



Demographic and economic correlates of health security in West Sumatra province - Indonesia

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ABSTRACT

Objectives: Access to health insurances could indicate the degree of health security among communities. Indonesia made a commitment to attain universal health insurance coverage by the end of 2019. However, until today it has not reached the goal of 100% coverage. Therefore, there is a need to portray the demographic and economic correlates of health insurance coverage in an area to improve health security achievement. **Methods:** This secondary analysis was based on the 2017 Indonesian national socio-economic survey conducted in the West Sumatra province. Multivariable models using logistic regression were used to estimate the odds ratios (OR) for being uninsured. **Results:** The results showed that health security, in terms of insurance coverage, was influenced by demographic and economic factors. Young and middle-aged individuals were more likely to be uninsured than older ones (OR = 1.49 and OR = 1.21, respectively). People from a lower educated family, or with lower consumption per capita have higher risk of being uninsured (OR = 3.00 and OR = 1.26, respectively). **Conclusion:** Insurance coverage was influenced by demographic and economic factors. Policymakers should consider demographic and economic factors related to the implementation of universal health coverage. Campaign about the importance of universal health coverage should reach all citizens.

1. Introduction

Health insurance is defined as coverage against the risk of incurring medical and related financial cost, and it is one of the ways people pay for their medical needs in various country [1]. Previous research showed that people's access to health insurances was influenced by many factors such as age, sex, education, socio-economic condition and people healthy behaviour [2]. Access to health insurances shows the degree of health security among communities [3]. Some studies suggest that learning about population dynamics such as demographic and economic correlates of health security could foster knowledge and provide solutions to enhance health

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security achievement [3].

Indonesia has made a commitment to provide universal health coverage. This ambitious health system reform started in 2005 [4]. Social health insurance for civil servants (Askes) has been provided since 1968 [5]. In the 1990s, additional health insurance schemes were developed. They include social health insurance for private employees (Jamsostek), voluntary health insurance (private insurance), and community health maintenance insurance (Jaminan Pemeliharaan Kesehatan Masyarakat [JPKM], another private insurance scheme introduced by the Indonesian Ministry of Health). Following the Asian financial crisis of 1997, the government provided health coverage for the poor for the first time [6]. However, about 86 % of the Indonesian population is still not covered by any form of health insurance [5]. Thus, in 2005, the Indonesian government started the ambitious health system reform to provide health insurance for the whole population by 2019 [4,7]. The proposed National Social Health Insurance (NSHI) scheme has been incorporated in an academic paper and draft bill for the new national social security by the Task Force for Social Security Reform established through a Presidential decree [5].

Despite the proposed National Social Health Insurance (NSHI) scheme, gaps in access to health insurance persist among Indonesian citizens, including those residing in West Sumatra, one of the 34 provinces in Indonesia. West Sumatra is one out of 34 provinces in Indonesia [8]. One of the unique characteristics found in West Sumatra is the belief that Minang (i.e., West Sumatran) people have to migrate and start their lives in a different place once they become adults. Nowadays, this tradition has evolved to encompass pursuits such as higher education, securing better employment opportunities, or establishing a family. These cultural norms may exert an influence on the accessibility of health insurance within the West Sumatran community, as adults who migrate from their familial homes might not yet be in a financially stable position to procure health insurance. Furthermore, West Sumatra is one of the regions in Indonesia that adheres to a matriarchal system. This social structure may also play a role in shaping the choice of health insurance within families, as decision-making dynamics may differ from those in regions with patriarchal systems.

In the 1994 International Conference on Population and Development (IPCD) in Cairo, coordinated by the United Nations, it was declared that all persons have the right to development, which was considered an expansion of human opportunity and freedom [9]. The role of population dynamics in reaching health equality is also a matter of human rights. Health inequalities include various factors in social inequalities that reflect systems of social stratification: class, gender, ethnoracial background, geography and various forms of discrimination [10]. Therefore, we should minimize avoidable injustice that results from a failure to fulfil human rights.

Currently, there is a scarcity of empirical evidence regarding the impact of population dynamics on achieving equitable access to healthcare in the Indonesian context, including within the province of West Sumatra. Thus, this research aimed to assess the demographic and economic correlates of health security in the West Sumatran population and provide suggestions to increase health security in the population.

