

EDUCATION'S ROLE IN PRIMARY HEALTHCARE UTILIZATION AMONG OLDER PEOPLE IN INDONESIA

Peran Pendidikan dalam Pemanfaatan Puskesmas pada Lansia di Indonesia

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Abstract

Introduction: The current situation shows that life expectancy is increasing, so the population of older people is also growing. As a vulnerable group, more senior people desperately need primary health care, and barriers to accessing services will increase vulnerability.

Aim: The study aimed to investigate the impact of education on primary healthcare utilization among older people.

Methods: This cross-sectional study examined 52,893 older people. It employed primary healthcare utilization as an outcome variable and education level as an exposure variable. Furthermore, the study used eight control variables: residence type, age group, gender, marital status, wealth, time travel to primary healthcare, and health insurance. We employed binary logistic regression to examine the data.

Results: The study showed that older adults with primary education were 1.050 times more likely than those without to utilize primary healthcare (95% CI 1.046-1.054). Older people with secondary education were 0.643 times less likely to use primary healthcare than those without (95% CI 0.638-0.649). Older adults with secondary education were 0.378 times less likely than those without to use primary healthcare (95% CI 0.372-0.383). Furthermore, the study indicated that all control variables were significantly related to direct healthcare utilization.

Conclusion: The study concluded that education level influences primary healthcare utilization among older people in Indonesia.

Keywords: elderly people, education, primary healthcare, healthcare evaluation, healthcare access, public health

Abstrak

Latar Belakang: Situasi saat ini menunjukkan bahwa usia harapan hidup semakin meningkat, sehingga jumlah penduduk lanjut usia juga semakin meningkat. Sebagai kelompok rentan, lansia sangat membutuhkan layanan kesehatan dasar, dan hambatan dalam mengakses layanan akan meningkatkan kerentanan.

Tujuan: Tujuan penelitian ini adalah untuk melihat dampak pendidikan terhadap pemanfaatan layanan kesehatan primer di kalangan lansia.

Metode: Studi potong lintang ini meneliti 52.893 lansia. Selain itu, penelitian menggunakan pemanfaatan layanan kesehatan primer sebagai variabel hasil dan tingkat pendidikan sebagai variabel paparan. Selain itu, penelitian ini menggunakan delapan variabel kontrol: tempat tinggal, usia, jenis kelamin, status perkawinan, kekayaan, perjalanan waktu ke layanan kesehatan primer, dan asuransi kesehatan. Kami memanfaatkan regresi logistik biner untuk analisis data.

Hasil: Hasil studi menginformasikan bahwa lansia dengan pendidikan dasar 1,050 kali lebih mungkin memanfaatkan layanan kesehatan primer dibandingkan mereka yang tidak sekolah (95% CI 1,046-1,054). Lansia dengan pendidikan menengah 0,643 kali lebih kecil kemungkinannya untuk menggunakan layanan kesehatan primer dibandingkan mereka yang tidak (AOR 0,643; 95% CI 0,638-0,649). Orang dewasa yang lebih tua dengan pendidikan menengah adalah 0,378 kali lebih kecil kemungkinannya dibandingkan mereka yang tidak menggunakan layanan kesehatan primer (AOR 0,378; 95% CI 0,372-0,383). Selanjutnya, hasil studi menemukan bahwa semua variabel kontrol signifikan berkaitan dengan pemanfaatan layanan kesehatan primer.

Kesimpulan: Tingkat pendidikan memengaruhi pemanfaatan layanan kesehatan primer pada lansia di Indonesia.

