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The Effects of Socio-Economic Factors on Health of Elderly in East Java

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Abstract

The study examines the effect of the socio-economic factors on the health status of elderly in East Java using the Indonesian Socio-Economic Survey (SUSENAS) of 2016. The socio-economic factors consist of sex, education, working activity, relationship status with the head of household, living arrangement, economic status, and location of residence. This study uses the ordered probit analysis accommodating three ordered potential health status of elderly, including (1) elderly without health problems, (2) elderly with health problems but not severe, and (3) elderly with severe health problems. The result of the study suggests that the health of the elderly is influenced significantly by some socio-economic factors including education, working activity, relationship status with head of household, living arrangement, and economic factors.

Keywords: elderly; socio-economic; health; Indonesia; demographic bonus.

JEL classification: J14.

1. INTRODUCTION

The population problem become an important issue in a country with high population growth like Indonesia. Beside the continuous population growth, various issues will often emerge in the country. One of important issues faced by Indonesia is the increase in the number of elderly in the population, particularly as a result of an increase in the life expectancy. As mentioned by Markovic (2013), in 2050, two billion people will be 60 years old or older; and 80 percent of them will be living in developing countries including Indonesia.

The increasing number of elderly has been occurred in almost all regions of Indonesia, including East Java. In East Java, the dependency ratio has been decreased from 46.1% in 2010 into 44.2% in 2015; and it will predict to continue decrease until 43.7% in 2020. After 2020, the dependency ratio in East Java is then predicted to increase, which is mainly caused

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by an increase in the elderly which also showing a continuously increase since 2010 (see Figure no. 1). The increasing of life expectancy is one of main reasons for the increasing number of elderly in East Java.

As mentioned by Ananta and Arifin (2016) based on population census data in 2010, East Java can be categorized as a transitional province, with a relatively high proportion of elderly of 10.4%. Consistent with them, Adioetomo (2016) also mentioned that East Java, in terms of dependency ratio can also be classified as the final transitional province with the dependency ratio of 44.2%. Both of them suggest that East Java should begin to consider for accommodating the increase in the number of elderly.

One important issue in accommodating the increase in elderly is their health status. As pointed out by Lock and Belza (2017), the elderly who have a good health might conduct various activities, including employment activities in labour market. Elderly who conduct daily activities, including employment, tend to have better health than elderly who do not perform any activities (Kumar *et al.*, 2016). This suggests that elderly should have been supported by a good health consistent with the increase in life expectancy, so that in her old age elderly might remain productive.

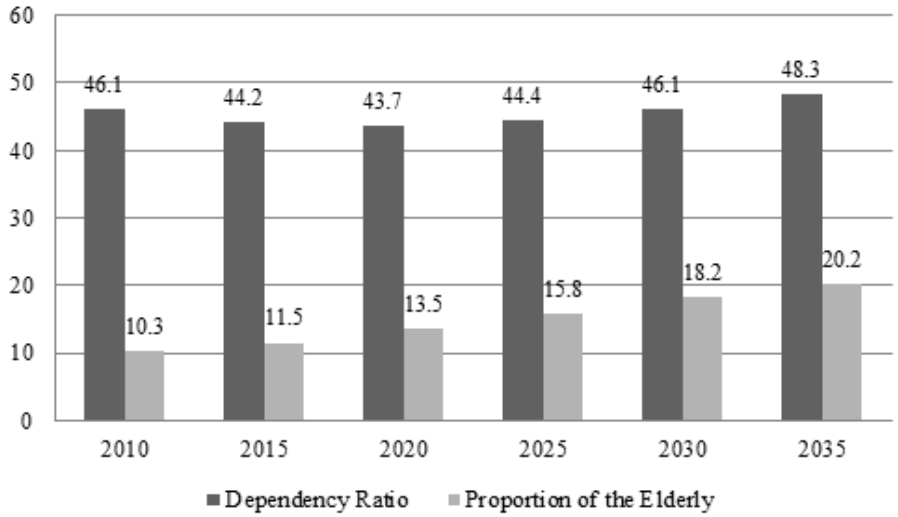

Figure no. 1 – Dependency Ratio and Proportion of Elderly (60+) in East Java (%)
Source: BPS data; processed (2010)

