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Factors Influencing the Welfare Status of Working Elderly Household Heads in East Nusa Tenggara Province in 2022

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Abstract

Most countries in the world are currently experiencing the phenomenon of population aging, and Indonesia is no exception. Since 2021, Indonesia has entered the old population structure. Population aging is a development challenge due to the vulnerable and unwell elderly, especially those who work. Nationally, East Nusa Tenggara (NTT) Province has the highest percentage of working elderly people above the national figure and among them are at the bottom of the economy. Therefore, this study aims to determine the variables that affect the welfare status of the working elderly household head. Using Susenas data in 2022 and the multilevel binary logistic regression method, it was found that as many as 40.15 percent of the welfare status of the working elderly household head in NTT Province were classified as not prosperous. Then, the variables of age, gender, regional classification, education, marital status, pension insurance ownership, and cellphone usage at the individual level, as well as the variables of health facility ratio, and crime incidence ratio at the district/city level have a significant effect on the welfare status of the working elderly household head in NTT Province. The tendency for the elderly to be unwell is greatest for the elderly who are female, live in rural areas, have completed primary school, have never married, do not have pension insurance, do not use mobile phones, have a low ratio of health facilities in districts/cities, and a high ratio of crime incidents in districts/cities. The variation in the welfare of the elderly with head of household status is caused by differences in the characteristics of each district/city which is 4.56 percent.

Keywords: working elderly, elderly well-being, multilevel binary logistic regression.

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1. Introduction

The aging population phenomenon is one of the demographic events that cannot be avoided. According to Anderson and Hussey (2000), one of the factors driving population aging is an

increase in life expectancy due to the government's success in reducing child mortality, improving health services and facilities, and expanding employment opportunities. Most countries around the world are currently experiencing an aging population process, and Indonesia is no exception. BPS (2022) states that since 2021 Indonesia has entered an old population structure, wherein the 2018-2022 period the percentage of the elderly tends to increase and in 2022, the percentage of the elderly population in Indonesia reaches 10.48 percent, and life expectancy is 72.91 years.

WHO (2002) defines the elderly as people aged 60 years and over. The elderly group is referred to as a group that is vulnerable to welfare, this is because those who are no longer productive often experience health problems and need assistance. The importance of welfare forthe elderly is contained in the fourth agenda of the National Medium-Term Development Plan (RPJMN) 2020-2024, namely increasing quality and competitive human resources directed at population control, fulfillment of basic services, and social protection by paying attention to the needs of the elderly population and persons with disabilities. Then, it refers to the third goal of the Sustainable Development Goals (SDGs), which is to ensure a healthy life and improve the welfareof the entire population of all ages, including the elderly. Social protection, it is still not infavor of the elderly, and their welfare is still quite vulnerable. This is evidenced by Susenas data, which shows that in 2022, 25.97 percent of the elderly population did not have health insurance. In addition, elderly households that have a social welfare card are only 19.15 percent. This figure has decreased significantly compared to 2015 of 25.58 percent. This means that in terms of social, economic and health, there are still many elderly people who do not have prosperous lives.

The presence of elderly households in Indonesia is increasing every year. Based on Susenas data in 2022, 29.80 percent of households in Indonesia are elderly households, and more than 50 percent of elderly people act as heads of households. The role of the elderly as head of the household makes the elderly, who should enjoy their old age, choose to work. According to BPS, in 2022 as many as 52.55 percent of elderly people in Indonesia chose to work, and this figure increased by 2.09 percent compared to 2021. The decision to work is a form of self-actualization for the elderly due to financial pressure. In addition, the absence of non-labor income such as pension guarantees is also a driving factor in the elderly's decision to work. (Jamaludin, 2020).

Susenas 2022 data shows that NTT province has the highest proportion of working elderly in Indonesia, reaching 66.53 percent and 13.98 percent greater than the national figure. Problems in the elderly that can affect their welfare are inseparable from social factors, decreased productivity, inappropriate living environment, elderly neglect, and economic status (BPS, 2022). The province of NTT also faces in relation to worsening economic conditions. Based on Susenas data in 2022, 55.33 percent of the elderly in NTT province were heads of households, and 36.5 percent of the elderly were in households in the bottom 40 percentof the economy. Therefore, to fulfill their economic needs and those of their families amidst declining physical conditions, the elderly choose to work. However, in the province of NTT, the welfare of the elderly who work is still not guaranteed. This can be seen from the fact that there are still many elderly people who work who earn low wages. According to BPS, low wages are defined as wages earned by someone who works

for less than two-thirds of the median wage for each region. In 2022, 34.48 percent of working elderly in NTT earned low wages. This figure increased by 5.99 percent compared to 2021.

Research related to the welfare of working elderly people has not been done much in Indonesia. Research by Yunny and Kartika (2020) analyzes the factors that influence the welfare of the elderly in Badung Regency using multiple linear regression. The results showed that education level, employment status, income, marital status, and access to health significantly affect the welfare of the elderly. On the other hand, research by Das, et al. (2018) analyzed the determinants of elderly welfare in India using multinomial logistic regression. The results showed that marital status, education level, employment, annual income, health status and regional factors are determinants of elderly well-being.

