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Research Paper

Utilization of Preventive Care Visits in Primary Healthcare: Evidence from Indonesia's National Health Insurance

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Abstract: Visiting primary health care providers for preventive care services is vital for early disease detection and overall population health improvement. In Indonesia, various barriers such as financial, systemic, and social, contribute to the underutilization of preventive health visits. This analytic cross-sectional study analyzed secondary data from a 1% representative sample of Indonesia's National Health Insurance (JKN) participants in 2023, including 608,572 individuals who had accessed at least one healthy visit at a primary care facility between 2017 and 2023. Descriptive statistics and a Generalized Linear Model assessed associations between healthy visit utilization and sex, generation, residence, and JKN membership segment. Utilization was higher among participants living in urban areas, government-subsidized members, non-workers, and older generations (particularly Baby Boomers), whereas the lowest rates were observed among informal workers, post-millennials, males, and participants residing in rural regencies. All associations were statistically significant ($p < 0.01$). These findings highlight significant disparities in healthy visit utilization across demographic and insurance groups in Indonesia's National Health Insurance program. Targeted interventions to increase preventive care uptake among underrepresented populations are critical to achieving equitable health outcomes.

Keywords: Primary Health Care; Preventive Health; National Health Insurance; Utilization Disparities

Introduction

Visiting a primary health care provider or family doctor for preventive services is a cornerstone of effective population health management (Zhang et al., 2024). Regular preventive health visits involving periodic examinations, disease screening, and lifestyle counseling would enable early identification of health risks and timely intervention, thereby supporting the Health for All initiative (Lau, 2023). These consultations also offer opportunities to address health inequities by facilitating access for marginalized groups and improving the management of chronic disease.

However, the failure to routinely visit primary care for preventive purposes can have substantial consequences. Without regular contact with primary health care providers,

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individuals are less likely to receive early screenings and evidence-based interventions, which may result in late detection of illnesses, higher morbidity, and increased health care costs (Ganguli et al., 2020). Recent innovations such as e-visits and telehealth have sought to address gaps in access. However, studies show that these digital alternatives often supplement, rather than replace, in-person visits and may not consistently improve objective health outcomes (Bavafa et al., 2018).

In many Asian contexts, including Indonesia, multiple barriers hinder regular use of primary health care for preventive services (Andary et al., 2023; Anderson de Cuevas et al., 2018; Sabin et al., 2024; Zhao et al., 2022). In South Asian countries such as India, Bangladesh, and Pakistan, barriers include limited knowledge of cancer prevention, cultural beliefs and stigma, language barriers, and poor awareness of the benefits of screening, particularly for breast and cervical cancer (Anderson de Cuevas et al., 2018). Structural and behavioral obstacles such as low education, limited facility access, financial constraints, and lack of family support further reduce uptake of antenatal and other preventive services (Sabin et al., 2024). In Southeast Asia, inequities in cervical cancer screening, stigma surrounding mental health, limited trained professionals, and poor distribution of resources contribute to persistent disparities, particularly among rural and marginalized groups (Andary et al., 2023; Zhao et al., 2022). Together, these findings highlight that barriers to preventive care in Asia extend beyond Indonesia, reinforcing the need for context-specific strategies to improve accessibility and utilization across diverse populations.

Given the potential of preventive care visits to enhance early detection and improve population health outcomes, it is critical to understand which groups are more or less likely to access these services. However, national data consistently show that the number of curative visits far exceeds preventive visits (BPJS Kesehatan, 2022). For instance, in 2022, there were 313,5 million curative visits compared to only 189,3 million preventive visits, underscoring a persistent underutilization of preventive health services despite their importance (BPJS Kesehatan, 2022). Similar patterns have been reported internationally, where preventive visits are often less utilized than curative care, particularly among disadvantaged groups, with wealthier and urban populations more likely to access preventive services (Coube et al., 2023; Lu et al., 2020; Lueckmann et al., 2021; Wang, 2018). Yet, few studies have directly examined these disparities in preventive visit utilization within the framework of large-scale national health insurance systems. In the context of Indonesia's National Health Insurance or *Jaminan Kesehatan Nasional* (JKN) program, one of the world's largest universal health coverage schemes, this study aims to examine disparities in preventive health visit utilization across different sociodemographic and insurance groups, providing evidence to guide more equitable and effective preventive health strategies.

