately prepared to engage in their own care and thus improve patient outcomes and quality of life (Malekzadeh et al., 2018). Using self-care theory provides structure to promoting positive health choices through goals and providing a framework to encourage 30 minutes of daily physical activity to improve mental health in the aging adult population of 65 and older.

Theories Influence on Advanced Practice of Nursing

The two theories selected to influence Advanced Practice Register Nurses (APRN) with increasing physical activity for adults over 65 to help increase mental health are Albert Bandura's social cognitive theory and Dorothea Orem's self-care theory. Bandura's social cognitive theory suggests that self-efficacy influences motivation and the ability to engage in self-care behaviors, which effects regular self-care behavior and the need to remove barriers which prevent desired outcomes (Tan et al., 2021). Some examples of a barrier would be a lack of time, desire, finances, or ability to participate in physical activity for 30 minutes a day by adults over age 65 for improved mental health. "The concept of self-efficacy expands the body of nursing knowledge in the approach to caring as it integrates elements for the understanding of health behaviors, the focus of interventions and a greater extension of nursing practice towards interdisciplinary scenarios that can contribute to the construction of new horizons for nursing in health promotion and caring of the person in the community" (Manjarres-Posada et al., 2020, p. 132). Heath promotion is a key part of being an APRN by developing a relationship with the patient and including them in the care-plan created. Social cognitive theory guides the development of caring interventions for health promotion, disease prevention and treatment, as well as, understanding and analysis of different clinical and home caring contexts in nursing

practice (Manjarres-Posada et al., 2020).

Dorothea Orem taught through her self-care theory to not consider patients as inactive and mere recipients of health services; rather, to consider patients as strong, reliable, responsible, and capable decision-makers who can take care of their own health appropriately (Khademian et al., 2020). Self-care theory provides a framework where individuals can engage their provider to maintain, restore or improve their health. Self-care theory can be related to APRN knowledge because it uses patient assessment skills, builds a nurse–patient relationship, plans how to meet the objectives of self-care, implements interventions, and evaluates how effective the interventions are in attaining health and self-care (Malekzadeh et al., 2018). Orem defined three nursing systems, including: wholly compensatory, partially compensatory, and supportive-educative systems. The APRN provides both education and support to help the patient not only improve their health but also improve their environment. Orem's self-care model leads to lower healthcare costs, quality care development and patient outcome, (Malekzadeh et al., 2018) and is an effective theory used by APRNs to provide high quality care across all demographics.

Theoretical Framework Analysis

Social cognitive theory and self-care theory are frameworks that will be implemented in developing a plan to improve mental well-being for adults over age 65 by using an exercise program for 30 minutes per day. The theories used address social beliefs about exercise, promote motivation in the individual, encourage goals and provide external support for optimal results. The article by Beauchamp et al., (2019) mentions that the key factors in using SCT to achieve meaningful behavioral change in people is to overcome various personal, social, economic, and environmental impediments.

With regards to mental well-being and physical activity, an exercise routine needs to

factor in overcoming the various barriers associated with aging. Some of the barriers to physical activity for older adults are witnessing physical deterioration in others, physical and mental health problems, having other responsibilities, extreme weather, safety fears, and a lack of support and finances (Maula, 2019). Educating the patient on the ability to engage in physical activity at any age is part of SCT self-efficacy and the belief that they can do something by removing barriers such as past experiences, learned behavior and adverse emotions. Self-efficacy influences motivation and the ability to engage in self-care behaviors, and according to this theory, personal beliefs and environmental factors contribute to a dynamic, ongoing process which influences self-care behavior (Tan et al., 2021).

Self-care is a nursing theory that encourages the patient to be their own advocate and agent for change, which is supported by the APRN. Self-care is considered as activities that people engage in to maintain, restore, or improve their health (Khademian et al., 2020). Through the self-care theory framework, physical activity can be promoted for those 65 and older to improve mental well-being. There is evidence that physical activity can enhance several mental functions, including cognition, independence in activities of daily living (ADL's), psychological health and increased quality of life (Nuzum, 2019). Educating the patient about the benefits for physical activity is a way to motivate change. "Patients with chronic illnesses need motivation, experience, and skill to perform the behaviors that are needed to maintain and improve their health and quality of life, all of which being rooted in the concept of self-care" (Khademian et al., 2020, p. 148). Through education on what exercises the patient can do with motivation, a complete daily physical activity behavior can be changed, and with it, increased mental health.

