



Article

# Assessing Determinants of Compliance with Contribution Payment for the National Health Insurance among Informal Workers in Indonesia

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**Abstract:** This study aimed to investigate the determinants of compliance with contribution payment for the National Health Insurance among informal workers in Bogor Regency, West Java Province, Indonesia. Surveys of 418 informal workers in Bogor Regency from April to May 2023 were conducted. Multivariate logistic regression analyses were performed to assess the factors associated with informal workers' compliance with contribution payment. The results revealed that being female, having secondary education or below, perceiving to have a good health status, having a negative attitude towards and poor knowledge of the NHI, ever experiencing financial difficulties, preferring to visit other types of health facilities than public ones, and utilizing fewer outpatient services were significantly associated with the non-compliance of informal workers with the NHI contribution payment. It was concluded that economic factors alone cannot contribute to informal workers payment compliance with the NHI contribution. Motivational factors (knowledge, attitude towards the insurance system, and self-related health status) simultaneously encourage respondents to comply with the contribution payment. Enhancing people's knowledge, especially the risk-sharing concept of the NHI, should be done through extensive health insurance education using proper methods subject to the population's characteristics.

Keywords: informal workers; National Health Insurance; payment compliance

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## 1. Introduction

Having prioritized achieving Universal Health Coverage (UHC), low- and middle-income countries (LMICs) have faced various obstacles. Many health care systems' ability to provide access to high-quality health care services has been hampered by a lack of pre-payment mechanisms as well as the lack of tools and resources to pool risks. As a result, many health systems in low- and middle-income countries (LMICs) have relied heavily on out-of-pocket (OOP) spending to pay for medical care for decades [1], which accounts for 30% to 85% of the entire cost of health care. At the end, these countries are financially burdened by catastrophic illnesses as a result of high out-of-pocket charges [2]. It was reported that around 808 million people in 2010 incurred catastrophic health care spending [3], which had been increasing constantly between 2000 and 2017 [4]

Social Health Insurance (SHI), which contains contribution and non-contribution schemes, has been shown to be the most used strategy for generating income and pulling funds to pay for medical services, as lessons learned from numerous countries that have

effectively implemented UHC [5]. Positive impacts are seen after the SHI's implementation, including the increasing of health care utilization [6, 7, 8], improving health quality [9, 10], reducing in OOP [11], and health care expenditures covered by the SHI [12]. However, several challenges had arisen for the contribution scheme of SHI, namely, low enrollment [13, 14], adverse selection [15, 16], and dropout participants [17, 18], particularly among informal workers.

Indonesia has been striving to achieve universal health coverage (UHC) since 2002 and has taken an advanced step by implementing the SHI named National Health Insurance (JKN) since 2014 [17], which was noted as the largest single-payer scheme in the world, supervised by the Social Security Agency for Health (SSAH). The eligibility of inpatient services was divided into three classes of membership: class 1 (contribution amount of USD 9.92 per person) for the formal sector salaried above USD 264.6 and the informal sector; class 2 (contribution amount of USD 6.61 per person) for the formal sector salaried equal to USD 264.6 or less and the informal sector; and class 3 (contribution amount of USD 2.77 per person) for the poor and vulnerable group, or informal sector. While the contribution of the formal sector was paid proportionally (1% paid by the employee and 4% paid by the employer), the poor and vulnerable were paid by the government, and the informal sector paid the contribution themselves, except for class 3, for whom the government provided subsidies of about 16.6% of the contribution [19]. All family members' contributions were bound together as one.

Following the NHI's implementation, the NHI's coverage increased rapidly from 66.5% in 2016 to 91.7% by December 2022, and the total contribution revenue increased from USD 5 billion in 2016 to USD 8.2 billion. Along with that, health care expenditure rose from USD 5 billion in 2016 to USD 7.3 billion in December 2022 [20, 21]. Despite the positive effects, the financial sustainability issue of the NHI program remain concerning due to the increased number of non-compliant PBPUs participants (informal workers) paying the NHI contribution [19]. Among 12.3% of the informal workers who registered NHI as PBPUs members, 51% of them were recorded to have stopped making the NHI contribution by December 2022 [21]. The average medical cost to average contribution ratio reported increased from 115% by 2015 to 124% by 2019, driven by the informal workers, who previously did not pay the contribution regularly; this ratio is supposed not to exceed 100% [22].

