

Analysis of a Different Quality of Elderly Health Based on Independence in the Sleman District

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The increasing population and life expectancy of the elderly is accompanied by ageing problems that can affect their quality of life, such as physical and mental health. This research was conducted in the Sleman Regency, and aims to determine the differences in the quality of life of the elderly based on the level of their independence. This research is a quantitative study and uses the description research type with a non-probability sampling design. The results show that there is no difference in the quality of excellent and adverse physical and mental health based on the independence of the elderly in carrying out their activities. Further, there is a significant difference in the quality of physical health based on the independence of the elderly in carrying out activities in their environment. However, there is no significant difference in the quality of mental health in the elderly in carrying out activities in their environment.

Keywords: *Quality of life, ADL, IADL, SF-12.*

Introduction

The demographers predict that soon there will be a demographic time bomb, namely an unprecedented increase in the percentage of the elderly. The transition process is marked by an increase in the elderly population that occurs throughout the State (Bahrudin, 2010). The soaring life expectancy (UHH) of the elderly can lead to an increase in the ageing population in Indonesia. According to the Ministry of Health, in 2045 to 2050, the average estimated life expectancy will be 77.6 years old, with the percentage of the elderly population in 2045 being projected at 28.68 per cent (Ministry of Health, 2013).

Meanwhile, the Province in Indonesia which has the highest age of life expectancy (UHH) is the Province of the Special Region of Yogyakarta (DIY). The rising ageing population and life expectancy rates are accompanied by elderly problems that can affect their quality of life, such as physical and mental health. The elderly's physical and mental health condition can be seen based on their independence.

According to Theresa and Trihandini (2013), routine activities performed by the elderly can have a positive impact on their lives. If the elderly cannot carry out their physical function, they will face several psychological problems and a decreased ability to be independent. For example, healthy lifestyles have been adopted by villagers by always walking or riding a bicycle when travelling to the rice fields or market. These abilities could provide benefits when they enter the old age phase. After reaching the stage of old age, they still go to the rice fields to fill in their time. They thoroughly enjoy planting rice and doing other activities without any obstacles.

Based on this story, the researcher is interested in studying the quality of life of the elderly, which is seen from the quality of life that is good or bad based on their independence. This research examines the differences in the elderly's life quality based on independence. It has a focus on the distance between the differences in the quality of life of the elderly in the Sleman Regency, based on ADL and IADL. The difference is in knowing who can do activities with or without the help of others. The research was conducted in the Sleman Regency because of its life expectancy age (UHH). According to BPS data (DIY Statistics) in 2017, the DIY has a life expectancy of up to 74.74 years old, and is the highest among the 34 provinces in Indonesia (BPS, 2017). The primary data was obtained from the Health and Demographic Surveillance System (HDSS) in Sleman, which is under the Faculty of Medicine of Gadjah Mada University.

Therefore, the article will be divided into three main parts. First, this article will started with related theoretical discussions about the quality of life of the elderly based on independence. Second, it will describe the research method used on the quality of life based on independence. Moreover, in the third explanation, this research describes the findings in the field, and the results show the significant differences in several of the variables that were studied.

Elderly

In Indonesia, the elderly age limit is 60 years and above. This age poses as the limitation for people who do not have a duty to work or fulfill their daily needs. Therefore, the elderly need protection from their children, grandchildren, closest relatives, and extended family, although

some of them continue to work because they do not want to bother others. However, the elderly are susceptible to disease, so special care is needed from their families.

According to Laslett, aging is a process of continuous biological change experienced by humans at all levels of age and time, while old age is the term for the final stages in the aging process (Partini, 2011). In addition, old age is the last stage in the journey of human life. The aging process is a development process and continues until the end of human life, which is marked by physical and psychological regression (Purnama, 2009).

Quality of Life

According to the World Health Organization's definition of 'quality of life' (WHOQOL), it is a functional condition of the elderly which is related to physical health, in terms of daily activities, dependence on medical assistance, resting needs, sleep anxiety, illness, energy, and fatigue. All of these aspects significantly affect elderly health, to the degree that they require regular checks to determine their functional health condition. Mobility, daily activities, and also work capacity, could influence functional conditions, whereas psychological health is concerned with positive feelings related to appearance and physical appearance that could build a stable condition because the healthy body will manage the positive and negative feelings of the elderly (Yuliati et al., 2014).

