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Older Adults' Physical Activities and Subjective Well-Being

Mihae Bae

Stephen F. Austin State University, baem@sfasu.edu

Hyunsook Kang

Stephen F Austin State University, khangh@sfasu.edu

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Abstract

This study examined the relationships between physical activities as health behaviors and subjective well-being in older adults. Data from the National Social Life, Health, and Aging Project (NSHAP) survey were used. The NSHAP study sampled persons 57-85 years of age ($n=3005$). The respondents completed a telephone survey, reporting their background information and social networking characteristics. For data analysis, a two-step hierarchical regression was used in order to identify the associations between the demographic and physical activity factors on subjective perception of well-being in older adults. Our results indicated that, among the demographic, income, education, health status and participation in specific physical activities ($R^2 = .04$, R^2 adjusted=.04, $p < .001$) were all significant factors in assessing subjective well-being for older people. The results showed that running, muscle training, taking stairs, and taking a bike ride were significant factors for the male older adults, whereas female older adults who participate in walking, swimming, yoga, and dance reported higher score of subjective well-being. The results of this study will help health researchers, gerontologists, and social policy makers who are interested in psychological well-being and health in later life. Understanding the gender basis for selection of physical activities can have important implications for interventions. Furthermore, understanding the associations between health behaviors and subjective well-being in later life will aid in understanding social dynamics in later life. Therefore, it is essential to find the effective ways adults can be motivated to keep participating in healthy physical activities in order to maintain health later in their life.

Key words: physical activities, health behaviors, subjective well-being, older adults, socio-economic status

Introduction

An increase in life expectancy and lower birth rate has resulted in an ageing global population (Arias et al., 2021; U.N., 2019; USCB, 2020; WHO, 2018). According to the United Nations (2019), older adults, those aged 65 or over, will number approximately 1.5 billion by 2050. As the world population ages, people become more interested in maintaining their health and in physical activities or exercise (Kang & Bae, 2020; Warburton & Bredin, 2017). Moreover, a decrease in physical activity relates negatively to an increase in chronic health problems with all age groups (CDC, 2020). A significant increase in sedentary or inactive time has been shown to have a negative influence on daily functions and eventually lead to health problems, especially for older adults (CDC, 2020; Sparks et al., 2018). Age-related changes in the body are another cause of health risks for aging people (Venturelli et al., 2018). More than one in four older people aged 65 or over falls in the US every year. These falls among aging individuals often result in fatal or non-fatal injuries which are often followed by hospital admissions (CDC, 2020; Bergen et al., 2016). According to CDC (2020), each year about 3 million older people are treated in emergency rooms for fall injuries. Muscular weakness due to lack of exercise is a contributing factor in these falls (CDC, 2020; Venturelli et al., 2018)

Exercise and health care professionals, have emphasized the benefits of physical activities (Roberts, Phillips, Cooper, Gray, & Allan, 2017; Warburton & Bredin, 2017). Among the benefits are ease in performing daily physical functions as well as the prevention of falling (Sternfeld et al., 2017) and also reduction of depression and anxiety (Carek et al., 2011). Since physical activity is necessary to maintain muscular strength necessary for older adults to perform daily functions (Kang & Bae, 2020; USDHHS, 2018), it is important to consider the ways older adults can be motivated to keep participating in healthy physical activities.

Literature Review

Active engagement in health behaviors, including physical activities, is associated with higher self-efficacy (Mason, 2011), a sense of life satisfaction and pleasure and subjective well-being (Runner et al., 2007) in older adults. Hooyman & Kiyak (2018) said that physical activity with social networks members, including health-related physical activity, is one indicator of well-being in older adults. In addition, Runner et al. (2007) stated that older adults who are conscientious about health are more likely to participate in diverse physical activities with their social members. Thus, active engagement in health behaviors may impact the subjective well-being status of older adults. In reference to older adults' health related activities and their perceived health status, Garcia, Banegas, Perez-Regadera, Cabrera, and Rodriguez-Artalejo (2005) argued that active engagement in health behaviors is associated with older adults' general life well-being. With the sample of 3600 older adults who are over 60 years old, regression results showed that physical health related activities provide a sense of integration and psychological satisfaction. In terms of a psychological perspective, it has been emphasized that active engagement in physical activities is a predictor of

self-rated well-being or quality of life of older adults. For example, Hooyman and Kiyak (2018) noted that frequent involvement with any type of physical activity has been recognized as an important benefit to older adults' psychological health status because it alleviates depression and provides daily life support (Carek et al., 2011). It is recognized that engaging in healthy behaviors can increase life satisfaction and subjective well-being of older adults (Kang & Bae, 2020; McAuley et al., 2007).

