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Out-of-pocket expenditure in Indonesia's national health insurance: evidence from household survey in Bandar Lampung City, Indonesia

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Abstract: Indonesia's National Health Insurance (NHI) was established to promote equitable access to healthcare and protect households from financial hardship. However, out-of-pocket (OOP) payments continue to occur, leading in catastrophic health for many families. This study aimed to measure the incidence and identify the determinants of OOP spending among NHI participants in Bandar Lampung. A cross-sectional survey involving 253 NHI members was conducted in 2020 across clinics, public health centers, and pharmacies. Data were analyzed using chi-square and logistic regression. OOP spending was reported by 31.62% of respondents. Bivariate analysis indicated that the type of health facility ($p = 0.004$) and membership status ($p = 0.040$) significantly influenced OOP expenditure, while age, gender, education, occupation, income, and treatment class were not significant. Multivariate analysis confirmed that visits to clinics ($p = 0.018$) and membership in Mandiri or PBI groups (both $p = 0.039$) were associated with a higher likelihood of OOP payments. Despite essential health services being covered under NHI, OOP expenditure remains a considerable financial burden. These findings highlight the need for stronger policy interventions to improve benefit coverage and ensure equitable financial protection under Indonesia's NHI system.

Keywords: Health insurance, health coverage, health facilities, out-of-pocket, community pharmacies

Introduction

Ensuring access to quality healthcare without financial hardship is a central goal of universal health coverage (UHC). The social health insurance mechanism is one of the main strategies to achieve this goal, as it enables promotive, preventive, curative, and rehabilitative health services at affordable costs while protecting individuals from financial risks [1,2]. However, in many low- and middle-income countries, health insurance systems remain underfunded and insufficiently integrated due to limited fiscal capacity and weak health financing policies [3-5]. Consequently, many households continue to rely on out-of-pocket (OOP) payments to access healthcare, which can result in financial hardship or catastrophic health expenditure [6-8].

Across Southeast Asia, high OOP spending continues to challenge the effectiveness of national health insurance schemes. In countries such as the Philippines and Vietnam, which implemented national health insurance before Indonesia, many insured individuals still make additional payments for medicines or services not fully covered by their benefit packages [9-11]. This indicates that the mere existence of insurance coverage does not guarantee comprehensive financial protection, especially when health financing systems face supply-side inefficiencies or limited benefit depth [10,12].

Indonesia faces similar challenges under its National Health Insurance system. Although NHI has expanded rapidly since its introduction, structural issues persist, including incomplete population coverage, uneven quality of care, and a high share of OOP health expenditure—around 30% of total health spending [13-16]. Recent studies indicate that, despite high enrollment, many households continue to pay out of pocket for essential medicines or diagnostic services, reflecting the limited depth of coverage and inefficiencies in reimbursement mechanisms [11]. Medicines, in particular, remain the largest contributor to OOP spending [9,16].

Lampung Province offers a relevant context to study these issues, as it represents a microcosm of Indonesia's healthcare system with diverse socioeconomic conditions,

mixed urban–rural demographics, and varying levels of access to health facilities. Studying OOP expenditure in this area allows for a deeper understanding of how NHI performs at the subnational level and how local disparities contribute to national financial protection outcomes [11].

Despite increasing attention to NHI performance, there remains limited empirical evidence on the extent and determinants of OOP spending among its participants. Therefore, investigate the incidence of an OOP event due to the implementation of NHI and also to analyze factors influencing OOP.

Methods

Study design

A cross-sectional survey was conducted in Bandar Lampung City between August and October 2020 to assess out-of-pocket (OOP) spending among NHI participants. Bandar Lampung was selected as it represents a diverse urban healthcare environment with various types of health facilities and a heterogeneous population enrolled in different NHI membership categories. Ethical approval was obtained from the Medical and Health Research Ethics Committee (MHREC), Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada No. KE/FK/0920/EC/2020.

Structured survey forms were prospectively administered to NHI members receiving outpatient care at primary healthcare facilities. Eighteen facilities were approached, comprising public health centers (puskesmas), private clinics, and community pharmacies across different districts of Bandar Lampung City, all of which granted permission to participate. The selection of facilities aimed to capture diverse healthcare settings and patient populations within the city's NHI system.