Theoretical Contribution to APRN Profession

The theoretical contributions of promoting physical activity for those 65 and older

may provide a benefit of improved mental wellbeing and overall health. Advanced Practice Register Nurses will be able to assist in the implementation of 30 minutes of daily activity for their patients dealing will depression, anxiety, lack of motivation and decreased ADL's. Physical activity is not only important in functional fitness but also in the improvement of mental capacity, which includes self-esteem, maintenance of the cognitive function, reduced anxiety, and depression, and improvement in social response (Jimenez-Zazo et al., 2020).

Health promotion is defined as the process of empowering people to gain control of their health and leads to positive results in activities related to health (Yousefi, 2019). As APRN's, it is important to promote healthy behavior in all patient demographics, with emphasis in adults 65 and older, for they are the least active of all demographics. Physical activity is a good predictor of healthy aging, which decreases the probability of disability in people over 65 years (Jimenez-Zazo et al., 2020).

Theories Implications to Guide Personal APRN Practice

Using theories in APRN practice brings a framework that is backed by research and supportive data. The healthcare provider and patient roles are based on developing relationships of trust, through effective communication and education. Social cognitive theory and self-care theory are effective in helping the patient become motivated, acquire skills, remove barriers, develop habits, and progress their goals with positive reinforcement. It is believed that the sense of self-efficacy and related behaviors is the key to successful treatment, increased self-care behaviors, and improved quality of life (Khademian et al., 2020). Self-care theory instructs that a healthcare provider's role is to supply guidance to the patient through education when they are willing to accept change. The first step is to establish a trustworthy nurse–patient relationship,

interacting with the individual to provide support and knowledge towards regaining self-care (Malekzadeh et al., 2018). Motivation, education, and guidance are the provider's part in self-care theory. The patient is the agent for change and must be willing to dedicate the time and effort to participate in treatment.

Using social cognitive theory and self-care theory as a framework in developing and implementing a plan to improve mental well-being for adults over age 65 by using an exercise program for 30 minutes per day is an important part of preventive medicine. The theories work hand in hand to promote goals, teach behavior, encourage results and provides a relationship where education, support and follow up are embraced. Overcoming potential barriers of lack of support and/or motivation can be assisted by APRN's by providing a means for accountability and follow-up. Further study is needed to find promotional means and material or social programs, primary care provider education and family and friend support will increase the success of getting the adult population 65 and older to exercise 30 minutes a day and enjoy the benefit of increased mental health. Using a literature search to find studies which showed a positive correlation between physical activity and increased mental well-being will offer support and validity to implementing PA as part of preventive medicine in healthcare.

Literature Search

A literature search was conducted to determine if implementing an exercise program for 30 minutes a day for adults 65 and older would increase mental well-being. The database Cumulative Index to Nursing and Allied Health Literature (CINAHL), Cochran Library, and Pub Med were used. The following search terms: "mental well-being AND physical activity AND 65 years and older or elderly" resulted in 121 results. The search was narrowed down by selecting peer reviewed, within the past five years, primary studies with full text available, which resulted

in 66 studies. The remaining 66 studies were reviewed and critiqued. Those that supported the PICO question for this proposal resulted in seven primary sources for this review. The final seven studies used for the literature review are as follows: three cross sectional studies (Chen et al., 2021, Felez-Nobrega et al., 2020, and Musich et al., 2017); three longitudinal studies (Awick et al. 2017, Martin-Maria et al., 2020, and Volders et al., 2021); and one retrospective study (Shaikh & Dandekar, 2020).

Definitions

1. Physical Activity (PA)- WHO (2022) defines physical activity as any bodily movement produced by skeletal muscles that requires energy expenditure. Physical activity refers to all movement including: during leisure time, for transport to get to and from places, or as part of a person's work. Both moderate and vigorous-intensity physical activity improve health.
2. Well-being – is a positive outcome that is meaningful for people and for many sectors of society, because it tells us that people perceive that their lives are going well. Well-being includes such things about people as the quality of their relationships, their positive emotions and resilience, the realization of their potential, or their overall satisfaction with life—i.e., their "well-being" (CDC, 2022).
3. Health Related Quality of Life (HRQoL)- An individual's or group's perceived physical and mental health over time (Chen et al. 2021).
4. Rapid Assessment of Physical Activity Scale (RAPA) - a questionnaire that provides clinicians with a tool for quickly assessing the level of physical activity of their older adult patients, evaluating a wide range of physical activity levels, from sedentary to vigorous activity (Shaikh & Dandekar 2019).