Method

This study is a cross-sectional, descriptive, and observational analysis using secondary data from a 1% representative sample of Indonesia's National Health Insurance participants. By December 31, 2023, the program had enrolled 267,311,566 individuals nationwide (National Social Security Council, 2024). The analytical sample included 2,501,251 participants, accounting for roughly 1% of the total registered population that year. Data were accessed through a public request to the Social Security Administrative Body for Health (BPJS Kesehatan), with all personally identifiable information excluded from the dataset prior to analysis. The data could be accessed from https://data.bpjs-kesehatan.go.id/.

The study population included all JKN participants from the 1% sample who were alive as of December 31, 2023. A total of 2,501,251 individuals were initially identified in the 1% Social Security Administrative Body for Health (BPJS Kesehatan) sample database covering 2017–2023. Of these, 147,029 participants who had either died or become inactive by the end of 2023 were excluded. An additional 1,745,650 participants who had never utilized a healthy visit were also excluded. After excluding 232,158 participants with missing data on any key study variable, the final analytic sample consisted of 608,572 participants (Figure 1).

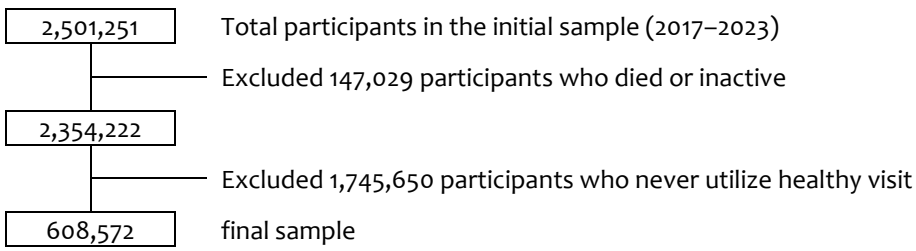

Figure 1. Sample selection process

Following Social Security Administrative Body for Health (BPJS Kesehatan) Program and Financial Management Report, a preventive health visit was defined as any participant encounter with a primary healthcare provider involving health information provision and promotive/preventive consultation (BPJS Kesehatan, 2022). The program and financial management report could be access from Social Security Administrative Body for Health (BPJS Kesehatan) official website (http://www.bpjs-kesehatan.go.id). Participants were selected as sample in this study if they had ever had a healthy visit if there was at least one recorded healthy visit to a primary health care facility (FKTP) between 2017 and 2023, as identified by the FKP22 variable (type of visit).

The primary outcome in this analysis was the total number of preventive care visits accessed by participants at primary health care facilities from 2017 to 2023. The observation period covered the years 2017 through 2023. Although the JKN program was launched in 2014, complete and reliable records of healthy visit utilization were not available for the earlier years. Specifically, the sample dataset indicated no recorded preventive care visits for 2014, while data for 2015 and 2016 were incomplete and did not cover the full calendar year. For this reason, 2017 was chosen as the starting point of the study period to ensure

consistency, completeness, and comparability of utilization data across participants and over time.

The main independent variables included: (1) sex; (2) generational cohort (categorized by year of birth); (3) resident, and (4) JKN membership segment, all determined based on participants' status as of 2023. Sex was categorized into male and female. Generational cohort was determined according to year of birth and grouped into Pre-Baby Boomer (≤1945), Baby Boomer (1946–1964), Generation X (1965–1980), Millennial (1981–1996), and Post-Millennial/Generation Z (1997 or later) (Okros & Okros, 2020). Residence distinguished participants living in regencies (kabupaten, predominantly rural) from those living in cities (kota, predominantly urban). The residence variable was operationalized based on participants' registered domicile in the JKN administrative database, rather than the location of the health facility utilized. JKN membership segmentation was classified into five categories based on premium type and payment source: non-workers (individuals not engaged in employment but independently covered by the program), PBI APBN (government-paid premium beneficiaries from the national budget), PBI APBD (local government-paid premium beneficiaries from the regional budget), PBPU (non-formal workers paying their own premium), and PPU (formal workers with employer–employee contribution). This categorization ensured consistency between the Methods and Results sections and allowed for a clear interpretation of utilization patterns across sociodemographic and insurance groups.

