



## Factors Related to Elderly Independent Activities in Everyday Living

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### Abstract

The large amount of elderly population leads to the emergence of new problems. Physical, mental and social changes will affect the independence of the elderly. The aim of this research is to explore factors related to the independence of the elderly in their daily activities. This research was conducted using an explanatory research methodology with cross sectional study. The population of this study was 3,779 elders whose age is more than 60 years old. Simple random sampling was applied and there were 108 elderlies in Puskesmas Pegandan, Semarang. The instrument used in this study was a questionnaire and Activity Daily Living (ADL) questions. Data analysis used rank spearman test and chi square test for bivariate analysis. Linier regression test were used for multivariate analysis. The results showed that there is a relationship between age variable (p-value = 0.0001), gender (p-value = 0.001), physical condition (p-value = 0.017), mental condition (p-value = 0.03) and social activities (p-value = 0.000) with the independence of the elderly. Variable of age (p-value = 0.0001), physical condition (p-value = 0.005) and social activities (p-value = 0.0001) are related to the independence of the elderly. Routine and regular checkups are needed to reduce complaints in the elderly, therefore they don't decrease.

**Keywords:** *Independency of elderly, Activity daily living*

### 1. Introduction

The demographic transition in Indonesia will pose challenges to its nation. The current change in demographic characteristics in Indonesia is the aging population since its growth rate is faster than the growth rate of the working age. This is caused by a reduction in birth rates and an increase in life expectancy in the elderly population (Sriyana, 2008).

An increase in life expectancy accompanied by an increase in elderly population can cause epidemiological transitions (Alfyanita et al, 2016). The epidemiological transition that occurred in Indonesia was a triple burden disease, where the problem of infectious diseases has not yet been resolved, but new health problems (new emerging disease) and degenerative diseases have already emerged (Djaja, 2012).

There was high percentage of senior population in Semarang City. According to the 2010 Census, the number of elderly people aged 60 years and over in Semarang City reached 10%. In 2017, the elderly population of Semarang City amounted to 148,800 people. Semarang City Health Department oversees 35 puskesmas. Based on the Semarang City Health Department data, it was found that the Pegandan Health Center has the highest number of elderly people.

Active aging, according to the World Health Organization (WHO), is a process to increase opportunities for obtaining healthcare access, participation, and a sense of security in order to improve the quality of life as a human being. Active aging is not only limited to being physically active and participating in employment but also further the continued participation of parents in social, economic, cultural, spiritual and civil affairs (Arifin et al, 2012).

Activity of daily living (ADL) is a form of measuring one's ability to carry out daily activities independently. ADL measures functional independence in terms of self-care and mobility consist of 10 items, including: eating, bathing, decorating, dressing, bladder control, and anal control, toileting, chair/bed transfers, mobility and climbing stairs (Susilowati, 2015). It was a challenge to increase the elderly population to maintain functional ability and to independently carry out daily activities at home (Putthinoi et al, 2016). It is crucial to evaluate elders' level of independence in ADL in order to determine the level of assistance and the long-term care planning that the elderly need (Alfyanita, A., Martini, R.D. & Kadri, H., 2016).

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Previous research conducted at Langkimat Public Health Center Simangambat District, Padang Lawas Utara Regency, focused on factors related to the independence of the elderly namely gender, physical health, mental health and social activities. Other research conducted in the working area of the Puskesmas of Lampasi stated that age, gender, education, health conditions and family support are related to the independence of the elderly (Hasibuan, 2016). It can be inferred that not many existing studies have conducted research on the influence of the previously mentioned factors on the independence level of the elderly. In addition, there were hardly any previous studies that link marital status, work status and residence patterns with the independence level of the elderly. Based on research conducted by Rina Juminta (2012) at Langkimat Community Health Center in Simangambat District, Padang Lawas Utara Regency, there were 69.4% of the elders considered independent. While Rosina's research results (2019) in Yogyakarta stated that 74.8% of the elderly were declared not independent.

Hence, the researchers are interested in exploring the factors related to the independence level of the elderly in Activity Daily Living in the work area of the Pegandan Health Center in 2019.

## 2. Objectives

1. To study factors related to elderly independent activities in everyday living
2. To analyze factors related to elderly independent activities in everyday living

## 3. Materials and Methods

This research was conducted using an explanatory research method along with a cross sectional study approach to explain the relationship between the independent variables and the dependent variable. The independent variables in this study were age, gender, marital status, education, work status, residence patterns, physical conditions, mental conditions and social activities whereas the dependent variable in this study was the independence of the elderly. The study took place in the working area of Pegandan Health Center, Semarang City, Central Java in August to September 2019.