2. Methods

2.1. Study population and research design

Indonesian 2017 national socio-economic survey (SUSENAS 2017) is a nationally representative survey carried out in 2017 by the Indonesian Board of Statistics (BPS). In Indonesia, SUSENAS provides important information about the socioeconomic conditions of the Indonesian society, including education, health, housing, crime, and other socioeconomic characteristics since 1963 [11]. In 2017, SUSENAS was conducted twice, i.e., in March and September [11–13]. The survey in March aimed at collecting information for district-level analysis, while the one conducted in September was designed to gather information for provincial-level of analysis [10, 12]. This study used SUSENAS data from March 2017 as it involved a larger sample size.

Nationally, the sampling frame of SUSENAS covers the entire population of Indonesia based on the latest population census. In March 2017, the sampling frame of SUSENAS consisted of all households in the 34 provinces of Indonesia as per the 2010 population census. To select the respondents, SUSENAS of March 2017 adopted a multistage design with a probabilistic sampling strategy called “two-stage and one-phase stratified sampling” where household was the primary unit of analysis [12,13]. Based on this strategy, all the households in all geographical areas are arranged by size from the largest area (country) to the smallest (census blocks, [CBs]). Nationally, the total sample of households in SUSENAS of March 2017 was 300,000 households [13]. Of these, approximately 10,200 households were located in West Sumatra, consisting of 4120 households in urban areas and 6080 households from rural areas [12,13].

The model of dependent and independent variables was selected before the analysis based on previous literature identifying possible associations [2].

2.2. Dependent variable

Health security was indicated by access to health insurance.

2.3. Independent variables

Independent variables included the respondents' age, sex, residential location, education, head of household's education, smoking status, household size, and household consumption per capita.

2.4. Data collection and management

Information regarding the variables was collected through the interview questionnaire. The dependent variable, access to health insurance, was self-reported by respondents by answering the question: “Are you covered by any of these insurances: social health insurance for civil servants and common people insurance provided by BPJS (social security administrative body), insurance for poor people covered by the government, private insurance, or social health insurance for employees)?” Health insurance access was then recorded as having health insurance vs not having health insurance.

Among the purported demographic correlates of health security, age was categorized into young (10–24 years), middle-aged (25–59 years) and older (60+ years) adults. Respondents aged more than 10 years were selected as the purchase of health insurance rarely happened before it. Sex included male vs. female. Residential location was divided into urban and rural location. The education of both the respondents and head of household, was trichotomized into elementary school or less, junior or secondary high school, and higher than secondary high school (university education or higher). Smoking status included current and past smoker vs. non-smoker. Purported economic correlates included household size (trichotomized into 1–3 persons, 4–5 persons, and ≥ 6 persons per family) and household consumption per capita (trichotomized into lowest consumption consisting of the 1st and 2nd quintile, middle consumption consisting of the 3rd and 4th quintile, highest consumption consisting of the 5th quintile, based on WHO suggestion) [14, 15]. Household consumption was self-reported, considering food and non-food expenditure in a household.

2.5. Statistical analysis

Statistical analysis was performed using SPSS 25. The background characteristics of the participants were described using frequencies and percentages. Association between the indicator of health security, i.e., health insurance and the purported demographic and economic correlates was examined using bivariate and multivariable analyses. Bivariate analyses were conducted using chi-square tests as the dependent and independent variables were categorical. As the respondents’ educational attainment and their household heads’ educational attainment are highly correlated, only household heads’ educational attainment was retained in the multivariable analysis. Multivariable models for the association of the independent variables with health security were constructed using logistic regression. This allowed assessment of the risk indicators of health security in the population. Both fully adjusted un-weighted and

Table 1
Background characteristic of study participants.