The condition of well-being refers to the term social welfare as a state of fulfillment of material and non-material needs. (Allen, 2008). According to Yunny and Kartika (2020), welfareis related to the fulfillment of basic needs reflected in livable housing, adequate clothing and food, affordable education, and quality health services. The welfare of the elderly population is a situation that includes the quality of life of the elderly as a description of the fulfillment of elderly rights both from social, physical and economic aspects. Andersen and Newman (1973) introduced a conceptual model of elderly well-being and mental health based on three factors, namely predisposing factors that include sociodemographic characteristics, supporting factors that include characteristics of family support and the surrounding environment, and need factors that include characteristics of self-care and illness.

The Organization for Economic Cooperation and Development (OECD) developed a conceptual framework that defines well-being indicators as multidimensional components that include material indicators (income and wealth, employment, housing conditions) and non-material factors (health status, work-life balance, education, social relationships, environmental quality, civic engagement and governance, personal security, and subjective well-being). (OECD, 2020). In line with the conceptual framework by the OECD, BPS (2022) classifies indicators to measure the level of community welfare into eight indicators, namely population, health, education, employment, expenditure, living conditions, living facilities, and home ownership status. Meanwhile, according to Sukmawardhana, et al. (2013) the criteria in measuring welfare consist of aspects of health, education, housing, security, and the social environment. Based on this description, it is important to examine what variables affect the welfare status of the working elderly household head in NTT province both at the individual level and at thedistrict/city level.

2. Research methods

This research covers all districts and cities in NTT province in 2022, consisting of 21 districts and one city. The unit of analysis is the elderly population who work and have the status of head of household in NTT province in 2022. The data used in this study are data of Susenas,

Consumption, and Expenditure in 2022 from BPS, and the publication of NTT Dalam Angka 2023. In the Susenas data, the stages of selecting the unit of analysis are presented in Figure 1.

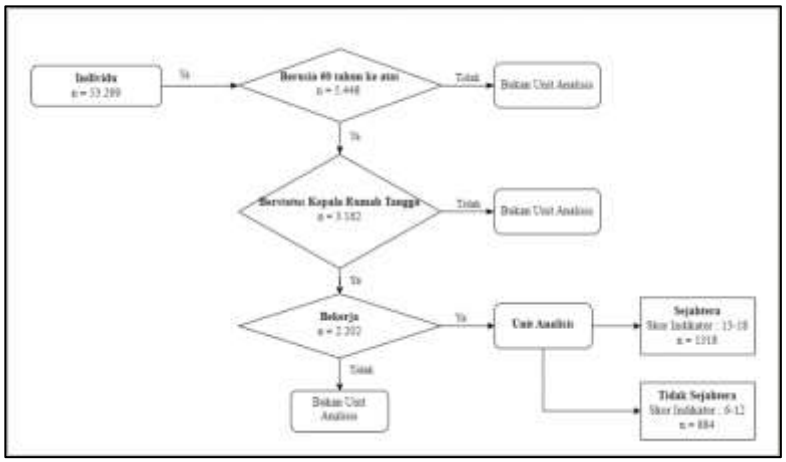


Figure 1. Flowchart of the analysis unit selection stage

2.1. Research Variables

The dependent variable used is the welfare status of the working elderly household head, which is obtained through the calculation of the welfare indicator score consisting of indicators of household expenditure, working hours of the elderly, living conditions, living facilities, home ownership status, and physical and mental conditions of the elderly (BPS, 2023; OECD, 2020; Sukmawardhana, et al., 2013). Through this score, the welfare status is classified into two categories, where the elderly who score less than 13 are categorized as not prosperous, while the elderly who score 13-18 are categorized as prosperous. The indicators used in shaping the welfare status of the elderly are presented in Table 1 as follows.

Table 1. Indicators of Elderly Wellbeing

Welfare Indicators	Criteria	Score
(1)	(2)	(3)
Household Expenses	High (>Rp 3,000,000)	3
	Medium (IDR 1,500,000 to IDR 3,000,000)	2
	Low (<Rp 1,500,000)	1
Elderly Working Hours	High (<15 hours)	3
	Medium (15 hours - 35 hours)	2
	Low (>35 hours)	1
Living Conditions	Permanent (9)	3
	Semi-Permanent (6-8)	2
	Non-permanent (3-5)	1
Residential Facilities	Complete (17-21)	3
	Fair (12-16)	2
	Less (7-11)	1
Home Ownership Status	Owned	3
	House for rent/contract/office	2
	Owned by parents/siblings	1

Welfare Indicators	Criteria	Score
Physical and Mental Health	High (8)	3
	Medium (5-7)	2
	Low (0-5)	1

Source: BPS (2023); OECD (2020); Sukmawardhana, *et al.* (2013).