The population of this study is the elderly who are 60 years or older and reside in the work area of Pegandan Health Center. In fact, the number of elderly in this area is as many as 3,379 people. There were 108 elderly participated in this research. The sample size was obtained from the Slovin formula and randomly selected using simple random sampling.

The research instrument was a set of questionnaire that was tested for its validity and reliability in the working area of the Kedungmundu Community Health Center and the Activity Daily Living (ADL) questionnaire. The ADL questionnaire was used to assess the activities of the daily life of the elderly based on an evaluation of their independent function or dependency. The Katz Index and Lawton Index questionnaires include 17 questions concerning on various aspects of one's life namely bathing, dressing, eating, personal hygiene, controlling bowel movements, walking on the ground floor, worshipping, doing homework, shopping, managing finances, using transportation, preparing medicine, planning / make decisions, and leisure activities. The data were collected through structured interviews.

The data analysis was carried out using bivariate and multivariate analysis. The bivariate analysis applied the chi square test to identify the relationship between gender variables, marital status, work status, and residence patterns with the elder's independence level. At the same time, the Spearman Rank test was used to determine the relationship between the variables of age, education, physical condition, mental condition and social activity with the elderly's level of independence. As for the multivariate analysis, it was performed using a linear regression test to determine the effectiveness and contribution of age, physical condition and social activity variables on the independence of the elderly.

This study was approved by the Health Research Ethics Committee of the Faculty of Public Health at Diponegoro University under number: 392 / EA / KEPKFKM / 2019. Prior to field research, the researchers requested permission from levels such as the Semarang City Health Office and Pegandan Health Center.



#### 4. Results and Discussion

**Table 1** Factors related to independency of the elderly

Variabel	Independent		depends		Total		p-value
	F	%	F	%	f	%	
Sex							
Male	13	50.0	13	50.0	26	100.0	0.001
Female	11	13.4	71	86.6	82	100.0	
Marital status							
Not married	9	17.6	42	82.4	51	100.0	0.395
Married	15	26.3	42	73.7	57	100.0	
Length of study							0.065
Work status							
Do not work	20	24.7	61	75.3	81	100.0	0.423
work	4	14.8	23	85.2	27	100.0	
Living arrangement							
Live alone	9	19.1	36	80.9	47	100.0	0.547
Live with child or relative	15	24.6	46	75.4	61	100.0	

\*Significant level at 0.05 \*\*\*Significant level at 0.01

**Table 2** Results of multivariate linear regression analysis

Variable Betas	B	t	p-value	R square
(Constant)	18.198	2.484	0.000**	
Age	-0.126	0.032	0.000**	0.361
Physical condition	0.213	0.082	0.011*	
Social activity	0.853	0.156	0.000**	

\*Significant level at 0.05 \*\*\*Significant level at 0.01

#### Respondents Characteristics

Distribution of respondents by age shows that the age range is between 60 to 88 years old. As one grew older, their physical and mental abilities began to decline. Regarding the sex of the respondents, women are accounting for 75.9% while men are accounting for 24.1% of the total participants. The gender distribution of the majority of women implies that women tend to have higher life expectancy than men. The distribution of marital status of respondents shows that there are more elderly who are married (52.8%) than those who are single (47.2%). Elderly people who live without a husband or wife do not have the motivation or motivation of their partners to carry out daily activities (Surti et al, 2017). Most respondents had a high school education (25%), followed by junior high school (23.1%) and elementary school (24.1%), respectively. This research is in line with Rina's research that the level of education of the elderly is dominated by elderly who graduated from high school (Jumita, R. 2012). A person's education level is influential in responding to something that comes from outside (Notoadmojo, 2010). The distribution of living arrangements illustrated that there are more elderly people live with their children (56.5%) compared to older people who live alone (43.5%). In the light of Indonesian culture, children are expected to stay and look after their parents, especially when they are no longer economically productive (Ng et al, 2010).

In this study, there were 77.8% of the elderly who were included in the independent category in carrying out daily activities. This result is in accordance with previous researches. It showed that most respondents can carry out their activities independently (87.78%) (Jumita, R. 2012). The activities with high percentage to carried out independently by respondents were bathing and toileting (100%), dressing and eating (97.2%), doing homework and observing religion (94.4%) and continents (93.5%). Respondents who were not independent in instrument activities, especially in using transportation equipment, generally because most respondents are unable to use their own vehicles and are always picked up by other people. In other words, some elders are considered dependent regarding transportation factor. Physical conditions that



have declined due to the aging process and the illness suffered by respondents caused respondents to seek assistance to carrying out their daily activities.

#### Social Demographic Relations and Independence of the Elderly

Social demographic relations and independence of the elderly were shown in table 1 and table 2. The analysis was done by using bivariate (by using Chi-square) and multivariate linear regression.