Study sample

The study population consisted of NHI participants receiving outpatient services at selected health facilities in Bandar Lampung City. Sampling was conducted using a convenience approach among eligible patients who visited the participating facilities during the study period. The sample size of 253 respondents was determined based on feasibility considerations, including the study timeline, available resources, and accessibility of participants across multiple facility types. All respondents who met the inclusion criteria during the data collection period and provided informed consent were included in the analysis.

Inclusion criteria: (i) patients receiving outpatient services at primary health centers, private clinics, or pharmacies in Bandar Lampung, (ii) registered as NHI members at the time of data collection, (iii) willing to participate by signing informed consent, (iv) cooperative and able to communicate clearly during the interview or questionnaire process.

Exclusion criteria: (i) patients under 18 years, (ii) patients using their NHI card for the first time at the health facility, (iii) patients who agreed to participate but submitted incomplete or unreadable questionnaire responses.

Survey instrument

The questionnaire used in this study was adapted from the authors' previously validated instrument developed to assess out-of-pocket experiences among NHI participants [17]. The original tool had been reviewed by experts in public health and health economics to ensure content validity. Minor contextual adjustments were made to align the questionnaire with the Lampung regional setting, including clarification of local terminology for health facilities and verification of appropriate income ranges relevant to the local economic context.

The questionnaire contains three questions regarding the experience of out-of-pocket incidence in the JKN era. The answers were close-ended with two options ("Yes" dan "No").

Data analysis

Data from 253 completed questionnaires were analyzed using IBM SPSS Statistics version 20.0. Descriptive statistics were used to summarize respondent characteristics and the prevalence of OOP payments, presented as frequencies and percentages for categorical variables.

Bivariate analyses (chi-square tests) were performed to explore the relationships between OOP occurrence and independent variables, including facility type, age, gender, education, occupation, income, membership status, and treatment class. Variables with a p-value < 0.25 in the bivariate analysis were subsequently entered into a multivariate logistic regression model to identify independent predictors of OOP expenditure.

Results

Sociodemographic characteristics

Based on the data provided, the study analyzed the sociodemographic characteristics of 253 respondents, revealing a diverse profile. The majority of participants, 66.4%, were female, and the most represented age group was 18–32 years, accounting for 31.6% of the sample (Table 1). In terms of education, senior high school was the most common level at 46.6%, while the occupational breakdown was varied, with nearly half of the respondents (47.8%) falling into the "other" category. For healthcare, clinics were the preferred facility, used by 49.8% of the participants, and Class III was the most common treatment class at 35.2%.

The economic and social status of the respondents also showed a wide range. A significant portion of the sample, 29.2%, had an income of less than Rp 1,000,000, while the most common health insurance membership was Penerima Bantuan Iuran (PBI) Askes, covering 32.0% of the individuals. This was closely followed by Mandiri members, who made up 30.4% of the group.

Factors related to the incidence of out of pocket

A study on 253 respondents revealed that nearly a third (31.62%) experienced out-of-pocket healthcare expenses (Table 2). These costs were most frequently reported by individuals who visited clinics and by those in the 18-32 age group. The data also indicated that self-payments were more common among women with either a high school or college education. The highest incidence of these additional costs occurred in the Rp. 2,000,000 to Rp. 3,000,000 income bracket. Furthermore, participants with PPU status—which includes a range of insurance types like PBI, Askes, and Jamsostek—were the most likely to have self-funded expenses, accounting for more than 50% of the cases. Interestingly, the rate of out-of-pocket spending was consistent across all treatment classes.

The research established a clear link between certain demographic factors and the likelihood of incurring OOP costs. A bivariate analysis showed a significant relationship between these expenses and two key variables: the type of health facility visited and the respondent's membership status. In contrast, factors such as age, gender, education, occupation, income, and treatment class did not show a statistically significant relationship. A subsequent logistic regression analysis further confirmed this, with an R^2 value of 0.701 indicating that demographics account for 70.1% of the influence on out-of-pocket spending (Table 2). The findings highlight that the type of health facility, particularly pharmacies, and membership status are the most influential factors in predicting these expenses.

Discussion

Evidence shows that health insurance expansion does not automatically guarantee financial protection. In high- and middle-income countries alike, individuals enrolled in private or employment-based insurance schemes often face higher out-of-pocket (OOP) expenditures than those in publicly subsidized programs. Studies from the United States and Ireland reveal persistent OOP burdens among privately insured populations [18-20], while research in China and the Philippines highlights that OOP spending remains substantial among urban and middle-income groups despite national insurance coverage [21-23].