Banerjee et al. [23] stated that enforcing the members in the contributory scheme by implementing several sanctions might turn out to be a toothless mandate and create low program enrollment, adverse selection, and a tendency to discontinue paying the NHI membership, especially among informal workers [17, 18]. Lack of money to pay the contribution [17, 24], an unaffordable contribution [18], not needing insurance again after rare illness episodes (usually among the young) [25], perceived poor quality of service of the providers [26], forgetting to pay [18], and a negative providers' attitude [25] are several justifications for their decision to be non-compliant participants. On the other hand, Dartanto et al. [17] stated that the irregularity of income characteristic of informal workers influences their economic capability more than their household monthly income. The insecurity of receiving the same amount each month, despite the fact that informal employees can earn more money at once, makes it challenging to pay the NHI contributions, which must be made on time each month.

For years, SSAH had experienced financial hardship and struggled to provide health care services due to the imbalance of revenue collection in the NHI and increased health care spending [27]. Although the government has regulated various regulations to enlighten the non-compliant participants and provide conveniences for them to pay the arrears effortlessly, these have not had a significant impact, and the number of non-compliant participants has continued to rise.

Moreover, characteristics relating to the family members' perceived health risks appeared to receive less attention in the earlier study. Most of the previous studies measured these factors as individuals, while the health insurance scheme was family-based. Having

one or more family members with health risks might motivate the participants to adhere to the NHI contribution payment [26, 28] due to a greater demand for health insurance, which is a solution to increase access to formal care and reduce out-of-pocket expenses [29]. By counting the factors related to the health risks faced by family members, this study aims to investigate the determinants of compliance with the NHI contribution payment among informal workers in Indonesia.

## 2. Materials and Methods

### 2.1. Study design and participants

This research was conducted as a quantitative cross-sectional study through face-to-face surveys from April 2023 to May 2023. The questionnaires were modified from previous studies [13, 17, 30].

Figure 1 describes the methodology for selecting the study area. Java Island was deliberately chosen. To select the region, preliminary data on non-compliant informal workers in all areas of Java Island was provided by the SSAH office, with the highest number of non-compliant informal worker participants as a prerequisite. Consequently, Bogor Regency was selected among 34 cities and 85 regencies, with a total of 596 thousand non-compliant informal worker participants among 1 million informal worker participants (a rate of 59.35%). After that, two districts in urban and rural areas were randomly selected. Further, conforming to the availability of the SSAH office, three wards and nine villages were approached. The list of informal worker participants from the SSAH database was subsequently synchronized with the local government database. A quota sampling method of approximately 50% of each characteristic (compliance and non-compliance) was utilized to obtain the representative sample. Lastly, as a household unit, the participants were chosen randomly.

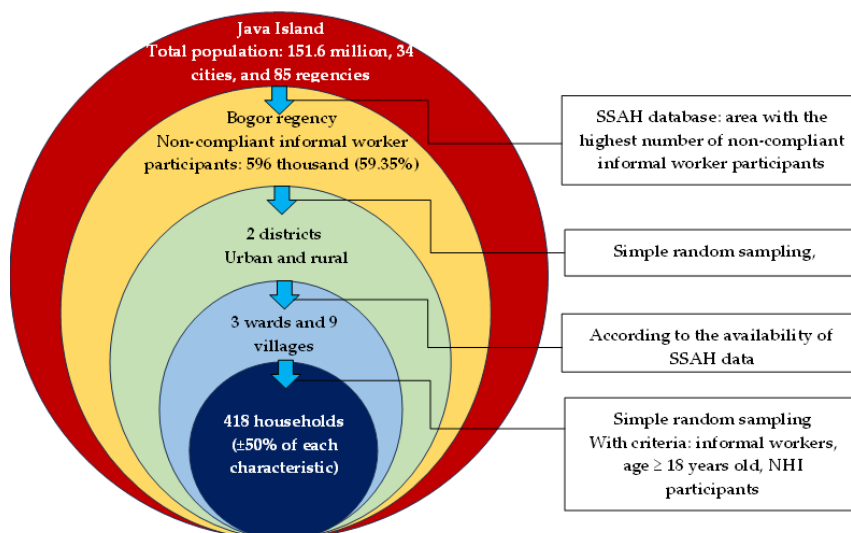


Figure 1. Sampling flow of the study

The formula proposed by Rea [31] was used to determine the sample size. It was decided to use a 95% confidence interval with a 5% (MEp) allowable error. The level of non-compliance was set at 50% in order to enable the collection of a large sample size (p). The sample size was increased by 10% to account for non-responding participants, resulting in 422 people in the final sample size. Informal workers who had registered as PBPU NHI participants, were at least 18 years old, and are willing to engage in a survey with written consent were included in this study.