The results of the linear regression test using the stepwise method revealed a significant effect between age, physical condition and social activity on the independence of the elderly at significant level below 0.01. The results of this study indicated that the factors of age, physical condition and social activities had an influence of 36.1%.

In table 1, it can be said that the age and independence level of the elderly have a significant relationship ( $p$ -value = 0.001) and have a negative direction which means that the independence of the elderly will decrease as they grew older. For the reason that the increasing of age will result in a decrease in physical function and ability to care for themselves. This study is in accordance with previous research that there was an association between age and independence level of the elderly (Hurek et al, 2019). This research is also supported by the theory that the more age increases, the less ability to carry out elders' daily activities (Darmojo, 2015).

Sex is a characteristic distinguished by nature since birth. Table 1 shows the significant results regarding the relationship between sex and the elderly's independence level ( $p$ -value = 0.001). To specify, biological female elders are likely to be self-reliant accounting for 86.6%. Thus, it can be said that elderly women tend to be more independent than elderly men. This study is in line with those that showed that there was a relationship between gender and independence of the elderly ( $p$ -value = 0.008). In other words, male respondents tend to be more dependent than female respondents. Most male respondents who are not independent occur because male respondents are not accustomed to housework. The results of this study is also in accordance with the theory that elderly men have a greater degree of dependence than women, and this will continue to increase along with one's age. It can be seen in the community that more women were left by their husbands but still can successfully raise their children (Darmojo, 2015).

Marital status whether or not the elderly still has a partner in their lives. Based on the chi square test, a  $p$ -value of 0.395 ( $\geq 0.05$ ) was obtained, it can be said that there is no statistically significant relationship between marital status and elderly independence due to the fact that elderly people who were married or unmarried cannot guarantee whether or not the elderly will live independently. This research is in line with Sharon's research stating that there is no meaningful relationship between marital status and independence of the elderly.

Based on multiple linear regression analysis, it was found that age has an influence on the independence level of the elderly. This study is in line with the results of the Trize study (2012) which demonstrated that age influences independence in BADL and independence in IADL. Trize also explained that the more you age, the higher risk you will experience dependency (Trize et al, 2012).

As for the marital status, elderly with or without spouse are both classified as independent in carrying out daily living activities (Gondodiputro et al, 2018). However, this study is not in line with Surti's claim stating that there were a relationship between marital status and the level of independence of the elderly. The marital status that is still complete or in pairs can encourage the independence of the elderly to fulfill the physical activity of the elderly because there will be support or encouragement from the partner to carry out daily activities (Surti et al, 2017). This is consistent with the cross tabulation in this study between marital status and social activities, which stated that the elderly who are married are more active in social activities than the unmarried elderly (60.8%). Whereas, those who still have partner have a mental drive from their partners to be more independent.

Regarding education, the length of this study was completed by respondents. The bivariate test results stated that there is no relationship between education and independence of the elderly ( $p$ -value = 0.065). This study is in line with previous research claiming that there is no relationship between education and the independence of the elderly. This shows that the availability of information in schools does not affect the ability of the elderly in independence (Purnanto & Khosiah, 2014). Other research also stated that education is basically obtained not only from school (formal) but also in the family, community and from



other media (Setyowati, 2017). In this research, many uneducated elderly are still productive and active in their daily activities by participating in various social activities in their surroundings and are still able to make decisions about problems that occur.

#### Relationship Between Work Status and Independence of the Elderly

Chi square test results shows that there is no relationship between work status and independence of the elderly ( $p$ -value = 0.423). It means that the elderly both employ and unemployed had high percentage in the independent category so the status of work does not guarantee the level of independence of the elderly. This is because the elderly with or without work are still productive in living their lives. The elders without work can be active in social activities in their environment and still maintain good mental condition. This study is not in line with Surti et al (2017) which stated that work status influence the independence of the elderly ( $p$ -value = 0,000). The elderly with a job will be more involved in physical activities compared to the elderly without a job. In addition, the unemployed elderly are also able to manage money well as the elderly who has a job because older people who do not work had pension or money given by their children (Kodri & Rahmayanti, 2016). Thus, the status of work does not affect the level of independence of the elderly.

#### Relationship Between Living Arrangement and Independence of the Elderly

The pattern of a residence or living arrangement is defined as the composition or number of households and the identity of the occupants. The pattern of residence is closely related to the health and well-being of the elderly, which affected the social role of the elderly by providing participation and support (Yigen et al, 2018). Based on the results of the chi square test showed, there is no relationship between patterns of residence with the independence level of the elderly ( $p$ -value = 0.659). This is because the percentage of elderly who live alone or live with their children have a greater percentage than the elderly who are independent. So, the pattern of residence does not guarantee the independence of the elderly. This study is in line with Yigen et al, (2018) ( $p$ -value > 0.05) which stated that the pattern of residence does not have a significant relationship with the independence of the elderly which means the elderly who live alone or together with other family members have a low level of independence. (Yigen et al, 2018).