The independent variables used in this study consisted of 11 variables at the individual level and 4 variables at the district/city level, which are presented in Table 2 Variables at the individual level are obtained from *raw data from* Susenas March 2022 which are categorical and continuous. The employment sector variable is categorized into formal and informal workers, where the working elderly who are included in the informal sector are those with the criteria of own business, business assisted by non-permanent workers/unpaid workers, free workers in agriculture and non-agriculture, and family workers/unpaid workers. Meanwhile, those who are classified as formal workers are elderly people with the criteria of doing business assisted by permanent/paid labor and laborers/employees/employees (BPS, 2023).

Table 2. Variables Used in the Study

Variables	Category	Data Source
(1)	(2)	(3)
Dependent Variable		
Elderly well-being Status(Y)	0 = Prosperous*	Raw Data Susenas March 2022
	1 = Not Prosperous	
Individual Level Independent Variable		
Age (X1)	Numerical	Raw Data Susenas March 2022
Gender (X2)	0 = Female*	
	1 = Male	
Region Classification (X3)	0 = Urban*	
	1 = Rural	
Education (X4)	0 = Junior high school or above	
	1 = Elementary school/equivalent and below	
Marital Status (X5)	0 = Ever Married *	
	1 = Never Married	
Employment Sector (X6)	0 = Formal	
	1 = Informal	
Health complaints (X7)	0 = None *	
	1 = Existing	
Health insurance Ownership (X8)	0 = Existing *	
	1 = None	
Pension Security Ownership (X9)	0 = Existing *	
	1 = None	
Traveling Status (X10)	0 = Existing *	
	1 = None	
Mobile phone usage (X11)	0 = Using*	
	1 = Not using	
Level two (District/City Level Independent Variables)		

Variables	Category	Data Source
Economic Growth	Numerical	East Nusa Tenggara Province in Figures 2023
Percentage of Poor Population	Numerical	
Ratio of Health Facilities	Numerical	
Crime Occurrence Ratio	Numerical	

*): Reference category

2.2. Analysis Method

The analysis methods used in this research include descriptive analysis and inferential analysis. Descriptive analysis in this study is used to see an overview of the characteristics of working elderly with the status of a prosperous and non-prosperous household head in NTT province in 2022 throughpie charts, tables, bar charts, and bivariate maps. The inferential analysis is used to determine the variables that have a significant effect on the welfare of the working elderly with head of household status in NTT province in 2022. Hox (2010) states that research in the social field often uses a multilevel approach because the social field analyzes the relationship between individuals and community groups described through a hierarchical system, where the two elements have different levels. Therefore, inference analysis was carried out using multilevel binary logistic regression in this study. Multilevel binary logistic regression is a mathematical model that explains the relationship between response variables and explanatory variables with two outcomes: success and failure. The variables in multilevel binary logistic regression are hierarchically structured so that there will be structural variables at a lower level and contextual variables at a higher level (Hosmer, et al., 2013).

Multilevel models are divided into two, namely models with random intercept and models with random slope. The model with random intercept assumes that each group has a different intercept value, but the slope is the same, which means there is no difference in the influence of the independent and dependent variables between groups. Meanwhile, the model with random slope assumes that there are differences in the influence of independent and dependent variables between groups, so that the slope of each group has a different value (Hox, et al., 2018). In this study, it is assumed that the effect of each explanatory variable on the response variable is the same for each group, so the model used is a multilevel binary logistic regression model with random intercept. The equation for the multilevel binary logistic regression model with random intercept in analyzing the welfare status of working elderly household heads in NTT province in 2022 is as follows.

$$\begin{aligned} ln\left(\frac{\pi_{ij}}{1-\pi_{ij}}\right) = {} & \gamma_{00} + \gamma_{10}Usia_{ij} + \gamma_{20}JK_{ij} + \gamma_{30}KlasWilayah_{ij} + \gamma_{40}Pendidikan_{ij} \\ & + \gamma_{50}StsKawin_{ij} + \gamma_{60}SektorKerja_{ij} + \gamma_{70}Keluhansehat_{ij} + \gamma_{80}Jamkes_{ij} \\ & + \gamma_{90}Jaminan\_pensiun_{ij} + \gamma_{100}Stsberpergian_{ij} + \gamma_{110}Handphone_{ij} \\ & + \gamma_{01}Pert\_Ekonomi_{j} + \gamma_{02}Persenmiskin_{j} + \gamma_{03}Rasiofaskes_{j} \\ & + \gamma_{04}Rasiokejahatan_{j} + u_{0j} + \varepsilon_{ij} \end{aligned} \quad (1)$$

Description:

