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RELATIONSHIP BETWEEN PHYSICAL FITNESS AND PSYCHOLOGICAL WELL-BEING ON THE QUALITY OF LIFE OF THE ELDERLY

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Abstract

This study aims to analyze the relationship between physical fitness and psychological well-being, on the quality of life of the elderly, who are members of gymnastics groups. This cross-sectional study used the World Health Organization QOL short-form questionnaire (WHOQOL-BREF), a senior fitness test, and a psychological well-being scale. The sample consisted of 99 people aged 65 years and members of the elderly exercise community. As a result, no significant relationship was observed. Only three senior fitness test items 6-minute walk, 2-minute step, and sit and reach best explained the overall quality of life in physical, psychological, and environmental domains in the study group. The physical domain and overall quality of life are less significant for all dimensions of psychological well-being. The physical domain correlates only with the environmental mastery dimension, and overall, quality of life correlates better with the two psychological well-being dimensions. In conclusion, psychological well-being is closely related to quality of life, especially in the psychological, social, and environmental domains.

INTRODUCTION

The significant structure of Indonesia's population is the elderly population, indicated by the percentage of the elderly population in 2020 which will reach more than 10 percent. In fact, from the results of population projections, in 2045 the Indonesian elderly are estimated to make up nearly one-fifth of the entire Indonesian population. In 2020, the total population of Indonesia, which is in the age category of 60 years and over, is estimated to reach 28 million people or 10.7 percent of the total population (Badan Pusat Statistik, 2021b). The increasing number of elderly people has an impact on increasing life expectancy. The data from Badan Pusat Statistik, (2021a) states that there has been an increase in life expectancy from 69.44 in 2019 to 69.67 in 2021 for men. As for women, there is also an increase in life expectancy from 73.33 in 2019 to 73.55 in 2021. The increasing number of elderly people will also be a challenge for health workers, especially community psychiatric nurses where the elderly will experience an aging process that affects the emergence of setbacks in their physical, psychological, and social conditions so that the elderly have limitations (Liotta et al., 2018).

One important factor affecting the health condition of the elderly is physical activity (Chodzko-Zajko et al., 2009; Isroin, 2016; Vanhees et al., 2005). Physical activity systematically supports the treatment of chronic diseases and enables a healthy and active life without functional barriers (Bouaziz et al., 2016, 2017; Hillman et al., 2008). Recent studies highlight that systematic physical activity and proper dosage can delay aging process (Gopinath et al., 2018; Rebelo-Marques et al., 2018). It also allows the elderly to maintain their physical fitness at a level that will enable them to function more independently (Buford et al., 2014; Rivera-Torres et al., 2019). Evidence from observational studies supports the beneficial effects of physical activity on cognition (Carvalho et al., 2014; Gheysen et

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al., 2018). However, robust evidence from randomized controlled trials is lacking, and for example, in the LIFE study, beneficial effects of physical activity on cognition were only seen in subgroup analysis (Fielding et al., 2017; Sink et al., 2015). In addition, reduced physical activity in the elderly increases many chronic diseases, including hypertension, diabetes, obesity, cardiovascular disease, stroke, and several types of cancer (Booth et al., 2012; Lavie et al., 2019). All kinds of chronic diseases suffered by the elderly can affect their psychological well-being.

From an evolutionary perspective, psychological well-being is associated with quality of life and mental health (Loera-Malvaez et al., 2017; Popescu, 2016; Sarafraz et al., 2019). In this case, quality of life is understood from a multidimensional perspective that addresses the most relevant individual dimensions of life (Cancino et al., 2016; Losada-Puente, 2018). It includes material and non-material aspects, as described in Maslow's hierarchy of needs - physiological, safety, love, and belonging to a social group. However, mental health, which concerns psychological well-being, is only associated with non-material factors with different clinical interpretations. Some of these factors are the creation of affective relationships with significant others, as well as the coaching and development of self-esteem, self-concept, or self-image (Latief & Retnowati, 2019).

The concept of psychological well-being considers the personal and social dimensions subjectively assessed by individuals. Thus, many authors simultaneously included questions related to the areas of social and emotional relations (Latipun et al., 2019; Rosa-Rodríguez et al., 2015), as well as aspects related to family and work contexts (Mafud, 2016; Millán et al., 2017; Soto & Almagiá, 2017). Although psychological well-being is commonly a personal effort to continuously improve oneself, with a clear goal of self-realization in a positive way (Ballesteros de Valderrama, 2006), it should be noted that other ideas also exist. Subjective judgments about well-being by individuals must be understood as perceptions of the absence of problems and/or the presence of pleasurable and satisfying sensations (Freedman et al., 2017; Posada et al., 2003; Valle Raleig et al., 2011). The conceptualization above inherits the classical components of subjective well-being, which emphasize satisfaction with one's own life, capacity development, and self-realization.