### 2.2 Variable measurement

To conduct the study, a theory of motivation-opportunity-ability (MOA) by Folke Olander and John Thogersen [30] was adapted to describe the association between independent variables and the compliance of the participants in paying the NHI contribution.

#### *2.2.1 The compliance with the NHI contribution payment*

The participants' compliance with paying the NHI contribution was reflected in their NHI membership status, either active or non-active. Participants with an active NHI status were considered compliant, and those with a non-active NHI membership status were considered non-compliant. The validation of the informal worker's NHI membership status was determined from the data list of informal worker participants and their NHI membership status provided by the BPJS Kesehatan or mobile JKN application.

#### *2.2.2 Sociodemographic characteristics*

In this section, six questions pertaining to the participants' general information, including their living region (urban or rural), age, gender, education, occupation, and family size, were asked.

#### *2.2.3 Motivational factors*

There are three subsections under the heading of motivation factors. First, the perceived health risks faced by the family members were consisted of five questions, adapted from Ashagrie et al. [28], including the self-rated health status, the presence of family members suffering from a chronic disease, recent illness history, the presence of the elderly in the family, and the presence of children under five years of age. The self-rated health status in this section included the health status of all family members, scaled from very poor (scored as 1) to very good (scored as 5), with the average total score used for categorizing. This was based on the consideration of the possibility that another family member's health status might affect the decision to pay the contribution, as the contribution payment is family-based. Second, seven scaled statements, modified from Kaso et al. [32], were performed to measure the perceived quality of service provided by the providers, with a Cronbach alpha of 0.89. Lastly, attitude towards NHI was comprised of six Likert scale statements, adapted from a previous study [32], with a Cronbach alpha of 0.91. Medians of the total score were used for categorizing both variables.

#### *2.2.4 Opportunity factors*

The opportunity factors contain two subsections. First, access to the health facilities was divided into two categories: less than 30 minutes and equal to 30 minutes or above, according to the average walking velocity of young adults [33]. Second, the health care service utilization was composed of five questions related to treatment seeking behavior, the type of health facilities visited, the outpatient and inpatient services visited in the last twelve months et al. [34], and the cost incurred prior to joining the NHI, which were adapted from Eseta et al. [35].

#### *2.2.5 Ability factors*

Two subsections were covered in the ability factors. Knowledge of the NHI program is assessed with ten questions related to the NHI program with domains: the basic principle of NHI's implementation, the aim of the NHI, the contribution amount, the inpatient-fine charge, the benefit package, the cost-sharing payment concept, and the risk-sharing concept, adapted from previous studies [32, 36]. The correct answer scored 1, and the incorrect answer scored 0. Income stability was measured by using closed-ended binary questions related to the determination of income received each month and the experience of having financial difficulties.

### *2.3. Data collection*

Face validity and content validity were performed to validate the questionnaire. The meaning, difficulty, and ambiguity of each questionnaire item were evaluated by four experts in related fields. The item-objective congruence (IOC) score was calculated, and a score equal to 0.5 or greater than 0.5 was considered acceptable. Consequently, one question related to their NHI card number was removed due to a score of  $IOC < 0.5$ . In addition, a pre-test of 30 informal worker participants in another area with similar characteristics to the study area was conducted to measure the reliability of the questionnaire.

Afterwards, with approval from the Committee for Research Ethics of Mahidol University Social Science Independent Review Board COA No. 2023/059.1904, a data request support letter for informal workers registered as NHI participants to the related department in BPJS Kesehatan (SSAH) was issued. The list of informal worker participants was provided by the Cibinong branch office of BPJS Kesehatan and held by the NHI cadres to maintain confidentiality, and their addresses and availability were subsequently synchronized with the local government's data. Four trained research assistants holding a bachelor's degree collected the data through face-to-face interviews using paper-based questionnaires, accompanied by NHI cadres. Before collecting the data, the objectives of the study were briefly described, and the respondent's agreement to participate in the survey was asked by signing the written consent letter. Respondents were given a code with a number according to their order on the respondent's list. Further, all data collected was rechecked for completeness daily. Some of the inappropriate data was confirmed by using the mobile JKN application.

#### 2.4. Statistical analysis

SPSS version 21 (IBM Corp., Armonk, NY, USA) was applied for data analysis. The results were presented in numbers, percentages, means, medians, standard deviations or quartile deviations, and ranges. The associations between the determinant factors and the payment compliance of the respondents in paying the premium were assessed by chi-square tests. Further, the predictors of the outcome variable were evaluated through multivariate logistic regression at a 0.5 significance level. Multicollinearity among independent variables was determined by measuring the coefficient value of the Spearman correlation test. A coefficient value of less than 0.75 indicated that there was no strong association between independent variables.

