Journal of Epidemiology and Public Health (2025), 10(01): 60-70
Masters Program in Public Health, Universitas Sebelas Maret

Research
Open Access

Investigating the Impact of Social Capital on Elderly Quality of Life in Surakarta: A Multilevel Analysis

Mentary Febryant Putry[1)], Argyo Dermatoto[2)], Bhisma Murti[1)]

[1)]Master's Program in Public Health, Universitas Sebelas Maret
[2)]Faculty of Social and Political Sciences, Universitas Sebelas Maret

Received: 25 Oktober 2024; Accepted: 19 December 2024; Available online: 16 January 2025

ABSTRACT

Background: A good quality of life is the goal of every individual in life. This quality of life indicates that a person is healthy and prosperous, so that they can live a normal life in the community, especially for the elderly population. This study aims to analyze the variables of the influence of social capital on the quality of life of the elderly at the individual level and the posyandu level.
Subjects and Method: This study is a study using a cross-sectional design conducted in 25 elderly posyandu in Surakarta from August to September 2024. The sample consisted of 200 elderly people who were selected by probability sampling. The independent variable in this study is social capital. The dependent variable is quality of life. Data collection was carried out by questionnaire. The analysis data uses multilevel analysis.
Results: The results of the multilevel analysis that has been carried out in this study stated that the social capital and quality of life of the elderly (b=1.29; CI 95%= 1.12 to 1.47; p<0.001), directly influenced by age (b=0-1.16; CI 95%= -3.64 to 1.31; p= 0.035), gender (b=8.91; CI 95%= 7.21 to 10.62; p<0.001), education (b=10.27; CI 95% = 8.73 to 11.81; p<0.001).
Conclusion: Social capital has a statistically significant positive influence on the quality of life of the elderly.

Keywords: Social capital, quality of life, multilevel analysis

Correspondence:
Argyo Demartoto. Master's Program in Public Health, Universitas Sebelas Maret. Jl. Ir. Sutami 36A, Surakarta 57126, Central Java, Indonesia. Email: Argyo.demartoto@staff.uns.ac.id.

Cite this as:
Putry MF, Dermatoto A¸Murti B (2025). Investigating the Impact of Social Capital on Elderly Quality of Life in Surakarta: A Multilevel Analysis. J Epidemiol Public Health. 10(1): 60-70. https://doi.org/10.26911/jepublichealth.2025.10.05.06.

BACKGROUND

The phenomenon of population aging is a global phenomenon that occurs in line with the advancement of health technology and the increase in human life expectancy. The number of people aged 60 years and over and in the elderly category in 2019 in the world is 1 billion. The WHO predicts that this number will increase to 1.4 billion in 2020 and reach 2.1 billion by 2050. This increase is happening at an incredible pace and is expected to continue to increase in the coming years, especially in developing countries (WHO, 2020).

Quality of life is a commitment of the World Health Organization. Quality of life is not only focused on health in a narrow sense, namely free from disease and disa-

bility, but also on physical, mental, social and environmental welfare (WHO, 1994). A good quality of life is the goal of every individual in life. This quality of life indicates that a person is healthy and prosperous, so that they can live a normal life in the community, especially for the elderly population.

In accordance with the distribution of the elderly population in Indonesia, a review of the quality of life must be more essential. This review is not necessarily carried out only to increase life expectancy. However, focusing on dynamic aging, as the number of elderly individuals increases, the quality of life of these individuals must also be a major consideration (Nasab and Hossein, 2019). Factors such as age, gender, health status and culture have an important influence on quality of life. Although elderly individuals tend to decline their quality of life as they age, there are other factors that play a role, several of which determine the quality of life related to healing and physical activity together.

Data from Indonesia's Central Statistics Agency (BPS) in 2022, Indonesia's Demographics shows that 8 out of 34 provinces are classified as provinces with an elderly population, because the proportion of elderly people reaches 10% or more. Most of the elderly, namely women, reached 51.81%, while men reached 48.19%. Residents between the ages of 60 and 69 are the largest contributors to the elderly population, with about 65 out of 100 elderly people in this age range. In the city of Surakarta itself, the number of elderly people starting from the age of 60 years and above is 79,092 people. Based on the results of the study, the quality of life of the elderly in Surakarta still needs to be improved, because many of them experience a decline in body functions, such as balance and physical fitness, which negatively affects their well-being (Rachmatika et al., 2022).