Ryff, (1989) incorporates different frameworks into a stratified model of psychological well-being, in which well-being is presented as a multidimensional and dynamic process that includes multiple psychological aspects. This model mentions six different dimensions of positive psychological functioning. The first dimension is described as a positive evaluation of oneself and one's past life (self-acceptance); the second as a sense of continuous growth and development as a person (personal growth); the third is the ability to have a purpose and direction in life as well as a feeling that one's life is purposeful and meaningful (purpose in life); the fourth as the ability to build relevant relationships with others based on trust and warmth, experience strong feelings of empathy and compassion and create intimate relationships (positive relationships with others); the fifth as the ability to effectively manage one's life and the world around it (environmental mastery); and sixth as a goal to be confident and independent and have a sense of self-determination (autonomy).

Psychological well-being and health are inextricably linked, and the relationship may become more important at older ages, if only because the prevalence of chronic disease increases with age. As life expectancy rises and treatment of life-threatening diseases becomes more effective, the issue of maintaining well-being in old age becomes even more vital. Studies of parents show that quality of life evaluations are affected by a person's state of health. But, the frequent finding that the average self-reported life evaluation in the population increases with age suggests that psychological well-being is influenced by many factors, apart from health. It includes material conditions, social and family relationships, social roles and activities, and factors that also change with age. There is a growing research literature showing that psychological well-being may even be a protective factor in health, reducing the risk of chronic physical illness and increasing longevity. It has also been argued that

psychological well-being should be addressed in health assessment measures, and considered in the allocation of healthcare resources (Dolan & White, 2007). This study aims to analyze the relationship between physical fitness and psychological well-being on the quality of life in the elderly. For this purpose, two main research questions were formulated: 1) Is physical fitness level related to quality of life among the study participants? and 2) Is there any relation between the research participants' psychological well-being and the quality of life?

METHOD

This study aims to analyze whether there is a relationship between the level of physical fitness and psychological well-being in the quality of life of the elderly. The research method used was a response with ex post facto, quantitative, transverse, correlational, and descriptive designs, with an initial sample of 99 people from two groups of elderly gymnastics in Magelang (n=42) and Yogyakarta (n=57) aged 60-75 years. The variables in the research methodology design were physical fitness, psychological well-being, and quality of life. Three methods were used for data collection. The first is a senior physical fitness test instrument. This test is intended for the elderly and consists of six fitness tests to evaluate upper and lower body strength and flexibility, endurance, motor coordination, and balance (Jones & Rikli, 2002). The alpha coefficient was used to measure the consistency of physical fitness tests as follows: chair standing test (pa = 0.682; pi = 0.632), arm curl test (pa = 0.905; pi = 0.654), 6-Min Walk Test (pa = 0.875; pi = 0.870), 2 Minute Step Test (pa = 0.947; pi = 0.910), Seat and Reach Test (pa = 0.935; pi = 0.915), Back Scratch Test (pa = 0.938; pi = 0.9843), and 8 - FT Up&Go Test (pa = 0.971; pi = 0.549).

Second, Ryff's Psychological Wellbeing Scale (1989) was adapted by van Dierendonck (2004). This scale collects data on psychological well-being variables, based on subjective assessment of various situations and questions related to their life and their perceptions of success in aspects of daily development and achievement, taking into account six dimensions: self-acceptance, positive relationships with others, environmental mastery, autonomy, purpose in life, and personal growth. The scale consists of 42 items in a Likert-type format with values ranging from 1 to 6, where 1 strongly disagrees and 6 strongly agrees. Cronbach's alpha is used to measure the internal consistency of the psychological well-being subscale as follows: self-acceptance (0.83), positive relationships with others (0.81), environmental mastery (0.71), autonomy (0.73), purpose in life (0.83), and personal growth (0.68).