### 3. Results

#### 3.1. Descriptive results of independent variables

A total of 431 participants took part in the surveys from three wards in Cibinong District (an urban area) and nine villages in Bojonggede District (a rural area). About 418 complete questionnaires were entered in the data analysis, while 13 incomplete data were excluded. With regards, the results showed that 51.7% of the participants reported not complying with paying the NHI contribution, while their counterparts were about 48.3%.

Table 1 illustrates the sociodemographic characteristics of the participants. It was reported that 50.5% of the participants lived in rural areas, and 49.5% lived in urban areas. Most of the participants were in the 36–45 age group (38.5%), males (62.9%), and completed higher than secondary education (71.3%). Participants who worked in the service sector and industry sector were around 46.7% and 14.4%, respectively, whereas 39.0% worked in the other sectors. More than half of the participants (58.1%) had a family size equal to four family members or above.

As shown in Table 2, according to the perceived health risks faced by family members, less than one-third of the participants admitted to having a poor health status (27.0%), while more than two-thirds admitted their family was healthy (73.0%). The majority of the respondents did not have any family members who had experienced illness recently and did not have a chronic disease (88.3% and 80.4%, respectively). Only a few (9.1%) of the respondents had one or more elderly people in their family. Similarly, less

than one-third (23.4%) of the participants had one or several children under five in their family.

Overall, the participants indicated having a good perception of the quality of service provided by the providers (67.9%), a positive attitude towards NHI (53.6%), and a good understanding of the NHI program (68.2%). Details are described in Table 3. Similarly, in the perceived quality of services provided by the provider variable, nearly half of the participants were unsure about their satisfaction related to the waiting time at the outpatient service, while most of them agreed with the other six positive statements (Table 4). In their attitude towards NHI, around one-third (31.8%) of them reported not being sure regarding the improvement of drug availability after the NHI's implementation (Table 5). Besides, none of the participants strongly disagreed with each statement about the perceived quality of services provided by the provider and their attitude towards NHI. For knowledge about the NHI program, less than half of the respondents were able to answer a question related to service coverage in contract and non-contract health facilities correctly (34.7%), whereas for the other questions, the majority of them could answer correctly (Table 6).

**Table 1.** Sociodemographic characteristics (n = 418)

Characteristics	Frequency (n)	Percentage (%)
Area		
Rural	211	50.5
Urban	207	49.5
Age (years)		
18-35	100	23.9
36-45	161	38.5
> 45	157	37.6
Gender		
Male	263	62.9
Female	155	37.1
Education level		
Primary school or less	54	12.9
Secondary school	66	15.8
Higher education	298	71.3
Occupation		
Industry sector	60	14.4
Service sector	195	46.7
Others	163	39.0
Family size (members)		
< 4	175	41.9
≥ 4	243	58.1

**Table 2.** Perceived health risk faced by family members

Characteristics	Frequency (n)	Percentage (%)
Self-rated health status		
Poor	113	27.0
Good	305	73.0
Recent illness experience		
No	369	88.3
Yes	49	11.7
The presence of family member with a chronic disease		
No	336	80.4
Yes	82	19.6
The presence of elderly people		
None	380	90.9
One or several	38	9.1

The presence of children under the age of five		
None	320	76.6
One or several	98	23.4

**Table 3.** Level of participants perception of the quality of service provided by the providers, attitude towards NHI, and knowledge of the NHI program (n = 418)

Items	Number (n)	Percentage (%)
Perceived quality of service provided by the provider		
Poor	134	32.1
Good	284	67.9
Median 26, Q.D 1.5, Range 17-35		
Attitude towards NHI		
Negative	194	46.4
Positive	224	53.6
Median 24, Q.D 1, Range 13-30		
Knowledge of the NHI program		
Poor	133	31.8
Good	285	68.2
Median 8, Q.D 1.5, Range 1-10		