Kata kunci: akses kesehatan, evaluasi kesehatan, kesehatan masyarakat, lansia, pelayanan kesehatan dasar, pendidikan



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Introduction

Life expectancy at birth is the estimated average number of years a person has from conception. Life expectancy illustrates a community's health state. Premature death is also reflected in life expectancy. The 2018 world community's life expectancy was 72.5 years based on WHO data. Inequality in life expectancy remains significant throughout the world. Rich countries have more than 80 years of life expectancy, while countries with the worst health conditions have 50-60 years (Roser *et al.*, 2019). Most high-income countries experienced a decline in life expectancy during 2014-15. However, most of these countries experienced an increase in 2015-2016 (Ho and Hendi, 2018). In 2019, the average life expectancy in Indonesia was 73.3 years for women and 69.4 years for men. The life expectancy of the Indonesian people has increased from year to year. The rise in life expectancy also suggests that Indonesians' socioeconomic and health conditions have improved (Indonesian Central Bureau of Statistics, 2021a). One of the indicators of health quality related to life expectancy is the health of the elderly group.

Older people are a vulnerable group due to degenerative diseases. According to a study, older persons have unmet care needs and chronic disorders. Older people have physical, psychological, social, and environmental limitations. The body functions of older adults also experience disturbances in the form of mental and physical disorders. In several cases, some elderly experience visual hallucinations, anxiety, worry, frustration, and fear. Physical conditions include heart failure, dementia, cancer, COPD, urinary incontinence, impaired digestive function, and knee osteoarthritis (Abdi *et al.*, 2019; Llopis-Cardona *et al.*, 2023; Svraka *et al.*, 2017). Older people in China, about 35% to 46%, are the vulnerable elderly group. In China, over 67% of older people are at risk of passing away or functional impairment (Kong and Yang, 2019).

In 2019, there were 25.9 million senior individuals in Indonesia or roughly 9.7% of the country's population. The older

adults' poverty rate in Indonesia is higher than other age groups, reaching 11.1%. Meanwhile, the elderly morbidity rate in Indonesia is also high, namely 25.05%. Older people and aging are closely linked to four diseases: blood circulation disorders, hormonal-metabolic disorders, joint infections, and neoplasms (Misnaniarti, 2017). Environmental, technological, and lifestyle changes have altered the disease pattern in Indonesia. Diabetes, heart disease, dyslipidemia, obesity, kidney disease, lung disease, and cancer are the most common diseases in Indonesia (Purnamasari, 2018). Furthermore, the prevalence of obesity and central obesity among Indonesian adults is 23.1% and 28%, respectively (Harbuwono *et al.*, 2018). Moreover, cancer, stroke, renal, joint disease, diabetes mellitus, heart disease, hypertension, and obesity showed a growing tendency in 2018 Indonesian Primary Health Research compared to prior studies (Purnamasari, 2018).

A previous study showed several non-communicable diseases related to older adults in Indonesia. The prevalence of hypertension, mental health issues, and depression among the elderly increases with age. Most hypertension and mental-emotional illnesses were more common among older people with poor education, and depression was more common in those with a low education level (Rukmini *et al.*, 2022). In Indonesia, nearly half of older adults (48.14%) experienced physical and psychological health concerns, and roughly 24.35% of the seniors were ill in the previous month. However, in 2020, the morbidity rate for older persons in Indonesia will be the lowest in the preceding six years. Most elderly persons self-medicate or seek outpatient care for their health problems (96.12%) (Indonesian Central Bureau of Statistics, 2021b; Megatsari *et al.*, 2023; Rukmini *et al.*, 2022).

Primary health care is the first level of service and the public's first point of contact with the healthcare system. Primary health care is universally available, and access to health services is a critical socioeconomic determinant of health to increase the availability and timeliness of

quality health care. In China, older persons with adequate access to health care have a longer life expectancy (Hao *et al.*, 2020). Most older adults in Indonesia choose to visit a practicing nurse/midwife, followed by community health care (C.-M. Chen and Baithesda, 2020). However, Ontario research found challenges to aged care, such as poor system connectivity and inadequate service access (Lafortune *et al.*, 2015). As a vulnerable group, older people desperately need primary health care, and barriers to accessing services will increase vulnerability (Suslo *et al.*, 2023).