Social capital in health, such as cognitive and structural, has a positive influence on the health of individuals from a micro perspective (Yuan et al., 2022) and decreased mortality (Borgonovi et al., 2021). Aging leads to cognitive declines, such as impaired memory and executive function, as well as age-related inflammation, which can have a significant impact on the quality of life of the elderly. In addition to health factors, the surrounding environment also plays an important role in their quality of life. Understanding the relationship between cognitive decline and environmental factors can provide valuable renovation strategies to create a more supportive environment, thereby improving the overall quality of life of the elderly (Song and Yu, 2019; Zhang et al., 2020). From the aspect of mental health, there is a link between family social capital and functional health that affect each other (Lu et al., 2021). In the study's findings, social capital correlates with the elderly, as well as risky health behaviors (Yang et al., 2020).

Multilevel analysis has an important role in evaluating how satisfaction with social networks, socioeconomic status (SES), and types of environments interact in a complex way, all of which contribute positively to improving the quality of life of the elderly. With this method, we can explore the factors that influence both at the individual and community levels on health-related quality of life (Moon and Cha, 2022; Schmidt et al., 2021). In this study, multilevel analysis will be applied to deeply understand how social capital, such as support from the immediate environment and community, affects the quality of life of the elderly at the individual level and at the posyandu level. The study will also explore the role of posyandu as a community health service center in support-

ing the well-being of the elderly, by looking at factors at the individual and community level that contribute to improving their quality of life.

SUBJECTS AND METHOD

1. Study Design

The type of study used is a quantitative study with an analytical observational method using a cross-sectional study. This study was conducted in 25 elderly Posyandu in Surakarta. The study was conducted from August to September 2024.

2. Population and Sample

The population in this study is the elderly at the elderly Posyandu in Surakarta. The researcher used as many as 200 study subjects. The sampling technique is simple random sampling.

3. Study Variables

The independent variable in this study is social capital. The dependent variable is quality of life.

4. Operational Definition of Variables

Social Capital: The existence of social glue in the social system, the proximity of whether there is conflict or not. Data were taken with a questionnaire with a continuous scale.

Structural Social Capital: The ability to make bonds between individuals, the presence or absence of participation, the activeness of participation, the role of individuals in the network, which is in the form of the structure, scope of organizations and community institutions at the local level, which accommodates and encourages the occurrence of collective activities that are beneficial to the entire community, a sense of security. Data were taken with a questionnaire with a continuous scale.

Cognitive Social Capital: Related to values, attitudes, and beliefs, which affect trust, solidarity, and reciprocity, which encourages the creation of cooperation in society to achieve common goals, related to resources that have the same frequency of comfort and closeness. Data were taken with a questionnaire with a continuous scale.

Relational Social Capital: The nature and quality of relationships between people, the number of people trusted, the level of trust, the feeling of being valued. Data were taken with a questionnaire with a continuous scale.

Social capital Communication: The process of passing information from one person to another. Activeness of communication, comfort in communicating. Data were taken with a questionnaire with a continuous scale.

5. Study Instrument

The study instrument used for data collection is using a questionnaire.

6. Data Analysis

Univariate analysis was carried out to determine the frequency distribution and percentage of each variable studied, namely social capital factors such as: social institutions and their contents, security and trust, tolerance for diversity, participation in local communities, work interactions, interactions with neighbors, and interactions with family and friends, as well as quality of life. The next analysis is bivariate with linear regression analysis carried out on each exogenous variable, namely social capital on the variables of the quality of life of the elderly, gender, education, and posyandu strata. Multivariate analysis uses a multilevel analysis model.

7. Research Ethics

Study ethics include consent sheets, anonymity, confidentiality, and ethical feasibility. The ethical feasibility of this study comes from the Ethics Committee of Health Studies Dr. Moewardi Surakarta with number: 2.039/VIII/HREC/2024.