5. The Global Physical Activity Questionnaire (GPAQ) is applied internationally as a tool to assess the level of physical activity. The GPAQ was designed as an interview, including the use of show cards, which visualize activities of moderate and intensive physical activity and support the distinction between these intensities (Felez-Noberga, 2020).
6. Exercise Benefits and Barriers Scale (EBBS) - a 43-item summated rating scale consisting of two subscales, Benefits and Barriers. Ratings are obtained using a four-point response system (Shaikh & Dandekar, 2019).

Literature Review

The literature review will be about the subject group of older adults 65 and older. The themes are physical activity with regards to the types of PA and how it is measured, and mental well-being with its tests and results, and if there is a positive correlation between PA levels and increased mental well-being. There is limited data on mental well-being as it is subjective, and typically relates to one's outlook with what life gives them. Mental well-being is relatable to older adults as they transition into a different time in their lives with retirement, downsizing, being alone, losing loved ones or taking care of their parents. Additionally, physical activity changes as we get older and limitations of comorbidities, lack of finances, no built environments and weather can all affect one's ability to be active.

Physical Activity

Physical Activity was measured differently by the studies reviewed. The cross-sectional studies of Chen et al. (2022), Felez-Nobrega et al. (2020), Musich et al. (2017) and Shaikh & Dandekar (2019) used self-reported data from the participants with no baseline or intervention. The data produced was used to show a correlation between those who were PA and increased mental well-being. The longitudinal studies were done over 6 months for Awick et al. (2022),

two different spans of 12 months for Martin-Maria et al. (2020) and 12 months for Volders et al. (2021). There were no assigned control groups in any of the studies as the participants were divided into groups based on their activity levels. Awick et al. (2022) was the only study that had activities shown to the participants, the other studies had the participants plan their own activities for PA. Chen et al. (2022), Musich et al. (2017) and Volders et al. (2021) gave examples of activities to participate in such as walking, golfing, yoga, and gardening. The Shaikh & Dandekar (2019), Felez-Nobrega et al. (2020) and Martin-Maria et al. (2020) did not have any prescribed or suggested physical activities, but encouraged PA as described in the Global Physical Activity Questionnaire (GPAQ).

Felez-Nobrega et al. (2020) cross-sectional study used the information from 14,585 individuals who were 65 and older to make 2 categories, those greater than 150 minutes of moderate-vigorous intensity of PA were defined as meeting the recommended guideline, which included 65.5% of participants, and those who were not meeting the recommended guideline 44.5%. Shaikh and Dandekar's (2019) cross-sectional study of one hundred and forty 65 and older adults similarly took the results of the RAPA and stated those who had scores of six or greater are physically active and those with a score less than six are physically inactive, with 70 in each group. The two studies had a subjective report of increased well-being while engaging in moderate to high physical activity versus participating in low or not being physically active. Chen et al. (2022) cross sectional study divided 87,495 surveyed individuals into four groups to see which activities increased mental health and quality of life. The individuals were divided into categories based on type of activity, with 38.9% doing aerobic activity only, 8.8% participated in muscle strength activity (MSA), 24.6% engaged in both aerobic and MSA combined, and 33.8% reported no activity. Aerobic activity is defined as running, calisthenics, golf, gardening, or

walking. Likewise, Musich et al. (2017) cross-sectional study of the 17,676 interviewed incorporated walking, gardening, and golfing to define light-to-moderate (aerobic) PA. In the study, three tiers were used for reported PA: 23.3% low (0-2 days per week), 33.9% intermediate (3-4 days per week and 42.9% high (>5 days per week; CDC recommendation). Both studies showed a positive correlation of high aerobic PA resulting in increased mental well-being.

