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Corelations Quality of Eldery and Regional Socio-Economic Indicators in Indonesia

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ABSTRACT

Every region has various features, one of which is the condition of the elderly in Indonesia where there are have gaps between regions. In addition to the features of the elderly, the socio-economic conditions of each province also diverse. So that policies of older peolpe can be right on target, his further research aims to assess the quality categories of the elderly and test how they relate to regional socio-economic indicators. The unit of analysis for this research is 34 provinces in Indonesia, with data sources from BPS publications (Susenas and Sakernas 2021). Examination of the quality of the elderly was carried out by means of non-hierarchical K-means clustering, classification of socio-economic conditions is done by scoring HDI, per capita income, and poverty in an area ,while the correlation of the quality of the elderly with socio-economic indicators was carried out by Spearman rank analysis. The results of this study indicate that in 2021 there will be 19 provinces with poor elderly quality, six provinces with good elderly quality, and 19 provinces with good elderly quality. There is a significant, quite strong, and one-way relationship between socio-economic conditions and the quality of provincial elderly in Indonesia. The HDI and GRDP Per capita have a significant, fairly strong, and in-line relationship with the quality of the provincial elderly. Meanwhile, the proportion of poor people has a significant, quite strong, but contradictory relationship with the quality of the provincial elderly

INTRODUCTION

Indonesia is currently entering the era of aging population. Aging population occurs when the country has an elderly population of 10 percent, currently the elderly population in Indonesia has reached 10.82 percent (Central Bureau of Statistics, 2021). Problems arise when there is an increase in the proportion of elderly but not accompanied by the quality of elderly human resources. Based on an assessment of the quality of the elderly according to the global helpage index in 2013, Indonesia ranked 71 and in 2015 it actually dropped to 74. This position is far from Thailand at 34 and Vietnam at 41, even though these two countries have a higher percentage of the elderly population more than 10 percent.

The theory of demographic transition shows the pattern of development of population structure iof countries in the world, that there is a tendency for population structure to change along with progress in socio-economic conditions that affect birth and death rates so that the proportion of elderly people is increasing (Todaro & Smith, 2009)

Indonesia has experienced a pattern of development similar to countries in the world, the economy and per capita income have increased, the proportion and number of elderly people has increased, but when compared to other countries it is classified as a country with an elderly but poor population. In addition, the condition of the elderly between regions in Indonesia is very different depending on location and culture, but most government policies still assume that the problems of the elderly in one area to another are the same (Survey Meter, 2012).

Geographical conditions have an important influence on aging, where we live will affect how we age (Garrett D & Poulain Michel, 2013). A region is unique, different from one another (Khabazi, 2018) The condition of the elderly in each province in Indonesia varies and there are still gaps. One of them can be assessed from the elderly literacy rate, based on BPS data for 2021 there are still areas with an illiterate elderly percentage of 46.8 percent, almost half of the elderly population cannot read. Meanwhile, there are provinces in Indonesia where the proportion of illiterate elderly is only 0.48 percent, meaning that almost all elderly can read.

(United Nations Economic Commission for Europe, 2012) in research on the quality of the elderly in Europe developed measurements of the dimensions of active elderly, namely employment, social participation, independence, health and life safety, as well as environmental conditions that support the lives of the elderly. In addition (HelpAge Internasional Global Network, 2015) measures the quality of the elderly in countries around the world using four dimensions, namely income security, health status, capabilities, and environment. Ann Bowling from University College London, introduced Older People's Quality of Life (OPQOL) consisting of eight domains, namely life in general, health, social relations, participation, independence, control over life and freedom, home and environment, psychological and emotional well-being, financial circumstances, as well as culture and religion (Mares dkk., 2016)

Population aging is a problem in development that must be solved using a lifelong approach for all age groups (life cycle). Sustainable socio-economic development and ensuring a decent quality of life for the elderly is the solution to solving this problem (Dobrokhleb & Barsukov, 2017). (Prayitno, 1999) said that economic, political, social and health technology costs are very large in policies related to the elderly. This means that areas with good socio-economic conditions will be more profitable for the elderly.