One study reports a strong relationship between education and population health. We can see that education policies can also be viewed as downstream health policies. Education is positively related to health through many mechanisms. In the adult group, an increase in education leads to a rise in healthy old age (Beltrán-Sánchez *et al.*, 2015; Nantabah *et al.*, 2023). The Elderly in Indonesia who have no education and live in rural areas are more likely to use community health care (C.-M. Chen and Baithesda, 2020). Based on the narration, the study's goal is to look into the impact of education on primary healthcare utilization among older people in Indonesia.

Method

Study Design and Data Source

We used secondary data from the 2018 Indonesian Basic Health Survey in the cross-sectional investigation. The Republic of Indonesia's Ministry of Health conducted a national-scale survey. During May and July 2018, the survey used Household and Individual Instruments interviews to acquire data for the survey.

The Indonesian Basic Health Survey 2018 surveyed all Indonesian households. This poll is based on the Central Statistics Agency's 2018 National Socioeconomic Survey, conducted in March 2018. Moreover, the 2018 Indonesian Basic Health Survey visited a target sample of 300,000 households from 30,000 census blocks, while the 2018 Socioeconomic Survey visited a target sample of 300,000

families from 30,000 census blocks (The Indonesian MOH, 2018).

The survey employed the probability proportional to size (PPS) approach, which uses systematic linear sampling in two stages: Stage 1: Implicit stratification based on the welfare strata of all census blocks established by the 2010 Population Census. PPS chose the sample survey as the sampling frame for selecting census blocks from a master frame of 720,000 from the 2010 Population Census, of which 180,000 were chosen (25%). The survey used the PPS method to identify the number of census blocks in each urban/rural strata per regency/city to create a Census Block Sample List. A total of 30,000 Census Blocks were chosen in the voting. Stage 2: To preserve the representation of the diversity value of household characteristics, utilize systematic sampling to select ten homes in each Census Block with the highest implicit stratification of education completed by the Head of Household. All household-chosen members will be polled as part of the 2018 Indonesian Basic Health Survey (Riskesmas) (The Indonesian MOH, 2018).

The participants in the study were all over 65 years old. According to the sampling methodology, this study used a weighted sample of 52,893 people.

Outcome Variables

The research employed primary healthcare use as the outcome variable. The utilization of primary healthcare by older adults was the access to primary healthcare. Primary healthcare use is split into unutilized and utilized (The Indonesian MOH, 2018).

Exposure Variable

We included education level as an exposure variable. The education level is determined based on the respondent's confession. Meanwhile, the study defines the education of older people as not attending school or receiving their last diploma. Moreover, the study included four education levels: no formal education, primary, secondary, and higher.

Control Variables

Furthermore, we examined eight control factors. The eight were residence type, age group, gender, marital status, employment status, health insurance, time travel to primary healthcare, and wealth status.

The study separated the housing types into urban and rural. We employed the Indonesian Statistics' provisions for urban-rural categorization. We divided older adults into 65-74 (youngest-old), 75-84 (middle-old), and ≥ 85 (oldest-old) (Lee *et al.*, 2018). However, we split gender into male and female. We also divided people into three categories regarding marital status: never married, married, and divorced/ widowed.

Unemployed and employed are the two employment statuses. Uninsured, government-run, private-run, and government-run + private-run insurance are the four types of health insurance ownership identified in the survey. Furthermore, two types of time travel to primary healthcare are ten minutes and more than ten minutes.

The survey used the wealth index formula to determine wealth status. The wealth index was calculated using a weighted average of a family's total spending in the survey. Meanwhile, the poll created a wealth index based on crucial household expenditures such as insurance, food, accommodation, etc. Furthermore, the study separated the income into the poorest, poorer, middle, richer, and richest (Wulandari, Laksono, Prasetyo, *et al.*, 2022).