**Table 4.** Perceived quality of service of the providers (n = 418)

Items	Disagree n (%)	Neutral n (%)	Agree n (%)	Strongly Agree n (%)
The health service providers provide equal treatment to NHI and non-NHI participants.	39 (9.3)	61 (14.6)	312 (74.6)	6 (1.4)
The physician visited you or your family frequently when you or your family were hospitalized.	6 (1.4)	105 (25.1)	303 (72.5)	4 (1.0)
The physicians clearly described your or your family’s disease (the cause and the treatment process).	5 (1.2)	76 (18.2)	333 (79.7)	4 (1.0)
The physician was available according to the polyclinic schedule.	13 (3.1)	81 (19.4)	322 (77.0)	2 (0.5)
The provider’s staff (the physicians, the nurses, the administration officers, and other hospital staff) served you or your family friendliness.	3 (0.7)	133 (31.8)	278 (66.5)	4 (1.0)
The waiting time from registration until the physician served you at the outpatient service satisfied you.	109 (26.1)	178 (42.6)	128 (30.6)	3 (0.7)
The provider’s staff gave clear information (direction to get the services) and handled your or your family’s yelps well.	1 (0.2)	148 (35.4)	266 (63.6)	3 (0.7)

**Table 5.** Attitude towards NHI (n = 418)

Items	Disagree n (%)	Neutral n (%)	Agree n (%)	Strongly Agree n (%)
NHI makes health care affordable.	1 (0.2)	44 (10.5)	363 (86.8)	10 (2.4)
NHI reduces the burden of health care spending.	1 (0.2)	42 (10.0)	364 (87.1)	11 (2.6)
NHI increases access to health care services.	0 (0.0)	54 (12.9)	357 (85.4)	7 (1.7)
The quality of services provided by the provider had improved after the NHI implementation.	17 (4.1)	91 (21.8)	305 (73.0)	5 (1.2)
The availability of drugs at the health facilities had improved after the NHI’s implementation.	38 (9.1)	133 (31.8)	244 (58.4)	3 (0.7)
The NHI Committee (SSAH) manages pooled funds very well.	10 (2.4)	87 (20.8)	318 (76.1)	3 (0.7)

**Table 6.** Knowledge of the NHI program

Items	Correct	
	Number (n)	Percentage (%)
The principle of NHI is mutual cooperation.	388	92.8

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The aim of the NHI is to protect people from falling into poverty if they suffer from diseases, especially diseases with high costs.	392	93.8
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Table 6. Cont.

Items	Correct	
	Number (n)	Percentage (%)
The monthly contribution of the 3 <sup>rd</sup> class of NHI is IDR 35 thousand, the 2 <sup>nd</sup> class of NHI is IDR 100 thousand, and the 1 <sup>st</sup> class of NHI is IDR 150 thousand.	364	87.1
The monthly contribution amount must be paid no later than the 10 <sup>th</sup> day of each month.	348	83.3
People will be fined for inpatient service fees within 45 days after the contributions or arrears are paid.	294	70.3
NHI covers health services from contract and non-contract providers.	145	34.7
NHI covers simple (example: upper respiratory infection, fever, or headache) and complex diseases (example: open heart surgery or chemotherapy), whether outpatient or inpatient services.	376	90.0
Cosmetic surgery, services that are not in accordance with the provisions, self-defeating diseases, and occupational diseases are outside the coverage of the NHI.	241	57.7
Cost sharing will be charged for executive clinics and room type upgrades for inpatient health services.	242	57.9
If you never use NHI to get treatment, your money for paying the contribution will not be returned.	382	91.4

The majority of the participants admitted to not having a fixed amount of monthly income (89.7%) and having experienced financial difficulties (77.5%). In the health care service utilization factors, more than three-quarters of the participants (75.6%) could access the health facilities from their homes in less than 30 minutes, while 24.4% of them took 30 minutes or more. Most of the participants visited the health facilities if they were sick (84.7%) and preferred to choose public (58.1%). Even so, only a few of them utilized outpatient services equal to four or above (15.6%) and utilized inpatient services once or more (11.0%). About 89.5% of the participants admitted spending equal to IDR 1 million or less for inpatient services prior to joining NHI (Table 7).

Table 7. Income stability and health care service utilization

Characteristics	Frequency (n)	Percentage (%)
<b>Income stability</b>		
Have a fixed amount of income per month		
No	375	89.7
Yes	43	10.3
Experienced financial difficulties		
No	94	22.5
Yes	324	77.5

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Table 7. Cont.