Countries that have a good HDI pay more attention to the quality of life of the elderly. Per capita income of the population also has a direct correlation with the quality of the elderly (HelpAge International Global Network, 2013). (Theou dkk., 2013) also stated that per capita income has an influence on the health and vulnerability of the population 50 years and over. The social welfare of countries in Europe as measured by per capita income has an influence on the healthy life expectancy of the population in a region. The strength of the state in pursuing economic productivity, welfare, and political stability also has implications for the quality of life of the population (United Nations Economic Commission for Europe, 2012). In addition to per capita income and HDI, poverty also has a relationship with the quality of the elderly. Poverty causes the elderly population to be unable to make ends meet and can affect freedom in obtaining a better life (United Nations Population Funds and HelpAge International, 2012)

This study aims to assess the quality of provincial elderly in Indonesia based on the characteristics of the elderly population in each province and analyze its correlation with regional socio-economic indicators, such as HDI, GRDP per capita, and the percentage of poor people. By knowing the quality of the elderly and their relationship with the socio-economic conditions of the region, it is hoped that policies related to the elderly can be more targeted.

METHODS

This research was conducted by analyzing secondary data obtained from the publication of the 2021 BPS Susenas and Sakernas 2021 publications. The analysis was carried out descriptively from the results of quantitative data processing.

To determine the quality variable of the elderly, data on the characteristics of the elderly are used, including: (1) Elderly can read (2) elderly have school certificate (3) elderly with health problems (4) elderly have social security (5) elderly worker (6) elderly who access thecnology (7) elderly who have traveled. While the socio-economic indicators consist of (1) HDI (2) GRDP Per Capita (3) Percentage of poor people.

The quality of the elderly is determined by using k-means non-hierarchical clustering analysis. This analysis is to combine provinces that have the closest similarities, so that provinces with good, moderate, and poor characteristics will be separated based on their elderly characteristics. Data on the percentage of elderly characteristics is the basis for determining the proximity distance. K-means analysis was performed with SPSS software. Before carrying out the analysis, the assumption must be fulfilled that multicollinearity should not occur in the data.

The interpretation of the results of the k-means clustering analysis is as follows:

1. The Final Cluster Center output shows positive and negative values. A positive value means the indicator value is above the average value, while a negative value means the indicator value is above the average. From these results it can be seen that the group is better than the other groups.

2. Significant values indicate differences in indicators between groups. With a significance level of 0.05, a significance value of more than 0.05 is considered to have no significant difference between groups.

3. The members of each group can be known directly from the results of the analysis in the SPSS output in the cluster membership table

Classification of socio-economic conditions is determined by scoring HDI, GRDP per capita, and poverty in an area. The score results are then classified using the empirical categorization provisions as follows:

Category Height: $X > Mean + SD$

Medium category: $Mean-SD \leq X \leq Mean+SD$

Low category: $X < Mean - SD$

Determination of the GRDP per capita score is based on empirical categorization as previously mentioned. Poverty level scoring based on modification of the classification of *Pendataan Program Perlindungan Sosial* (PPLS 2011) by BPS in Soetomo (2015) is as follows:

a. Regions with high poverty have a percentage of poor people > 26.23 percent (score 1)

b. Regions with moderate poverty have a percentage of poor people at 13.35 percent-26.23 percent (score 2)

c. Regions with low poverty have a percentage of poor people <13.35 percent (score 3)

The HDI scoring is based on BPS classification which can be seen from table 1.

Table 1. Classification of Human Development Index

HDI	Catrgories	Score
HDI < 60	Low	1
60 ≤ HDI < 70	Medium	2
70 ≤ HDI < 80	High	3
HDI ≥ 80	Very High	4

After knowing the quality of the elderly and the socio-economic category, a correlation test was performed on the relationship between socio-economic conditions and the quality of the elderly by

province. Correlation tests were then also carried out on the relationship between each socio-economic indicator and the quality of the elderly by province. The analysis used is spearman rank with SPSS software. The choice of this analysis is because the data quality of the elderly from clustering is ordinal data in the form of categories. The value of the strength of the relationship can be seen in table 2.

Table 2. Correlation Coefficient Rank Spearman

correlation coefficient	relationship level
0,00 – 0,25	Very weak
0,26 – 0,50	Fairly Strong
0,51 – 0,75	Strong
0,75 – 0,99	Very Strong
1,00	Perfect

Source: (Raharjo, 2020)

The correlation coefficient value of the Spearman rank test in a statistical analysis or data analysis ranges from +1 to -1. If the correlation is positive then the relationship is directly proportional. The significance value used is 0,05. Decision making is as follows:

a) If the sig. > 0,05 then Ho is accepted

b) If the sig. < 0,05 mak Ho is rejected

RESULTS AND DISCUSSION

A. Provincial Elderly Quality in Indonesia

The results of the K-means clustering analysis produced three groups of provinces with good, medium and poor quality. The significance of the indicators and the average value of the indicators in each category can be seen in table 3.