Looking at the place of residence, a study in India by Chokkanathan and Mohanty (2017) mentioned that elderly in rural areas tend to have poor health due to the difficulty in accessing health facilities compared to who are living in urban areas. However, according to Park *et al.* (2010) elderly who are living in the city will also not always in a good health condition. This is mainly because of the socio-economic and cultural conditions of urban communities which are different from the village community which tend to be more relax and flexible.

In fact, elderly are more vulnerable to the illness. A study by Divisi Geriatri Departemen Penyakit Dalam (2015) mentioned that the common diseases in elderly in general include stroke, diabetes mellitus, heart disease, hypertension, osteoporosis, and gout.

According to the Statistical Office (BPS) of East Java (2014), common diseases suffered by the elderly in East Java include chronic diseases such as uric acid, high blood pressure, rheumatism, low blood, and diabetes. Nearly 50 percent of elderly people in East Java have health problems as shown in the Figure no. 2.

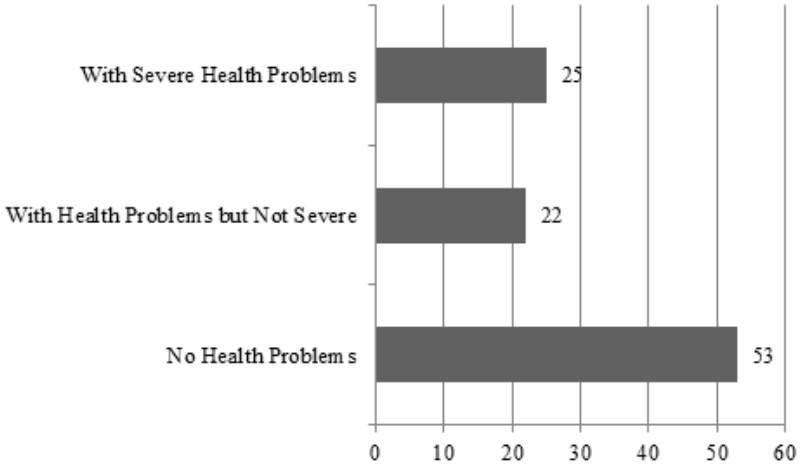

Figure no. 2 – Elderly Health Status in East Java 2016 (%)
Source: SUSENAS (2016), processed

More than 50% (51.74%) of elderly in East Java are working. This indicates that some of the elderly are still able to be productive in the labour market and even able to fulfill their daily life independently. However, this situation can also indicate that their possible low level of welfare has forced elderly to work and enter the labour market rather than stay at home without employment activities. For information, in East Java, there are 15.47% of elderly who are still categorized as poor in 2016, based on the Survey of Socio-Economic data, which is relatively higher than the total East Java's poverty rate of 12% in 2016.

Family relationship is another important issue needed to support the elderly in their daily life in the case of developing countries. In East Java, 88.76% of elderly is living together with the other household members. In other words, the elderly are more likely requiring the presence of the other household members in their life. Moreover, when viewed from the location of residence, there are 48.39 pesen elderly living in urban areas in East Java, compared to more than 50% of elderly who are living in rural areas.

This study examines the effect of socio-economic factors on the health status of elderly in East Java using the Indonesian Socio-Economic Survey (SUSENAS) in 2016. The study is not the first study examining the health of elderly (see for example Ekstrom *et al.*, 2013, and Fitriana, 2013). However, in contrast, the previous studies in developing countries have tended to focus on one of the factors that affect the health of elderly, while our study examines simultaneously factors that affect the health of elderly, among others, sex, education, activities, status relationship with the head of household, living arrangements economic status, and location of residence (urban/rural areas). As far as we know, our study is also the first quantitative analysis conducted in Indonesia considering the increase in the number of elderly in Indonesia.