RESULTS

1. Sample Characteristics

Table 1 shows that from the 200 respondents studied, it can be seen that the majority of study subjects are aged 60-69 years (80%), are women (62%), have a low level of education (83.5%), and are posyandu participants with independent strata (84%).

Table 1. Description categorical data of the characteristics of the elderly in Surakarta City as a study sample (N=200)

Variable	Category	Frequency (n)	Percentage (%)
Age	60-69 Years	160	80%
	>70 Years	40	20%
Gender	Man	76	38%
	Woman	124	62%
Education	Graduated from junior high school	33	16.5%
	High School Graduation	167	83.5%
Strata Posyandu	Primary	0	0%
	Intermediate	8	4%
	Full moon	24	12%
	Self-sufficient	168	84%

Table 2 shows the univariate results of 200 study subjects, that the mean of the social capital variable is 15.56 with a minimum value of 7 and the maximum value obtained by the subjects on this variable is 20.

Table 2. Description continuous data of the social capital variables and quality of life of the elderly in Surakarta City (N=200)

Variable	Mean	SD	Min.	Max.
Social Capital	15.56	4.18	7	20
Quality of Life for the Elderly	66.91	7.54	42	80

2. Bivariate Analysis

Table 3 shows that there is a statistically significant positive relationship between social capital and the quality of life of the elderly, every 1 unit increase in social capital score will be followed by an improvement in the quality of life of the elderly by 1.29 units (b=1.29; CI 95% = 1.12 to 1.47; p <0.001). Based on the age relationship variable, the results showed that there was a statistically significant negative relationship between age and the quality of life of the elderly. Every 1 unit increase in age score will be followed by a decrease in the quality of life of the elderly by 1.16 units (b= -1.16; CI 95% = -3.64 to 1.31; p= 0.035). On the gender relationship variable, there is a statistically significant positive relationship between gender and the quality of life of the elderly. Women have a better quality of life than older men (b=8.91; CI 95% = 7.21 to 10.62; p <0.001). On the variables of the educational relationship, there is a statistically significant positive relationship between education and the quality of life of the elderly. Every increase of 1 unit of education score will be followed by an improvement in the quality of life of the elderly by 10.27 units (b=10.27; CI 95% = 8.73 to 11.81; p <0.001).

Table 3. Bivariate analysis of the relationship between social capital variables, age, gender, education and quality of life of the elderly

Independent Variables	Regression coefficient (b)	CI 95 %		p
		Lower limit	Upper limit	
Social Capital	1.29	1.12	1.47	<0.001
Age	-1.16	-3.64	1.31	0.035
Gender	8.91	7.21	10.62	<0.001
Education	10.27	8.73	11.81	<0.001

3. Multilevel Analysis

Multilevel double linear regression analysis was used to assess the influence of social capital, education, gender, and posyandu strata on the quality of life of the elderly, taking into account factors at the individual and posyandu levels. Social capital, including social support and community participation, was analyzed in conjunction with educational and gender variables. This approach allows for the separation of influences at the individual and posyandu levels, providing a deeper understanding of how the four variables contribute to the quality of life of the elderly.

Table 4. Multiple multilevel linear regression analysis of the influence of social capital and quality of life in the elderly

Independent Variable	Regression coef. (b)	CI 95%		p
		Lower bound	Upper bound	
Fixed effect				
Social capital	1.01	0.84	1.17	<0.001
Age (≥70 years old)	-2.00	-3.96	-0.05	0.045
Gender (female)	1.72	0.16	3.28	0.031
Education (≥High School)	3.07	0.92	5.22	0.005
Strata Posyandu (highest level)	8.49	2.23	14.75	0.008
Strata Posyandu (advanced level)	9.94	4.38	15.50	<0.001
Random effect				
Posyandu				
Var (cons)	4.07	1.42	11.66	
Var (residuals)	27.99	22.70	34.52	
N observation=200				
p<0.001				
LR test p= 0.003				
ICC = 12.7 %				

a. Level 1 Elderly people

1. Social capital and quality of life

There is a positive influence of social capital on the quality of life of the elderly, and this influence is statistically significant. Each increase in social capital score will be followed by an increase in quality of life score by 1.01 units (b=1.01; CI 95%= 0.84 to 1.17; p<0.001).