Participation in physical activities in a social setting can help in maintenance of lower blood pressure, muscular strength, and cardio-respiratory endurance (ACSM, 2009; CDC, 2020; Mason, 2011). In addition, Hooyman and Kiyak (2018) noted that active participation in health activities (e.g., leisure, hobby, and daily events) with others in later life may reduce the possibility of disability and chronic disease. Therefore, it is clear that participation in healthy activities that involves both social relationships and physical activity is a crucial factors for well-being status in later life.

Life Satisfaction

Subjective well-being (SWB) can be defined as assessment of emotional and cognitive self-perceptions including happiness, peace, fulfillment, and life satisfaction (Hiller & Barrow, 2015). An individual's personality and cultural background may influence the reporting of SWB. Therefore, the research area of SWB is comprised of how people evaluate their lives.

Although the research of subjective well-being has received considerable attention, the older adults' health behaviors and their subjective well-being component has been relatively neglected.

The satisfaction with life scale was developed as a measure of the judgmental component of subjective well-being (SWLS, Pavot et al., 1991). The SWLS is shown to be a valid and reliable measure of life satisfaction, which makes it is possible to compare it to many other measures of life satisfaction. One important issue is that people's moods, emotions, and self-evaluative judgments can change over time. However, the conventional life satisfaction measurement scales have only consisted of questions: e.g., "In general, how much are you happy?" Or "how much are you satisfied with your life?" (Diener et al., 2003).

Furthermore, the concerns of SWLS are narrowly focused to assess global life satisfaction and do not assess satisfaction with life domains such as health or finances. The Philadelphia Geriatric Morale Scale (Lawton, 1975) also has limitations in that it has only yes or no choices, not a Likert scale. Therefore, it is impossible to compare respondents' scores even though they have health behaviors domain specific items. Another issue of subjective well-being of older adults is the heterogeneity of the aging population. People seek satisfaction in very different ways which are based on their living conditions, life histories and cultural backgrounds. It is necessary to consider diverse life patterns and cultural differences among old people. Ignoring this heterogeneity of the population can result in inaccurate assumptions about the older population.

An additional difficulty with research in subjective well-being is overemphasis on objective conditions underlying the subjective well-being. For

example, objective standards measuring life satisfaction include classification by age, financial security, family/friend relationships and health. The problem is that aging adults who are below average in these standards, nonetheless perceived their lives as satisfactory (Berk, 2018). It is necessary to find other distinctive perceptions of life quality or subjective components of well-being in old age.

Another objective classification of life conditions includes the distinction between global and domain specific measures of satisfaction (Mason, 2011). The definition of domain specific assessments of satisfaction includes specific areas of satisfaction such as health, social relationships, financial capacity, and other areas of life. The relationships between objective life conditions and domain specific assessments of satisfaction with life conditions are correlated with each other. It is clear that objective life conditions cannot fully account for subjective evaluations of life quality, because people have different life values and different amounts of resources for obtaining their particular life satisfaction (Kim-Prieto & Miller, 2018).

Early measurements of SWB usually have only a single item with a Likert scale response format (Andrews & Withey, 1976). However, Pavot and Diener (2004) suggested that it is necessary to measure more complex and multiple items of life satisfaction. Therefore, satisfaction with life scale (Pavot & Diener, 2004) and the positive affect/and negative affect scales (PANAS: Watson, Clark, & Tellegen, 1988) are available for more recent measurements providing specific aspects of the broad concept of SWB (i.e., positive and negative affect and optimism and self-esteem).