Older people usually live and enjoy their lives by continuing to think, study, concentrate, remember, build self-esteem, and individual trust. Elderly social relationships are comprised of social support, personal relationships, and also environmental conditions, such as the home environment, freedom, physical safety, activities in the environment, vehicles, security, financial resources, health, and social care. In general, older people experience limitations that will decrease their quality of life. The family is the smallest unit of society, so it has a crucial role in elderly care to improve their quality of life (Yuliati et al., 2014). The family is the key to happiness for the elderly, which is a place to know their children growing up in the circle of life, and even their children give them grandchildren, so they feel their lives are perfect; it means the elderly who are cared for by their children will have a better quality of life.

Independence

The Department of Health announced the Elderly Health Program with the aim to improve the degree of elderly health to enable them to be healthy, independent, and efficient, so that they do not become a burden to themselves, their families or the community. Several of the aspects being developed are prevention efforts so that the aging process can be slowed down,

while the other elderly who are in need of rehabilitation, can also continue to live their daily lives independently (Partini, 2011).

Independence is the freedom to act; it does not depend on others, is free to regulate the self, and is free from dangerous diseases (Wulandari, 2014). The self-reliant elderly can carry out activities without the help of others, such as waking up, wearing clothes, eating, and going to the toilet.

The level of independence in this research measures the degree of elderly independence in carrying out personal activities such as bathing, dressing, eating, waking up, going to the toilet, and using the toilet. In addition, the elderly independence level can also be seen from doing activities in the surrounding environment, such as doing homework, participating in social activities, walking, and travelling using private or public transportation.

Methods

This is a survey research which uses the type of research description through primary data from the HDSS, which is a surveillance system that collects population transition and health status data periodically for a specific time in the Sleman Regency. The selection of the Sleman Regency as a research location is because this district has the highest life expectancy (UHH) in Indonesia, as well as a sizeable elderly population. The study has been carried out since May 2018.

The dependent variable used in this study is the quality of life of the elderly, and the independent variable used in this study is the independence of personal activities and independence of activities in the surrounding environment. The sampling technique used in this study is a non-probability sampling design. Incomplete sampling is done using the law of probability; it means, not all population units could be used as research samples (Bungin, 2011).

This research was conducted in the Sleman Regency by collecting a population from 17 districts with 577 total populations. The population data was obtained from populations recorded in the HDSS with the characteristics of age respondents over 60 years. From the 577 elderly people recorded in the HDSS, the researchers took 20 per cent of the sample randomly from each sub-district in the Sleman Regency and produced 111 samples from all sub-districts. The following are the calculation results of the sample numbers from each district in the Sleman Regency.

Table 1: Total Samples of Sub-Districts in Sleman Regency

No.	Sub-District	Total Population	Total Sample
1.	Berbah	25	5
2.	Cangkringan	32	6
3.	Depok	68	14
4.	Gamping	49	10
5.	Godean	49	10
6.	Kalasan	39	8
7.	Minggir	28	6
8.	Mlati	49	10
9.	Moyudan	14	3
10.	Ngaglik	72	14
11.	Ngemplak	18	4
12.	Pakem	12	2
13.	Prambanan	28	6
14.	Sayengan	16	3
15.	Sleman	22	4
16.	Tempel	37	2
17.	Turi	19	4
	Total	577	111

The following research instruments will be used in the study:

SF-12

Short-Form 12 or SF-12 is the development of SF-36 measuring instruments. Compared to SF-36, SF-12 has few question items. SF-12 only uses SF-12 questions to measure health and functional well-being from the patient's perspective. In determining the quality of life, there are two assessment components in SF-12: the physical health of the elderly or Physical Component Summary (PCS), and the mental health of the elderly or Mental Component Summary (MCS). Both components are used to determine the good or bad quality of physical and mental health by giving a score between zero to 100. The higher the score obtained, the better the quality of life of the elderly. Scoring is done by using software, namely Pro CoRE of OptumInsight Life Sciences, Inc.

Activities of Daily Living (ADL)

Activities of Daily Living (ADL) is a measuring tool to determine the independence of the elderly in carrying out personal activities, such as bathing, dressing, eating, moving from chair to bed and from bed to chair, in and out of the toilet, and taking off and wearing pants.

