



Effects of National Health Insurance Rate Increases on Healthcare Outcomes



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ABSTRACT

Aims The increase in national health insurance rates is a policy that can significantly impact various aspects of healthcare services, including patient satisfaction, service quality, and financial factors, such as the ability and willingness to pay contributions. This study aimed to examine the effects of national health insurance rate increases on patient satisfaction, service quality, facility availability, and participants' financial capacity and willingness to pay within Kendari City.

Instrument & Methods This cross-sectional quantitative study employed an analytic observational approach. Data were collected from 1,368 independent healthcare and Social Security Agency health participants registered in several hospitals in Kendari City in 2023. Data were collected using a questionnaire distributed to national health insurance Mandiri participants visiting hospitals in Kendari City.

Findings The increase in contributions significantly influenced patient satisfaction, as well as participants' ability and willingness to pay contributions ($p=0.001$). However, the increase in fees did not significantly affect patient perceptions of facility availability ($p=0.817$).

Conclusion The fee increase is strongly associated with patient satisfaction, ability to pay, and willingness to pay.

Keywords Health Insurance; Health Facilities; Payment for Health Services; Health Policy

CITATION LINKS

[1] Effect of health insurance on the use and provision of maternal health services and maternal and neonatal health outcomes ... [2] What factors affect voluntary uptake of community-based health insurance schemes in low-and middle-income countries? A systematic ... [3] Demographic factors affecting health services utilization ... [4] Health insurance for the Indonesian people according ... [5] Analysis of the implementation of national health insurance program policies ... [6] Analysis of the implementation of national health insurance program policies ... [7] National Health Insurance Program (JKN) ... [8] The relationship of hospital cost, service quality and patient ... [9] Analysis of patient satisfaction through the effect of healthcare spending on waiting times ... [10] Analysis of contribution assistance recipients' utilization of national ... [11] Law of the Republic of Indonesia Number 24 of 2011 concerning Social Security ... [12] BPJS public health ... [13] Profile of the Kendari City Health Service ... [14] Willingness to pay for national health insurance: A contingent valuation study among patients visiting ... [15] Factors that influence enrolment and retention in Ghana' national health ... [16] The increased of the national health insurance premium and primary health care ... [17] The impact of the policy of increasing BPJS contributions ... [18] Factors related to compliance with paying BPJS health contributions by independent participants in the ... [19] Willingness to pay for primary health care at public facilities in the ... [20] Analysis of the influence of personal factors and the quality of health facilities services and the quality of insurance services on the intention ... [21] Assessing the effects of quality, value, and customer satisfaction on consumer ... [22] The measurement of satisfaction with healthcare: Implications for practice ... [23] Patient's willingness to pay for improved community health ... [24] Patient perceptions of the quality ... [25] Factors associated with willingness to pay for health insurance and pension scheme among informal economy workers in low-and middle-income ... [26] Impact of national health insurance for the poor and the informal sector in low-and ...

Introduction

This study is motivated by recent changes in the national health insurance (NHI) rate policy implemented by the government, particularly for independent (Mandiri) NHI participants [1-3]. The NHI program, launched in 2014, aims to ensure equitable access to healthcare services for all segments of Indonesian society [4-6]. However, the policy of increasing NHI rates for independent participants (who pay contributions directly without government subsidies) has raised concerns about its potential impact on patient satisfaction and other factors, including service quality, facility availability, and patients' financial capacity and willingness to pay [7]. This rate increase may influence patients' perceptions of the healthcare services they receive, which, in turn, could affect their overall satisfaction [8, 9].

Participation in the Healthcare and Social Security Agency (HSSA) is categorized into two groups, including contribution assistance recipients (CARs) and non-contribution assistance recipients (non-CAR) [10]. CAR participants consist of individuals classified as poor or economically disadvantaged. In contrast, non-CAR participants are those not classified as poor or disadvantaged and are further divided into three subcategories, including wage-earning workers (WEWs), such as civil servants, members of the military (TNI), police officers, state officials, and members of the Regional People's Representative Council (DPRD), along with their family members; non-WEWs, including self-employed individuals and workers outside formal employment, along with their family members; and non-workers, such as investors, veterans, and pension recipients, along with their family members [11].