Data Analysis

We used the Chi-Square test in the early stages to offer a bivariate comparison. A collinearity test was also employed to ensure that the independent variables in the final regression model did not have a strong link. In the last point of the study, we used a binary logistic regression. The survey used the test to examine the multivariate association between all

independent factors and primary healthcare use. We used an adjusted odds ratio (AOR) at 95% significance. We employed the IBM SPSS 26 application throughout the statistical examination.

Besides, we employed ArcGIS 10.3 (ESRI Inc., Redlands, CA, USA) to map primary healthcare utilization among Indonesia's elderly in 2018 by province.

Result and Discussion

According to the findings, Indonesia's national average primary healthcare utilization among older adults was 10.3%. Meanwhile, Figure 1 informs the distribution map of immediate healthcare utilization by the province among older adults. The map indicates a tendency for direct healthcare utilization outside Java-Bali Island, as the government's center tends to be better.

Table 1 displays descriptive statistics of primary healthcare use and Indonesia's elderly characteristics. The study results find older people with unutilized primary healthcare ruled in all education. Meanwhile, regarding the type of residence, older adults in the urban area lead the secondary and higher education categories. Moreover, older people, the youngest age, dominated at all education levels.

The male ruled in the secondary and higher education categories. On the contrary, the female elderly lead in the no and primary education. The married elderly ruled in all education level categories based on marital status, except that divorced or widowed elderly dominated no education category.

Table 1 shows the unemployed dominated in none and secondary education; employed elderly ruled in primary and higher education categories. Moreover, the elderly with government-run insurance dominated all education level types.

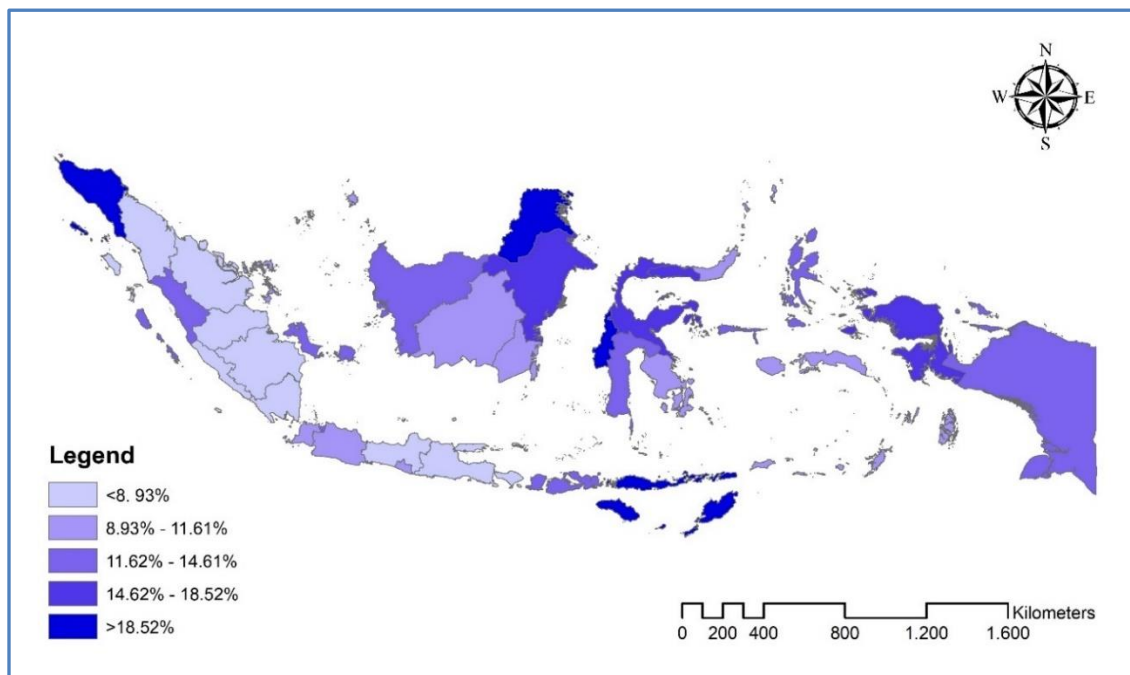


Figure 1. Map of Distribution of primary healthcare utilization among older adults by the province, Indonesia, 2018