Descriptive statistics summarized participant characteristics and healthy visit utilization. Due to the highly skewed distribution of healthy visit counts, a Generalized Linear Model (GLM) was applied to assess associations between participant characteristics (sex, generation, and JKN segmentation) and the number of preventive care visits (Etzioni et al., 2021). Because the distribution of preventive visit counts was highly skewed and exhibited overdispersion, we applied a GLM with a Negative Binomial specification rather than a Poisson distribution. This choice ensured more reliable parameter estimates and a better fit to the data.

Results

This analysis drew on a nationally representative sample of 608,572 active JKN participants as of December 2023. Table 1 summarizes the demographic and insurance profiles of the study population, alongside patterns of healthy visit utilization in primary health care.

Table 1. Participants Characteristic

Variable	Category	n	%
Utilization frequency (2017-2023)	≤ 5	374,544	61.5
	> 5	234,028	38.5
Sex	Male	289,248	47.5
	Female	319,324	52.5
Segmentation	Non-Worker	17,762	2.9
	PBI APBN – (government -paid premiums)	232,933	38.3

Variable	Category	n	%
	PBI APBD – (local government-paid premiums)	74,200	12.2
	PBPU (non formal worker)	71,892	11.8
	PPU (formal worker)	211,785	34.8
Generation	Pre Baby Boomer	10,211	1.7
	Baby Boomer	79,552	13.1
	Gen X	148,137	24.3
	Millennial	165,743	27.2
	Post Millennial	204,929	33.7
Resident	Regency	457,328	75.1
	City	151,244	24.9

Source : *BPJS Kesehatan*, processed by authors.

Between 2017 and 2023, the majority of participants (61.5%) utilized preventive care visits five times or fewer, while only 38.5% had more than five visits, indicating generally low frequency of preventive care utilization. The majority of participants (75.1%) resided in rural regency or district areas, while only 24.9% lived in urban city settings. Regarding participant segmentation, the largest groups were those with government-paid premiums (PBI APBN, 38.3%) and formal workers (PPU, 34.8%), while smaller proportions were classified as non-workers (2.9%), local government-paid recipients (PBI APBD, 12.2%), and non-formal workers (PBPU, 11.8%).

By generation, post-millennials constituted the largest cohort (33.7%), followed by millennials (27.2%), generation X (24.3%), baby boomers (13.1%), and pre-baby boomers (1.7%), The sex distribution was fairly balanced, with females making up 52.5% and males 47.5% of the participants.

Figure 1. Sample selection process presents a histogram of healthy visit utilization among participants, showing that the distribution is highly right-skewed (skewness = 5.53). Most participants accessed only a few preventive care visits during the study period, as indicated by a median of 3 visits and a mean of 8.63 visits. The standard deviation is 14.13, reflecting considerable variation in utilization across the sample. While the minimum number of visits was 1 and the maximum reached 494, the majority of participants clustered at the lower end of the distribution. This pattern suggests that, although a small proportion of participants are high utilizers, most individuals make relatively few preventive care visits to primary care providers.

