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The Impact of Indonesia's National Health Insurance on Healthcare Utilization Among the Elderly: A Decade of Implementation

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Abstract

Indonesia's elderly population (aged 60+) now exceeds 7% of the total population, creating challenges for equitable health service delivery. The National Health Insurance (JKN) program, supporting SDG 3.8, has achieved 98% population coverage over its decade-long implementation. Longitudinal *Susenas* survey data were used to evaluate the utilization of healthcare services among older individuals by examining their use over time and correlating it with relevant factors, which were categorized into potential predictors as defined by the Andersen model, based on demographic, socioeconomic, and healthcare need indicators. Logistic regression was conducted, and propensity score matching with a caliper of 0.05 was used to ensure statistical rigor in the study. Furthermore, the impact of JKN membership on healthcare consultations was estimated over the past decade using a difference-in-differences method. Factors influencing JKN enrollment shifted over the decade, with education and urban residence becoming more important, while internet access and health-related factors declined. JKN membership was not significant in 2013 but became significant by 2023, with a 7.71% average treatment effect. Difference-in-differences analysis shows a 5.85% increase in healthcare utilization attributable to JKN. JKN has produced modest gains in elderly healthcare utilization (5.85%). Further progress requires addressing quality perceptions and geographic inequities to achieve universal health access for Indonesia's aging population.

INTRODUCTION

Starting in 2020, Indonesia began experiencing a rise in its senior citizen demographic, which is expected to represent over 7 percent of the total population by 2023 (BPS, 2023). This demographic shift is creating new challenges for the national healthcare system and its workforce, as older adults tend to utilize healthcare services more frequently and experience more complex health issues than their younger counterparts (Sari & Utomo, 2022). Therefore, there is a need for a strong and equitable healthcare protection system to support access, affordability, and availability of healthcare for this vulnerable population (Kusuma et al., 2021).

In 2014, Indonesia established the National Health Insurance program, Jaminan Kesehatan Nasional (JKN), to support its goal of achieving Universal Health Coverage (UHC) in alignment with Sustainable Development Goal (SDG) 3.8 (Ministry of Health, 2020). JKN is structured as a social health insurance system covering all population groups, aiming to eliminate financial barriers and improve healthcare access for all individuals, particularly older

adults (Agustina et al., 2019). Over the past decade, enrollment in JKN has increased substantially, making it one of the largest national health insurance programs in the world (BPJS Kesehatan, 2023).

Although JKN (the government-funded health insurance program in Indonesia) has achieved broad coverage, questions remain regarding its effectiveness in increasing healthcare utilization, especially among older adults who face multiple challenges, including chronic illnesses, mobility limitations, low digital literacy, and persistent disparities between rural and urban populations (Rahmawati et al., 2021; Wicaksono & Sulistiawan, 2022). It is critically important that these factors are considered when assessing the impact of health insurance coverage on healthcare utilization among the elderly in a rapidly aging society (Li & Zhang, 2013; National Academies of Sciences and Medicine & Disabilities, 2018; Wang et al., 2018). Therefore, understanding the determinants of healthcare utilization among older adults is essential to evaluate whether JKN is achieving its intended objectives (Cheng et al., 2025; JAUHAR, 2025).

The Andersen Behavioral Model provides a theoretical framework that enables researchers to categorize the determinants of healthcare utilization into predisposing, enabling, and need factors (Babitsch et al., 2019). Predisposing factors, such as age, sex, marital status, and education, influence individuals' propensity to use healthcare services, while enabling factors affect their ability to access those services (Hastuti & Kurniawan, 2023). Enabling factors include geographic location, internet connectivity, and socioeconomic status. In addition, need factors—such as health conditions and functional limitations—are key indicators influencing healthcare utilization among the elderly (Putri & Pratama, 2022). Changes in these characteristics from 2013 to 2023 may reflect broader socioeconomic transitions within the Indonesian population as it adapts to the implementation of JKN.