Table 1. Descriptive statistic of primary healthcare use and older adults characteristics, Indonesia, 2018

| Demographic Characteristics | Education Level | | | | p-value |
|---------------------------------------|------------------|---------------------|----------------------|----------------|---------|
| | None (n=197,340) | Primary (n=413,012) | Secondary (n=14,025) | Higher (4,993) | |
| Primary Healthcare Utilization | | | | | < 0.001 |
| Unutilized | 89.4% | 89.0% | 93.0% | 95.7% | |
| Utilized | 10.6% | 11.0% | 7.0% | 4.3% | |
| Type of residence | | | | | < 0.001 |
| Urban | 39.2% | 50.0% | 83.8% | 84.1% | |
| Rural | 60.8% | 50.0% | 16.2% | 15.9% | |
| Age | | | | | < 0.001 |
| Youngest-old | 56.5% | 71.2% | 78.4% | 82.8% | |
| Middle-old | 33.3% | 24.0% | 19.9% | 16.5% | |
| Oldest-old | 10.2% | 4.8% | 1.7% | 0.7% | |
| Gender | | | | | |
| Male | 30.3% | 49.4% | 64.4% | 63.8% | |
| Female | 69.7% | 50.6% | 35.6% | 36.2% | |
| Marital status | | | | | < 0.001 |
| Never in union | 1.4% | 0.9% | 1.1% | 1.7% | |
| Married/ Living with a partner | 40.3% | 58.9% | 70.9% | 76.0% | |
| Divorced/ Widowed | 58.2% | 40.2% | 28.0% | 22.3% | |
| Employment status | | | | | < 0.001 |
| Unemployed | 61.5% | 49.2% | 51.7% | 45.8% | |
| Employed | 38.5% | 50.8% | 48.3% | 54.2% | |
| Health Insurance | | | | | |
| Uninsured | 36.3% | 32.7% | 16.6% | 7.0% | |
| Government-run | 63.4% | 66.2% | 78.1% | 83.2% | |
| Private-run | 0.2% | 0.8% | 4.1% | 7.1% | |
| Government and Private-run | 0.1% | 0.3% | 1.2% | 2.7% | |

| Demographic Characteristics | Education Level | | | | p-value |
|-----------------------------|------------------|---------------------|----------------------|----------------|---------|
| | None (n=197,340) | Primary (n=413,012) | Secondary (n=14,025) | Higher (4,993) | |
| Wealth status | | | | | < 0.001 |
| Poorest | 35.3% | 25.8% | 5.2% | 2.5% | |
| Poorer | 23.6% | 20.9% | 8.0% | 3.4% | |
| Middle | 17.4% | 18.8% | 12.7% | 7.3% | |
| Richer | 14.6% | 18.1% | 20.5% | 14.6% | |
| Richest | 9.1% | 16.4% | 53.6% | 72.2% | |
| Time travel | | | | | < 0.001 |
| ≤10 minutes | 42.9% | 49.6% | 62.3% | 65.6% | |
| >10 minutes | 57.1% | 50.4% | 37.7% | 34.4% | |