Variables	West Sumatran study participants ≥ 10 years old (N = 32,366) % [95 % CI]
Insurance coverage	
Having insurance	61.1 [60.6–61.7]
Uninsured	38.9 [38.3–39.4]
Demographic correlates	
Age	
Young (10–24 years old)	32.7 [32.2–33.2]
Middle age (25–59 years old)	54.9 [54.4–55.5]
Older adults (60+ years old)	12.4 [12.0–12.8]
Sex	
Male	48.7 [48.2–49.3]
Female	51.3 [50.7–51.8]
Residential place	
Urban	40.6 [40.1–41.1]
Rural	59.4 [58.9–59.9]
Respondent’s education	
Less or equal with elementary school	47.7 [47.1–48.2]
Junior/secondary high school	42.8 [42.3–43.4]
More than secondary high school	9.5 [9.2–9.8]
Household head’s education	
Less or equal with elementary school	47.1 [46.1–48.1]
Junior/secondary high school	44.1 [43.1–45.1]
More than secondary high school	8.8 [8.3–9.4]
Smoking status	
Current and past smoker	26.2 [25.7–26.7]
Non smoker	73.8 [73.3–74.3]
Economic correlates	
Household size	
1–3 persons	29.8 [29.3–30.3]
4–5 persons	56.8 [56.2–57.3]
≥ 6 persons	13.4 [13.1–13.8]
Consumption per capita	
Lowest consumption	36.4 [35.9–36.9]
Middle consumption	41.6 [41.1–42.1]
Highest consumption	22.0 [21.5–22.4]

weighed models were presented. The statistical significance of the associations was evaluated at $P < 0.05$.

3. Results

A total of 32,366 respondents aged 10 years and older were included in this analysis. Table 1 presents the background characteristics of the study participants. The respondents were nearly evenly distributed by gender, with 48.7 % being male and 51.3 % female. A majority of the respondents fell within the middle age group, between 25 and 59 years old, accounting for over 50 % of the sample, while only 12 % of the respondents belonged to the older age group, aged over 60 years. Around 59 % of the respondents lived in rural areas of West Sumatra. Additionally, less than 10 % of the respondents had attained an education level higher than senior high school, similar to the education background of the household heads. Moreover, among all respondents, 26 % were identified as smokers (comprising both current and past smokers), and about 13 % lived in households with more than six family members.

Bivariate analysis showed that all the demographic and economic correlates chosen in this research were significantly associated with health security, except age and household size (Table 2). Table 3 shows the odds ratios for being uninsured according to individual risk factors (both the demographic and economic risk factors) in un-weighted and weighted models. The younger the person, the more uninsured he/she was. The young (10–24 years old) and middle-aged (25–59 years old) groups had 49 % and 21 % higher odds of being uninsured, respectively, than the older age group (60+ years old). Males had 2 % more chance of being uninsured while having urban residence were less likely to be uninsured (OR = 1.02 and OR = 0.55 respectively). Household head's less education was predictor of being uninsured. People having a household head with education less or equal to elementary school had three times higher risk of being uninsured. Smokers were more likely to be uninsured than non-smokers (OR = 1.23). People living in a household containing 1–3 household members had 48 % more chance of being uninsured than people living in households with 6+ members; people living in a household containing 4–5 household members had 12 % more chance of being uninsured than people living in households with 6+ members. People in the lowest and middle consumption per capita groups were more likely to be uninsured (OR = 1.26 and OR = 1.29, respectively) than people in the highest consumption group.

4. Discussion

This research shows that health security, indicated by health insurance, is influenced by demographic and economic factors. This finding should be considered by policymakers to improve equitable access to the insurance programs among West Sumatran

Table 2

Bivariate analysis of health security risk indicators among West Sumatran people 10+ years old.

Variables	Health in-secured % of uninsured people	Health secured % of insured people	Sig
Demographic correlates			
Age			
Young (10–24 years old)	39.7	60.3	0.08
Middle age (25–59 years old)	38.6	61.4	
Older adults (60+ years old)	38.0	62.0	
Sex			
Male	39.8	60.2	<0.001
Female	38.0	62.0	
Residential place			
Urban	28.7	71.3	<0.001
Rural	45.8	54.2	
Respondent's education			
Less or equal with elementary school	42.0	58.0	<0.001
Junior/secondary high school	39.3	60.7	
More than secondary high school	20.3	79.7	
Household head's education			
Less or equal with elementary school	42.5	57.5	<0.001
Junior/secondary high school	37.7	62.3	
More than secondary high school	12.0	88.0	
Smoking status			
Current and past smoker	42.4	57.6	<0.001
Non smoker	37.6	62.4	
Economic correlates			
Household size			
1–3 persons	39.9	60.1	0.05
4–5 persons	38.6	61.4	
≥6 persons	38.0	62.0	
Consumption per capita			
Lowest consumption	41.2	58.8	<0.001
Middle consumption	41.6	58.4	
Highest consumption	30.0	70.0	

Bold: significant.