π_{ij} : conditional probability of success event Y with X i-th individual j-th group
i : 1,2,3, … , n_j, where n_j is the number of individuals in the jth group
j : 1,2,3, … , N, Where N is the number of groups (districts/cities)
γ_{00} : *intercept* (probability of welfare status when the value of the independentvariable is 0)
γ_{10} : fixed effects for the explanatory variable age
γ_{20} : fixed effects for the explanatory variable gender
γ_{30} : fixed effects for the region classification explanatory variable
γ_{40} : fixed effects for the explanatory variable education
γ_{50} : fixed effects for the explanatory variable marital status
γ_{60} : fixed effects for the explanatory variable employment sector
γ_{70} : fixed effects for the explanatory variable health complaints
γ_{80} : fixed effects for the explanatory variable of health insurance ownership
γ_{90} : fixed effects for the explanatory variable pension security ownership
γ_{100} : fixed effects for the explanatory variable of traveling status
γ_{110} : fixed effects for the explanatory variable of mobile phone usage
γ_{01} : fixed effects for the explanatory variable economic growth
γ_{02} : fixed effects for the explanatory variable percentage of poor population
γ_{03} : fixed effects for the explanatory variable health facility ratio
γ_{04} : fixed effects for the explanatory variable crime incidence ratio
u_{0j} : random effect of j-th group (district/city)
ε_{ij} : residuals for the i-th individual in the j-th group (district/city)

The testing stages in the multilevel binary logistic regression model are explained as follows.

1. Random Effect Significance Test

   This test aims to determine whether the multilevel binary logistic regression model is better used than binary logistic regression using the likelihood ratio test. The null hypothesis states that the random effect is not significant. The decision to reject H_0 at a test level (α) of 5 percent if the LR value> $\chi^2_{(1)}$ = 3,841 or p-value < 0.05. Thus, it can be concluded that the random effect is significant at the 5 percent significance level or there is enough evidence to state that multilevel binary logistic regression is better in modeling the welfare status of the working elderly household head in NTT province in 2022 than one-level binary logistic regression.

2. Intraclass Correlation Coefficient (ICC) Calculation

   The ICC calculation is used to obtain the variance value of the welfare status of the elderlywho work as household heads because of the differences in the characteristics of districts/cities in NTT province. The ICC value is in the range of 0 to 1. The higher the ICC value means that the units at the individual level are more homogeneous, while the units atthe district/city level are more diverse (heterogeneous).

3. Simultaneous Parameter Significance Test

   This test aims to determine whether the independent variables together have a significant effect on the welfare status of the working elderly household head in NTT Province in 2022 using the G test. The null hypothesis states that the independent variables do not affect the welfare status of the working elderly household head. The decision to reject H_0 at a significance level (α) of 5 percent if G > $\chi^2_{(0,05;p)}$or p-value <0.05.Thus, it can be concluded that there is at least one independent variable that significantly influences the welfare status of the working elderly household head in NTT province in 2022.

4. Partial Parameter Significance Test

   The purpose of this test is to find out which variables have a significant effect on the welfare status of the working elderly household head in NTT Province in 2022 using theWald test. The null hypothesis states that the independent variables at each level (individual and district/city) a significant effect on the welfare status of the working elderly household head. The decision to reject H_0 is obtained if |W| > $Z_{0,025}$ or p-value < 0.05. Thus, it can be concluded that there is sufficient evidence to state that the independent variables partially affect the welfare status of the working elderly household head in NTT Province in 2022.

5. Odds Ratio Interpretation

   Odds ratio is a measure to identify the tendency of influence between one category and another category in each independent variable.

3. Results and Discussion

3.1. Overview of The Welfare Status of The Working Elderly Household Head in NTT Province in 2022 According to the Characteristics of Explanatory Variables and Their Welfare Status

The descriptive analysis in this study provides an overview of the welfare of the working elderly household head in NTT Province in 2022 in terms of the characteristics of the explanatory variables and their welfare status. Figure 2 shows the percentage of working elderly household heads in NTT Province according to their welfare status in 2022, it can be seen that 40.15 percent are classified as not prosperous, while the remaining 59.85 percent are classified as thriving. When examined by district/city, South Timor Tengah Regency has the highest percentage of working elderly household heads are not prosperous, while Kupang City has the lowest percentage. The high welfare rate of the elderly, especially those who work, certainly needs to be a concern for the government. Given the government's target as stated in the RPJMN 2020-2024, the fourth agenda is to improve quality and competitive human resources by paying attention to the needs of the elderly population and persons with disabilities. This target can be realized by providing productivity support to the elderly, such as skills training programs and elderly care communities, as well as employment social security programs (Roziq, et al., 2023).

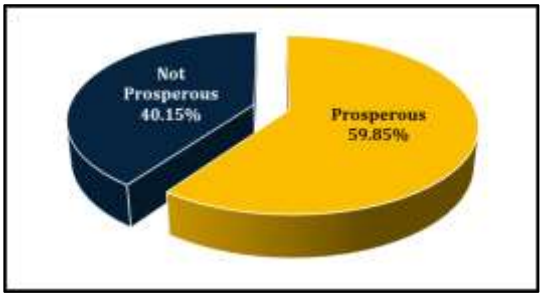


Figure 2. Percentage of the welfare status of the working elderly household head in NTT Province in 2022.
Source: Susenas, 2022 (processed)

The picture of the welfare status of the working elderly household head can also be seen based on the variables at the individual level that are thought to influenceit. Based on Table 3, it can be seen that in general, the percentage of the welfare status of the working elderly household head who are not prosperous is higher among the elderly with the characteristics of being female, living in rural areas, the last education completed is elementary school/ equivalent or not graduated from elementary school, never married, working in the informal sector, not having health complaints, not having health insurance, not having pension insurance, never traveling, and who do not use cellphones as a means of communication.