Characteristics	Frequency (n)	Percentage (%)
<b>Health care service utilization</b>		
Distance to reach the health facilities (in minute)		
< 30 minutes	316	27.0
≥ 30 minutes	102	73.0
Median 20, Q.D 5, Range 5-120		
Treatment seeking behavior		
No	64	88.3
Yes	354	11.7
The type of health facilities visited		
Public	243	27.0
Private	138	73.0
Others	37	
Outpatient services utilization in the last 12 months		
Never or once	353	88.3
More than once	65	11.7
Inpatient services utilization in the last 12 months		
Never	372	80.4
Once or more	46	19.6
Cost incurred for the inpatient service prior to joining NHI		
IDR ≤ 1 million	374	89.5
IDR > 1 million	44	10.5

### 3.2. Association between independent variables and compliance with the NHI contribution payment

The chi-square tests, bivariate analysis, and multivariate analysis were performed in Table 8. The chi-square tests were conducted to assess the association between the independent variables and the participants' compliance with contribution payment for the NHI. Furthermore, the multicollinearity among independent variables was determined by the Spearman correlation test. The coefficient value of the Spearman correlation test should not be greater than 0.75. The result showed that none of the independent variables had a coefficient value greater than 0.75.

The final model multivariate logistic regression results implied that female informal workers were 6.56 times ( $p < 0.001$ ) less likely to comply with paying the NHI contribution compared to their counterparts. Informal workers who completed secondary education or lower were found to be 7.52 times less likely to comply with the NHI contribution payment compared to those who completed higher education levels ( $p < 0.001$ ). Being healthy influenced the non-compliance of informal workers in paying the NHI contribution 5.18 times ( $p < 0.001$ ). Further, having a negative attitude towards NHI and poor knowledge of the NHI program contributed to the non-compliance of informal worker payment with the NHI contribution payment about 2.66 times ( $p < 0.050$ ) and 4.94 times ( $p < 0.004$ ), respectively. Ever experienced financial difficulties made a higher probability of being less likely to comply about 4.64 times with the NHI contribution payment ( $p < 0.005$ ). Likewise, informal workers who preferred to go to other types of health facilities rather than public health facilities to seek treatment were 4.55 times ( $p < 0.001$ ) less likely to comply with the NHI contribution payment. Participants who never utilized or utilized outpatient services only once in the last 12 months have an 8.35 times ( $p < 0.001$ ) lower likelihood of complying with the NHI contribution payment as opposed to those who utilized them more.

**Table 8.** Multiple logistic regression of the association between independent variables and the informal worker's compliance with the NHI contribution payment (n = 418)

Variables	Payment compliance		CORa (95% CI)c	p-Value	AORb (95% CI)	p-Value
	Compliance (%)	Non-compliance (%)				
Age (years)						
18-35	32.0	68.0	2.69 (1.59-4.54)	0.001		
36-45	55.9	44.1	1			
> 45	51.0	49.0	1.22 (0.78-1.89)	0.377		
Sex						
Male	65.8	34.2	1		1	
Female	18.7	81.3	8.35 (5.18-13.46)	< 0.001	6.56 (2.59-16.61)	< 0.001
Education level						
Secondary or below	5.8	94.2	30.56 (13.73-68.00)	< 0.001	7.52 (2.39-23.57)	0.001
Higher than secondary	65.4	34.6	1		1	
Self-rated health status						
Poor	82.3	17.7	1		1	
Good	35.7	64.3	8.36 (4.88-14.30)	< 0.001	5.18 (1.55-17.30)	0.007
The presence of family member with a chronic disease						
No	43.5	56.5	2.80 (1.67-4.68)	< 0.001		
Yes	68.3	31.7	1			
The presence of elderly people						
None	52.1	47.9	1			
One or several	10.5	89.5	9.24 (3.21-26.56)	< 0.001		
The presence of children under the age of five						
None	51.9	48.1	1			
One or several	36.7	63.3	1.85 (1.16-2.95)	0.009		
Perceived quality of services provided by the provider						
Poor	29.1	70.9	3.28 (2.11-5.09)	< 0.001		
Good	57.4	42.6	1			
Attitude towards NHI						
Negative	32.5	67.5	3.40 (2.27-5.09)	< 0.001	2.66 (1.00-7.11)	0.050
Positive	62.1	37.9	1		1	
Knowledge of NHI						
Poor	14.3	85.7	10.76 (6.25-18.52)	< 0.001	4.94 (1.66-14.67)	0.004
Good	64.2	35.8	1		1	
Fix income						
No	53.1	46.9	1			
Yes	7.0	93.0	15.07 (4.58-49.58)	< 0.001		
Experienced financial difficulties						
No	84.0	16.0	1		1	
Yes	38.0	62.0	8.60 (4.74-15.61)	< 0.001	4.64 (1.59-13.56)	0.005
Distance of health facilities (minutes)						
< 30	55.1	44.9	1			
≥ 30	27.5	72.5	3.23 (1.98-5.27)	< 0.001		
Treatment-seeking behavior						
No	20.3	79.7	4.49 (2.36-8.55)	< 0.001		
Yes	53.4	46.6	1			
The type of health facilities visited						
Public	67.9	32.1	1		1	
Others	23.4	76.6	6.95 (4.48-10.77)	< 0.001	4.55 (1.92-10.77)	0.001
Outpatient services utilization in the last 12 months						
Never or once	29.4	70.6	8.10 (5.15-12.73)	< 0.001	8.35 (3.02-23.06)	< 0.001
More than once	77.1	22.9	1		1	

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Table 8. Cont.