Table 3. Significance and Average Characteristic Indicators of the Elderly

Characteristics of the Elderly	Sig	Average		
		Good	Medium	poor
Elderly can read	0	95.09	86.86	**73.42**
Elderly have school certificate	0	68.31	61.09	**47.56**
Elderly with health problems	0.06	**19.07**	**21.96**	24.43
Elderly have social security	0.018	14.84	14.64	**10.47**
Elderly Worker	0.002	**43.4**	**49.19**	53.82
Elderly who access technology	0.002	34.72	**23.67**	**23.2**
Elderly who have traveled	0.055	12.26	**9.49**	**8.49**

Based on table 3, it can be seen that all indicators are significant in differentiating between the three groups, except for the quality of the elderly who have traveled and the elderly whose activities are disrupted due to health problems. In this indicator, there is not much difference between the good, medium and poor quality groups when viewed from a significance value of more than 0,05. In the average column you can see the average value of each indicator from each group. Numbers in blue and in bold are indicator values below the national average.

Based on the average value of the indicators for each group, it can be concluded that provinces with good quality elderly have the best characteristics of health, education and social quality compared to other groups, with the least proportion of working elderly. There are six provinces with good quality elderly which are dominated by the West Indonesia region, namely Sumatera Utara, Sumatera Barat,

Kep. Bangka Belitung, Kep. Riau, DKI Jakarta, Sulawesi Utara.

The provincial group with moderate elderly The provincial group with moderate elderly quality has characteristics of good quality of education and health, but it is still not optimal in terms of access to technology and social travel activities, the number of working elderly in this group is also below average. There are 19 provinces with moderate elderly quality, including Aceh, Riau, Jambi, Banten, Kalimantan Tengah, Kalimantan Selatan, Kalimantan Timur, Kalimantan Utara, Sulawesi Tengah, Sumatera Selatan, Jawa Barat, DI Yogyakarta Sulawesi Selatan, Sulawesi Tenggara, Gorontalo, Maluku, Maluku Utara, Papua Barat, and Papua.

Provinces with poor quality elderly had the lowest health, educational and social quality characteristics, but the proportion of working elderly people was the highest. There are nine provinces in this group, including Sulawesi Barat, Bali, Nusa Tenggara Barat, Nusa Tenggara Timur, Kalimantan Barat, Jawa Timur, Jawa Tengah, Bengkulu, and Lampung.

The findings that attract attention in this study are that there are far more elderly workers in provinces with poor quality elderly. Older workers in Indonesia tend to come from workers who do not have pension funds, work in physical work, work with little concentration, health needs cannot be met, and feel content with their previous job. The reasons for the elderly to keep working indicate that the elderly work because they are required to fulfill their daily needs. Non-labor income such as pension funds cannot be owned by all the elderly, so those who do not have income are forced to keep working. Elderly who are not working have better happiness compared to the elderly who are still working (Jamalludin, 2021).

The results of Jamalludin's research are in line with the findings in this study, where the tendency of the elderly to work is higher in the provincial group with unfavorable elderly characteristics. This condition occurs because the elderly who choose to work tend to be those who do not have non-labor income. Unfavorable characteristics of the elderly cause the elderly to be unable to access jobs that can provide security in old age, thus requiring them to continue working at an advanced age to meet daily needs.

B. Relationship between the quality of the elderly and the socio-economic conditions of provinces in Indonesia

Socio-economic conditions in Indonesia consist of good, moderate, and unfavorable socio-economic conditions. The scoring results show that provinces with good socio-economic conditions consist of six provinces including Riau, Kep. Riau, Kalimantan Utara, Kalimantan Timur, DKI Jakarta, and DI Yogyakarta. DKI Jakarta and Kep. Riau is a province that has equally good socioeconomic conditions and elderly characteristics, while the other four provinces have moderate elderly characteristics.

Moderate socio-economic conditions consist of twenty-two provinces including, Sulawesi Utara, Sulawesi Tengah, Sulawesi Tenggara, Sulawesi Selatan, Sulawesi Barat, Maluku Utara, Kep. Bangka Belitung, Jawa Barat, Jawa Tengah, Banten, Jawa Timur, Aceh, Sumatera Utara, Sumatera Barat, Jambi, Sumatera Selatan, Bengkulu, Lampung, Bali, Kalimantan Barat, Kalimantan Tengah, Kalimantan Selatan.