The structure of the paper is as follows. The next section discusses the brief literature review. The paper then explains in Section 3 the research methodology used in the study. After the research methodology, the paper reports in Section 4 the empirical results and the findings of the study. Finally, the paper presents in Section 5 the conclusions and some policy implications of the findings.

2. BRIEF LITERATURE REVIEW

Ekstrom *et al.* (2013) studied the effect of informal support on social participation of fractured elderly people. The study used the data of "Good Aging in Skane" of Sweden and employed the logistic regression analysis. The study suggested that the supports of family and close relatives of the elderly would bring a good effect on daily activities. Elderly who received supports from their relatives are more enthusiastic and have a good health than elderly who are not receiving supports.

In Turkey, the study conducted by Bilgili and Arpac (2014) examines the quality of life of older adults. By using an interview technique with as many as 300 respondents aged 60 years and over, it was concluded that sex, presence or absence of children, social security, history of disease, age, education, living arrangement, and the economy affect the quality of life of the elderly. In this case, the quality of elderly life is measured by the health status.

Relating to living arrangements, Mohd (2016) studied the living arrangements of elderly using evidence from Household Income Expenditure Survey in Malaysia. She found that the majority of elderly in Malaysia choose to live with an adult child. In addition, the study also concluded that elderly men in Malaysia are likely to live alone, as well as elderly who are living in rural areas.

In the case of Indonesia, Fitriana (2013) examined the relationship of family knowledge with elderly healthy behavior In Wirogunan Kartasura Village. Using correlation analysis, it can be concluded that there is a close relationship between family knowledge of clean and healthy life behavior and the health status of elderly, whereas the higher the knowledge of the family of the clean and healthy life, the better the health conditions of the elderly.

The study by Adioetomo (2016) discussed the regional development in the era of demographic changes across regions in Indonesia. The study mentioned that East Java is one of the areas included in the transition group of regions. Although the development of capital and job creation are important, the policy action should start focusing on the issues of elderly as the number of elderly has increased sharply in the near future. This is also a reason why the studies of elderly in East Java and other regions in Indonesia are important to be conducted.

3. RESEARCH METHOD

The method used in the analysis is the ordered probit with the dependent variable divided into 3 (three) categories, including:

(1) elderly without health problems,
(2) elderly with health problems but not severe, and
(3) elderly with severe health problems.

Severe and not severe health problems are characterized by whether elderly have experienced health problems and hospitalized in the last one year, based on the National Socio-economic Survey questionnaires. The elderly itself is measured by the people who are 60 years or above.

The ordered probit is estimated rather than simple probit or multinomial probit due to the potential values which have a natural ordering. Meanwhile, the socio-economic independent variables used in the analysis include sex, education, working activity, relationship with the household head, living arrangement, economic status or poverty status, and location of residence. The detailed of the variables used in the study are presented in Table no. 1.

Table no. 1 – Description of Variables

	Name of Variable	Description
Dependent Variable	Health Status	(1) without health problems (2) with health problems but not severe (3) with severe health problems
Independent Variables	Sex	(1) males (0) females
	Education	measured by years of education
	Working Activity	(1) Working (0) Not working
	Relationship Status with Head of Household	(1) as Head of Household (0) Others
	Living Arrangement	(1) living alone (0) living together with other household members
	Economic Status or Poverty Status	(1) living above the poverty line of East Java (0) living the below poverty line of East Java
	Location of residence	(1) living in urban areas (0) living in rural areas

The formal ordered-probit model estimated is expressed as follows:

- Probability of health status (without health problems)

$$P(Y = 1) = F(\beta_1 Sex + \beta_2 Education + \beta_3 Activity + \beta_4 Relation + \beta_5 Arrangement + \beta_6 Poverty + \beta_7 Location)$$