2. Age and quality of life

There is a positive influence of age on the quality of life of the elderly, and this influence is statistically significant. Older people ≥70 years old have an average social capital score of 2.00 lower than older < 70 years old (b=-2.00; CI 95%= -3.96 to -0.05; p=0.045).

3. Gender and quality of life

There was a positive gender influence on the quality of life of the elderly, and this influence was statistically significant. The average female elderly has a social capital score of 1.72 higher than that of male elderly (b=1.72; CI 95%= 0.16 to 3.28; p=0.031).

4. Education and quality of life

There was a positive influence of education on the quality of life of the elderly, and the influence was statistically significant. Educated older age >= high school has an average social capital score of 3.07 higher than high school (b=3.07; CI 95%= 0.92 to 5.22; p=0.005).

5. Posyandu level and quality of life

There is a positive influence of the posyandu strata on the quality of life of the elderly, and this influence is statistically significant. Elderly people who visit posyandu for the elderly with a full strata have an average social capital score of 8.49 higher than the primary strata (b=8.49; CI 95%= 2.23 to 14.75 ; p=0.008).

6. Posyandu level and quality of life

There is a positive influence of the posyandu strata on the quality of life of the elderly, and this influence is statistically significant. The elderly who visited the elderly posyandu with the plenary strata had an average social capital score of 9.94 higher than the primary strata (b=9.94; CI 95%= 4.38 to 15.50; p=< 0.001).

b. Level 2: Posyandu for the elderly

1. Constant Variations

There was a constant variation (in other words, mean) in the quality of life of the elderly between posyandu, of 4.07. Thus, there is a contextual influence of posyandu where the elderly are served on the quality of life of the elderly (constant variation = 4.07; CI 95%= 1.42 to 11.66).

2. Residual variation

There was a residual variation (in other words, the difference between the quality of life observation value in each elderly individual and the prediction of the quality of life of the elderly), which was 27.99. (residual variation= 27.99; CI 95%= 22.70 to 34.52).

7. Intra-class Correlation (ICC)

There was a contextual influence of posyandu on the quality of life at the level of elderly individuals, which was shown by ICC (ICC = 12.7%). This means that 12.7% of the variation in the quality of life of the elderly is determined by contextual factors at the posyandu level. This also means that 12.7% of the variation in the quality of life of the elderly can be explained by contextual factors at the posyandu level.

8. Likelihood ratio (LR) test

There is a statistically significant difference between the multilevel double linear regression analysis model and the ordinary double linear regression analysis. These results show that a multilevel analysis model is indeed needed.

DISCUSSION

1. The influence of social capital on the quality of life of the elderly

This study shows that social capital has a statistically significant positive influence on the quality of life of the elderly. Every increase in one score on social capital will lead to an increase in the quality of life score by 1.01 units (b=1.01; CI 95% = 0.84 to 1.17; p<0.001).

The results of this study are in line with other studies that state that higher personal social capital is closely related to improved health-related quality of life in the elderly group. This relationship appears to be stronger among older people living in rural areas, where access to social networks and community support tends to be important factors in maintaining health and

well-being. Elderly people in rural areas who have better personal social capital tend to show more positive health outcomes than those with lower social capital (Jiang et al., 2022).

Social capital and socioeconomic status (SES) have a significant relationship with health-related quality of life in the elderly, but they are also associated with health-risking behaviors, such as smoking habits, lack of physical activity, and unhealthy diets. Older people with lower social capital and SES tend to be more vulnerable to behaviors that can increase the risk of health problems, negatively impacting their overall quality of life (Dya and Oktora, 2023).

In contrast, older people with higher social capital and SES tend to have better access to social resources and supports, which can help them avoid or reduce these risky habits (Yang et al., 2020). Slightly different results stated that the perception of aging also affects the quality of life of the elderly. A positive view of the aging process is strongly associated with improved quality of life in older adults, while a negative view of aging is associated with a decline in quality of life. Individuals who have an optimistic attitude towards aging tend to experience better well-being, both physically and mentally. In contrast, those who have a pessimistic view of aging often face a variety of challenges, including more serious health problems and a lack of motivation to participate in social activities, which negatively impact their overall quality of life (Velaithan et al., 2024).