According to the Southeast Sulawesi Health Office, the population in 2021 was 2,669,840, with a total of 2,469,046 individuals registered as HSSA health members. Among these, 1,729,431 were CARs, 516,674 were WEWs, 190,132 were Non-WEWs, and 32,809 were non-worker participants. Meanwhile, 200,794 individuals were not enrolled in the NHI program [12].

According to the Kendari City Health Office, in 2021, the population of Kendari City was 343,320. Of this total, 298,656 individuals were registered as HSSA participants, including 71,192 CARs, 127,386 WEWs, 58,753 non-WEWs, and 8,527 non-worker participants. Meanwhile, 44,664 individuals were not enrolled in the NHI program at the HSSA Health KC-Kendari Office [13].

Several research gaps highlight the significance of this study. While numerous previous studies have explored the impact of NHI policies on patient satisfaction and quality of care, most have focused on WEW enrollees or have not differentiated the effects on self-pay participants [8].

Additionally, many studies have overlooked economic factors, such as patients' ability and willingness to pay, which are especially relevant for the self-pay group [14]. This study addressed these gaps by examining in detail how the increase in NHI contribution rates affects aspects such as patient satisfaction, quality of care, and the economic factors influencing patients' ability and willingness to pay higher rates [15].

The novelty of this study lies in its integrated approach, combining multiple parameters within a comprehensive analytical model. Unlike previous studies that typically have assessed the impact of tariff increases on patient satisfaction or service quality in isolation, this study also incorporated economic factors, such as the ability and willingness to pay—factors often overlooked in earlier research. In terms of innovation, this study contributes to the advancement of healthcare research, particularly in relation to NHI policy and its effects on patient experience. By combining health service aspects with economic factors affecting patients, this study offers a more holistic perspective, employing a methodology that is rarely used in previous studies. The purpose of this study was to analyze the impact of NHI rate increases on patient satisfaction, service quality, facility availability, as well as participants' ability and willingness to pay among NHI enrollees in Kendari City.

Instrument and Methods

Study design

This quantitative employed analytical observational research with a cross-sectional approach. This type of research focuses on measuring or observing data at a single point in time, examining both dependent and independent parameters. The cross-sectional approach is used to analyze the relationships between parameters at that particular moment.

Sample

This study focused on independent HSSA health participants registered at various hospitals in Kendari City in 2023, with a total of 1,368 participant visits. The population included individuals seeking treatment at both public and private hospitals in the city, such as Kendari City Hospital, Bahteramas Hospital, Bayangkara Hospital, and others. Patient visit data varies across these hospitals, with Kendari City Hospital reporting 411 participants, Bahteramas Hospital reporting 516 participants, and smaller numbers at other hospitals, such as Dewi Sartika Hospital with 17 participants and Santaana Hospital with 23 participants. This variation reflects the distribution of independent HSSA health participants across different healthcare facilities in Kendari. Using the Slovin formula with a 5% margin of error, the calculated sample size for this study was 1,200 participants.

Inclusion and exclusion criteria

Inclusion and exclusion criteria were established to ensure that the selected samples aligned with the research objectives and provided relevant data. The inclusion criteria were HSSA Health Mandiri participants who were registered and recorded at hospitals in Kendari City during 2023, participants who have undergone medical visits and are included in the hospital visit records within the research data, and participants who were willing to provide information related to their health conditions and experiences during treatment at the hospital. Exclusion criteria were defined to prevent bias or factors that could undermine the validity of the study results, including participants who lacked complete or valid data regarding the number of visits or their medical identity at the hospital, participants who did not provide consent to participate in the study or could not be contacted for follow-up interviews, and participants who were family members of medical personnel or hospital staff, as their involvement could affect the objectivity of data collection.

A proportional sampling technique was employed, meaning the number of samples selected from each hospital would be proportional to the share of participant visits at that hospital relative to the total population. As a result, hospitals with a higher number of visits, such as Bahteramas Hospital and Kendari City Hospital, contributed more samples than hospitals with fewer visits, such as Dewi Sartika Hospital and Santaana Hospital.