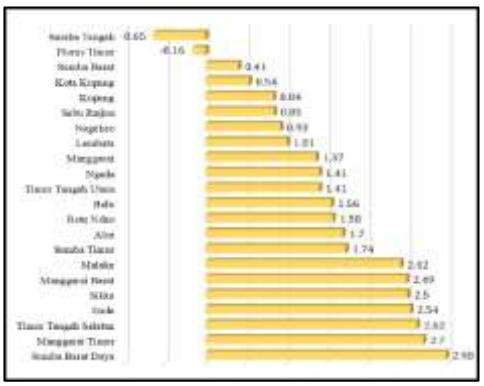
Table 3. Percentage of welfare status of working elderly household head according to individual characteristics

Variable Name	Category	Welfare status of working elderly household head	
		Prosperous (%)	Not Prosperous (%)
(1)	(2)	(3)	(4)
Gender	Female	46.11	53.89
	Male	63.64	36.36
Region Classification	Urban	81.86	18.14
	Rural	57.47	42.53
Education	Junior high school/equivalent and above	82.88	17.12
	Elementary school/equivalent and below	55.23	44.77
Marital Status	Ever Married	60.28	39.72
	Single	40.00	60.00
Employment Sector	Formal	77.36	22.64
	Informal	58.97	41.03
Health Complaints	None	56.09	43.91
	There is	60.74	39.26
	There is	60.45	39.55

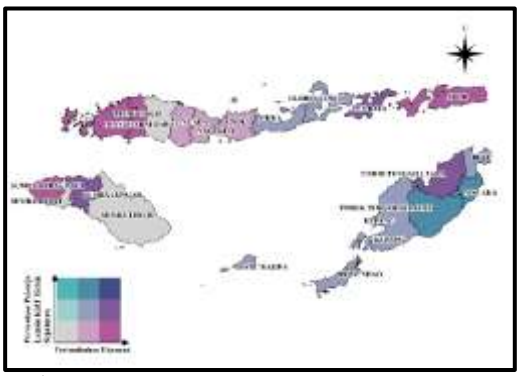
Variable Name	Category	Welfare status of working elderly household head	
		Prosperous (%)	Not Prosperous (%)
Health Insurance Ownership	None	53.81	46.19
Retirement Security Ownership	There is	87.50	12.50
	None	58.03	41.97
Travelling Status	There is	63.35	36.65
	None	56.93	43.07
Mobile phone usage	Using	68.03	31.97
	Not using	45.65	54.35

Source: raw data Susenas, 2022 (processed)

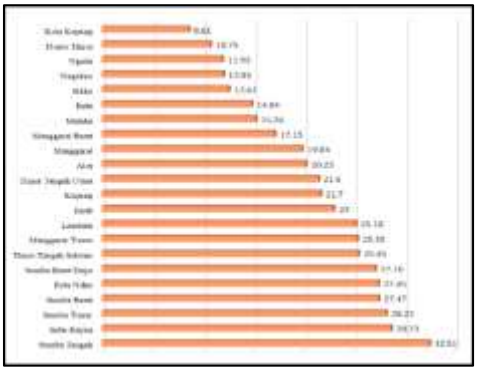
Based on Figure 3(a), it can be seen that in general, economic growth in NTT Province is positive in almost all districts/municipalities. There are two districts with negative economic growth, namely the Central Sumba district and the East Flores district. Figure 3(b) shows the relationship between economic growth and the percentage of the working elderly household head are not prosperous, with the districts of South Central Timor and Malacca having moderate economic growth and a high percentage of working elderly household head are not prosperous. On the other hand, there are 3 districts with low economic growth and a low percentage of working elderly household heads. Furthermore, based on Figure 3(c), it can be seen that in general, the percentage of poor people in each district/municipality in NTT province is above 8 percent. Ka Central Sumba district is the region with the largest number of poor people, while Kupang city has the lowest percentage of poor people. As for Figure 3(d), which illustrates the relationship between the variable percentage of the poor population and the percentage of the working elderly household head who are not prosperous, it can be seen that the district of South Central Timor has a high percentage of the poor population and a high percentage of working elderly household head are not prosperous. On the other hand, 4 out of 22 districts have a high percentage of poor people but a low percentage of working elderly household heads.