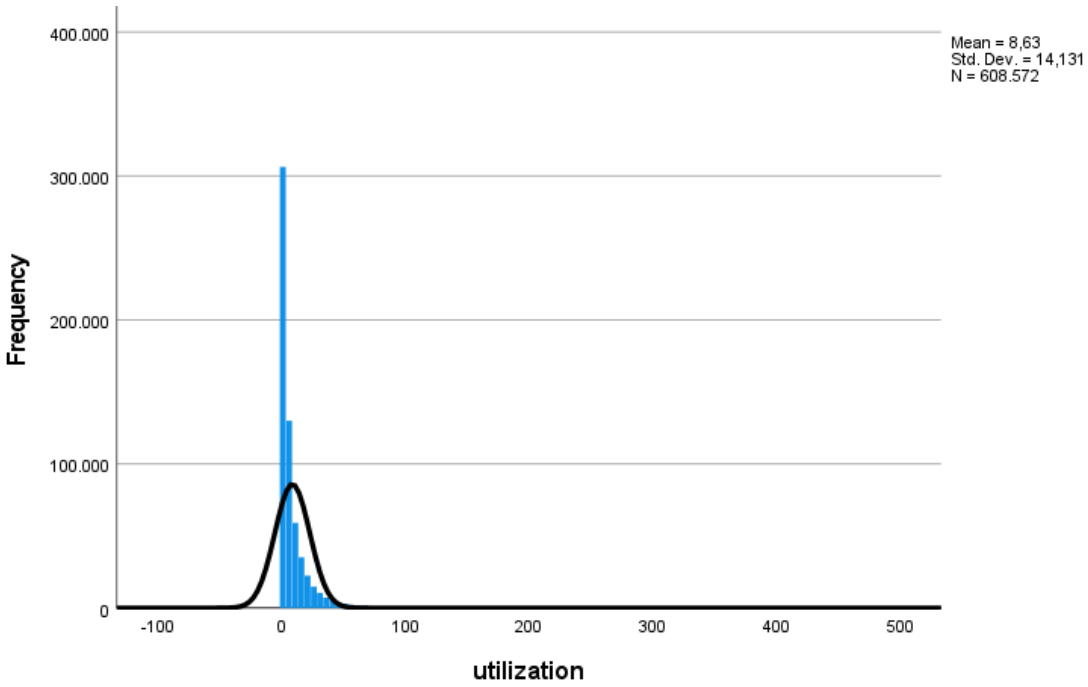

Figure 2. Distribution of Healthy Visit Utilization Among JKN Participants (2017–2023)

Descriptive statistics were calculated to summarize healthy visit utilization across sample characteristic. These descriptive findings provide an overview of utilization patterns by sex, residency, insurance segment, and generational cohort. The summary of descriptive statistics can be seen in Table 2.

Table 2. Summary Statistics of Healthy Visit Utilization by Sample Characteristics

Variable	Mean	Median	Maximum	Standard Deviation
Male	8	3	418	13
Female	9	4	494	15
Non-Worker	10	4	491	18
PBI APBN – (government -paid premiums)	11	5	494	15
PBI APBD – (local government-paid premiums)	9	4	323	16
PBPU (non formal worker)	6	2	293	11
PPU (formal worker)	7	3	450	12
Pre Baby Boomer	10	5	298	16
Baby Boomer	10	4	491	17
Gen X	9	4	494	15
Millennial	8	3	450	13
Post Millennial	8	3	382	13
City	10	4	450	17
Regency	8	3	494	13

Source : *BPJS Kesehatan*, processed by authors.

The descriptive statistics highlight variations in healthy visit utilization across different demographic and insurance groups. Female participants recorded a slightly higher mean number of preventive visits (mean = 9) compared to their male counterparts (mean = 8). Participants living in cities (mean = 10) utilize preventive care visits more frequently than those living in regencies (mean = 8). When considering participant segments at the time of accessing primary healthcare, individuals with government-paid central premiums (PBI APBN) show the highest average utilization (mean = 11), followed

by non-workers (mean = 10) and those with local government-paid premiums (PBI APBD, mean = 9). Informal workers (PBPU) and formal workers (PPU) have the lowest mean utilization, at 6 and 7, respectively. Generational differences are also evident: Pre Baby Boomers and Baby Boomers both exhibit the highest mean healthy visit utilization (mean = 10), followed by Generation X (mean = 9), while Millennials and Post Millennials report the lowest average utilization (mean = 8 each). These findings suggest that women, older individuals, urban residents, and those covered by government-paid health insurance tend to utilize preventive care visits more frequently than their respective counterparts.

Table 3. GLM Estimates of Determinants of Preventive Care Visit Utilization

Variable	B	95% CI	p
Female	reference		
Male	-0.07	-0.08-(-0.06)	<0.01
PPU (formal worker)	reference		
Non-Worker	0.21	0.19-0.22	<0.01
PBI APBN – (government -paid premiums)	0.53	0.52-0.53	<0.01
PBI APBD – (local government-paid premiums)	0.31	0.3-0.32	<0.01
PBPU (non formal worker)	-0.20	-0.21-(-0.19)	<0.01
Post Millennial	Reference		
Pre Baby Boomer	0.24	0.21-0.26	<0.01
Baby Boomer	0.30	0.29-0.31	<0.01
Gen X	0.21	0.2-0.22	<0.01
Millennial	0.08	0.07-0.08	<0.01
City	reference		
Regency	-0.29	-0.29-(-0.28)	<0.01

Source : *BPJS Kesehatan*, processed by authors.