Research tools

Data were collected using a questionnaire distributed to NHI Mandiri participants visiting hospitals in Kendari City. To ensure the quality of the data obtained, validity and reliability tests were conducted on the questionnaires used. The validity test assessed whether each item in the questionnaire accurately measured the intended constructs, specifically the impact of the NHI rate increase on patient satisfaction, service quality, facility availability, ability to pay, and willingness to pay among NHI Mandiri participants. Construct validity was tested through factor analysis to ensure that each dimension in the questionnaire reflected the relevant aspects of the study. Additionally, reliability was assessed using Cronbach's Alpha coefficient to evaluate the internal consistency of each item. A Cronbach's Alpha value greater than 0.7 indicates good reliability for the instrument used. Some questionnaire items were found to inadequately reflect the intended constructs, such as the impact of NHI tariff increases on patient satisfaction or economic factors, like ability and willingness to pay. The validity test results revealed several items with low loading factor values, indicating that these questions did not significantly contribute to measuring the parameters under study. Additionally, the reliability test using Cronbach's Alpha coefficient showed that some questions had values below the acceptable threshold (e.g., below 0.7), suggesting

insufficient internal consistency. As a result, to enhance data quality and ensure more accurate findings, the questions that did not meet the required standards were excluded from further analysis.

Data collection

The data collection employed multiple methods to gather comprehensive information on the impact of NHI tariff increases on various. Data were collected using a questionnaire distributed to NHI Mandiri participants visiting hospitals in Kendari City. Additionally, secondary data were obtained from administrative records at the relevant hospitals, including patient visit data and NHI tariff information. The data collection process was carried out with the informed consent of the participants, and confidentiality was assured to maintain the validity of the data obtained.

Statistical analysis

Data analysis was conducted using both descriptive and inferential statistical techniques to interpret the results obtained from the questionnaires and secondary data. Descriptive statistics were employed to outline the general characteristics of the sample, including frequency distributions, means, percentages, and standard deviations for the variables under study, such as patient satisfaction, service quality, facility availability, ability to pay, and willingness to pay. To examine the relationships and impacts between parameters, inferential statistics were applied. One of the tests used was the Chi-square test, which helps determine whether changes in one parameter are significantly related to changes in another, with a p-value of less than 0.05 indicating a significant relationship. Additionally, to assess the effect of multiple independent parameters on the dependent parameter, MANOVA was employed. It enables researchers to analyze the simultaneous impact of several factors, such as the effects of NHI tariff increases, service quality, and ability to pay on patients' willingness to pay. The MANOVA was chosen because the dependent parameters consisted of multiple numerical data points, while the independent parameters were categorical.

Findings

By age group, the largest proportion of respondents fell into the middle adult category (48.6%), followed by early adults (22%) and older adults (19.4%). In terms of gender, females slightly outnumbered males, accounting for 53.5% and 46.5% of respondents, respectively. Regarding payment methods, more than half of the respondents made payments through tellers (55.7%), while the remainder used auto-debit (44.3%). In terms of health service categories, the majority were enrolled in class 3 (43.1%), followed by class 2 (39.9%) and class 1 (17%). Employment status showed that most respondents were traders or self-employed (34.3%), followed by private employees (31.5%), and those who were not working

or were domestic workers (24.3%).

Table 1. Frequency of respondents' characteristics

Parameter	Values
Age group	
Adolescent	18(1.5)
Early adult	264(22)
Midle adult	582(48.6)
Late adult	232(19.4)
Elderly	104(8.7)
Gender	
Male	558(46.5)
Female	642(53.5)
Paying method	
Teller	668(55.7)
Auto debet	532(44.3)
Health-service category	
Class 1	204(17)
Class 2	479(39.9)
Class 3	517(43.1)
Occupation	
Unemployed/housewife	291(24.3)
Trader/self-employed	411(34.3)
Non-governmental	378(31.5)
Freelancer	120(10)
Education	
Illiterate	2(0.2)
Elementary	45(3.8)
Junior school	122(10.2)
High school	611(50.9)
College	420(35)
Income (IRD)	
≤2,992,713.00	567(47.3)
≥2,992,713.00	633(52.8)

Educational attainment revealed that the majority had completed high school or vocational school (50.9%), with 35% having attended college, and a negligible 0.2% having no formal education. In terms of income, nearly half of the respondents reported earnings of ≤2,992,713 (47.3%), while the remaining 52.8% earned ≥2,992,713 (Table 1).