2. The effect of age on the quality of life of the elderly

This study shows that there is a statistically significant positive influence between age on the quality of life of the elderly. Seniors aged 70 years and older have an average social capital score of 2.00 points lower than those under 70 years old (b=-2.00; CI 95%= -3.96 to -0.05; p=0.045).

The results of this study are in line with other studies that say that as we age, quality of life (QoL) often declines, mainly due to physical and mental health challenges, such as chronic diseases and depression. Older people in older age groups (e.g., 65-75 years) tend to report lower quality of life compared to younger older groups. This is due to an increased risk of health disorders and a decline in physical and cognitive abilities as we age, which significantly affects overall well-being. Older people may also face social isolation and limited access to health services, which further worsens their condition (Eryando et al., 2020; Gunawan et al., 2020).

Slightly different results stated that the perception of aging also affects the quality of life of the elderly. A positive view of the aging process is strongly associated with improved quality of life in older adults, while a negative view of aging is associated with a decline in quality of life. Individuals who have an optimistic attitude towards aging tend to experience better well-being, both physically and mentally. In contrast, those who have a pessimistic view of aging often face a variety of challenges, including more serious health problems and a lack of motivation to participate in social activities, which negatively impact their overall quality of life (Velaithan et al., 2024).

3. The influence of gender on the quality of life of the elderly

This study shows that there is a statistically significant positive influence between gender and quality of life of the elderly. On average, elderly women have a social capital score that is 1.72 points higher than that of elderly men (b=1.72; CI 95% = 0.16 to 3.28; p=0.031).

This study in contrast to other studies that state that older men report better

quality of life compared to older women in all countries studied. These findings suggest that there is a gender difference in quality of life experiences among older adults, where men tend to feel more satisfied with their lives. Factors such as social roles, community support, and differences in physical and mental health may contribute to these differences, suggesting that older men may have more positive access or experiences in terms of quality of life compared to their female counterparts (Lee et al., 2020).

In the elderly in India, women tend to score lower in physical and psychological factors than men, but they have better scores in aspects of social and environmental relationships. This suggests that while women may experience greater challenges related to physical health and mental well-being, they can build and maintain strong social relationships and create a supportive environment. These differences indicate that older women may be more successful in the social aspects of their lives, although they face difficulties in both physical and psychological areas (Moirangthem dan Ojha, 2022).

4. The influence of education on the quality of life of the elderly

Studies show that there is a statistically significant positive influence between education and the quality of life of the elderly. On average, the elderly who have a minimum high school education have a social capital score of 3.07 points higher than the elderly who have an education below high school (b=3.07; CI 95% = 0.92 to 5.22; p=0.005). Higher levels of education are closely related to better quality of life in the elderly, as education can improve cognitive abilities and provide better coping mechanisms to face the challenges associated with aging (Jurkiewicz et al., 2022; Utomo et al., 2023).

Education has the strongest positive influence on the quality of life of the elderly, along with income and access to health services. Education not only improves knowledge and skills, but can also serve as a coping mechanism that helps the elderly in facing life's challenges. With good education, the elderly are better able to access health information, make better decisions regarding self-care, and actively participate in the community, thereby contributing to improving their overall quality of life (Cui et al., 2019; Utomo et al., 2023).

In addition, educational interventions, such as education programs on healthy lifestyles, have been shown to significantly improve the quality of life among the elderly population. By providing the knowledge and skills necessary to adopt a healthy lifestyle, these interventions help older people overcome various health problems and improve their overall well-being, as well as facilitate them in living a better quality of life (Sabbaghzadeh et al., 2021).

5. The influence of the posyandu level on the quality of life of the elderly

The study showed that there was a statistically significant positive influence between the strata of posyandu and the quality of life of the elderly. Elderly people who visited posyandu with full strata had an average social capital score of 8.49 points higher than those who visited posyandu strata pratama (b=8.49; CI 95% = 2.23 to 14.75; p=0.008). In addition, the elderly who visited posyandu with a plenary strata also showed an average social capital score of 9.94 points higher than those who visited the primary strata (b=9.94; CI 95% = 4.38 to 15.50; p<0.001).