Awick et al. (2017) longitudinal study of 247 participants was a six-month study that had a measured baseline with planned weekly exercises that included walking or dancing, or a strength, stretching and stability class. Each minute of accelerometer wear and PA was classified as either sedentary, LPA, or MVPA according to intensity of the participants activity levels. Martin-Maria et al. (2020) prospective longitudinal study with 885 participants 65 and older used baseline activity level that was reassessed with the GPAQ that were converted to a Metabolic Equivalent of Task (MET) value to monitor progress. The study like the Awick et al. (2017) found that high to moderate PA increased mental well-being versus low activity. The two studies found that MVPA resulted in increased mental well-being from decreased psychological distress from the baseline measured values. Volders et al. (2021) longitudinal study had 432 adults 65 and older that participated in a defined light physical activity (LPA), such as walking at low speed and light household chores. Bicycling at low speed, vacuuming, and walking briskly are examples of moderate-intensity PA, and running, swimming, and carrying heavy loads are examples of vigorous-intensity PA. The activity level was measured by a daily worn accelerometer. Volders et al. (2021) found that LPA activities such as walking, gardening and household chores are more preferred for older adults to maintain for long durations of time.

From all the studies, there is a positive correlation that physical activity in those who are 65 and older improved mental well-being. The cross-sectional studies are a snapshot in time and

may be skewed because those who participated are self-reporting their activity. The collected data of daily physical activity with the most validity due to it being objectively measured would be using an accelerometer as used by the longitudinal studies by Volders et al. (2021) and Awick et al. (2017). Both studies had the participants wear the accelerometer on the right hip for 10 hours during the day. The results of the studies yielded positive results of increased PA equal to increased well-being attributes. The benefit of the accelerometer is accurate data about the type, duration, frequency, and intensity of PA performed by the participant. Additionally, a longitudinal study yields data that can be used to show the long-term benefits of PA for adults over 65 to improve mental well-being. Having a unified prescribed activity is not beneficial but encouraging older adults to increase their heart rate by doing activities they can physically do and enjoy doing showed a positive correlation with increased participation. The most beneficial PA from the studies for older adults is aerobic activity and at least 5 days a week.

Mental Well-being

Mental well-being is often subjectively defined as if the person both feels good and functions well, which people call either positive mental health, or simply flourishing. There is difficulty in finding studies that measure mental well-being as related to daily PA with the same tools. The cross-sectional study by Musich et al. (2017) discovered by using the PHQ-2 and UCLA 3-item scale that those engaged in higher PA showed better mental health with lower depression and loneliness scores and increased well-being. The results of the study showed depression and loneliness were 50% more common in those with low PA versus medium and high PA. There were similar results in the Shaikh and Sukanya (2019) study, which used the Geriatric Depression Scale to learn that those being physically active enjoyed spending time with peers twice as much as those with who were not PA, and mental health improved and decreased

tension by 25%. The results being an increase in QoL and independence which can be included in the definition of mental well-being. Felez-Nobrega et al. (2020) cross-sectional study using the World health Organization's (WHO) Composite International Diagnostic Interview (CIDI) for 12 months supported the previous data that anxiety and depression are 25% lower, and a healthy social life is 25% higher for those who meet PA guidelines. Additionally, the study used the Happiness Scale, which showed those who were happy at 48% for those who are physically active versus 13% for those who are not physically active; and happiness is a definition of positive mental well-being.

An increased quality of life (QoL) was reported by Awick et al. (2017) 6-month longitudinal study and a decrease in poor Health Related Quality of Life (HRQoL) is reported in the Chen et al. (2022) cross-sectional study. ~~A~~wick et al. (2017) study, which used accelerometers, reported that increases in moderate-to-vigorous physical activity (MVPA) over the course of the intervention was associated with greater reductions in psychological distress measured by the Hospital Anxiety and Depression Scale (HADS) and the Perceived Stress Scale (PSS) which, in turn, were significantly associated with improvements in QoL measure with the Satisfaction with Life Scale (SWLS). Chen et al. (2022) cross-sectional study reported that PA improved HRQol by increasing an individual's physical function, self-rated psychological function, and cognitive function. The study additionally reports that participating in daily aerobic exercise had the greatest benefit for reducing poor mental health.

Martin-Maria et al. (2020) a longitudinal study used several scales to measure well-being at baseline, at 6 months and at the end of the study of 12 months. They were called subjective well-being indicators and included the abbreviated version of the Day Reconstruction Method (DRM) and the Cantril Self Anchoring Striving Scale. The results were that high to moderate

physical activity resulted in higher positive affect, higher life satisfaction, and lower negative affect. In contrast, Volders et al. (2021) one-year longitudinal study, which also used accelerometers but used the Stop Signal Task (SST) and the Digit Symbol Substitution Test (DSST) states light physical activity (LPA) is a better option for older adults, which decreases depression, improves cognitive function and independence. Additionally, Volders et al. (2021) reports that LPA is more achievable for older adults, especially those with chronic illness versus MVPA.