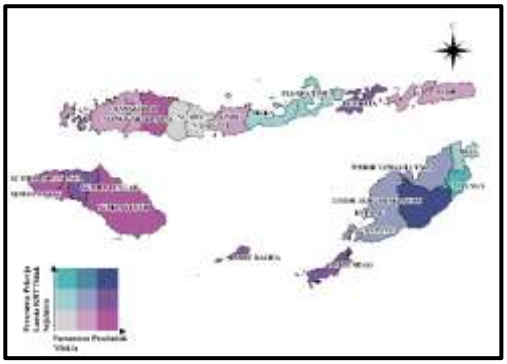
a) Economic Growth Rate)



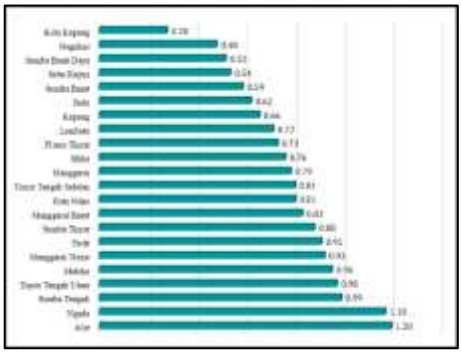
b) Bivariate Maps of Economic Growth and Percentage of Elderly Not on Welfare)



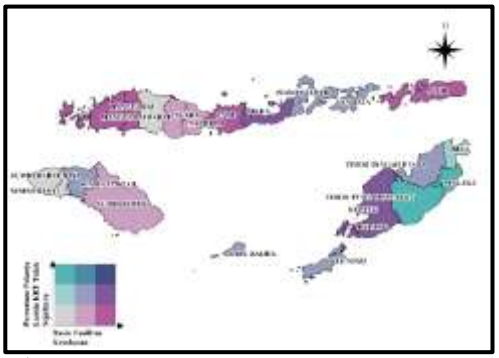
c) Percentage of Poor Population)



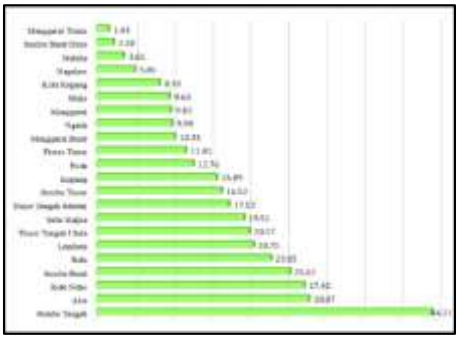
d) Bivariate Maps Percentage of Poor and Percentage of Elderly Not on Welfare)



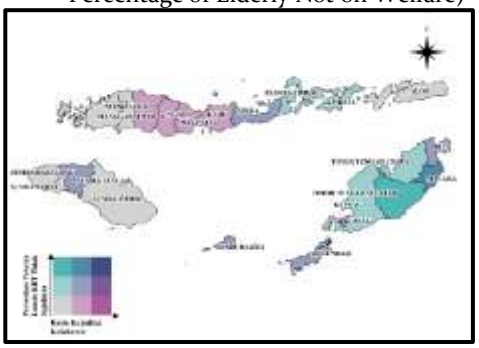
e) Health Facility Ratio)



f) Bivariate Maps Health Facility Ratio and Percentage of Elderly Not on Welfare)



g) Crime Occurrence Ratio)



h) Bivariate Maps Crime Occurrence Ratio and Percentage of Elderly Not on Welfare)

Figure 3. Overview of contextual variabel

Source: Susenas, 2022; NTT province in figures, 2023 (processed)

Figure 3(e) shows the ratio of health facilities in NTT Province, with Alor District having the highest ratio of 1.2. Meanwhile, Kupang City is the region with the lowest ratio of health facilities. On the other hand, Figure 3(f) shows the relationship between the facility ratio variable and the percentage of the working elderly household head who are not prosperous, showing that the districts of South Central Timor and Malacca have a low health facility ratio but a high percentage of the working elderly household head are not prosperous. Based on Figure 3(g), it can be seen

that Central Sumba district has the highest crime incidence ratio at 44.21 and East Manggarai district has thelowest crime incidence ratio. The relationship between the crime incidence ratio variable and thepercentage of the working elderly household heads who are not prosperous in Figure 3(h) shows that Malacca Regency has a medium crime incidence ratio and a high percentage of the working elderly household heads are not prosperous.

3.2. Variables that Affect The Welfare Status of The Elderly Who Work as A Household Head in NTT Province in 2022

3.2.1. Random Effect Significance Test

The results of this test can be seen from the likelihood ratio test statistic value of 45.2055 with a *p-value* < 1.744e-11. When compared with $\chi^2_{0,05(1)} = 3,8414$ or *p-value* = 0.05, then the decision is Reject H_0. Thus, at a significance level of 5 percent, it can be shown that there is a significant variation in the welfare status of the working elderly household head between districts/cities in NTT Province in 2022. Therefore, the multilevel binary logistic regression model is more appropriate in explaining the data than the binary logistic regression model.

3.2.2. ICC Calculation

Based on the results of data processing, the ICC value is 0.0456, which means that differences in the characteristics of districts/cities in NTT Province can explain 4.56 percent of the variation in the welfare status of working elderly household heads in NTT Province. Twisk (2006) states in his research states that there are no definite provisions regarding the minimum value of ICC. In addition, Nezlek (2008) also stated in his research that ICC values around zero are still relevant to use.