Table 2. The findings of binary logistic regression of primary healthcare use among older adults, Indonesia, 2018

| Predictor | Utilized Primary Healthcare | | | |
|--|-----------------------------|-------|-------------|-------------|
| | p-value | AOR | 95% CI | |
| | | | Lower Bound | Upper Bound |
| Education: No Education | - | - | - | - |
| Education: Primary | < 0.001 | 1.050 | 1.046 | 1.054 |
| Education: Secondary | < 0.001 | 0.643 | 0.638 | 0.649 |
| Education: Higher | < 0.001 | 0.378 | 0.372 | 0.383 |
| Residence: Urban | < 0.001 | 0.877 | 0.874 | 0.881 |
| Residence: Rural | - | - | - | - |
| Age: Youngest-old | - | - | - | - |
| Age: Middle-old | < 0.001 | 0.908 | 0.904 | 0.911 |
| Age: Oldest-old | < 0.001 | 0.729 | 0.723 | 0.735 |
| Gender: Male | < 0.001 | 1.030 | 1.026 | 1.034 |
| Gender: Female | - | - | - | - |
| Marital: Never in union | - | - | - | - |
| Marital: Married/Living with partner | < 0.001 | 0.913 | 0.898 | 0.929 |
| Marital: Divorced/Widowed | < 0.001 | 0.901 | 0.898 | 0.905 |
| Employment: Unemployed | - | - | - | - |
| Employment: Employed | < 0.001 | 0.848 | 0.845 | 0.851 |
| Health insurance: Uninsured | - | - | - | - |
| Health insurance: Government-run | < 0.001 | 2.158 | 2.150 | 2.167 |
| Health insurance: Private-run | < 0.001 | 1.303 | 1.277 | 1.330 |
| Health insurance: Government-run and Private-run | < 0.001 | 0.394 | 0.371 | 0.417 |
| Wealth: Poorest | - | - | - | - |
| Wealth: Poorer | < 0.001 | 1.067 | 1.061 | 1.072 |
| Wealth: Middle | < 0.001 | 1.030 | 1.024 | 1.035 |
| Wealth: Richer | < 0.001 | 1.043 | 1.038 | 1.049 |
| Wealth: Richest | < 0.001 | 0.908 | 0.903 | 0.913 |
| Time travel: ≤10 minutes | < 0.001 | 1.067 | 1.061 | 1.072 |
| Time travel: >10 minutes | - | - | - | - |

The poorest were ruled out in the no and primary education categories based on wealth. Reversely, the richest ruled in the secondary and higher education groups. Furthermore, the secondary and higher education groups lead for ten minutes based on time travel to primary healthcare. On the contrary, the elderly with more than ten minutes ruled in the none and primary education categories.

Based on gender, males led the uninsured category. According to marital status, married elderly has significance in all types of health insurance ownership. In addition to that, primary education represented the uninsured category. Meanwhile, employed dominated all sorts of health insurance ownership. Finally, the richest are overwhelmed by all adults with insurance based on wealth status.

The following phase was to do a collinearity test. The results demonstrate that there is no significant link between the independent variables. Furthermore, the tolerance value for all variables is more significant than 0.10, and the variance inflation factor (VIF) value for all variables is less than 10.00. There were no signs of multicollinearity in the regression model.

Table 2 displays the binary logistic regression findings of primary healthcare utilization among older people. The study used the "utilized primary healthcare" as a reference in the investigation. Table 2 indicates that older adults with primary education are 1.050 times more likely than those without to use primary healthcare (95% CI 1.046-1.054). Meanwhile, older people with secondary education are 0.643 times less likely than those without to utilize primary healthcare (95% CI 0.638-0.649). Moreover, older people with secondary education are 0.378 times less likely than those without to use primary healthcare (95% CI 0.372-0.383).

The findings explain that the education level of older adults contributes to direct healthcare utilization in Indonesia (Gao *et al.*, 2022; Mahmudiono and Laksono, 2021). Education is a fundamental social determinant that affects the upstream aspects of public health (Rohmah *et al.*, 2020). A study conducted in China to improve the primary healthcare

system found that education level is one of the main challenges in implementing integrated healthcare reform (Li *et al.*, 2017). The findings align with previous studies, which explained that most older adults prefer to go to the midwife/nurse rather than visit primary healthcare. Education level, region, and disease condition are significantly predicting factors for all disease types in direct health services (C. M. Chen and Baithesda, 2020; Megatsari *et al.*, 2018). A study conducted in Italy also confirmed that education is one of the most important factors influencing the choice of health services in different geopolitical areas (Barbiellini *et al.*, 2021; Wulandari *et al.*, 2023).