However, there can be another important issue related to measurement of subjective well-being. An individual's perception of life satisfaction is influenced by health and health behaviors. Nardi and Siegart (2006) studied 883 older adults aged from 65 to 98 and showed that there were significant associations between health and subjective well-being. Their findings indicated that health needs and resources differed with age, which altered predictions of well-being later in life. However, it remains unclear to what extent the relationship between older adults' health and health behaviors influences their subjective perception of well-being. Additionally, there is still uncertainty about the extent to which older adults' different health behaviors can explain the variety of subjective well-being.

Gender Patterns of Participation in Physical Activities

Males and females have different reasons for exercise and exercise habits (Craft et al., 2014; McPhee et al., 2016). Males are more likely to exercise for enjoyment and health reasons (Azevedo et al., 2007; Craft et al., 2014), whereas weight loss and social factors inspire females to engage in physical activities, especially young women (Prichard & Tiggemann, 2005). Craft et al. (2014) demonstrated that there were gender differences in exercise habits and motives. According to Azevedo et al. (2007), both genders have different levels of physical activity and socioeconomic level was associated with physical activity in both males and females. Similarly, socioeconomic level influences older adults' life styles and contexts (Pinquart & Schindler, 2007). Older people in higher socioeconomic levels are more likely to engage in physical activity, while those in lower socioeconomic positions are less likely (McPhee, et al., 2016)

In older adults' physical activities, research has recommended that older people participate in aerobic exercise and resistance exercise (ACSM, 2009; USDHHS, 2018). In exercise classes for older adults, older females engage in moderate-intensity aerobic activities including yoga, dance, and swimming, while older males participate in running and biking. Considering the gender basis for selection of physical activities can have important implications for interventions (Craft et al., 2014).

Health Behaviors on Subjective Well-Being

Older adults' physical health was significant for predicting their everyday life including subjective well-being. It is not surprising that healthier older adults may have a more active participation in social activities than those who suffer from chronic or physical illness (Hooyman & Kiyak, 2018). Previous studies support the association between health status and perceived subjective well-being in later life. For example, Garcia et al. (2005) noted that the frequency of engaging in health behaviors is positively related to older adults' perceived subjective well-being, especially for those over the age of 70.

With respect to the relationship between health behaviors and subjective well-being, the current studies indicate that older adults who engage in frequent and diverse health related behaviors report higher score of well-being or life satisfaction (CDC, 2020; Kang & Bae, 2020). They are consistent with past studies (Emlet et al., 2013). However, an interesting finding was that health status was significantly associated with other demographic factors, such as income, education, and frequency of engaging in social activities.

In addition, older adults who have a physical illness may experience more frequent negative responses from their families because family members feel obligated to take on the burden of caregiving to help sick and older adults. The dynamics of family support and stress in a caregiving is an area for further theoretical development and research. Since family is ideally a lifetime informal support group, it is understandable that family or adult children may provide more caregiving and support for sick older adults than non-family relationships. Therefore, it is expected that healthier older adults participate more frequently in diverse health behaviors than less healthy older adults.

With respect to health behaviors and subjective well-being, the current study supported the hypothesis that older adults who engage more frequently in physical activities report higher subjective well-being than their counterparts who engage less frequently. Similar findings have been determined previously. For example, Koenig, George, and Titus (2004) examined the relationship between life satisfaction and health activities with adults over 50 years of age. Koenig et al. (2004) found that the frequency of health behaviors and level of life satisfaction were significantly associated with better psychological status for older adults. Similarly, the qualitative study of Hiller and Barrow (2015) found that adults over age 70 who reported specific health behaviors (e.g., jogging, walking, running, others) also reported better health. Specifically, Berk (2018) emphasized that health behaviors in later life provide well-being and the maintenance of daily life activities. Thus, it is clear that health status offers the opportunity for older adults

to actively engage in health behaviors in a social context that provides a sense of health and well-being (Hooyman & Kiyak, 2018).

Based on the research of health and well-being in later life, it is clear that research should investigate the unique patterns of health behaviors and perceived well-being in later life. Therefore, this study has two hypotheses.