It is critical to assess JKN after 10 years of implementation to evaluate whether the program has improved healthcare access for older adults. At the national level, datasets from the National Socioeconomic Survey (Susenas) provide robust evidence on changes in healthcare-seeking behavior among older adults before and after the introduction of JKN (BPS, 2023). Previous analyses have demonstrated shifting contributions of socioeconomic variables to insurance coverage and healthcare utilization, including the roles of education and widening urban–rural disparities; these insights help evaluate the long-term effects of JKN (Hartono & Wijayanti, 2021).

Advanced statistical techniques, such as Propensity Score Matching (PSM) and Difference-in-Differences (DiD), are commonly used to evaluate health policy impacts, including the effect of JKN on healthcare access among older adults (Hapsari & Fadilah, 2020). These methods help control for selection bias between insured and uninsured populations, allowing for more accurate estimation of JKN's impact on healthcare utilization (Sukmana et al., 2022). The application of these analytical approaches is essential for understanding how JKN has influenced access to care over time (Maulana et al., 2022).

This study aims to provide a comprehensive evaluation of the impact of JKN on healthcare utilization among the elderly in Indonesia. The findings will be valuable for assessing the current policy framework's capacity to support the transition toward a more

effective and sustainable healthcare system that ensures quality, accessibility, and long-term service delivery for an increasingly aging population (Mahendri et al., 2023). Additionally, identifying persistent barriers—such as regional disparities, perceived service quality, and challenges in healthcare delivery—is crucial for strengthening JKN's role in achieving equitable health outcomes for the elderly population.

METHOD

A quantitative analytical design using secondary data was utilized in this study. The data were obtained from the National Socio-Economic Survey (Survei Sosial Ekonomi Nasional/Susenas) for the years 2013 and 2023. These two datasets represented the periods before and after the implementation of Indonesia's National Health Insurance program (Jaminan Kesehatan Nasional [JKN]) a decade earlier and provided an opportunity to assess changes in healthcare utilization among individuals aged 60 years or older over time. A total of 95,464 respondents were included in the 2013 dataset and 129,234 in the 2023 dataset, providing sufficient statistical power and national representativeness (BPS, 2023).

The Andersen Behavioral Model was used to develop the study framework. This model identifies three categories of determinants influencing healthcare utilization: predisposing, enabling, and need factors (Babitsch et al., 2019). Predisposing factors included age, sex, marital status, and educational level. Enabling factors included residential type (urban or rural), internet access, and an asset index as a proxy for economic status. Need factors included reported health conditions and limitations in activities of daily living resulting from those conditions. The variables included in this study were consistent with those used in previous research on elderly populations in other geographical contexts where the Andersen model had been applied to examine healthcare utilization (Hastuti & Kurniawan, 2023; Putri & Pratama, 2022).

To assess the influence of health insurance ownership and estimate the causal impact of the National Health Insurance program (JKN) on healthcare utilization, two analytical techniques were employed. Logistic regression analysis was conducted to examine the relationship between predisposing, enabling, and need factors and the likelihood of healthcare utilization among insured individuals. This model enabled the identification of statistically significant predictors of health service utilization in both survey years.

Second, Propensity Score Matching (PSM) was applied to reduce selection bias between insured and uninsured participants using a nearest neighbor matching algorithm with a caliper width of 0.05, which is commonly recommended (Hapsari & Fadilah, 2020). PSM facilitated the estimation of the average treatment effect on the treated (ATT), reflecting the difference in healthcare utilization between insured and uninsured groups after controlling for observable characteristics (Sukmana et al., 2022). The use of PSM strengthened the validity of the findings by ensuring comparability between groups based on key sociodemographic variables.

Next, a Difference-in-Differences (DiD) analysis was conducted to estimate the net effect of JKN over the ten-year study period. Following the matching procedure, the DiD approach compared changes in healthcare utilization between insured and uninsured groups across the two survey years while accounting for time-varying factors unrelated to JKN (Mahendri et al.,

2023). This approach provided a robust framework for evaluating the long-term impact of JKN on healthcare utilization among the elderly at the national level.