Unfavorable socioeconomic conditions tend to spread across eastern Indonesia, including Nusa Tenggara Timur, Nusa Tenggara Barat, Gorontalo, Maluku, Papua Barat, and Papua. Where Nusa Tenggara Barat and Nusa Tenggara Timur also have unfavorable characteristics of the elderly.

The relationship between socio-economic conditions originating from the HDI score, GRDP per capita, and the percentage of poor people with the quality of the elderly can be seen in table 4.

Table 4. Correlation of Socio-Economic Conditions with Elderly Quality

			Socio Economic	Elderly Characteristics
Spearman's rho	Socio Economic	Correlation Coefficient	1.000	.432*
		Sig. (2-tailed)	.	.011
	Elderly Quality	Correlation Coefficient	.432*	1.000
		Sig. (2-tailed)	.011	.
*. Correlation is significant at the 0.05 level (2-tailed).				

Based on table 4 it can be seen that the correlation value is 0.432*. This value means that the relationship between the socio-economic conditions of the region and the characteristics of aging is quite strong. The * symbol indicates that the correlation value is significant at a significance value of 0.05.

The correlation number in table 3 has a positive value, so that the relationship between socio-economic conditions and the characteristics of the elderly is unidirectional. Thus the better the socio-economic conditions in a region, the better the aging characteristics in an area, and vice versa.

Sig. Value (2-tailed) shows a value of 0.011, this value is smaller than 0.05. Thus this value indicates a significant relationship between the socio-economic conditions of the region and the classification of aging characteristics.

After testing the relationship between the socio-economic conditions of the region and the quality of the elderly, it will then be seen how the relationship of each regional socio-economic indicator with the quality category of the elderly, the results of which can be seen in table 5.

Table 5. Closeness of Regional Socio-Economic Indicator Relationship with the Quality of the Elderly

Indicator	Correlation coefficient	Significant value	Information	
			Closeness	Trend
HDI	0.414	0.015	Fairly Strong	Positif
Poverty	-0.353	0.041	Fairly Strong	Negatif
GRDP per capita	0.487	0.003	Fairly Strong	Positif

Based on the table, the HDI indicator has a direct relationship with the characteristic categories of provincial elderly in Indonesia. Thus a province with a better HDI level will also be classified as having better aging characteristics. The strength of the relationship between HDI and the categories of elderly characteristics has a fairly strong violence and with a 95 percent confidence level, the reduction is significant. GRDP per capita also has a direct relationship with the characteristics of aging provinces in Indonesia. The strength of the relationship between GRDP per capita and the category of characteristics of the elderly is violence which is quite strong and has a significant decrease at the 99 percent confidence level.

The results of this study are in line with the findings (Br Ginting dkk., 2019) that there is a significant effect of HDI and per capita income on the classification of pre-elderly in Indonesia. Meanwhile, in the classification of aging, development indicators that have a significant effect are social capital and HDI.

The study (HelpAge International Global Network, 2013) also revealed that countries or regions with good HDI and per capita income will also have good quality elderly compared to countries

with low HDI and per capita income.) (Theou dkk., 2013) in his research also have characteristics that are in line, that per capita income has an influence on the health and vulnerability of the population 50 years and over.

The proportion of poor people with the provincial elderly characteristic category has a fairly strong and significant relationship strength, with 95 percent confidence. The direction of the relationship formed is opposite, meaning that a province with a lower number of poor people will belong to a group with better characteristics. This relationship is in accordance with research by (United Nations Population Funds and HelpAge International, 2012)

CONCLUSSION

In 2021 there are 9 provinces with poor quality elderly, 19 provinces with moderate elderly quality, and 6 provinces with good elderly quality. Provinces in the eastern part of Indonesia tend to be classified as having poor quality elderly, while good quality elderly tend to be in the western part.

Based on the scoring results, there are six provinces with good socio-economic conditions, 22 provinces with moderate socio-economic conditions, and six provinces with unfavorable socio-economic conditions.

HDI and GRDP per capita area have a positive, significant, and fairly strong effect on the quality of the elderly by province. Meanwhile, poverty has a negative, significant, and fairly strong effect on the quality of the elderly by province. Thus, with an increase in the HDI and GRDP per capita, as well as a decrease in the poverty rate in the provinces in Indonesia, the quality of the elderly in the region can also be better.

Attention to the eastern part of Indonesia must be prioritized to achieve a better quality of life for the elderly at present and for the elderly in the future.

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