The results of the GLM estimates analysis indicate that several demographic and socioeconomic factors are significantly associated with healthy visit utilization. Male participants had significantly lower preventive visit utilization compared to females. Regarding employment and insurance status, non-workers and individuals covered by government-paid insurance schemes, specifically central (PBI APBN) and local government (PBI APBD) programs, demonstrate higher rates of preventive health visit utilization relative to formal workers, with the strongest effect observed among those with central government-paid premiums. In contrast, informal workers (PBPU) are associated with lower utilization rates compared to formal workers. Generational differences are also apparent; older cohorts such as Pre Baby Boomers, Baby Boomers, Generation X, and Millennials exhibit higher healthy visit utilization compared to the post-millennial generation, with Baby Boomers showing the most pronounced increase. Additionally, the analysis reveals that individuals residing in regencies (rural areas) have significantly lower healthy visit utilization rates than those living in cities. All observed associations are statistically significant ($p < 0.01$), underscoring the importance of sex, insurance category, generational cohort, and geographic location as determinants of healthy visit utilization in the study population.

Discussion

This study, using a large and nationally representative sample of JKN participants, highlights substantial variation in the utilization of preventive care visits across demographic and insurance-related groups. Although preventive health visit utilization showed a highly right-skewed distribution overall, with most participants making few visits while a small subset had very high utilization, distinct patterns emerged when analyzed by group. Females had a slightly higher mean utilization than males in descriptive analysis, yet regression analysis showed that females had significantly lower adjusted rates compared to males. Urban residents, older generations (especially Baby Boomers and Pre-Baby Boomers), and those covered by government-paid insurance (PBI APBN and PBI APBD) or classified as non-workers consistently exhibited higher healthy visit utilization. Conversely, participants living in rural (regency) areas, formal and informal workers, and post-millennials were least likely to access preventive care. All associations remained significant in multivariate analysis, emphasizing the roles of sex, age group, insurance type, and residence in shaping healthy visit patterns among JKN participants.

This study is consistent with international literature, which shows that women utilize preventive and health promotion services in primary health care more frequently than men (Kiss et al., 2024; Schlichthorst et al., 2016). This pattern aligns with global trends and underscores persistent gender differences in health-seeking behavior, possibly influenced by cultural, social, and programmatic factors within Indonesia's universal health coverage system. These findings highlight the continued need for targeted strategies to encourage greater engagement with preventive services among men. Men may have higher utilization of preventive visits for medical check-ups required for occupational reasons. However, existing regulations might not yet provide adequate coverage for such visits. Moving forward, it is worth considering policies that mandate at least one annual preventive visit under the JKN program, a recommendation already supported by existing initiatives such as *Cek Kesehatan Gratis* (CKG) or free health check-ups, which aim to encourage proactive health-seeking behaviors across the population (Rahayu, Desi Ariyana., 2025).

Global evidence consistently shows a pro-rich pattern in preventive primary healthcare utilization (Gao et al., 2022; Moreno-Peral et al., 2015; Stange et al., 2023), while our findings reveal that participants from government-subsidized groups (PBI) were more likely to access preventive care visits than the self-paying or formally employed counterparts. This divergence may reflect unique characteristics of Indonesia's JKN system, particularly targeted policies and community-based initiatives that have expanded outreach and access among vulnerable populations. Further investigation is needed to determine whether this higher utilization represents effective policy impact or administrative recording patterns, and to ensure that preventive services are equally promoted across all socioeconomic groups.

This study aligns with global evidence that indicates that younger generations, such as Gen Z, are less likely to utilize primary healthcare for health promotion and preventive consultations compared to older generations like Generation X or Baby Boomers

(Hostetter et al., 2020; Laddu et al., 2021; C. Li et al., 2021). This pattern has been attributed to factors such as a perceived sense of invulnerability among young adults, fewer chronic health conditions, and competing social or economic priorities that reduce the urgency of preventive care (Laddu et al., 2021; C. Li et al., 2021). In contrast, older adults are more engaged with primary care, often for chronic disease management, and thus more frequently receive evidence-based preventive interventions (Hostetter et al., 2020). These findings underscore the need for tailored health promotion strategies aimed at engaging younger adults in preventive care and addressing the unique barriers faced by this population group.

A substantial body of international research finds that urban populations typically have higher utilization rates of primary healthcare for preventive and health promotion services compared to rural or district residents (J. Li et al., 2018; Nuako et al., 2022; Sharma et al., 2024). Lower utilization in rural areas is linked to factors such as greater distances to care, fewer healthcare providers, and socioeconomic challenges, as well as more limited clinic hours and service availability (Nuako et al., 2022). Rural patients may also experience lower continuity of care and are less likely to receive recommended screenings and preventive interventions (Fraze et al., 2022; Johannes et al., 2024). While some improvements have been achieved, significant urban-rural disparities persist across countries and health systems (J. Li et al., 2018; Nuako et al., 2022; Sharma et al., 2024). Our findings are consistent with these studies, underscoring the ongoing need to address structural and access barriers that hinder preventive care utilization among rural populations.