- Probability of health status (with health problems but not severe)

$$P(Y = 2) = F(\beta_1 Sex + \beta_2 Education + \beta_3 Activity + \beta_4 Relation + \beta_5 Arrangement + \beta_6 Poverty + \beta_7 Location)$$

- Probability of health status (with severe health problems)

$$P(Y = 3) = F(\beta_1 Sex + \beta_2 Education + \beta_3 Activity + \beta_4 Relation + \beta_5 Arrangement + \beta_6 Poverty + \beta_7 Location)$$

where :

- P(Y) : Probability of elderly's health status
- β_i: Estimation of Parameter
- *Sex* : males or females
- *Education*: educational level
- *Activity* : Working activity
- *Relation*: Relationship Status with Head of Household
- *Arrangement*: living arrangement
- *Poverty*: Economic Status
- *Location* : Location of residence (urban/rural areas)

The data used in the study is the Indonesian Socio-Economic Survey (SUSENAS) data of East Java Province in 2016. Based on SUSENAS, the number of people aged 60 years and above (elderly) is 12,434 respondents.

The main limitation of the study is the fact that health status is measured subjectively in the Indonesian Socioeconomic Survey by the answer of respondents during the survey. The medical assessment should be considered for future studies in order to avoid subjective measurement of the health status of elderly.

4. RESULTS AND DISCUSSION

Table no. 2 presents the results of the ordered probit estimate of health of elderly. Based on the result, the level of education, working activity, relationship status with head of household, living arrangement and economic status have significant effects on the health status of elderly, while sex and location of the residence do not significantly affect the health status of elderly.

The result suggests that sex have no significant effect on health status of elderly, indicating that both males and females have same probability to experience health problems. The previous studies also show no consensus on the effect of gender on the health status of elderly. According to Mark's research in Suen (2011), females have better health than males so that females' life expectancy is longer than males. However, it is contrast with Yount *et al.* (2010) which states that elderly women have worse health when compared with men, particularly when it is viewed from chronic illness and obesity suffered.

This no significant result among males and females is supported by Burhanuddin *et al.* (2013) study, which states that both men and women have the same probability for having a stroke. According to the Division of Geriatrics Department of Internal Medicine FKUI (2015) stroke is one of the degenerative diseases that often attack the elderly for both males and females.

Table no. 2 – Empirical Results of Ordered Probit Estimate

	No Health Problems (1)		**With Health Problems but Not Severe (2)**		**With Severe Health Problems (3)**	
Health Status	**dy/dx**	**P>|z|**	**dy/dx**	**P>|z|**	**dy/dx**	**P>|z|**
Sex	-0.010	0.363	0.002	0.362	0.007	0.363
Educational Level	0.006	0.000	-0.001	0.000	-0.005	0.000
Working Activity	0.146	0.000	-0.030	0.000	-0.115	0.000
Head of Household	-0.080	0.000	0.018	0.000	0.062	0.000
Living Alone	-0.080	0.000	0.013	0.000	0.066	0.000
High Economic Status	-0.035	0.003	0.008	0.005	0.027	0.002
Urban Areas	0.015	0.072	-0.003	0.073	-0.012	0.072

Note: No. observation: 12,434

Elderly with higher education have a lower probability of experiencing health problems; both severe health problems and not severe health problems. The result is consistent with the study conducted by Knodel (2012) which explains that someone who has a high education tend to have a good health, because they tend to maintain their healthy lifestyle, fitness and also body health. In other words, elderly who are highly educated will

basically have better understanding on the importance of healthy living compared to the elderly who have lower level of education.

When viewed from the working activities, elderly who are working have a lower probability to experience health problems. This is also consistent with Kumar's study (2016) which explains that elderly who perform working activities have better health when compared with elderly who do not perform working activities. Doing regular physical activity is also the most important thing that can help a person be healthy. World Health Organization in Prasetyo (2014), noted that about two million people worldwide died from illness due to lazy lifestyle and lack of exercise. The impact that resulted from never doing activity is not only limited to physical, but susceptible to various diseases such as coronary heart disease, high blood pressure, diabetes mellitus, and stroke. Basically work activities have benefits for the elderly, both physically and psychologically.