Third, the World Health Organization Quality of Life (QOL) Standardized Questionnaire, Short Form (WHOQOL-BREF) to assess the level of quality of life based on WHOQOL 100, which is designed for subjective quality of life assessment (Skevington et al., 2004). This instrument analyzes four main areas of life: physical, psychological, social, and environmental, as well as overall quality of life and self-assessment of health. On the physical front, older adults were assessed: activities of daily living, dependence on medicinal substances and medical aids, energy and fatigue, pain and mobility discomfort, sleep and rest, and work capacity. In the psychological field: body image and appearance, negative feelings, positive feelings, self-esteem, spirituality/ religion/personal beliefs, thinking, learning, memory, and concentration. In the social field: personal relationships, social support, sexual activity. In the field of environment: financial resources, freedom, physical safety and security, health condition, and social care (accessibility and quality), home environment, opportunities to acquire information and new skills, participation and opportunities for recreational/leisure activities physical environment, (pollution, noise, traffic, climate), and transportation (Wong et al., 2018). The score for a given domain is determined by calculating the arithmetic mean of the positions belonging to that particular domain. Scoring has a positive direction, meaning that the more points, the better the quality of life (Suárez et al., 2018). According to (Jaracz et al., 2006), who described the psychometric properties of the WHOQOL-BREF showing high validity ranging from 0.62-0.76 for the physical domain, 0.55-0.78 for the psychological domain, 0.68-0.85 for the social domain, and 0.58-0.68 for the

Table 1. Relationship of Physical Fitness and Quality of Life

Correlations								
		Chair Stand	Arm Curl	6-Min Walk	2-Min Step	Chair Sit and Reach	Back Scratch	8-FT Up & Go
Overall QOL	Pearson Correlation	.211*	.169	.283**		.312**	.162	-.113
	Sig. (2-tailed)	.036	.095	.004	.002	.002	.108	.266
	N	99	99	99	99	99	99	99
Physical domain	Pearson Correlation	.209*	.185	.287**		.313**	.174	-.142
	Sig. (2-tailed)	.038	.067	.004	.002	.002	.085	.162
	N	99	99	99	99	99	99	99
Psychological domain	Pearson Correlation	.082	.100	.264**	.244*	.260**	.187	-.191
	Sig. (2-tailed)	.419	.325	.008	.015	.009	.064	.058
	N	99	99	99	99	99	99	99

environmental domain.

RESULT AND DISCUSSION

A correlation was shown between QOL and senior fitness test results in the elderly (Table 1). In these results, no less significant relationship is observed. Overall, QOL and physical domain correlated with the four senior fitness test items (standing in a chair, 6 minutes walking, 2 minutes walking, and sitting and reaching for a chair). The psychological domain was correlated with three senior fitness test items (6-minute walk, 2-minute steps, and sitting chair and reach). The environmental domain was correlated with five senior fitness test items (curved arms, 6-minute walk, 2-minute steps, chair sit and reach, and back scratch). Meanwhile, the social domain is less significant with all items on the senior fitness test. In addition, 8-FT Up & Go is also less significant with all domains in WHOQOL-BREF (Table 1).

The analysis continued on the correlation of QOL and psychological well-being in the elderly (Table 2). In the results of correlation calculations, there is also a less significant relationship. QOL, as a whole, is correlated with two dimensions of psychological well-being (environmental mastery and life goals). The physical domain is correlated with only one dimension of psychological well-being (environmental mastery). Meanwhile, the psychological domain, social domain, and environmental domain have a significant correlation with all dimensions of psychological well-being (self-acceptance, positive relationships with others, autonomy, environmental mastery, personal growth, and life goals) (Table 2).

The regression analyses were performed step by step for the parametric outcomes of seven senior fitness test items (stand-in chair, roll arms, walk 6 minutes, walk 2 minutes, sit and reach for chair, back scratch, 8-FT up & go) and six domains of well-being psychological (self-acceptance, positive relationships with others, autonomy, environmental mastery, personal growth, purpose in life). The three-item senior fitness test (6-minute walk, 2-minute steps, and chair sit and reach) best describes the overall QOL, physical domain, psychological domain, and environmental domain variables in the studied group. Meanwhile, the social domain is less significant with all items on the senior fitness test. The most dominant QOL area for the elderly is the environmental domain. Safety, health care, proper materials, living conditions, access to information, and realization of

Table 2. Relationship of Psychological Well-Being and Quality of Life

Correlations							
		Self-Acceptance	Positive Releation with Other	Autonomy	Environmental Mastery	Personal Growt	Purpose in Live
Overall QOL	Pearson Correlation	-.071	-.119	.066	.298**	-.036	-.267**
	Sig. (2-tailed)	.484	.242	.514	.003	.721	.008
	N	99	99	99	99	99	99
Physical domain	Pearson Correlation	.057	-.018	.161	.335**	.020	-.193
	Sig. (2-tailed)	.576	.857	.112	.001	.845	.056
	N	99	99	99	99	99	99
Psychological domain	Pearson Correlation	.589**	.486**	.608**	.553**	.493**	.482**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000
	N	99	99	99	99	99	99
Social domain	Pearson Correlation	.550**	.431**	.349**	.462**	.329**	.424**
	Sig. (2-tailed)	.000	.000	.000	.000	.001	.000
	N	99	99	99	99	99	99

interests play vital roles in assessing QOL.