Our findings that utilization of preventive visits varied by sex, generation, residence, insurance type, and employment status reflect mechanisms widely reported in global literature. Women often show higher preventive care use due to reproductive health needs and targeted programs, yet adjusted analyses sometimes reveal lower rates when controlling for insurance and socioeconomic factors, pointing to the influence of structural norms and health system design (Dore et al., 2024; Mitričević et al., 2021). Government-subsidized participants in our study had higher utilization than formal workers, consistent with evidence that subsidies reduce financial barriers, though coverage quality and literacy remain critical determinants (Zhou et al., 2025). Younger cohorts underutilize care due to perceived invulnerability and fewer chronic conditions, while older adults are more consistent users for chronic disease management (Rand & Goldstein, 2018; Rotenstein et al., 2023). Urban–rural gaps mirror persistent disparities in provider availability and transportation access (Liu et al., 2016; Nuako et al., 2022), and employment patterns suggest informal and self-employed workers face barriers linked to insurance scope and irregular work conditions (Kim et al., 2018; Sarkodie, 2021). Together, these mechanisms suggest that disparities in JKN preventive care use are not solely financial but shaped by complex social, cultural, and systemic factors that require tailored interventions.

The findings of this study emphasize the need for targeted strategies to enhance the utilization of preventive health visits among specific demographic and insurance groups

within Indonesia's National Health Insurance (JKN) system. Efforts should be focused on increasing awareness and reducing barriers among men, younger generations, informal workers, and rural residents. Policymakers and health system administrators should prioritize initiatives that encourage regular preventive care visits, strengthen primary care outreach, and ensure equitable access to preventive services across all population segments. Such actions are essential to maximize the preventive potential of JKN and improve population health outcomes.

Beyond the demographic and insurance factors analyzed in this study, prior literature has highlighted several other determinants of preventive healthcare utilization, including health literacy, cultural and gender norms, socioeconomic status, provider availability, and the scope of insurance coverage (Dore et al., 2024; Ghimire et al., 2023; Yagi et al., 2022). These variables were not captured in our dataset, but they may play critical roles in explaining disparities in utilization. Future research should incorporate these determinants and use direct survey or qualitative methods to better understand why certain groups, such as younger adults, men, and informal workers, engage less in preventive visits compared to their counterparts. Our findings thus provide an important starting point for more in-depth investigations into the mechanisms behind preventive care utilization.

Targeted actions to improve preventive care visits are needed from key stakeholders, including BPJS Kesehatan, the Ministry of Health, and local governments. These institutions should prioritize interventions that encourage routine preventive visits, such as strengthening incentive mechanisms for primary care providers (KBK), developing outreach programs tailored for younger generations and informal workers, and integrating preventive check-ups into existing community health initiatives. Strengthening collaboration among these stakeholders is critical to ensuring that preventive care utilization becomes a central pillar of Indonesia's universal health coverage strategy rather than reacting to illness.

This study has several limitations. All sociodemographic and insurance-related variables were recorded as of 2023, which may not reflect participant status at the time of each healthy visit. The cross-sectional design precludes inference of causal relationships between participant characteristics and healthy visit utilization. Finally, the use of secondary administrative data limits the ability to assess other important determinants, such as health literacy, cultural factors, or facility-level barriers, which may influence preventive care utilization.

Conclusion

This study demonstrates significant disparities in the utilization of preventive care visits across demographic and insurance groups within Indonesia's National Health Insurance (JKN) system. While women, older generations, and government-subsidized members are more likely to access preventive services, utilization remains lower among men, informal workers, post-millennials, and rural residents. Addressing these disparities is essential for optimizing the preventive health potential of JKN and promoting equitable

health outcomes. Policymakers, BPJS Kesehatan, the Ministry of Health, and local governments should work together to reduce barriers and promote regular preventive visits through strategies such as targeted outreach, FKTP incentives, and integration with digital health and community-based programs. Future research should explore additional determinants, such as health literacy, cultural norms, and socioeconomic status. This study can serve as a foundation for direct survey-based investigations to better explain why certain groups utilize preventive care more than others.

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