Interestingly, elderly who are the head of household has a higher probability of experiencing health problems, compared with elderly who are only a member of the household. This probably shows the greater pressure and responsibility as the head of the household causing an elderly more likely to experience health problems. The role of the head of the household on the one hand indicates a person is considered capable of being responsible to other household members. But, on the other hand, this responsibility becomes a burden for the elderly. Tohme *et al.* (2011) mentioned that elderly who are head of household basically as the backbone of the family, responsible for managing and living her household, so that makes elderly bear a large burden, causing a negative impact on his/her health.

From living arrangement, elderly who are living alone have higher probability to experience health problems. Hairi *et al.* (2013), for example, explained that elderly with the lack of any ability in vision will find it difficult in managing their own households without any assistances from other household members. The presence of other household members has also a positive psychological impact on the elderly who has an effect on their health. In addition, according to Putri *et al.* (2015), family support for elderly will have a positive impact on the health of the elderly. The presence of other household members accompanying the elderly allows for the feeling of belonging to a group. This allows them to share interests, concerns, and conduct activities of a nature together.

Interestingly, the results showed that elderly with higher economic status have a higher probability of experiencing health complaints. One of the factors that might affect their health is about her diet and lifestyle. According to Wijayakusuma (2011), people with higher economic status have a probability to experience health problems, because of the lifestyle of people who are more likely to drinking alcoholic beverages and unhealthy diet. In addition, according to Pranarka (2006), people with good economic status tend to have a poor lifestyle, thus increasing the risk of obesity and other diseases. This is also supported by Heryana's (2016) study, which says the increase in income is in line with the increase in unhealthy lifestyles such as alcoholic beverages, smoking habits, and lack of healthy activities. In addition, an increase in income also causes people more consumptive.

Looking at the place residences, elderly who are living in urban areas have lower probability to experience health problems, compared with elderly who are living in rural areas. However, the result is only significant at 10% level in the case of East Java. Chokkanathan and Mohanty (2017) in India showed that elderly in rural India tend to have poor health due to the difficulty of accessing health facilities. In contrast, according to Park *et al.* (2010), elderly living in urban areas will have poor health compared with elderly who

live in rural areas, seen from the socio-economic and cultural conditions of urban people who have a higher crime rate than in the rural areas.

In general, the results support Bilgili and Arpac (2014) analysis stating that the health of elderly is basically influenced by the quality of life of elderly as individuals, including gender, education, economic status, environment living arrangements, as well as the support of the adequate health facilities. The study also supports that modernization might increase the probability of elderly who are living alone. According to Rosana (2011), the process of modernization is a process of transformation towards a change in the direction of a more advanced various aspects of life in community. The rapid technological change and transformation from agriculture to the more industrial society might cause more elderly to be left behind by other household members who migrate to find work in other areas. This might adversely affect the physical and mental condition of the elderly who have higher probability to have health problems.

5. CONCLUSIONS

The study examines the effect of the socio-economic factors on the health status of elderly in East Java using the Indonesian Socio-Economic Survey of 2016. Based on the result, it can be concluded that the health of the elderly is significantly influenced by social factors including education, activity, relationship status with head of household, living arrangement, and economic factors that include economic status.

The policies related to the health of elderly can be conducted through the studies on the right nutritional composition, as well as prevention of degenerative of elderly. The policy makers also need to consider the potential occupations that provide more space for the elderly to participate effectively in the labour market. Another policy that needs to be considered by the government is to prepare health services, especially health services in remote areas to deal with diseases commonly suffered by the elderly. It is also necessary to apply family and community-based policies, which promote and enhance the role of the family in providing care for elderly and their household members. For the future studies, the medical assessment should be considered to measure health status of elderly in order to avoid subjective measurement of elderly.

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