Posyandu operating at higher strata provide better health services for the elderly, including routine health checkups, nutrition counseling, and physical activities such as gymnastics. This comprehensive service plays an important role in improving the overall social well-being and health of the

elderly population. By facilitating access to quality health services and encouraging an active lifestyle, this posyandu contributes to improving the quality of life of the elderly, while strengthening community involvement and creating a healthier living environment (Patria et al., 2024).

These findings indicate that a higher level of posyandu strata is related to improved quality of life in the elderly. This study is in line with other studies that state that posyandu services are proven to improve quality of life (QoL) in the elderly who experience multimorbidity (Yen et al., 2021). Several factors, such as poor nutritional status, depressive symptoms, and fragility, have been identified as risk factors contributing to poor QoL outcomes. In addition, participation in the Elderly Integrated Health Service Post significantly improved QoL in various domains, including physical, psychological, social and environmental aspects. By optimizing integrated health services, the elderly can overcome various health challenges they face and achieve better overall well-being (Margaretha et al., 2021).

AUTHOR CONTRIBUTION

All authors have made meaningful and significant contributions to data analysis and the preparation of the final manuscript.

ACKNOWLEDGMENT

The researcher expressed his deep gratitude to the study subjects for the willingness of the time that has been given and expressed his gratitude to all parties who played a role in the preparation of this article.

FUNDING AND SPONSORSHIP

This study is funded by the first author.

CONFLICT OF INTEREST

There was no conflict of interest in this study.

REFERENCE

BPS (2022). Statistics of the Elderly Population 2022 (Statistik Penduduk Lanjut Usia 2022). Badan Pusat Statistik

Borgonovi F, Andrieu E, Subramanian SV (2021). The evolution of the association between community level social capital and COVID-19 deaths and hospitalizations in the United States. Soc Sci Med. 278: 11–17. doi: 10.101-6/j.socscimed.2021.113948.

Cui S, Wang R, Lu L, Wang H, Zhang Y (2019). Influence of education level on mental health and medical coping modes: A correlation analysis in the elderlies. Am J Nurs Sci. 8(6): 324. doi: 10.11648/j.ajns.20190806.16.

Dya CA, Oktora SI (2023). The influence of social capital on the happiness of the elderly population in Indonesia (Pengaruh modal sosial terhadap kebahagiaan penduduk lanjut usia di Indonesia). JKI. 18(1): 75–92. doi: 10.55981/jki.2023.1696.

Eryando T, Ariha D, Daniah, Damayanti YF, Anggraini S (2020). Relationship of age, working and education with/ regarding the quality of life of elderly. ICoSHEET. 1–10. doi: 10.2991/ahsr.k-.200723.058.

Gunawan I, Lin MH, Hsu HC (2020). Exploring the quality of life and its related factors among the elderly. SEANR. 2(1): 1–5. doi: 10.26714/sean-r.2.1.2020.1-10.

Jiang D, Yan Y, Zhou H, Wang Q (2022). The association between personal social capital and health-related quality of life among Chinese older people: A cross-sectional study. Front

Nutr. 9(1): 1–5. doi: 10.3389/fnut.2022.995729.

Jurkiewicz B, Barnaś E, Kołpa M (2022). Senior education and the quality of life of women in different periods of old age. J Educ Health Sport. 12(8): 217–230. doi: 10.12775/JEHS.2022.12.08.021.

Lee KH, Xu H, Wu B (2020). Gender differences in quality of life among community-dwelling older adults in low- and middle-income countries: Results from the study on global AGEing and adult health (SAGE). BMC Public Health. 20(1): 114. doi: 10.1186/s12889-020-8212-0.

Lu N, Spencer M, Sun Q, Lou VWQ (2021). Family social capital and life satisfaction among older adults living alone in urban China: The moderating role of functional health. Aging Ment Health. 25(4): 695–702.