From the studies reviewed, Martin-Maria et al. (2020) had the best tools for assessing subjective well-being with the Day Reconstruction Method, and with the Cantril Self Anchoring Striving Scale. Using both tools while the participant engages in daily PA is a good way to see positive correlation between the activity they completed that day and their overall mental well-being. Additionally, the baseline data was collected using face-to-face structured interviews using Computer Assisted Person Interviewing (CAPI) to ensure the data was correctly entered. Using a simple data collection software like the happiness scale used by Felez-Nobrega et al. (2020) is a good way to do daily or weekly evaluations of one's overall positive mental health.

Limitations/Strengths

The limitations in cross-sectional studies by Chen et al. (2021), Felez-Nobrega et al. (2020), Martin-Maria et al. (2020) and Musich et al. (2017) were the lack of causality and directionality where relationships cannot be inferred. It is difficult to clearly conclude that PA caused increases in mental well-being, because the opposite may be true, that increased mental well-being may have increased the PA in older adults. Additionally, in the cross-sectional studies, activity levels were self-reported, which can be an inaccurate portrait of the participants' true PA levels. The longitudinal studies of Awick et al. (2017) and Volders et al. (2021)

limitations were the smaller number of participants 65 and older, with 247 and 432, respectively. Additionally, longitudinal studies can be hindered by historical or life events such as COVID-19 lockdowns, which may limit both PA and mental well-being.

The strengths of the cross-sectional studies are the larger demographics: Chen et al. (2021) had 154,701, Felez-Nobrega et al. (2020) had 14,585, and Musich et al. (2017) had 17,676 participants over the age of 65. Larger demographics from the general older adult population gives the study increased generalization of the findings that can be inferred for a greater number of adults over 65. Chen et al. (2022) study used the data collected from phone interviews in the United States, which allowed the interviewer to obtain more accurate answers with clarification from the participants and the data more relevant to US older adults. The strengths of the longitudinal studies were the real time data over an extended period with Awick et al. (2017) study lasting 6 months and 12 months for Volders et al. (2021). The Awick et al. (2017) study showed in real time the mediating effect of PA on QoL, showing the relationship of increases in MVPA associated with reductions in psychological distress which, in turn, were significantly associated with improvements in QoL. Both studies additionally measured the data of PA using accelerometers, which is an objective, reliable method for capturing physical activity data.

Gaps in the Literature

The research for physical activity and older adults shows a positive correlation between increased PA and increased aspects of mental well-being. More research is needed using accelerometers as they provide real activity data versus self-reported data to accurately examine the key attributes of PA including type, duration, intensity, and duration. While collecting data on daily PA and increased mental well-being, there were a variety of scales that measure aspects

of mental well-being. There needs to be more research that uses a standard quick assessment of mental well-being to show a causality of increased PA. There are limited mental well-being exams and very limited research into physical activity and older adults in relation to mental well-being. Additionally, the definition of mental well-being is subjective and difficult to measure in terms of a unified definition of what the word means.

Conclusion

Increased mental well-being is an important part of preventive medicine. Physical activity has been shown to have many health benefits in adults 65 and older. The difficulty in implementing PA in an older demographic is the increased number of barriers that prevent compliance. The purpose of this capstone project is to bring awareness to the benefits of PA and the inherent increase in mental well-being. The type, intensity, and duration of PA should be developed in a partnership with a health care provider. Using social cognitive theory and self-care theory is an effective way to help the patient to be motivated, acquire skills, remove barriers, develop habits, and progress physically and mentally, using the patient's own goals as positive reinforcement. Overcoming potential barriers of lack of support and/or motivation can be assisted by APRN's by providing a means for accountability and follow-up. There is a need for increased study into the most effective physical activities for older adults to participate in and how to safely encourage participation in the activities. Further resources need to be developed for older adults to have options for health promoting PA, with increased built environments, access to trainers, safe and effective equipment, incentive programs to be active, increased social support and education. The proposal has evidentiary support from the literature reviewed and should move forward in the promotion of physical activity in older adults to enhance mental well-being.

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