Statistical analyses were performed using Stata 17. Standard errors were adjusted to account for the survey design, including clustering at the household level and the complex sampling structure of Susenas. Ethical considerations were addressed using publicly available, anonymized secondary data from the National Statistical Agency. No personal identifiers were associated with the dataset; therefore, all procedures complied with national guidelines for the use of secondary data in research.

RESULTS AND DISCUSSION

Descriptive Results

The demographic and socioeconomic differences of older adults (60 plus), as shown in Table 1, have changed considerably between 2013 and 2023. The increase of percentage of older adults having attained secondary education increased from 16.22% in 2013 to 23.72% in 2023 reflects an improvement in educational levels for this population. The number of older adults with access to the internet significantly increased; however, the predictive significance of this variable declined in subsequent regression analyses. A significant increase in older adults residing in urban areas who also have insurance shows that there has been an increase in geographical disparities in the ownership of health insurance.

Table 1. Descriptive Characteristics of Older Adults (2013 vs 2023)

Variable	2013 (%)	2023 (%)	Change (%)
Secondary education or higher	16.22	23.72	+7.50
Urban residence	11.14	46.93	+35.79
Internet access	40.82	34.94	–5.88
Health complaints	22.56	12.47	–10.09
Service utilization rate	37.20	44.91	+7.71
JKN participation	56.40	98.00	+41.60

Source: Susenas 2013 & 2023 (processed)

Logistic Regression Results

According to logistic regression analysis, there were different factors that exerted influence on the use of health services in 2013 and 2023. In need factors were the most important in 2013 e.g., health complaints majorly contributed to individuals seeking health services (OR = 1.86) as anticipated based on the Andersen Behavioral Model, which states that individuals with perceived illnesses will seek health services (Babitsch et al., 2019). There was only a slight decrease in the effects of need in 2023, however the impact of enabling factors, such education (OR = 1.23) and urban residency (OR = 1.47) had increased significantly.

The analysis suggests that since the beginning of the JKN program, a change in the place of use of healthcare services for older people occurred approximately one year ago - where use was based mainly on health-related needs and now uses have increasingly become associated with socioeconomic characteristics. These observations are consistent with evidence that

continues to demonstrate that structural inequities have played a significant role in shaping older adults' access to healthcare, even with the expansion of insurance coverage (Wicaksono & Sulistiawan, 2022).

Propensity Score Matching (PSM) Findings

The results of the Average Treatment Effect on the Treated (ATT) after nearest neighbor matching using a caliper of 0.05 in Table 2.

Table 2. PSM Results: Impact of Insurance Ownership on Healthcare Utilization

Year	ATT (%)	Significance
2013	1.86	Not significant ($p > 0.05$)
2023	7.71	Significant ($p < 0.01$)

Source: PSM Analysis (processed)

Table 2 show that there were not statistically significant healthcare utilization differences between insured and uninsured older adults in 2013 prior to widespread implementation of JKN. On the other hand, the statistically significant average treatment effect of 7.71% on healthcare utilization for members of JKN in 2023 indicates that JKN membership positively impacts healthcare utilization.

The study findings add to past literature suggesting that as time passes the implementation process for national health insurance programs improves using appropriate administrative procedures thereby allowing for increased utilization of services (Hapsari & Fadilah, 2020; Agustina et al., 2019).

Difference-in-Differences (DID) Estimates

After controlling for chronological changes, using a difference-in-difference (DID) model showed that the implementation of the JKN had resulted in an increase of 5.85 percent in health care utilization. This number indicates that the implementation of the JKN represents the effects of the program on use of health care by those people who have insurance and those people without insurance who were surveyed during each survey period.