In the ADL Questionnaire, there are five questions related to these matters. Each question is given a value of one to five, to assess the answer given by the respondent.

Instrument of Activity Daily Living (IADL)

The Instrument of Activity Daily Living (IADL) is a measuring tool to determine the independence of the elderly in carrying out activities in the surrounding environment, such as doing daily household chores, participating in community activities, independence (either experiencing difficulty or not) in travelling using private or public transportation, and difficulty walking or not. The IADL questionnaire has similarities in giving value with ADL but the difference is, the IADL is a questionnaire to identify the activities of the respondents in the surrounding environment, and the IADL questionnaire only has four questions. The questions in the IADL questionnaire are related to these matters.

The data analysis is performed by:

- Univariate Analysis: an analysis in displaying descriptive data. This data includes data on gender, marital status, education, employment, income, and the independence level of the elderly.
- Bivariate Analysis: this study uses a bivariate analysis method intending to determine the effect between independent variables and independent variables using a percentage. The data obtained will be analysed in probability using the chi-square statistical analysis test and data management using SPSS version 20, with the error risk of significance level $\alpha = 5\%$. To find the difference between the dependent variable (quality of life of the elderly) it is based on the independent variable (the independence of the elderly doing personal activities, and the independence of the elderly doing activities in the surrounding environment). Below are the steps to find the value of chi-squared:

1. Calculate the value of chi-square (X^2)

$$\text{Formula: } X^2 = \sum \frac{(fo-fe)^2}{fe}$$

2. The value of X_{table}^2 could be seen from the chi-square table

$$X_{table}^2 = X_{(dk,\alpha)}^2$$

$$dk = (k-1)(b-1)$$

which is: k = column, b = row, α = the degree of freedom (significant level).

3. Comparison between X_{count}^2 and X_{table}^2

Determine the hypothesis.

Result

Summary

The independence level of the elderly in this study is seen from the elderly respondents in answering the two questionnaires submitted. The two questionnaires are the Activities of Daily Living (ADL), and the Instrument of Activity Daily Living (IADL). The ADL questionnaire was used to determine the independence of the elderly in carrying out personal activities, such as bathing, dressing, eating, moving from chair to bed and from bed to chair, in and out of the toilet, and taking off and wearing pants. Meanwhile, the IADL questionnaire was used to determine the elderly's independence in carrying out activities in the surrounding environment, such as doing daily household, participating in community activities, independence (either facing difficulty or not) in travelling using private or public transportation, and walking (experiences difficulty or not).

In the ADL, the results showed that 87.4 per cent of respondents answered that they could do personal activities without the help of others (independently). Also, there were 10.8 per cent of respondents who had a mild dependency; it means they are able to carry out activities but there were a few constraints. For example, in bathing, the respondents had difficulty rubbing their backs. Furthermore, 1.8 per cent answered that they could not do their activities and needed others to help them (total dependence). For IADL, the results showed that 58.6 per cent of respondents answered that they could still do their activities in the surrounding environment without the help of others (independent). There were 22.5 per cent of respondents who had a mild dependency that were able to carry out their activities in the surrounding environment, but there were a few obstacles. For example, when cleaning the house, one can only do two things, namely sweeping and mopping the floor. There were 10.8 per cent of respondents who had a moderate dependency, that could do activities in the surrounding environment but not as good as when they were young. This included, when cleaning a house, the respondents could not fully sweep. Furthermore, 5.4 per cent of the respondents have a heavy dependency that requires help when doing activities in the surrounding environment, such as needing help when cleaning the house. A further 2.7 per cent of respondents answered they had a total dependence or cannot do activities in the home environment, such as not being able to clean the house. The following table describes the frequency of the ADL and the IADL.