These findings suggest that financial protection depends not only on coverage breadth but also on how benefits are financed and delivered. Indonesia's NHI reflects this challenge under Presidential Regulation No. 82 of 2018 [24]. Although NHI has expanded coverage to over 90% of the population, the persistence of OOP expenditure indicates gaps in benefit depth, reimbursement mechanisms, and provider incentives. The primary-care capitation payment model and performance-based financing were designed to promote efficiency and accountability, yet implementation remains uneven across regions and facility types, particularly among private clinics [15,25,26].

The present study results align with previous findings, which also found higher OOP spending in occupational groups that had promising jobs and high income. It was caused by adequate access to health services so that the utilization of health facilities was high. In contrast to low-income groups or those classified as poor, the low out-of-pocket rate is due to rarely using health facilities due to limited ability to pay health costs [27,10,28].

Unlike previous studies conducted in Nepal and China, this study found no significant relationship between the incidence of OOP and age. Based on those studies, people over 65 years experience out-of-pocket more frequently due to chronic diseases that require higher health care costs such as inpatient hospital fees and medicines, which often causes poverty [29-32].

Table 1. The distribution of respondent's sociodemographic characteristics

No.	Sociodemographic Characteristics (n=253)	Percent (n)
1.	Type of health facilities	
	Pharmacy	22.1 (56)
	Clinic	49.8 (126)
	Primary healthcare	28.1 (71)
2.	Age (years)	
	18 – 32	31.6 (80)
	33 – 47	27.7 (70)
	48 – 62	25.7 (65)
	>62	15.0 (38)
3.	Gender	
	Male	33.6 (85)
	Female	66.4 (168)
4.	Education levels	
	Elementary	11.5 (29)
	Junior high school	6.7 (17)
	Senior high school	46.6 (118)
	College	33.6 (85)
	Other	1.6 (4)
5.	Occupation	
	Student	9.1 (23)
	Entrepreneur	9.9 (25)
	Civil servants	16.2 (41)
	Private employees	17.0 (43)
	Other	47.8 (121)
6.	Income levels	
	< Rp 1.000.000	29.2 (74)
	Rp 1.000.000 – Rp 2.000.000	19.8 (50)
	Rp 2.000.000 – Rp 3.000.000	25.3 (64)
	Rp 3.000.000 – Rp 4.000.000	11.9 (30)
	> Rp 4.000.000	13.8 (35)
7.	Membership status	
	Penerima Biaya Iuran (PBI)	13.8 (35)
	Askes	32.0 (81)
	Jamsostek	20.9 (53)
	Health insurance for the police officer and national army	2.8 (7)
	Mandiri	30.4 (77)
8.	Treatment class	
	Class I	32.8 (83)
	Class II	32.0 (81)
	Class III	35.2 (89)

Table 2. Out-of-pocket incidence and factors related

Characteristics	Out-of-Pocket Incidence				Chi Square p-value	Logistic Regression p-value	Exp (B)
	Yes		No				
	n	(%)	n	(%)			
Type of health facilities					0.004		
Pharmacy	11	19.64	45	80.36		0.103	0.462
Primary healthcare	17	23.94	54	76.06		0.319	1.441
Clinic	52	41.27	74	58.73		0.018	
Age (years)					0.463		
18 – 32	28	35.00	52	65.00			
33 – 47	25	35.71	45	64.29			
48 – 62	16	24.62	49	75.38			
>62	11	28.95	27	72.05			
Gender					0.143		
Male	32	37.65	53	62.35			
Female	48	28.57	120	71.43			
Education Levels					0.240		
Elementary	3	10.34	26	89.66			
Junior high school	4	23.53	13	76.47			
Senior high school	36	30.51	82	69.49			
College	36	42.35	49	57.65			
Other	1	25.00	3	75.00			
Occupation					0.072		
Student	9	39.13	14	60.87		0.165	2.008
Entrepreneur	11	44.00	14	56.00		0.067	2.441
Civil servants	14	34.15	27	65.85		0.458	0.683
Private employees	18	41.86	25	58.14		0.075	2.103
Other	28	23.14	93	76.86		0.106	
Income Levels					0,297		
< Rp 1.000.000	18	24.32	56	75.68			
Rp 1.000.000 – Rp 2.000.000	15	30.00	35	70.00			
Rp 2.000.000 – Rp 3.000.000	20	31.25	44	68.75			
Rp 3.000.000 – Rp 4.000.000	12	40.00	18	60.00			
> Rp 4.000.000	15	42.86	20	57.14			
Type of JKN membership					0.040		
Penerima Biaya Iuran (PBI)	4	11.1	31	23.9		0.039	0.282
Askes	30	25.6	51	55.4		0.183	1.735
Jamsostek	16	16.8	37	36.2		0.389	0.702
health insurance for the police officer and national army	4	2.2	3	4.8		0.147	3.981
Mandiri	26	24.3	51	52.7			
Participation status					0.430		
PPU	51	35.17	94	64.83			
PBPU/BP	25	32.89	51	67.11			
PBI JK	4	12.5	28	87.5			
Treatment class					0.346		
Class I	29	34.94	54	65.06			
Class II	28	34.57	53	65.43			
Class III	23	25.84	66	74.16			