Variables	Payment compliance		CORa (95% CI)c	p-Value	AORb (95% CI)	p-Value
	Compliance (%)	Non-compliance (%)				
Inpatient services utilization in the last 12 months						
Never	45.4	54.6	3.04 (1.55-5.97)	0.001		
Once or more	71.7	28.3	1			

Notes: a = crude odds ratio, b = adjusted odds ratio, c = confidence interval

#### 4. Discussion

Indonesia, a low-middle-income country that is heavily populated and has been planning to attain UHC since 2002, performed the National Health Insurance entitled Jaminan Kesehatan Nasional (JKN) 2014 under the SSAH supervision, which is the largest single payer in the world, as part of its ambitious national health insurance program. Despite this, providing accessible and affordable health care services appeared to be a challenge due to the high percentage of informal workers who did not comply with paying the NHI contribution, which increased the financial burden placed on SSAH due to the imbalance between its revenue and health care spending. Hence, the factors that affect informal workers compliance with the NHI contribution payment are important to investigate.

In accordance with the results of the multivariate analysis, females were 6.56 times ( $p < 0.001$ ) less likely to comply with paying the NHI contribution compared to their counterparts, which is contrary to the finding from a study done in northwest Ethiopia [28] that showed females, as the vulnerable group, were more likely to comply with paying the NHI contribution. On the other hand, Roy and Jain found that women's financial literacy was dissatisfying. The lack of precision in insurance, saving, and investment might have influenced their perception and affected how they view the significance of maintaining active insurance [37]. Completing education at the secondary level or lower has a significant effect of 7.52 times ( $p < 0.001$ ) on informal workers' non-compliance with paying JKN contributions compared to those who have completed education higher than the secondary level. A higher education level might generate a higher income, easier access to media to gather information, and a more comprehensive understanding of the benefits of having health insurance [38].

Since the NHI is a family-based program, we deduce that the desire to make contributions may be sparked by health issues affecting family members other than the family head. In concurrence, the current study assesses the whole family member's health status by utilizing the mean score for categorization to evaluate the health status of the household. This complements the ideas of the majority of similar studies, which merely measure the decision-maker's health state, which might not accurately reflect that person's motivation for the same variable. The study finding implies that informal workers who assumed their family was in good health were 5.18 times ( $p 0.007$ ) less likely to comply with the NHI contribution payment. [39]. This was in line with research from Ghana [29]. As stated by Grossman [40], a person's capacity, willingness to pay, and conviction that they need or do not require health all have an impact on demand. In fact, due to their higher risk [41], vulnerable and high-risk groups demanded health care more than those who were healthy [40] and were more justified in purchasing more health insurance [42] to improve access to formal care and lower out-of-pocket costs [29]. Conversely, it could have been predicted that health insurance would be less advantageous for health groups as their demand for health declined [39].

Further, a higher probability of not complying was noted among informal workers who have a negative attitude towards the NHI, about 2.66 times ( $p 0.050$ ) compared to those positive ones. Supported by previous studies [28, 35] and the theory of planned behavior by Icek [43], an in-depth understanding of the NHI and trust in well-managed

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health insurance might encourage a positive attitude towards the NHI and lead to positive action to make contributors to the NHI more compliant.

The existence of elderly people and children under the age of five unexpectedly revealed negligible relationships with the informal worker's payment compliance as one of the characteristics connected to perceived family health risks. Even though having senior family members may increase the health risks that their families perceive, economic factors may have made it more difficult for them to make contributions [44]. Besides, adding family members increases the cost of the required contributions, increasing the financial burden on the family to make these payments. The NHI's billing mechanism, however, requires that all contributions from a single family be made at once.