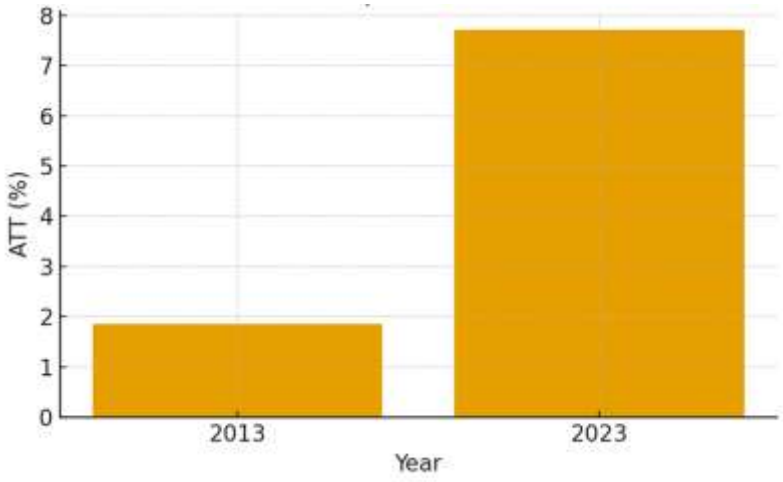


Figure 1. Impact of Insurance Ownership on Healthcare Utilization (PSM-ATT)

Source: Processed primary data from PSM analysis (Susenas 2013 & 2023)

This result provides evidence that the implementation of the JKN significantly increased access to health services (as compared to other evidence from middle-income countries which have implemented similar health financing reform, based on UHC).

Discussion

This study shows that over the last ten years, the Indonesian National Health Insurance Program has had a positive effect on the utilization of healthcare services by older people. The emphasis now being placed on all facets of socio-economic status and the availability of healthcare facilities as determinants of health-seeking behavior, rather than just health status as the only determinant, appears to play an important role in influencing older adults' patterns of health-seeking behavior. Although factors such as health problems still play a role, their decreasing importance indicates that early detection and better access to primary healthcare services may have improved.

The substantial ATT observed in 2023 demonstrates how owning insurance can help eliminate financial barriers and promote accessing medical care, both are especially true for those who have historically lacked access. Nevertheless, the substantial growth of the Urban Residency effect highlights continuing geographic inequity. For example, many older adults living in rural areas may still be challenged by limited access to facilities, barriers to transportation, and a lack of digital skills. factors that are known to reduce older adults' use of the healthcare system (Rahmawati et al., 2021).

Additionally, JKN has shown some improvement (5.85 percent) through the DID estimates, although this change is not substantial. Nevertheless, these results indicate that additional interventions may be necessary to improve service readiness, provider availability, and patient experience in JKN. With Indonesia's population projected to age significantly over time along with an increase in the number of patients with chronic diseases, this is now more important than ever.

As per evidence, UHC schemes will require additional support from structural enhancements (for example, distribution of health workers, preparedness of the facilities providing healthcare and development of an efficient digital health system) to be most effective (Mahendri et al., 2023; Kusuma et al., 2021). This means that policy makers should focus on targeted interventions for elderly patients like those who live in remote areas; so as to narrow the gap between them and others and improve JKN's effectiveness.

CONCLUSION

The findings indicate that Indonesia's National Health Insurance program (Jaminan Kesehatan Nasional [JKN]) has had a positive impact on healthcare utilization among older adults over the past decade, as evidenced by analysis of the 2013 and 2023 Survei Sosial Ekonomi Nasional (Susenas) datasets. Insurance coverage and healthcare use among individuals aged 60 and older increased substantially during this period, with Propensity Score Matching (PSM) showing a 7.71% higher utilization rate in 2023 and Difference-in-Differences (DiD) estimating a net increase of 5.85% attributable to JKN. The results also

suggest a shift in determinants of healthcare utilization from primarily need-based factors to enabling factors, such as education and urban residence, highlighting persistent socioeconomic and geographic disparities despite reduced financial barriers. These findings underscore that expanding insurance coverage alone is insufficient; strengthening healthcare system infrastructure, improving digital access, and enhancing service quality are essential to ensure equitable utilization, particularly in rural and underserved areas. Future research should explore longitudinal and region-specific analyses to better understand how disparities evolve over time and to assess the effectiveness of targeted interventions aimed at improving healthcare access for older populations in diverse settings.

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