Note: PPU = Pekerja Penerima Upah (Salaried Worker registered by employer); PBPU = Pekerja Bukan Penerima Upah (Non-Salaried Worker, such as self-employed or professionals); BP = Bukan Pekerja (Non-Worker, such as investors or retirees); PBI JK = Penerima Bantuan Iuran Jaminan Kesehatan (Premium Assistance Recipients for Health Insurance)

Similar cases have been documented in other countries. A study linking the use of health facilities with the incidence of out-of-pocket in Sri Lanka states that 92% of excessive health expenditures are found in patients who use private health facilities [32]. In Indonesia, 70% of out-of-pocket incidents are found in public hospitals, and 83% in private hospitals. Statistically, the probability of the incidence of out-of-pocket is higher in private health facilities than in other types of health facilities [32]. Studies have described that the implementation of NHI does not always lead to a decrease in out-of-pocket because of the moral hazard of stakeholders in health facilities [33,34,28]. Besides, another cause that induces the incidence of out-of-pocket is the pattern of drug use in health facilities and duplication of drugs in prescriptions [35]. Improvements in government policies regarding service policies in health facilities including increasing budget allocations and evaluation of services in health facilities by both the government and researchers are important to reduce the incidence of out-of-pocket.

Persistent OOP spending under NHI is closely linked to systemic issues within Indonesia's health financing ecosystem. Limited drug availability in the e-catalogue and frequent stock-outs at primary facilities often compel patients to purchase medicines independently, while delayed insurance claim payments strain provider cash flow and encourage informal charging. Inadequate capitation rates and complex referral requirements further discourage patients from fully utilizing covered services. These barriers are more pronounced in subnational areas like Bandar Lampung, where disparities in infrastructure and provider distribution restrict access to contracted facilities. Our findings that OOP incidence was higher among patients visiting clinics and among certain membership categories (Mandiri and PBI) support this interpretation. Variations in OOP expenditure among PBI, Mandiri, and PPU members reflect unequal benefit depth and utilization patterns. PBI beneficiaries may still pay for unavailable medicines or non-contracted services, while Mandiri members, who prefer private facilities, are exposed to greater out-of-pocket costs. Such disparities show that coverage expansion alone does not guarantee equitable financial protection under NHI [13,36,37,11].

These findings reflect systemic inequities. Addressing them requires policy reforms that strengthen medicine procurement, ensure timely claim settlement, revise capitation formulas to reflect regional cost variations, and expand contracting with private providers. Such measures are essential to advance universal health coverage (UHC) by enhancing equity, reducing OOP burden, and ensuring that NHI delivers real financial protection for all Indonesians [36-39].

Conclusion

This study highlights that out-of-pocket (OOP) health spending remains a major challenge among NHI participants in Bandar Lampung City, particularly among patients seeking care at private clinics. Although NHI has expanded population coverage, the persistence of OOP payments underscores ongoing systemic gaps in benefit depth, provider reimbursement, and essential medicine availability. These findings reveal that weaknesses in the capitation-based payment system, delays in claim settlements, and limited drug procurement through the e-catalogue continue to undermine the program's goal of financial protection. Strengthening provider payment adequacy, improving supply chain management, and expanding contracting with private facilities are therefore critical to reduce OOP spending. Further research on provider behavior, information asymmetry, and health-seeking patterns is also needed to inform more equitable and sustainable NHI reforms toward universal health coverage.

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Declaration of interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Author contributions

ADA: Conceptualization, Methodology, Resources, Supervision, Project administration, Funding acquisition, Writing – review & editing; IAS: Conceptualization, Methodology, Formal analysis, Investigation, Data curation, Writing – original draft, Writing – review &

editing, Visualization; D: Investigation, Data curation, Writing – review & editing

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