Research Question

The working hypothesis was that exercise influences perception of well-being in persons aged 57-85. With respect to the participation in physical activities and subjective well-being for older adults, this study examines the hypothesis that older people who engage frequently in physical activities report high subjective well-being. Older adult males and females tend to choose different physical activity. Thus, the present study addressed the following research questions:

1. Health behaviors contribute to the perceived subjective well-being of older adults?
2. Is there any gender difference in physical activity for older adult?

Method

Sample

The National Social Life, Health, and Aging Project (NSHAP) (Waite et al., 2018) was used for this secondary data analysis. The NSHAP examined older adults' health and social factors with a national scale. The unit of observation was community dwelling older adults aged 57-85 ($n=3005$). Forty eight percent of the total sample ($n=3005$) was male and fifty two percent was female. Marital status composition was widowed 22%, married and living with partner 62%, never married (single) 4%, and divorced or separated 12%. The race composition was White 70%, African American 17%, Hispanic 10%, and other ethnicity 2.3%. Face-to-face interviews took place in participants' homes from 2010 to 2011. The research design and research protocol for the NSHAP study are available at Waite et al. (2018)

Measures

Perceived subjective well-being. Subjective well-being was assessed with a single-item Likert scale question (1= "strongly unsatisfied", 10= "very satisfied"). Sample item: "On which of these 10 steps of the ladder do you feel you personally stand at the present time?"

Demographics. Demographics (e.g., age, education, race, and income, marital status) and health (e.g., health status) were assessed via single-item questions. ***Education*** was measured with an ordinal scale (1= "Less than high school", 2="High school", 3="Some college", 4= "Associate degree", 5="Bachelor's degree", 6="some graduate training). ***Income*** was measured by satisfaction with current financial situation: 0= "Not at all satisfied", 1="Somewhat satisfied", 2="Very satisfied"). ***Marital status*** was measured as: 1="married", 2="divorced", 3= "widowed", 4= "never married" and then converted to a dummy variable for analysis. ***Self-identified race:*** 1="White/Caucasian", 2="Black/African American", 3= "Hispanic or non Black", 4= "Other", 5="Asian" and converted to a dummy variable for analysis.

Health was assessed with a single question: “How would you describe your overall state of health behaviors these days?” Would you say it is excellent, very good, good, fair, or poor?” (1=“Fair”, 2=“Good”, 3=“Very Good”, 4=“Excellent”).

Health-behaviors & activities frequency. “What kind of activities do you enjoy for your health?” Health activities behaviors frequency were assessed via single item questions on frequency of behaviors (1=“never”, 4=“often”).

Sample item: “For each of these activities, please check whether it is something you do often, occasionally, not very often, or never.”

Swimming	Running	Walking
Go for a bike ride	Taking the stairs	Taking class for yoga
Taking class for Tai Chi	Muscle training at gym	Taking dance class

Data analysis

To address the research question, a two-step hierarchical regression was conducted. In the first step, basic demographic factors were regressed on the subjective well-being factor. In the second step, the health behaviors factors were added to the regression equation.

Results

The descriptive statistics for the current study in Table 1 showed that the participants for the study ranged in age from 57-85 years and the mean age of the sample was 69.3 ($SD = 7.9$). Forty eight percent of the total sample ($n=3005$) was male and fifty two percent were female. Marital status composition was widowed 22%, married and living with partner 62%, never married (single) 4%, and divorced or separated 12%. The race composition was White 70%, African American 17%, Hispanic 10%, and other ethnicity 2.3%.

Table 1. Descriptive Statistics (n=3005)

Variables	Categories	Percentage
Marital Status (n=3,005)	Married	62%
	Divorced	12%
	Widowed	22%
	Never married	4%
Retirement Status (n=3,005)	Retired	63%
	Non-retired	37%
Age (n=3,005)	Young-old (57-74)	30%
	Middle-old (75-85)	70%
Ethnicity (n=2,993)	White	70%
	Black	17%
	Hispanic	10%
	Other Ethnicity	2%
Gender (n=3,005)	Male	48%
	Female	52%
Health status(n=2,993)	Poor	8%
	Fair	19%
	Good	30%
	Very good	31%
	Excellent	12%
Income Status (n=2,362)	Far below average	9%
	Average	18%
	Below average	33%
	Above average	16%
	Far above average	3%

Regression results indicate that independent variables (e.g., ethnicity) in this study accounted for 2.0% of the variance in subjective well-being ($R^2 = .02$, R^2 adjusted=.02, $p < .001$). Beta values indicated that there were no relationships between marital status, ethnicity and subjective well-being on health behaviors, but income and health status were significant factors.