Regarding patient satisfaction, a significant difference was observed between those who disagreed and those who agreed with the fee increase ($p=0.001$), indicating that the fee increase affected patient satisfaction. Similarly, both the ability to pay and the willingness to pay demonstrated significant relationships with the fee increase ($p=0.001$). However, no significant difference was found concerning facility availability ($p=0.817$), suggesting that the fee increase did not impact perceptions of facility completeness (Table 2).

Patient satisfaction had a mean value ranging from 27.25 to 80.21 ($p=0.001$), indicating a significant difference. In contrast, facility availability showed a mean value ranging from 12.09 to 12.06 ($p=0.635$), suggesting no significant difference in perceptions of facility completeness. Willingness displayed a mean value between 3.69 and 4.03 ($p=0.001$), indicating a significant effect. Similarly, ability had a mean value ranging from 3.96 to 3.49 ($p=0.001$), also demonstrating a significant influence (Table 3).

Table 2. Frequency of the relationship between the dues increase and the independent national health insurance service components

Parameter	Component	Category	Disagree	Agree	p-value
Dues increase	Patient satisfaction	Dissatisfied	137 (46.6)	284 (31.3)	0.001
		Satisfied	157 (53.4)	622 (68.7)	
	Facility availability	Incomplete	2 (40)	419 (35)	0.817
		Complete	3 (60)	776 (65)	
	Willingness	No	102 (72)	319 (30)	0.001
		Yes	40 (28)	739 (70)	
	Ability	No	37 (22)	384 (34)	0.001
		Yes	134 (78)	645 (63)	

Table 3. MANOVA results for national health insurance components

Parameter	df	Mean	p-value	Lower limit	Upper limit
Patient satisfaction	1	27.25-80.21	0.001	76-79	78-80
Facility availability	1	12.09-12.06	0.635	11.9-11.9	12.2-12.1
Willingness	1	3.69-4.03	0.001	3.6-4.0	3.7-4.0
Ability	1	3.96-3.49	0.001	3.8-3.4	4.0-3.6

Discussion

This study examined the impact of fee increases on patient satisfaction, facility availability, ability to pay fees, and willingness to pay fees. There was a significant relationship between the fee increase and patient satisfaction, as well as the ability and willingness to pay. However, no significant effect was observed on perceptions of facility availability.

There was a significant difference in patient satisfaction concerning the fee increase, suggesting that the increase impacts satisfaction levels. Patients who agreed with the fee increase tended to report higher satisfaction compared to those who disagreed. Additionally, there was a significant effect of the fee increase on both the ability and willingness to pay.

Among those who disagreed with the fee increase, 102 cases reported feeling unable to pay, whereas 319 of those who agreed felt able to pay. Similarly, regarding willingness to pay, 37 patients in the disagreement group expressed unwillingness, while 384 of those who agreed indicated a willingness to pay more. These findings suggest that patients who support the fee increase are more likely to perceive themselves as able and willing to pay compared to those who oppose it [16, 17].

No significant association was observed between the fee increase and facility availability. Despite variations in the cross-tabulation data, the high p-value indicates that patients' perceptions of facility completeness are not affected by the fee increase.

This outcome may be attributed to other factors, such as the location or management of the facilities, which likely have a greater influence on patient perceptions than the fee changes [18].

The multivariate analysis using MANOVA revealed a significant effect on patient satisfaction, willingness to pay, and ability to pay, as evidenced by the very low p-values for all three parameters. The mean values for patient satisfaction, ranging from 27.25 to 80.21, demonstrated a distinct variation in satisfaction levels, potentially influenced by internal and external factors, such as service quality, costs, or health policies. These findings suggest that factors, such as patients' willingness and ability to pay, alongside relevant policies, play a crucial role in shaping their satisfaction with the health services received [9, 14, 19].