Indonesia does not have specific standards for assessing the physical fitness of the elderly. The results of this study can be related with great care to standards developed in the US, in which 7,183 people were tested (Rikli & Jones, 1999). In such comparisons, Indonesians aged 60 and over are not on par with older American adults. Specifically, in the "2-min step" and "8-FT up & go" tests, the results in the examined group were significantly below the lower limit of the norm; only in upper and lower extremity strength do elderly Indonesians reach lower limits for age groups comparable to the US population.

International studies similar to ours have been carried out by Grześkowiak & Wieliński, (2009; Ignasiak et al., (2009); Katan, A., Kaczorowska, A., & Ignasiak, (2013); Lepsy et al., (2021). In this study, the results were also much worse than the American population. The difference in the results obtained can be attributed to the low level of physical activity among the elderly in Indonesia. A cross-sectional study by Puciato et al., (2017) among more than 1000 participants using the WHOQOL-BREF showed that the overall QOL, physical, psychological, social, and environmental domains were significantly better in people with higher physical levels. The activity was assessed using the International Physical Activity Questionnaire Short Version (IPAQ-SF). The highest mean indicators of overall perceived health status, QOL and QOL in the physical, psychological, social, and environmental domains were shown in older adults with the highest physical activity, which is in agreement with our results.

Nawrocka et al., (2019) showed that the level of physical activity is significantly related to the social domain of QOL. The researchers identified differences in functional fitness

(tests of senior fitness and handgrip strength) and QOL (WHOQOL-BREF) in people over 60 years depending on the level of physical activity objectively measured according to the Global Recommendations on Physical Activity for health. It shows a significant relationship between upper body strength, dynamic balance, and the social domain of QOL. In addition, the results of this study also reveal that all dimensions of psychological well-being (self-acceptance, positive relationships with others, autonomy, environmental mastery, personal growth, and life goals) can significantly affect the quality of life of the elderly, especially in the psychological, social, and environmental domains. Meanwhile, the physical domain and overall QOL are less significant with all dimensions of psychological well-being. The physical domain was only correlated with the environmental mastery dimensions and overall QOL correlated better with the two dimensions of psychological well-being (environmental mastery and life goals).

These results are consistent with the findings of Gómez et al., (2010) and (de Castro et al., 2012). Elderly with good psychological well-being tend to have a high quality of life. According to Refahi et al., (2015), good psychological well-being will affect positive attitudes, feelings of satisfaction, intimacy about relationships, feelings of independence, life goals, and feelings of strength in life. In conclusion, the results of this study confirm the role of autonomy, purpose in life, positive relationships with others, personal growth, self-acceptance, and environmental mastery in influencing psychological well-being among the elderly. The results also confirm the importance of psychological well-being in the quality of life of the elderly. Regarding the results achieved, we suggest that other researchers repeat this study in various regions or countries to achieve more accurate and general results. We also recommend for elderly families to pay more attention to the psychological well-being of the elderly to improve and maintain a good quality of life. Good intervention programs or modules can also be created to increase psychological well-being and quality of life among the elderly.

CONCLUSION

The elderly who are members of the gymnastic group show a good level of QOL. In addition, they also showed good physical fitness, had high independence in daily activities, and assessed their own QOL better. The overall QOL, physical, psychological, and environmental domains are important in QOL assessment in older adults. Older people's positive assessment in terms of QOL is associated with their level of physical fitness, in particular: lower body mobility and flexibility. In addition, all dimensions of psychological well-being (self-acceptance, positive relationships with others, autonomy, environmental mastery, personal growth, and life goals) in the elderly can significantly affect the quality of life, especially in psychological, social, and environmental aspects. Meanwhile, the physical domain and overall QOL are less significant with all dimensions of psychological well-being. The physical domain is only correlated with environmental mastery, and overall QOL correlated better with the two dimensions of psychological well-being (environmental mastery and purpose in life).

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