

## Multilevel Analysis: Factors Related with Quality Service of Elderly Community Health Post in Sukoharjo Central Java

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### ABSTRACT

**Background:** The quality of health services is the difference between patient expectations and their perceptions of the services they receive, thus the quality of health services shows the success of a health service. This study aims to analyze the factors that influence the quality of at the elderly community health post.

**Subjects and Method:** This research was a cross-sectional study conducted at 25 at the elderly community health post in Sukoharjo Regency, Central Java in November 2023. The sample consisted of 200 elderly people using random sampling. The dependent variable is the quality of health services at the elderly community health post, while the independent variables are gender, age, number of visits, level of education, and income. Data collection was carried out using a questionnaire. Data were analyzed using multilevel linear regression analysis.

**Results:** The results of multilevel analysis show that the assessment of the quality of health services decreases in elderly women ( $b = -0.82$ ;  $CI_{95\%} = -1.65$  to  $-0.01$ ;  $p = 0.049$ ), aged  $\geq 66$  years ( $b = -1.22$ ,  $CI_{95\%} = -2.01$  to  $-0.44$ ;  $p = 0.002$ ), number of visits 6 times ( $b = -3.03$ ;  $CI_{95\%} = -3.89$  to  $-2.61$ ;  $p < 0.001$ ), education  $\geq 0.699$ , and income ( $b = -2.09$ ;  $CI_{95\%} = -3.20$  to  $0.97$ ;  $p < 0.001$ ). Posyandu has a contextual effect on assessing the quality of health services with  $ICC = 52.76\%$ .

**Conclusion:** The assessment of the quality of the elderly community health post service decreased in the elderly type, age  $\geq 66$  years, number of visits 6 times, education  $\geq$  high school, and income  $\geq$  Rp 2,000,000. at the elderly community health post shows quite large contextual effects on assessing the quality of health services.

**Keywords:** Quality of health services, multilevel analysis, elderly

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### BACKGROUND

Elderly or old age is the closing period of the human life span which begins at the age of 60 years. Elderly is characterized by changes in physical, psychological and social cond-

itions in interactions with other individuals (Akbar et al., 2021). Many changes and problems occur in the elderly along with the aging process, such as a decline in biological, psychological, social, or economic functions

(Ghenta et al., 2022). To overcome this, the government established an elderly community health post activity which aims to control the condition of the elderly population and provide them with guidance in caring for and monitoring their health independently. This program is a policy development from the government through elderly health services which are administered through Community Health Centers without ignoring the role and participation of the elderly, families, community leaders and social organizations (Masturi et al., 2021).

A healthcare institution needs to evaluate the services it offers to patients to provide added value when compared to its competitors. Health institutions must prioritize patient satisfaction to meet patient needs appropriately while providing effective and accurate services. Patient satisfaction is described as a complex combination of perceived needs, healthcare expectations, and care experiences. The results of patient satisfaction after using health services can show perceptions that can create a patient commitment, so that patients can choose the same health institution when they need services again (Darmus and Akbolat, 2020).

The quality of health services can be measured with the SERVQUAL or RATER instrument which consists of Reliability, Assurance, Tangibles, Empathy, and Responsiveness (Goula et al., 2021). This study aimed to analyze the factors that influence the quality of elderly community health post.

## SUBJECTS AND METHOD

### 1. Study Design

This research was conducted using the analytical observation method with a cross sectional approach. This research was conducted at 25 elderly community health post in Sukoharjo Regency, Central Java in November 2023.

### 2. Population and Sample

The target population is all elderly people who visit the elderly community health post in Sukoharjo Regency, Central Java. A total of 200 elderly people were selected using stratified random sampling.

### 3. Study Variables

The dependent variable is the quality of health services at elderly community health post, while the independent variables are gender, age, number of visits, level of education, and income for the elderly who attend the elderly community health post.

### 4. Conceptual Definition

**Gender:** is the difference in gender of research subjects which includes men and women.

**Age:** is the age of the research subject from birth to the time of research in years.

**The number of visits:** the presence of research subjects in the elderly community health post program in the last 6 months.

**The level of education:** is the last level of formal education taken by the research subject to obtain a diploma.

**Income:** is the total income of research subjects from fixed income and additional income in 6 months and is expressed in rupiah.

### 5. Study Instruments

The study instrument was questionnaire. The quality of health services can be measured with the SERVQUAL or RATER instrument which consists of Reliability, Assurance, Tangibles, Empathy, and Responsiveness

### 6. Data Analysis

Univariate analysis is a general description of each variable. Continuous data presented in mean, standard deviation (SD), minimum and maximum. Category data is presented in frequencies and percentages. Bivariate analysis was carried out using the chi-square test. Multivariate analysis carried out using multilevel linear regression analysis. Analysis was carried out with Stata 13.