In contrast, the analysis of the facility availability revealed no significant difference, indicating that patients' perceptions of facility completeness remained consistent despite variations in factors, such as fee increases or willingness to pay [20]. This suggests that perceptions of facilities are likely influenced by stable elements, such as the existing standard of facilities, which are less affected by fee policies or other parameters [21]. Nevertheless, the significant impact of willingness and ability to pay, as demonstrated in MANOVA, highlights that these play a more substantial role in shaping patients' decisions and satisfaction compared to their perceptions of facility availability.

A comparison of our findings with previous research highlights both similarities and differences regarding the impact of fee increases on patient satisfaction and behavior [22, 23]. Like this study, many prior studies have concluded that changes in costs or fee increases influence patient satisfaction. For instance, Sofaer and Firminger found that rising healthcare costs often lead to decreased satisfaction, as patients perceive an increased financial burden. These findings align with this study, demonstrating a significant relationship between fee increases and patient satisfaction, with patients who are more satisfied being more likely to accept the fee increase [24].

We further revealed that the ability and willingness to pay significantly influenced outcomes, aligning with findings by Miti *et al.*, demonstrating that an individual's financial capacity directly impacts their willingness to contribute to health insurance.

Unlike earlier studies that primarily linked financial factors to satisfaction levels, this research underscores the critical role of willingness to pay in shaping outcomes [25, 26].

Conversely, the findings contrast with studies, such as those by Santos-Jaén *et al.*, finding no significant relationship between contribution increases and facility perceptions. This research also concluded that fee increases do not significantly affect perceptions of facility completeness, suggesting that

these perceptions are largely unaffected by cost changes [9].

This study has several limitations that should be considered when interpreting the results and applying the findings. First, as a cross-sectional study, data were collected at a single point in time, meaning it cannot establish clear cause-and-effect relationships between the parameters examined. Second, the use of proxy parameters, such as willingness, ability, and satisfaction to measure specific outcomes may not fully capture all factors influencing patient decision-making or perceptions. Additionally, response bias could have affected the results, as respondents might have provided answers that they believed to be more socially acceptable or in line with the researchers' expectations, potentially compromising the validity of the data. Patients who agree with the fee increase tend to report higher satisfaction levels and are more able and willing to pay the fee. These findings highlight the importance of considering both patient satisfaction and financial capability when designing policies related to changes in healthcare costs.

Conclusion

The fee increase is strongly associated with patient satisfaction, ability to pay, and willingness to pay.

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Ethical Permissions: This research was conducted with ethical guidelines and principles to ensure the rights, safety, and well-being of all participants. Ethical approval was obtained from the Ethics Committee of Halu Oleo University. Before data collection, detailed information about the objectives, procedures, potential risks, and benefits of the study was provided to all respondents. Informed consent was obtained from all participants, ensuring their voluntary participation. Confidentiality and anonymity were maintained throughout the research process, and all data collected were used solely for academic purposes.

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Authors' Contribution: Suhadi S (First Author), Introduction Writer/Original Researcher/Methodologist/Discussion Writer/Statistical Analyst (40%); Jumakil J (Second Author), Original Researcher/Discussion Writer (20%); Pratiwi AD (Third Author), Introduction Writer/Original Researcher/Discussion Writer (20%); Rahman R (Fourth Author), Introduction Writer/Original Researcher/Discussion Writer (5%); Dewi ST (Fifth Author), Introduction Writer/Original

Researcher/Discussion Writer (5%); Afa JR (Sixth Author), Introduction Writer/Original Researcher/Discussion Writer (2.5%); Astuti NPEW (Seventh Author), Introduction Writer/Original Researcher/Discussion Writer (2.5%); Fauziah N (Eighth Author), Introduction Writer/Original Researcher/Discussion Writer (2.5%); Sucipta ED (Ninth Author), Introduction Writer/Original Researcher/Discussion Writer (2.5%)

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