Table 2 below shows regression results of subjective well-being. The factors collectively, accounted for 21% variance in subjective well-being (R^2 adjusted=.18, $p < .001$). Beta values indicated that income and health status were unique predictors. There was a 10% increase in satisfaction variance (total $R^2 = .31$,

$p < .001$, total R^2 adjusted = .23, $p < .001$). Beta values indicated that all the factors in this model were significantly unique predictors.

With respect to subjective well-being, independent variables accounted for 4% variance in frequency of health behaviors ($R^2 = .04$, R^2 adjusted = .04, $p < .001$). Beta values indicated that Go for a bike ride, swimming, walking, running, taking stairs, taking yoga class, taking Tai Chi class, muscle training, and taking dance class were all significant factors on subjective well-being, independent variables accounted for 2% variance in frequency of family demands ($R^2 = .02$, R^2 adjusted = .02, $p < .001$).

Table 2. Two-step Hierarchical Regression of Health Behaviors and Subjective well-being

	B	SE	B
<u>Step 1 – Basic Demographic Factors ($R^2 = .21$, $p < .001$)</u>			
Marital Status	-.35	.53	-.06
Education	.10	.15	.06*
Race	1.01	.48	.19
Income	.64	.36	.15**
Health Status	.63	.31	.21*
Gender (Male)	.41	.36	.27
<u>Step 2 – Health Behavior Factors (R^2 change = .10, $p < .001$)</u>			
Go for a bike ride	.07	.28	.03*
Swimming	.63	.31	.19**
Walking	.28	.27	.11**
Running	.15	.26	.06*
Taking stairs	.50	.30	.15**
Taking yoga class	.60	.26	.24**
Taking Tai Chi class	.16	.20	.08*
Muscle training at gym	.30	.29	.11*
Taking dance class	.26	.23	.12*
(Total $R^2 = .31$, $p < .001$) * $p < .05$ *** $p < .001$			

Table 2 shows perceived subjective well-being of older individuals who were influenced by physical activities involving aerobic capacity, flexibility, and muscular strength and endurance. Figure 1 shows conceptual relationships of older adults' health behaviors and perception of subjective well-being.

Figure 1. Conceptual Relationships of Older Adults' Health Behaviors and Perception of Subjective Well-being