Table 3
Multivariable model for being uninsured, both in fully adjusted unweighted and weighted models.

Variables	Fully adjusted unweighted model		Fully adjusted weighted model	
	p-Value	Odds Ratio (OR)	p-Value	Odds Ratio (OR)
Demographic correlates				
Age				
Young (10–24 years old)	<0.001	1.92	<0.001	1.49
Middle age (25–59 years old)	0.01	1.16	<0.001	1.21
Older adults (60+ years old) (ref)		1.00 (ref)		1.00 (ref)
Sex				
Male	0.82	0.99	0.01	1.02
Female (ref)		1.00 (ref)		1.00 (ref)
Residential place				
Urban	<0.001	0.55	<0.001	0.55
Rural (ref)		1.00 (ref)		1.00 (ref)
Household head's education				
Less or equal with elementary school	<0.001	3.69	<0.001	3.00
Junior/secondary high school	<0.001	3.45	<0.001	2.83
More than secondary high school (ref)		1.00 (ref)		1.00 (ref)
Smoking status				
Current and past smoker (ref)	<0.001	1.23	<0.001	1.23
Non-smoker		1.00 (ref)		1.00 (ref)
Economic correlates				
Household size				
1–3 persons	<0.001	1.40	<0.001	1.48
4–5 persons	0.06	1.17	<0.001	1.12
≥6 persons (ref)		1.00 (ref)		1.00 (ref)
Consumption per capita				
Lowest consumption	0.001	1.24	<0.001	1.26
Middle consumption	<0.001	1.33	<0.001	1.29
Highest consumption (ref)		1.00 (ref)		1.00 (ref)

Bold: significant.

population.

This research found that younger people are more at risk of being uninsured. Xiong et al. [3] found a similar result when investigating health security among kids in China. Younger kids tend to be uninsured [3]. In the Indonesian context, this shows less awareness in a community in relation to insurance. As younger people tend to be healthier than their older counterparts, people think that young people do not need insurance. It results in a pool of older people with more health care needs as chronic diseases, physical disabilities, and other comorbidities are more common among older people [16].

Another critical finding is in the context of women's health. In the un-adjusted model, this study found that women are more at risk of being uninsured. This finding is similar to that observed in a study conducted in India [17]. However, the result slightly change in the weighted analysis, showing that men are more at risk of being uninsured. Another study by Adamson, Ben-Shlomo, Chaturvedi, and Donovan [18] revealed that gender did not influence immediate health care seeking behaviour. Sen and Östlin [19] discussed why gender relations of power exist both within and outside the health sector and exercise a pernicious influence on the health of people. Furthermore, meeting women's health access is challenging due to inequality in society. Women, who often have lower educational levels compared to men and face challenges in accessing income and resources, encounter obstacles when deciding whether or not to subscribe to health insurance. This condition is prevalent in many places in Indonesia, and it seems to persist in West Sumatra, albeit at relatively lower levels compared to other areas as West Sumatra accepts the matriarchy system.

Our finding shows that people living in a rural area are more at risk of being uninsured, supporting previous research [20]. Research conducted in the USA [21] found that among people covered by Medicare insurance, rural residents have fewer visits to health care practitioners than their urban counterparts due to travel distance and time. In contrast, Matthews et al. [22] reveal that the urban poor do not necessarily have better access to services than the rural poor, despite their proximity to services. In the Indonesian context, people living in a rural area could receive less information and have lower literacy about health insurance. These possibilities warrant future research.

Individuals living in households with a less-educated head are at a higher likelihood of being uninsured. Conversely, those with higher levels of education tend to understand the advantages of insurance, often exhibit preventive behaviors, and consequently utilize insurance as a means of ensuring health security for both themselves and their families. Previous research has consistently identified the "literacy gap" or a lack of knowledge regarding insurance mechanisms, utility, and related aspects as significant barriers deterring individuals from participating in health insurance schemes [23]. A study among informal sector workers in an urban area in Bangladesh [24] found that an educational intervention had an impact on willingness to pay for insurance.