The two opportunity factors that were strongly associated with the informal worker's compliance with paying the NHI payments were the types of health facilities used when a member of the household has a disease and the frequency of outpatient service use. Informal workers were 4.55 times ( $p < 0.001$ ) less likely to comply with the NHI contribution payment when they chose to go to other types of health facilities (private, traditional, or drug store) than the public health facilities when they had a disease. According to Sharma et al. [26], people who registered at private health facilities as their first point of contact had a higher likelihood of being non-compliant with the NHI contribution payment. They may have decided to stop offering the NHI due to service dissatisfaction [26]. Although there is a significant correlation between the type of health facilities and the informal workers' payment compliance, this study found that the perceived quality of services provided by the providers was not statistically significant, suggesting that there may be additional aspects of the type of health facilities that affect the payment compliance of the informal workers that need to be examined in future research. In addition, compared to those who used outpatient healthcare services more frequently, informal workers who used them less frequently in the previous 12 months have an 8.35 times ( $p < 0.001$ ) higher likelihood of failing to make the NHI contribution. The opportunity to learn about and appreciate the value of having health insurance may have been available to those who used healthcare services more frequently [45]. On the other hand, a study conducted in Ethiopia [28] produced the opposite results. Frequent visits to the medical facilities could exacerbate their conflicts with the doctors or the staff, leading to a lack of satisfaction with the service provided by the provider and making them less inclined to trust the health insurance system.

Concerning the ability factors, knowledge of the NHI program and the informal workers' experience of having financial difficulties were the predictors of the informal worker's payment compliance. Informal workers were 4.94 times ( $p < 0.004$ ) more likely than those who knew the NHI program well to not make the required NHI contribution payments. A similar result from previous studies supported this [32, 36]. This might be the result of those who are knowledgeable about the NHI plan having a deeper awareness of its guiding principles, benefit package, and benefits of maintaining participation in a health insurance system [32]. Another argument could be that a thorough understanding of NHI will improve their comprehension of the NHI notion of risk-sharing [28]. Payment non-compliance among informal workers was affected by their financial difficulties roughly 4.64 times ( $p < 0.005$ ) more than it was for those who had never experienced the same. A key finding from the previous study was that among informal workers, income insecurity may be a contributing factor to their financial issues. The satisfaction of one's basic requirements takes precedence for those who have struggled financially. Nonetheless, a study on household priorities and coping mechanisms in a context without universal health coverage came to a different conclusion [46]. People who have experienced a death or a sick family member have said that while money may be found, lives are precious and cannot be replaced, even when they have faced financial troubles and have less income. This implies that there are other elements besides money that influence people's decisions to get health insurance. Their drive and a key factor in keeping their health insurance may come from the awful experience of illness or death.

Several limitations were encountered in this investigation. Regarding the diversity of population characteristics in Indonesia, this study employed a small sample size and was only carried out in one region, whose results could not be generalized and did not represent the overall population of informal workers. Thus, future research was suggested to pay attention to conducting research in various regions with a large sample size. Next, the months of arrears were not specified in this study, and different lengths of time of lapsed payment might indicate different reasons for not paying the NHI contribution. It would be advantageous to obtain a more comprehensive result by including the length of the months in arrears. An initial data set related to health care service utilization is suggested for inclusion in subsequent studies to reduce recall bias, which emerged in this study. Lastly, the current study did not evaluate the home expenses and monthly revenue of informal employees. Though irregular revenue is a major problem for informal workers, applying for monthly income and household expenses will be equally crucial. Despite of these limitations, the current study provided a foremost thought by counting the perceived health risks faced by family members factors. With regards to our knowledge, we analyze each family member's health state as a motivation to comply with making contributions, which is an addition to prior studies that mostly solely assess respondents' health.

## 5. Conclusions

Indonesia has been struggling to maintain the NHI program's sustainability in order to achieve UHC since informal workers do not comply with the contributions stated in the current study. The findings show that, despite the fact that irregularity of income is a significant influencing factor, motivational factors and ability-related factors were simultaneously identified, which influenced the behavior of the informal workers to be non-compliant in paying the NHI contribution. The informal workers were less inclined to make the NHI contribution when they believed that their families were in good health, which showed a weak willingness to share the risk with those who were ill. Instead, only informal workers who utilized the health care services more frequently were more likely to comply with the NHI contribution payment than those who used them less frequently, which may indicate adverse selection. Hence, a thorough understanding of the risk-sharing concept of the NHI's participants should be taken into account to be improved by the government to raise awareness of the noteworthiness of maintaining the NHI program using appropriate methods derived from the characteristics of the population. Expanding the NHI cadre's role from simply collecting the contribution to also educating NHI's participants through a face-to-face approach for those who are poorly educated may be more practical.

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