3.2.3. Simultaneous Parameter Significance Test

The test results of the resulting G test statistic value of 262.4907 with *p-value* < 2.2e - 16. When compared with $\chi^2_{0,05(15)} = 24,996$ or *p - value* = 0.05, then the decision is to reject H_0. Thus, at the 5 percent significance level, it can be shown that there is at least one independent variable that has a significant effect on the welfare status of the working elderly household head in NTT Province in 2022.

3.2.4. Partial Parameter Significance Test

The results of partial testing of each explanatory variable in the multilevel binary logistic regression model with random intercept are presented in Table 3 as follows.

Table 4. Parameter estimation results of multilevel binary logistic regression model

Characteristics		$\hat{\beta}$	*Z*	*p-value*	*Odds Ratio*
(1)	(2)	(3)	(4)	(5)	(6)
Constant		-4.533	-6.121	0.000	0.010*
Age		0.029	3.633	0.000	1.029*
Gender	Female				
	Male	-0.501	-4.40	0.000	0.605*
Region Classification	Urban				
	Rural	0.729	3.465	0.000	2.073*
Education	Junior high school/equivalent and above				
	Elementary school/equivalent and below	0.744	4.572	0.000	2.105*
Marital Status	Ever Married				
	Single	0.772	2.358	0.018	2.164*
Employment Sector	Formal				
	Informal	0.041	0.156	0.875	1.042
Health Complaints	None				
	There is	0.187	1.525	0.127	1.206
Health Insurance Ownership	There is				
	None	-0.068	-0.38	0.699	0.933
Retirement Security Ownership	There is				
	None	1.068	3.700	0.000	2.911*
Travelling Status	There is				
	None	0.136	1.349	0.177	1.146
Mobile phone usage	Using				
	Not using	0.685	6.829	0.000	1.985*
Economic Growth		0.165	1.435	0.146	1.179
Percentage of Poor Population		-0.024	-1.516	0.131	0.975
Health Facilities Ratio		-0.154	-2.161	0.030	0.857*
Crime Occurrence Ratio		0.031	2.478	0.012	1.032*

Source: Susenas, 2022 (processed)

Based on the results of the Wald test in Table 4, the equation of the multilevel binary logistic regression model with random intercept that explains the effect of the independent variables at the individual and district/city levels on the welfare status of the working elderly household head in NTT Province in 2022 is as follows.

$$\begin{aligned} ln\left(\frac{\hat{\pi}_{ij}}{1-\hat{\pi}_{ij}}\right) = {} & u_{0j} - 4,533 + 0,029Usia_{ij}^{*} - 0,501JenisKelamin_{ij}^{*} + 0,729KlasWilayah_{ij}^{*} \\ & + 0,744Pendidikan_{ij}^{*} + 0,772StatKawin_{ij}^{*} + 0,041SektorKerja_{ij} \\ & + 0,187KeluhanSehat_{ij} - 0,068Jamkes_{ij} + 1,068JaminanPensiun_{ij}^{*} \\ & + 0,136StatBepergian_{ij} + 0,685Handphone_{ij}^{*} + 0,165PertEkonomi_{j}^{*} \\ & - 0,024PersenMiskin_{j}^{*} - 0,154RasioFaskes_{j} + 0,031RasioJahat_{j}^{*} \end{aligned} \quad (2)$$

3.3. The Trend of Variables Affecting the Welfare of the Elderly Working as Head of Households in NTT Province in 2022

The age variable has a significant influence on the welfare status of the working elderly household head with an odds ratio value of 1,029. This can be interpreted that every increase in the age of the working elderly household head for one year will increase their tendency to be unwell by 1,029 times, assuming other variables are considered constant. This finding is in line with the research of Indrayani and Ronoatmodjo (2018) which states that the older the elderly get, the more their quality of life will decrease and they will not prosper. This can be caused by the fact that the older they age, the more vulnerable they will be to various diseases, and the decrease in body functions will decrease their welfare.

The gender of the elderly who work as housekeepers has a significant effect on their welfare status with an *odds ratio* value of less than 1, which is 0,605. This means that the working elderly household head with male gender have 0,605 times less tendency to be unwell than the working elderly household head with female gender, assuming other variables are considered constant. Age is no longer young and declining physical conditions make elderly women who play a role in supporting the family by working less prosperous. This finding is consistent with Dragomirecka and Selepova's (2002) research that women are more vulnerable to being unwell than men. This could be due to the fact that older women tend to feel lonely, have a low economy, and feel worried about the future which has an impact on their quality of life and well-being.

The regional classification variable has a significant influence on the welfare status of the working elderly household head with an odds ratio of 2,073. This value means that the working elderly household heads living in rural areas are 2,073 times more likely to be unwell than those living in urban areas, assuming other variables are constant. This may be due to the more adequate facilities in urban areas as well as the difference in wages for the working elderly, which makes the income of those living in urban areas higher and more prosperous. This study's results align with research by Putri, et al. (2019) that the quality of life of the elderly in rural areas is lower due to limited health services and the absence of social programs to support quality of life.