Smokers are more at risk of being uninsured. This finding supports the results of previous research conducted in the USA [25]. The researchers argued that the phenomenon was probably related to the fact that smokers were usually associated with other vulnerability factors, such as lower socioeconomic status [25,26]. Our finding also shows that people with lower wealth are more at risk of being uninsured. Other research revealed the same finding [27]. Additionally, Van Doorslaer, Masseria, and Koolman [28] observed that

individuals with higher incomes are markedly more inclined to seek the services of a specialist than those with lower incomes, and this pattern is consistently observed in most countries. In contrast, a study by Adamson et al. [18] revealed that individuals in lower socioeconomic positions are more likely to report immediate care-seeking behavior.

The proposed Indonesian National Social Health Insurance (NSHI) scheme is an ambitious health system reform established by the Indonesian government to provide wider insurance coverage to the whole population in all Indonesian regions, including in West Sumatra. This research suggests that some actions should be taken by policymakers to expand the insurance coverage among West Sumatran population. Campaign about the importance of universal health coverage should reach all citizens, including the elders, retired people, and people working in the informal sectors. Government should simplify the process and provide assistance for the middle-class people who want to join but encounter difficulties in the process. People should be aware of the importance of health insurance coverage even before they need it because health uninsured condition is closely associated with mortality [29]. The government should enhance health promotion by linking it to the fact that in the future, diseases caused by unhealthy behaviors such as smoking will not be covered by insurance. Therefore, along with their awareness of insurance, people will also realize the importance of adopting healthy behaviors.

To the best of our knowledge, this research on health security issues is the first in the West Sumatran population. As the secondary data analysis used the available survey data, some residual confounding might exist due to data limitation, which can be considered a potential weakness of the study. Nevertheless, a notable strength of this research lies in the weighted analysis, which enables the findings to be generalized to the entire West Sumatran population. Although the discrepancy of our weighted and un-weighted analysis was less than 10 %, showing an un-biased result, previous study suggested that weighting should be taken as a priority in the population base data analysis collected by sampling with complex designs [30]. Moreover, the substantial sample size of this study, with a total of 32,366 data subjects, contributes to the precision of the estimates. Our findings underscore the persistent challenges in achieving Indonesia's objective of universal health coverage.

5. Conclusions

The fundamental human right to live longer and in good health underlines the importance of ensuring that individuals are well-informed about how to live longer and achieve better health. The government and community should create conditions where affordable health access is available and accessible and encourage businesses to supply this service. The study's findings clearly demonstrate the persistent challenges in attaining universal health coverage in Indonesia. Policymakers should be aware of the demographic and economic correlates that may influence patterns of health security access among the West Sumatran population.

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Ethical approval

SUSENAS has been routinely conducted annually since 1963. As this particular study was a secondary data analysis, new ethics clearance was not required. Written permission was received from the [Central Board of Statistics, West Sumatra province](#), Indonesia for the use of the data in this research.

Data availability statement

The authors do not have permission to share data. The data could be accessed by sending a proposal request to the [Central Board of Statistics, West Sumatra province](#), Indonesia.

CRedit authorship contribution statement

Ninuk Hariyani: Conceptualization, Data curation, Formal analysis, Funding acquisition, Methodology, Project administration, Resources, Software, Validation, Visualization, Writing – original draft, Writing – review & editing. **Dessi Febriyanti:** Data curation, Formal analysis, Investigation, Methodology, Project administration, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. **Marpaleni:** conceived and designed the experiments, analyzed and interpreted the data, wrote the paper. **Judith Wigati Darmastuti:** Data curation, Formal analysis, Project administration, Visualization, Writing – review & editing. **Suha Mudhish Abduljalil Ahmed:** Data curation, Formal analysis, Project administration, Writing – original draft, Writing – review & editing. **Kaushik Sengupta:** Formal analysis, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing.

Declaration of competing 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.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.heliyon.2023.e21142>.

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