Table 2: Frequency Distribution of Independence by Using the ADL and IADL Measurement Tools

Label	ADL (Activities of Daily Living)		IADL (Instrument of Activity Daily Living)	
	Frequency (Fe)	Percentage (%)	Frequency (Fe)	Percentage (%)
Independent	97	87.4	65	58.6
Mild Dependency	12	10.8	25	22.5
Moderate Dependency	0	0	12	10.8
Heavy Dependency	0	0	6	5.4
Total Dependency	2	1.8	3	2.7
Total	111	100%	111	100%

Source: Research Data Results (2019)

Analysis of the Difference in the Quality of Life of the Elderly

The analysis of the differences in the elderly's life quality is based on the type of level of independence, using the chi-square statistical test. The level of independence of the elderly in this study is derived from the responses of the respondents in completing the two questionnaires. The two questionnaires are the ADL and the IADL. The ADL questionnaire is used to determine the independence of the elderly in carrying out personal activities, such as bathing, dressing, eating, moving from chair to bed and from bed to chair, in and out of the toilet, and taking off and wearing pants. Meanwhile, the IADL questionnaire is used to determine the independence of the elderly in carrying out activities in the surrounding environment, such as doing daily household chores, participating in community activities, independence (having difficulty or not) in travelling using private or public transportation, and walking (having difficulty or not).

To determine the life quality of the elderly, there are two key components: the physical health of the elderly or Physical Component Summary (PCS), and the mental health of the elderly or Mental Component Summary (MCS). Furthermore, it is essential to see how great the difference is between each of the two components, based on the level of independence. The following table shows the results of the data on the differences in the physical health of the elderly or PCS, and the mental health of the elderly or MCS, based on the two questionnaires for the independence of ADL and IADL.

ADL (Activities of Daily Living)

The result of the chi-square statistical test table shows the value of X^2 (chi-square value) is 2.836. Then, based on the value of the degree of freedom (df), and by using the risk of error $\alpha = 5\%$, the chi-square table finds the significance value of 5.991. Based on the chi-square test, the significance value is higher than the value of X^2 (chi-square value). However, it was concluded that there was no significant difference in the quality of the elderly's physical health based on the ADL. In addition, the results of the chi-square statistical test table shows that there is an X^2 value (Chi-square value) of 4.674. Then, based on the value of df, and by using the risk of error $\alpha = 5\%$, the chi-square table found the significance value is 5.991. Based on the chi-square test, the significance value is higher than the value of X^2 (chi-square value). In addition, it was concluded there was no significant difference in the quality of mental health based on the ADL.

The tabulation data shows that there is no significant difference among the elderly who are independent in their activities, those who are mildly dependent, and those who are totally dependent on someone to help them in their activities. Thus, there is no influence on the independence of the elderly in carrying out personal activities on the quality of the physical health of the elderly.

In the Sleman Regency, most elderly people can carry out their activities without the help of others, compared to the elderly who have a total dependence and mild dependence on someone to help carry out their activities. Thus, for respondents who are independent in carrying out their activities, they have a good physical health quality, more so than respondents who have a poor physical health quality. Likewise, with the elderly who are mildly dependent and totally dependent on someone in helping him carry out their activities.

The tabulation data shows that the majority of elderly people in the Sleman Regency can carry out their activities independently and without the help of others. Besides, the average elderly person who can do activities independently, has a good mental health quality. Only a few of the elderly have a poor mental health quality. Doing activities independently can help the cognitive function of the elderly because by doing personal activities, such as wearing one's clothes and eating alone, it can help increase the power of concentration. The following are the results of the cross-tabulation of the ADL of the elderly respondents:

Table 3: Activities of Daily Living Cross Tabulation

Label	PCS		Total	MCS		Total
	Better	Well Below		Better	Well Below	
Independent	56 (50.5%)	41 (36.9%)	97 (87.4%)	87 (78.4%)	10 (9.0%)	97 (87.4%)
Mild Dependency	6 (5.4%)	6 (5.4%)	12 (10.8%)	9 (8.1%)	3 (2.7%)	12 (10.8%)
Total Dependency	0 (0%)	2 (1.8%)	2 (1.8%)	1 (0.9%)	1 (0.9%)	2 (1.8%)
Total	62 (55.9%)	49 (44.1%)	111 (100%)	97 (87.4%)	14 (12.6%)	111 (100%)

Source: Chi-Square statistical test data using SPSS

IADL (Instrument of Activity Daily Living)

The results of the chi-square statistical test table show that there is a value of X^2 (chi-square value) that is 14.862. Then, based on the value of df, and by using the risk of error $\alpha = 5\%$, the chi-square table found the significance value of 9.488. Based on the chi-square test, the significance value is smaller than the value of X^2 (chi-square value). Finally, it was concluded that there were significant differences in the quality of the physical health of the elderly, based on the IADL. Furthermore, the results of the chi-square statistical test table show that there is a value of X^2 (chi-square value) at 1.925. Then, based on the value of df, and by using the risk of error $\alpha = 5\%$, the chi-square table found the significance value of 9488. Based on the chi-square test, the significance value is higher than the value of X^2 (chi-square value). Therefore, it was concluded that there was no significant difference in the quality of mental health based on the IADL.