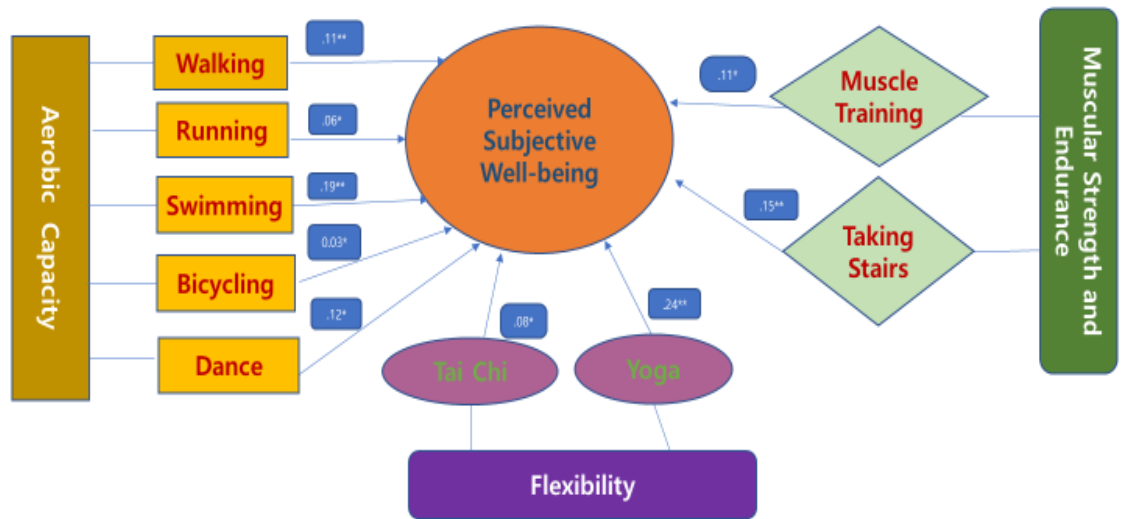


Table 3. Regression Results of Gender differences on Health Behaviors

Gender	Health Behaviors	Beta		
		B	S	Beta
Male		td.	Error	a
Aerobic Capacity	Walking	-.44	.20	-.16*
	Running	.05	.07	.02*
	Swimming	-.71	.40	-.15
	Taking a bike ride	.10	.06	.12*
	Dance	-.33	.02	-.11**
	Flexibility	Yoga	-.03	.04
	Chi	.06	.09	.02
Muscular Strength/Endurance	Muscle Training	.15	.04	.09**
	Taking Stairs	.13	.04	.07*

(Note. reference group was female group).

Table 3 shows regression results of health behaviors of gender differences on subjective well-being. With respect to subjective well-being, running, muscle training, taking stairs, and taking a bike ride were significant factors for the male older adults. It shows that female older adults who participate in walking, swimming, yoga, and dance reported higher score of subjective well-being than male counterparts.

Discussion

The major findings from this study were that participating in physical activities affected older adults' subjective well-being. It is not surprising that older adults report higher scores of subjective well-being when they engage more frequently in physical activities or exercise. Prior research on older adults has supported the linkage of subjective well-being to health activity (Mason, 2011; Kang & Bae, 2020). The current research findings are consistent with research on satisfaction and health behaviors (Emlet et al., 2013; Hooyman & Kiyak, 2018). Hooyman and Kiyak suggested that if older adults can engage in any type of health activities on a regular basis, then they report higher health status, subjective well-being, and better quality of life in general.

It is understandable as well that health status is associated with subjective well-being. Our research findings fit with van Baarsen and van Groenou's (2001) study, in which they reported that older adults who engaged in more outdoor health activities reported higher scores of happiness.

The previous research on retirement and retired older adults' changes in their social lives, including health behaviors, confirmed that older adults may undergo negative experiences such as health decline, depression, and lower level of life satisfaction after retirement (Berk, 2018). Aging normally leads to physiological declines due to an increase in sedentary or inactive time which results in a decrease in muscle mass (Finkel et al., 2018; Venturelli et al., 2018). This decrease in muscle mass can result in falls for older adults (CDC, 2020; Finkel et al., 2018). However, to counteract that decline, older adults who participated actively in physical activities reported higher scores of subjective well-being (Kang & Bae, 2020). Our study using two-step Hierarchical Regression of Health Behaviors and Subjective well-being found that older adults who participated actively in physical activities reported higher scores of subjective well-being.

Furthermore, frequent participation in physical activities benefits all age groups of people physiologically and psychologically (ACSM, 2009; USDHHS, 2018; Warburton & Bredin, 2017), especially older adults (Kang & Bae, 2020; Sternfeld et al., 2017; van Uffelen et al., 2017). Aging normally leads to physiological declines due to an increase in sedentary or inactive time which results in a decrease in muscle mass (Finkel et al., 2018; Venturelli et al., 2018). This decrease in muscle mass can result in falls for older adults (CDC, 2020; Finkel et al., 2018). Considering about 3 million older people are treated in emergency rooms for fall injuries each year in the United States (CDC, 2020; Bergen et al., 2016), intervention is important for older individuals (Stevens & Burns, 2015). Many studies have confirmed the benefits of physical activities (ACSM, 2009; Roberts et al., 2017; USDHHS, 2018) which include ease in performing daily physical functions (Kang & Bae, 2020; Sternfeld et al., 2017; van Uffelen et al., 2017) as well as the prevention of falling (CDC, 2020; Moreland et al., 2020). In addition, participation in physical activities contributes to reduction of depression and anxiety (Carek et al., 2011; USDHHS, 2018), which influence perceived subjective well-being.