**7. Research Ethics**

Research ethics consists of informed consent, anonymity, confidentiality, and ethical feasibility. The examination was carried out by the Health Research Ethics Committee of RSUD Dr. Moewardi, Surakarta, Central Java, with number: 1.954/X/HREC/2023.

**RESULTS**

**1. Univariate Analysis**

Table 1 shows the continuous data research subjects show that age with an average of 65.78 (mean= 65.78; SD= 3.94), income with an average of 2442.75 (mean= 2442.75;

SD= 1460.95), visits to elderly community health post in the last 6 months with an average of -average 4.65 (mean= 4.65; SD= 1.87), Service Quality with an average of 39.28 (mean= 39.28; SD= 3.96). Meanwhile, table 2 shows the characteristics of categorical data. as many as 104 subjects (52%) were >66 years old, 141 subjects (70.50%) were female, had 6 visits (65.50%), and had an income of ≥Rp. 2,000,000. A total of 101 subjects (50.50%), ≥SMA as many as 123 subjects (61.50), assessing the quality of health services as good as many as 109 subjects (54.50%).

**Table 1 Continuous data research subjects (N=200)**

Variable	Mean	SD	Min.	Max.
Age	65.78	3.94	56	78
Income	2422.75	1460.95	800	7000
Visits to elderly community health post in the last 6 months	4.65	1.87	1	6
Service Quality	39.28	3.96	29	45

**Table 2 Categorical data research subjects**

Characteristics	Frequency (n)	Percentage (%)
<b>Age</b>		
<66 years	104	52.00
≥66 years	96	48.00
<b>Gender</b>		
Male	59	29.50
Female	141	70.50
<b>Number of Patient Visits</b>		
<6 times	71	35.50
6 times	129	65.50
<b>Patient Income</b>		
<Rp. 2,000,000	99	49.50
≥Rp. 2,000,000	101	50.50
<b>Education</b>		
<SHS	123	61.50
≥SHS	77	38.50
<b>Service Quality</b>		
Poor	91	45.50
Good	109	54.50

**2. Bivariate Analysis**

Table 3 shows the effect of gender (OR= 0.84; CI95% = 0.42 to 1.69; p= 0.003), age (OR= 0.51; CI95% = 0.27 to 0.96; p= 0.566),

number of visits (OR= 0.11; CI95% = 0.05 to 0.25; p<0.001), education level (OR= 4.62; CI95%= 1.62 to 13.2; p= 0.142), income (OR= 0.67; CI95% = 0.27 to 1.75; p= 0.261).

**Table 3. Bivariate analysis with chi-square test**

Variable Group	ServQual				OR	p
	Poor		Good			
	N	%	N	%		
<b>Gender</b>						
Male	25	42.37	31	57.63	0.84	0.003
Female	67	43.26	77	56.74		
<b>Age</b>						
<66 years	37	25.70	67	74.30	0.51	0.566
≥66 years	37	38.54	43	61.46		
<b>Number of Elderly Visits</b>						
<6 times	13	18.30	58	81.70	0.11	<0.001
6 times	77	59.70	52	40.30		
<b>Education</b>						
<SHS	60	48.78	63	51.22	4.62	0.142
≥SHS	30	38.90	47	61.10		
<b>Income</b>						
<Rp 2,000,000	49	49.50	50	50.50	0.67	0.261
≥Rp 2,000,000	42	41.60	59	58.40		

**3. Multivariate Analysis**

Table 4 shows that there is an influence of gender on the assessment of the quality of health services at elderly community health post. Women on average rated the quality of

health services 0.84 units lower than men and this relationship was statistically significant (b= -0.82; 95% CI= -1.65 to -0.01; p= 0.049).

**Table 4 Multivariate analysis of multiple linear regression on factors influencing the quality of elderly community health post**

Independent Variable	b	CI 95%		p
		Lower Limit	Upper Limit	
<b>Fixed Effect</b>				
Female	-0.82	-1.65	-0.01	0.049
Age ≥66 years	-1.22	-2.01	-0.44	0.002
Visit ≥6 times	-3.03	-3.89	-2.16	<0.001
Education ≥ SHS	-0.24	-1.44	0.97	0.699
Income (≥Rp 2,000,000)	-2.09	-3.20	-0.97	<0.001
<b>Random Effect</b>				
Integrated Service Center				
Var (constanta)	7.18	3.78	13.64	
Var (residual)	6.43	5.21	7.94	
N observation 200				
Log likelihood = -498.56				
LR test vs. linear regression, p= <0.001				
ICC= 52.76%				

There is an influence of old age on the assessment of the quality of health services at elderly community health post. Older ages on average rated the quality of health services 1.22 units lower than younger ages

and this relationship was statistically significant (b= -1.22; 95% CI= -2.01 to -0.44; p=0.002). There is an influence of education level on the assessment of the quality of health services at p elderly

community health post. Elderly people with  $\geq$ high school education on average rated the quality of health services 0.24 units lower than elderly people with <high school education, but this relationship was not statistically significant ( $b = -0.24$ , 95% CI = -1.44 to 0.97;  $p = 0.699$ ). There is an influence of income on the assessment of the quality of health services at elderly community health post. Elderly people with income  $\geq$ Rp 2,000,000 on average rated the quality of

health services 2.09 units lower than elderly people with income <Rp 2,000,000 and this relationship was statistically significant ( $b = -2.09$ ; 95% CI = -3.20 to 0.97;  $p < 0.001$ ). Analysis of the influence of at the elderly community health post on health quality assessment. Based on data analysis, ICC = 52.76%, which means that the quality of elderly at the elderly community health post services is 52.76% determined by the at the community health post.

health services. Younger age groups tend to be more satisfied and critical of health service assessments than older patients.