The tabulation data shows that the majority of elderly people in the Sleman Regency can do activities in the surrounding environment independently and without the help of others. In addition, the average elderly person who can perform activities in the surrounding environment independently has a good physical health quality. However, some elderly people who can carry out activities in their surroundings, have a poor physical health quality. Physical activity, such as cleaning the house, can strengthen the physical condition of the elderly. By moving when cleaning the house, it can reduce the risk of suffering from chronic diseases because cleaning the house can be a substitute for exercise as it requires movement and motion that can help the body sweat like it is exercising.

The data tabulation also shows that there is no significant difference between the elderly who are independent in carrying out activities in the surrounding environment and the elderly who are mild-dependent and total-dependent on others in helping complete their activities in the

surrounding environment. Thus, there is no influence on the elderly's independence in carrying out activities in the surrounding environment on the quality of the mental health of the elderly. The following are the results of the cross-tabulation of the IADL of the elderly respondents:

Table 4: Instrument of Activity Daily Living Cross-Tabulation

Label	PCS		Total	MCS		Total
	Better	Well Below		Better	Well Below	
Independent	42 (37.9%)	23 (20.7%)	65 (58.6%)	57 (51.4%)	8 (7.2%)	65 (58.6%)
Mild Dependency	16 (14.4%)	9 (8.1%)	25 (22.5%)	23 (20.7%)	2 (1.8%)	25 (22.5%)
Medium Dependency	3 (2.7%)	9 (8.1%)	12 (10.8%)	10 (9.0%)	2 (1.8%)	12 (10.8%)
Hard Dependency	1 (0.9%)	5 (4.5%)	6 (5.4%)	5 (4.5%)	1 (0.9%)	6 (5.4%)
Independent	0 (0%)	3 (2.7%)	3 (2.7%)	2 (1.8%)	1 (0.9%)	3 (2.7%)
Total	62 (55.9%)	49 44.1%)	111 (100%)	97 (87.4%)	14 (12.6%)	111 (100%)

Source: Chi-Square statistical test data using SPSS

Discussion

Physical changes in the elderly will affect the level of independence. Independence is the freedom to act. It does not depend on others and is free to regulate oneself or one's activities in both individuals and groups of various health or illness (Wulandari, 2014). In personal independence, it shows that there is no significant difference in the quality between the good or poor physical health of the elderly. There was also no significant difference in the quality of the mental health of the elderly who are good or bad in carrying out their personal activities. In addition, the cross-tabulation data shows that the majority of the elderly in the Sleman Regency can carry out their activities independently and have a good mental health quality.

The independence of the environment shows that there are significant differences in the quality of good or bad physical health of the elderly, based on the independence of the elderly in carrying out activities in the surrounding environment. The elderly who are independent in carrying out their activities in the environment have a higher physical health quality compared to the elderly who have a mild, moderate, heavy, and total dependence. Meanwhile, in relation to the quality of the mental health of the elderly, there is no difference in the quality of good or bad mental health of the elderly in carrying out activities in their environment.



Conclusion

The results show that there is no difference in the quality of good and bad physical and mental health based on the independence of the elderly in carrying out their activities. However, there are significant differences in the quality of physical health based on the independence of the elderly in carrying out activities in their environment. There is no significant difference in the quality of mental health in the elderly in carrying out activities in their environment.

Based on the tabulation data, it shows that the elderly in Sleman have a high level of independence. It is evidenced that the number of elderly persons who are independent in carrying out their activities and in the surrounding environment, do so more than others who need assistance in carrying out these activities. The independent and productive elderly can increase their life expectancy, and it can prosper the lives of the elderly because the elderly have a good quality of life.



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