Considering subjective well-being for older adults, our current study confirmed that participants aged 65-85 reported high scores of subjective well-being while they regularly participated in physical activities, including aerobic activities (e.g., swimming, dancing, walking, running, and taking a bike ride), muscular strength/endurance (e.g., taking stairs and muscular training), and flexibility (e.g., yoga class and Tai Chi class) which were all significant factors on subjective well-being for older adults (Kang & Bae, 2020; USDHHS, 2018).

Our study results found gender differences in types of physical activities (Finkel et al., 2018). With respect to subjective well-being, older males who participated frequently in running, muscular training, and taking stairs reported higher scores of subjective well-being, whereas females who participated frequently in walking, dancing, swimming, and yoga, and dancing reported higher scores. According to Finkel et al. (2018), it seems that males tend to focus more on muscular strength/endurance types of physical activities, whereas females tend to participate in walking, swimming, dancing, and yoga. The information

regarding gender differences in the participation of physical activities in older adults could be used to develop programs for older people.

However, health behaviors and their association with subjective well-being have been neglected as subjects of study. Given the growing evidence about the relationship of health behaviors to older adults' subjective well-being, more detailed research should be conducted to explore the relationships between health behaviors and subjective perception of well-being.

A directive for future research is to examine more diverse demographic variables which explain the dynamic relationships between older adults' demographic factors and a wide range of healthy behaviors related to physical fitness. The findings indicate that older adults' physical activities are important predictors for their perceived subjective well-being. Perhaps the nature of health, such as its strong relationships between activities and feeling of well-being, contributes to explaining the physical activities based on the subjective well-being factor. Indeed, demographic factors such as income, health, race, age, and gender have cross-combined or interactive effects in explaining subjective well-being in later life. Given the diverse effects on aging in society, more studies need to define the associations between the direct and indirect effects of physical activities and subjective well-being on older adults' lives.

Limitations

Understanding the effects of different demographic factors on subjective well-being in later life, can enable gerontological researchers, health policy makers, and physical activities welfare workers to focus on the social and health programs which provide most benefits to older adults and their family, community, and institutional members. Despite of the strength of the current findings, limitations exist that might influence the interpretation of the results. First, this research was a secondary data analysis of the NSHAP (2018) interview study; so, it is inherently restricted to the design of the original study. Therefore, it was not possible to refine the original interview questionnaire protocol. Second, all of the variables were measured with one-item questions. Third, in reference to the variables, a limited range of physical activities variables were assessed, such as both frequency and quality of activities. The limited measure of subjective well-being entails that the results might have been different if additional physical activities (e.g., volunteer activities, other community activities) were measured. Fourth, the findings are based on self-reported measures of demographic variables and subjective well-being, which may result in inaccuracies in reporting. Fifth, a cross-sectional study of this type can only reveal associations among variables; therefore, causality cannot be proved.

Conclusion

This study examined the influence that participation in physical activities has on subjective well-being for aging individuals. With respect to health behaviors and subjective well-being, the current study supported the hypothesis that older adults who engage more frequently in physical activities report higher subjective well-being than their counterparts who engage less frequently. The results showed that the choice of exercises tended to be based on gender, specifically that running, muscle training, taking stairs, and taking a bike ride

were significant factors for the male older adults, whereas female older adults who participate in walking, swimming, yoga, and dance reported higher score of subjective well-being than male counterparts. Understanding favorable selection of physical activities based on gender can have important implications for interventions.

An additional factor in the pattern of participation in physical activities is socioeconomic status. The results indicate that adults of higher socio-economic status may be better able to maintain their health and keep regular health behaviors in their later life. Socio-economic status is positively related to their subjective well-being.

Understanding the associations between health behaviors and subjective well-being in later life will aid in understanding social dynamics in later life. Results from the current study have implications for future researchers. The number of variables measured should be expanded. Other factors may mediate the older adults' subjective well-being which need to be examined for future studies. Further studies also need to investigate the possible barriers that are related to demographic factors' influences in older adults' physical activities. By applying longitudinal design, it is possible to determine how the effects of physical activities and age change over the life cycle.

It is important to consider these factors also in order to find the ways older adults can be motivated to keep participating in healthy physical activities in order to maintain health later in their lives.

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