The last education completed by the working elderly household head has a significant effect on their welfare with an odds ratio value of 2,105. This means that the elderly who have the last education of elementary school / equivalent and do not graduate from elementary school tend to be 2,105 times more prosperous than the elderly with junior high school / equivalent education and above, assuming other variables are constant. This can happen because education is the capital of the future, where the higher the level of education completed,the easier it will be to get a job and a decent life. This finding is in line with research by Viryamitha and Purwanti (2020) that a broad provision of knowledge and insight has an impact on the opportunity to get a decent job so as to get a guaranteed pension that can be utilized in old age.

The marital status variable has a significant influence on the welfare status of the working elderly household head with an *odds ratio* value of 2,164. This means that older people who have

never married have a tendency to be less prosperous 2,164 times greater than those who have married, assuming other variables are constant. The presence of a spouse and family makes the elderly feel more cared for and loved so that they can improve their welfare and quality of life. The results of this study are in accordance with research by Yunny & Kartika (2020) that shows someone who does not have a partner has a lower quality of life than someone who has or has had a partner.

The work sector engaged in by the elderly does not significantly affect the welfare status of the working elderly household head. Aqil (2023) stated that there were changes felt by the elderly who worked after the COVID-19 pandemic, both those who worked in the formal and informal sectors so the work sector did not determine the welfare of the elderly. In addition, there may be contributions from other household members who help earn a living so that any sector of work for the elderly no longer determines welfare for them. Furthermore, the variables of health complaints and ownership of health insurance do not have a significant influence on the welfare of older people who work as household heads. This result is not in accordance with the theory of welfare put forward by Andersen & Newman (1973), that supporting factors, which include health insurance variables and need factors, which include variables of illness suffered, affect the welfare and mental health of the elderly.

The variable of pension security ownership has a significant influence on the welfare status of the working elderly household head with an odds ratio value of 2,911. This can be interpreted that the working elderly household head who do not have pension insurance have a tendency to be less prosperous 2,911 times greater than those who have it, assuming other variables are constant. This finding is in line with the results of Kartikasari and Hanri's research (2020) that the existence of pension funds makes the quality of life of the elderly. Then the variable of traveling status does not have a significant influence on the welfare status of the working elderly household head. This finding contradicts Ratz and Michalkó's (2011) research that people who travel frequently and travel tend to have higher levels of happiness which can improve one's quality of life. The use of mobile phones as the utilization of information and communication technology has a significant influence on the welfare status of the working elderly household head with an odds ratio value of 1,985. This can be interpreted that the tendency of the working elderly household head who do not use cellphones to be unwell is 1,985 times greater than those who use cellphones assuming other variables are constant. The results of this study are consistent with the research of Nugraha, et al. (2022) that the use of cellphones can improve social functioning and happiness of the elderly.

The economic growth variable does not significantly affect the welfare status of the working elderly household head in NTT Province. This may be because economic growth is not accompanied by an increase in facilities and infrastructure such as educational facilities, road access, health facilities, and decent drinking water sources. The results of this study contradict research by Yuaidi & Siregar (2023) that shows economic growth has an impact on community welfare.Then, the variable percentage of poor people does not significantly affect the welfare of the

working elderly household head. This result is in line with Mulia & Putri's research (2022) that the poor already have a survival strategy, so being poor does not significantly impact their welfare. The ratio of health facilities has a significant effect with an *odds ratio* value of 0,857. This means that every increase in the ratio of health facilities in NTT Province by 1 unit will reduce the tendency of the elderly not to be prosperous by 0,857 times. This finding is in line with Viryamitha & Purwanti's (2020) research that access to health facilities affects the welfare of the elderly. The ratio of crime incidence has a significant effect with an *odds ratio* value of 1,032. Every increase in the ratio of crime incidence in NTT Province by 1 unit, the tendency of the working elderly household head to be not prosperous increases 1,032 times. This finding is in line with Allen's (2008) research that insecurity has an impact on the quality of life of the elderly.

4. Conclusion and Recommendations

Based on the study results, it can be concluded that most of the working elderly household heads in NTT Province are classified as prosperous. The characteristics of age,gender, regional classification, education, marital status, ownership of health insurance, and the use of cellphones in the elderly as well as the ratio of health facilities and the ratio of crime incidents affect the welfare of the working elderly household head. The tendency of the elderly not to be prosperous is dominated by the elderly who are old, female, live in rural areas, have never married, do not have pension insurance, and do not use cell phones. Pension security ownership and marital status are the variables with the highest tendency.

The suggestions that can be given based on the research results include several things First, the NTT Provincial government can organize an old-age allowance program for working elderly people, especially in the informal sector, to still have productive opportunities and a guaranteed prosperous life. Then for the government, it is hoped that it can carry out a women's empowerment program in the form of skills training for elderly women. For future researchers, they can conduct research in 514 districts/cities in Indonesia and include variables related to happiness and mental health of the elderly.

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