Moreover, the findings indicate that older people with secondary and higher education are likelier to utilize primary healthcare. The condition can explain that better education of older adults positively impacts immediate healthcare utilization in Indonesia. Healthcare services are essential in public policy and in achieving universal health coverage (Prinja *et al.*, 2019). The higher the level of education, the lower the likelihood that older people will experience health problems and poor functional capacity (Azhar *et al.*, 2021). Education provides several benefits for health because it affects psychosocial and behavioral factors. Elderly individuals with higher levels of education are less likely to expose themselves to illness and unsuitable working conditions (Vegi *et al.*, 2020).

Besides, the findings found that all control variables were significantly related to primary healthcare utilization. Older people in the urban area are 0.877 times less likely than those in the rural area to utilize primary healthcare (95% CI 0.874-0.881). Geographical access to primary health care in urban areas is more affordable than in rural (Laksono *et al.*, 2019b; Seran *et al.*, 2020). The disparity in direct health services is still an unresolved problem in Indonesia (Laksono *et al.*, 2019a; Wulandari, Laksono, Nantabah, *et al.*, 2022). On the other hand, politicians must uphold access to primary healthcare as a fundamental right to promote population health (Wang *et al.*, 2018). A

prior study advised that elderly persons, particularly those living in rural parts of developing countries, have adequate access to healthcare (Banerjee, 2021; Zhang *et al.*, 2017). Moreover, other studies inform that the authors see disparities in primary health care between ethnic minorities and the majority areas. Policymakers evenly distribute professional health workers, and road access improvements will also improve spatial access to direct health services and narrow the gap (Sillehu *et al.*, 2023; Wang *et al.*, 2018).

According to the age group, the middle-old is 0.908 times less likely than the youngest-old to utilize primary healthcare (95% CI 0.904-0.911). Furthermore, the oldest is 0.729 times less likely than the youngest to use primary healthcare (95% CI 0.723-0.735). Table 2 shows gender is also related to direct healthcare utilization. The male is 1.030 times more likely than the female to use primary healthcare (95% CI 1.026-1.034). According to marital status, the married elderly are 0.913 times less likely than those who are never in a union to utilize primary healthcare (95% CI 0.898-0.929). Conversely, the divorced/widowed elderly are 0.901 times less likely than those who are never in a union to utilize primary healthcare (95% CI 0.898-0.905). Table 2 displays employment that is also connected to direct healthcare utilization. The employed are 0.848 times less likely than the unemployed to use primary healthcare (95% CI 0.845-0.851).

The situation informs that several other aspects also influence primary healthcare utilization among older adults in Indonesia, including age group, gender, marital status, and employment status. Previous research has informed that life expectancy gains due to employment status depend on race, gender, education, and other social situations (Assari, 2018; Yang *et al.*, 2021). In Indonesia, a previous study found factors related to healthcare utilization among adults were also associated with gender, marital status, and type of work (Laksono *et al.*, 2019b; Megatsari *et al.*, 2021).

Regarding health insurance ownership, older adults with government-run insurance are 2.158 times more likely than the uninsured to utilize primary healthcare (95% CI 2.150-2.167). Meanwhile, the elderly with private-run insurance is 1.303 times more likely than the uninsured to use primary healthcare (95% CI 1.277-1.330). Moreover, older adults with government-run and private-run insurance are 0.394 times less likely to utilize primary healthcare than the uninsured (95% CI 0.371-0.417).