#### Relationship Between Physical Condition and Independence of the Elderly

Table 2 shows that there is a relationship between physical condition and independence of the elderly ( $p$ -value = 0.017). The relationship between physical condition and independence of the elderly has a positive direction, which means that the higher the physical condition of the elderly is, the higher the independence level of the elderly will be. With good health, they can carry out any activity in their daily lives (Jumita, 2012).

A variable physical condition has an influence on the independence of the elderly ( $p$ -value = 0.005). This research is in line with research in the Balairung Health Center Work Area with ( $p$ -value = 0.001) (Hurek, Setiaji & Suginary 2019). Similarly, Herman & Akhriani, (2018) in Yogyakarta ( $p$ -value = 0.001; OR = 3.89), physical condition variables affect the daily living activity. Limitations of physical condition are usually due to age, changes and decreased physiological function. These conditions can cause disruption to meet daily needs, so as it can cause dependence in daily life activities (Herman & Akhriani, 2018).

To clarify, elderly people with low independence level tend to make complaints regarding their physical conditions, such as, blood pressure disorders, headaches, neck disorders, back pain, sleep disorders, nose and sinus disorders, impaired vision, physical fatigue and cold feelings accompanied tingling in the limbs. This study is in line with previous research, which states that there is a relationship between physical conditions with elderly independence. The elderly who have the highest level of independence are physically and psychologically in good health (Jumita, 2012). Other research also shows that there is a relationship between health status and independence of the elderly, the better the health status of the elderly is, the less dependency experienced by the elderly (Kodri & Rahmayanti, 2016).



### Relationship Between Mental Conditions and Independence of the Elderly

Mental conditions include adjustments to the condition of the elderly. With the decline in various conditions of the elderly, it will automatically lead to a decline in mental abilities characterized by a decreased cognitive function. The bivariate test results indicate that mental condition is a variable with a significant relationship with the independence of the elderly. The positive relationship between mental condition and independence of the elderly signifies the superior level of one's mental condition. Consequently, the independence of the elderly will increase. The elderly with low mental conditions tends to depend on others. For example, some respondents have an unexpressed burden in mind, preferring to stay at home instead of going out, memory loss, feeling heavy in doing something new and easily upset with small things. This study is in line with previous research claiming that mental health variables are related to elderly independence (Hasibuan 2016). The elderly with various kinds of mental shifts encountered specifically psychosocial changes, which affect the level of dependency in their daily activities and the people around them (Safitri et al, 2015). In general, social relations performed by the elderly refer to social exchange. An elderly can interact socially in the community by following the activities in his/her environment. This will affect their independence level (Safitri et al, 2015).

### Relationship Between Social Activity and Independence of the Elderly

Based on the results of this study, it can be inferred that social activity variables have a meaningful relationship with the independence of the elderly ( $p$ -value = 0.0001). The relationship between social activities and the independence of the elderly has a positive relationship direction. To elaborate, the higher the rate of elder's participation in social activity, the more the independence of the elderly will increase. Most of the elderly, who are independent, are still active in the elderly community activities. For instance, social gathering, religious activities such as religious studies and services, elderly Posyandu and special exercises for the elderly. This will also trigger their self-esteem and their self-confidence, which will heighten the desire to live longer (Rasyid, D. 2017). This research is in line with Kodri's research, which states that there is a relationship between social conditions and the independence of the elderly. According to Kodri, the elderly are most willing to socialize with activities in their environment, it makes them happy and positively affects the independence level of the elderly (Rasyid, D. 2017). Social activities is related to independence of senior people. In other words, these activities can improve the elders' general health conditions and reduce depression while develops the habit of doing daily activities on their own, which are not accustomed to being helped by family and foster healthy living habits (Hurek et al, 2019).

The social activity variable shows that its influence on the independence of the elderly ( $p$ -value = 0.0001). This study is in line with previous research in the working area of Balairung Health Center ( $p$ -value = 0.002). The elderly with bad social interactions have a risk of dependence in conducting BADL of 2.748 times greater than those with good social interactions (Hurek et al, 2019).

## 5. Conclusion

It can be concluded that there is a relationship between the variables of age, sex, physical condition, mental condition and social activities with the independence of the elderly. On the contrary, the variables of marital status, education, work status and living arrangement do not affect the independence of the elderly. Based on this finding, it can be said that the health service center needs to improve health facilities and infrastructure in relation to the complaints, for example, the provision of routine health check-ups.

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