This is because increasing age makes it possible to have greater expectations for the health services provided. Older age also requires more support for daily living activities, so this must be obtained from health services (Kasa and Gedamu, 2021).

## DISCUSSION

### 1. The influence of gender on assessing the quality of at the elderly community health post

There is an influence of gender on the assessment of the quality of health services at posyandu for the elderly. On average, women rate the quality of health services 0.84 units lower than men. This is in accordance with research conducted by Bogale et al. (2023) which shows that men on average rate health services as 2.48 units more satisfied than women.

Gender differences are closely related to how to evaluate service quality, and can have an impact on subsequent behavior. Women are claimed to be more sensitive to assessing service quality (Zhong and Moon, 2020).

### 2. The influence of age on assessing the quality of the elderly community health post

There is an influence of old age on the assessment of the quality of health services at at the elderly community health post. Older people on average rated the quality of health services 1.22 units lower than younger people. These results are in line with research by Kewi et al. (2018) which states that age influences satisfaction with

### 3. The influence of the number of visits on the assessment of the quality of at the elderly community health post

There is an influence of the frequency of visits on the assessment of the quality of health services at at the elderly community health post. Elderly people who visited 6 times in the last 6 months on average rated the quality of health services as 3.03 units lower than elderly people who visited <6 times in 6 months. Those who have just visited have low awareness of health services, thereby lowering their expectations (Mulugeta et al., 2019).

These results are in line with research by Bogale et al. (2023) which shows that those who have visited health services before are less likely to feel satisfied in assessing the quality of health services than their colleagues who have recently visited. This is because they have previous experience related to service procedures they receive.



#### **4. The influence of education on assessing the quality of the elderly community health post**

There is a relationship between the level of education and the assessment of the quality of health services at the elderly community health post. Seniors with  $\geq$ high school education on average rated the quality of health services 0.24 units lower than seniors with  $<$ high school education, but this relationship was not statistically significant.

Someone with a higher educational background is more likely to assess health services as worse because they have access to better media regarding service quality and a good understanding of health service quality issues (Adema et al., 2023). Teklegiorgis and Ketema's (2018) research also shows that patients with low educational backgrounds have lower expectations for health services so they are more likely to feel satisfied.

#### **5. The influence of income on assessing the quality of the elderly community health post**

There is an influence of income on the assessment of the quality of health services at the elderly community health post. Elderly people with income  $\geq$ Rp 2,000,000 on average rated the quality of health services as 2.09 units lower than elderly people with income  $<$ Rp 2,000,000. The results of this research are in line with research conducted by Aga et al. (2021) which states that research subjects with lower incomes are 1.68 times more satisfied in assessing the quality of health services compared to research subjects with higher incomes.

Someone with a high income is likely to openly ask about additional treatment received from a health service, whereas someone with a low income tends to passively not ask many questions and accept the health services that have been provided

well (Akbar et al., 2017). This is what causes someone with a lower income to rate a health service with higher results than someone with a high income.

#### **6. The influence of community health post on assessing the quality of at the elderly community health post**

The results of multilevel research show that ICC= 52.76%. This indicator shows that community health post-contextual factors influence variations in health service quality assessments by 52.76%, thus the contextual influence of community health posts on health service quality is large enough that it cannot be ignored. This is in line with research by Husen et al. (2018) which states that the level of satisfaction with community health posts services can be determined through the performance of community health post-health workers such as nurses and cadres in providing health services to the elderly. By assessing the quality of community health posts' health services for the elderly, health workers and community health post cadres can re-evaluate the services provided to the elderly.

Factors that can cause differences in service quality between community health posts are the speed of service and handling carried out by health workers as well as the existence of PMT (supplementary feeding) and the distance from home to the community health post location which are considerations for the elderly (Saraisang et al., 2018) by assessing the quality of elderly community health post.

#### **AUTHOR CONTRIBUTION**

Deviana Tristian is the main researcher who selected topics, searched and collected articles, analyzed data, and wrote the manuscript. Bhisma Murti helps proofread writing, analyzes data, and provides corrections. Argyo Demartoto provided input

material, discussions regarding the quality of health services.

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#### CONFLICT OF INTEREST

There is no conflict of interest in this study.

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