Older adults with government-run insurance can contribute to direct healthcare utilization in Indonesia. Several studies inform several things. First, having health insurance increases the likelihood of receiving health services and lowers out-of-pocket hospitalization costs. Second, healthcare systems distribute benefits unequally, with low- and middle-income persons benefiting most from out-of-pocket reductions. Third, health insurance benefits rural populations somewhat, demonstrating that institutional impediments persist. Fourth, health insurance does not boost patient visits to primary care institutions; hospitals remain the dominant providers (Laksono *et al.*, 2021, 2023; Putri *et al.*, 2023; Wulandari, Laksono, Sillehu, *et al.*, 2022). On the contrary, our analysis of the elderly shows that government-run insurance can increase access to primary health care.

Based on wealth status, all statuses of wealth have more possibility than the poorest to utilize primary healthcare, except the richest, who are less likely than the poorest to use primary healthcare. The results explain why the condition is associated with the ability to pay for services (Muttaqien *et al.*, 2021). These results strengthen the previous studies in various countries (Islam and Shahjahan, 2021; Laksono *et al.*, 2022; Wulandari *et al.*, 2019; Wuneh *et al.*, 2019). Conversely, several previous studies informed that wealthier people prefer to seek treatment at hospitals with more complete services (Wulandari *et al.*, 2019; Wulandari, Laksono, Prasetyo, *et al.*, 2022).

Finally, Table 2 indicates that primary healthcare travel time affects direct

healthcare utilization. Older adults with ten minutes to travel to primary healthcare are 1.067 times more likely than those with more than ten minutes to utilize primary healthcare (95% CI 1.061-1.072). Travel time can be an early factor to consider in using primary healthcare. The faster the travel time to primary healthcare, the more opportunities for the Elderly to take advantage of direct health services. A previous study informed that long-distance travel and the economic aspect of access to health services for older people further exacerbated the gap between urban and suburban areas to utilize primary healthcare (Du *et al.*, 2020; Ipa *et al.*, 2023; Lama *et al.*, 2020). Another study emphasizes a critical place that policymakers must address regarding accessibility to primary healthcare centers. Policymakers should consider the time spent on foot or by car at primary healthcare centers in future policy planning and decision-making (Du *et al.*, 2020).

Strength and Limitation

We evaluate big data to represent nationally. On the contrary, we look at secondary data, limiting the factors acceptable variables can examine. Earlier studies established several other factors connected to primary healthcare utilization among older people, such as travel costs, lifestyles, and diseases affecting older adults, which we cannot study (Lee *et al.*, 2021; Xiao *et al.*, 2021).

Conclusion

The study concluded that education level influences primary healthcare utilization among older adults in Indonesia. On the other hand, we also found all control variables related to immediate healthcare use: age group, gender, marital status, employment status, health insurance ownership, wealth status, and time travel to primary healthcare.

Policymakers can take advantage of the results to accelerate primary healthcare utilization among older people in Indonesia. Policymakers can determine specific policy targets based on the findings.

Abbreviations

AOR: Adjusted Odds Ratio; CI: Confidence Interval; *Risikesdas*: *Riset Kesehatan Dasar*.

Declarations

Ethics Approval and Consent Participant

The 2018 Indonesian Basic Health Survey was approved by the National Ethics Committee (LB.02.01/2/KE.024/2018). All respondents' identities were removed from the dataset after the survey. Participants have given written consent to participate in the study. Through the website <http://www.litbang.kemkes.go.id/layanan-permintaan-data-riSET/>, the author has been granted permission to utilize the data for this study.

Conflict of Interest

The authors affirm that they do not have any competing interests.

Availability of Data and Materials

The author cannot publicly disclose the data since neither a third party nor the Ministry of Health of the Republic of Indonesia, the data's owner, is authorized to do so. For researchers who meet the requirements for access to confidential data, the 2018 Indonesian Basic Health Survey data set is accessible online at <https://layanandata.kemkes.go.id/>.

Authors' Contribution

ADL constructed the study concept; RDW proposed the methodology; Z and NR drafted, edited, and revised the text; and ADL wrote the first draft.

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