Margaretha C, Sarjana W, Suharto S, Jusup I (2021). Relationship between quality of life, depression, and participation in elderly integrated health service post among older adults. Nurs Med J Nurs. 11(2): 144–153. doi: 10.14710/nmjn.v11i2.33500.

Moirangthem S, Ojha GJ (2022). Gender differences in quality of life and subjective happiness in Indian elderly. Indian J Occup Ther. 54(2): 51–56. doi: 10.4103/ijoth.ijoth_32_21.

Moon H, Cha S (2022). Multilevel analysis of factors affecting health-related quality of life of the elderly. J Korean Psychiart. 31(3): 391–401. doi: 10.12934/jkpmhn.2022.31.3.391.

Nasab D, Hossein A (2019). The role of empowering the elderly in healthy and active aging. The 5th National Conference on Humanities and Management Studies.

Patria DKA, Ristanto R, Asri Y, Maulana (2024). Peningkatan kualitas kesehatan lansia dengan penyuluhan gizi lansia di persatuan istri purnawirawan Batu. JPKM. 5(1): 47–52. doi: 10.47575/jpkm.v5i1.538.

Rachmatika B, Komalasari DR, Widodo A, Rahman F (2022). The relationship between body balance and physical fitness to the quality of life in the elderly in urban areas of Surakarta (Hubungan keseimbangan tubuh dan kebugaran fisik terhadap kualitas hidup pada lanjut usia di daerah urban Surakarta). MJN. 4(7): 1839–1849. doi: 10.33024/mnj.v4i7.6906.

Sabbaghzadeh A, Vazirinejad R, Khalili P, Dousti AR, Sabzavari S (2021). The effect of healthy lifestyle education on the quality of life of the elderly in Rafsanjan: A quasi-experimental study. JRUMC. 20(5): 539–553. doi: 10.52547/jrums.20.5.539.

Schmidt T, Christiansen LB, Schipperijn J, Cerin E (2021). Social network characteristics as correlates and moderators of older adults' quality of life—the SHARE study. Europ J Pub Health. 31(3): 541–547. doi: 10.1093/eurpub/ckab001.

Song D, Yu DSF (2019). Effects of a moderate-intensity aerobic exercise programme on the cognitive function and quality of life of community-dwelling elderly people with mild cognitive impairment: A randomised controlled trial. Int J Nurs Stud. 93(1): 97–105. doi: 10.1016/j.ijnurstu.2019.02.019.

Utomo J, Rukmana AY, Andarmoyo S, Anurogo D (2023). The effect of education, income, and access to health services on the quality of life of the elderly in West Java. West Sci Soc

Stud. 1(05): 227–235. doi: 10.58812/-wsshs.v1i05.348.

Velaithan V, Tan MM, Yu TF, Liem A, Teh PL, Su TT (2024). The association of self-perception of aging and quality of life in older adults: A systematic review. Gerontol. 64(4): 1–10. doi: 10.1-093/geront/gnad041.

WHO (1994). The development of the World Health Organization quality of life assessment instrument, in Quality of Life Assessment: International Perspectives: Proceedings of the Joint-Meeting Organized by the World Health Organization and the Fondation IPSEN. 41–57.

WHO (2020). Healthy Life Expectancy (HALE) at birth (years). World Health Organization

Yang Y, Wang S, Chen L, Luo M, Xue L, Cui D, Mao Z (2020). Socioeconomic status, social capital, health risk behaviors, and health-related quality of life among Chinese older adults. Health Qual Life Outcomes. 18(1): 291. doi: 10.1186/s12955-020-01540-8.

Yen KH, Hsu CC, Yu PC, Liu HY, Chen ZJ, Chen YW, Peng LN, et al. (2021). Determinants of improved quality of life among older adults with multimorbidity receiving integrated outpatient services: A hospital-based retrospective cohort study. Arch Gerontol Geriatr. 97(1): 4–5. doi: 10.1016/j.archger.2021.104475.

Zhang F, Li D, Ahrentzen S, Feng H (2020). Exploring the inner relationship among neighborhood environmental factors affecting quality of life of older adults based on SLR–ISM method. J Hous Built Environ. 35(1): 215–242. doi: 10.1007/s10901-019-09674-y.