

# Unmet Need for Healthcare Among People with Hypertension in Indonesia

Asmaripa Ainy (✉ [asmaripa\\_ainy@fkm.unsri.ac.id](mailto:asmaripa_ainy@fkm.unsri.ac.id))

Faculty of Public Health Sriwijaya University <https://orcid.org/0000-0002-2769-3885>

Amrina Rosyada

Universitas Sriwijaya

Haerawati Idris

Universitas Sriwijaya

Asri Maharani

The University of Manchester

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## Research article

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# Abstract

**Background:** Hypertension is a leading global public health problem in both developed and developing countries including Indonesia, mainly due to its high frequency and risks of cardiovascular diseases. Prevalence of hypertension in the Indonesian population aged > 18 years in 2018 was 34.11%. Unmet need for healthcare generally has been explored, but limited empirical study explores it among people with hypertension. The objective of this study is to investigate the determinants of unmet need for healthcare among people with hypertension.

**Methods:** The design of this study is cross-sectional, using the data from the Indonesia Family Life Survey wave 5 (IFLS-5). The sample of the survey was 6,302 adults age >40 years old, stratified by rural/urban status. Three-level multilevel analysis was performed to estimate the individual level, household level, and community-level determinants of unmet needs for hypertension care.

**Results:** The data shows that 78.4% of respondents with hypertension reported an unmet need for healthcare. Age, female, single, income, having insurance, living in the urban area, and the number of health posts for elderly (*Posyandu Lansia*) are significantly associated with meet needs for health care utilization among hypertension, while education and employment status shows no association with them.

**Conclusion:** Improving access to healthcare and reducing health inequality are required to address this problem.

## Background

Hypertension is regarded as a global public health problem in both developed and developing countries because of its high prevalence and contribution to the burden of cardiovascular disease(1). Hypertension is a major factor for noncommunicable diseases (*NCDs*) that continues to increase. *NCDs* in Indonesia are estimated to account for 73% of all deaths in 2016 and one of its major risk factors at adults aged 18 + was raised blood pressure (22%)(2) According to Indonesian Basic Health Research (*Riskesdas*) in 2018 estimated the prevalence of hypertension in the Indonesian population aged 18 + was 34.11(3). The prevalence of hypertension has become a significant factor for contributing worldwide mortality and morbidity(4)(5). It gradually damaged the heart, blood vessels, and other organs without apparent symptoms and recognized as a silent killer(5). People with resistant hypertension are more likely to be older, overweight, have diabetes, and have a long history of poorly controlled blood pressure(6).

Therefore, prevention and control of *NCDs* become one of the national priority programs in the health sector in Indonesia. In 2016, the Indonesian ministry of health issued a national program called Healthy Indonesia approached by Family (*PIS-PK*)(7). The success of this program is measured by the Healthy Family Index (*IKS*) formulated from four national priority health programs in Indonesia, namely reducing maternal mortality, reducing infant mortality and stunting prevalence, controlling communicable diseases

(HIV/AIDS, tuberculosis and malaria) and controlling NCDs (Hypertension, Diabetes Mellitus, Cancer, Obesity and Mental Disorders)(8).

Unmet need for health care is an undesirable feature of modern health care(9). A recent study regarding hypertension among Indonesian adults aged 40–65 years using IFLS-4 in 2007 datasets described that there was a low prevalence of antihypertensive medication treatment. The research stated that 37% of people with hypertension were diagnosed or aware and only 25% were treated with prescribed antihypertensive medication(10). Other studies have discussed the problem of access to health services influenced by various factors, such as reduction in consumer trust in hospital in-patient services, lack of continuity in the health system, culture and resource, inconvenient timing of appointments and the long-term implications of accessing healthcare(11)(12)(13)(14). Moreover, personal choice, waiting time, and cost become contributing factors to unmet need health care(15)(16)(17)(18). Generally, unmet health care needs depend on the aspects of the health care system (timing of appointments, waiting time before receiving care, etc.) and in certain situations of individuals seeking care (personal choice, trust, cost, etc). However, there is a limited study that explores the unmet need for healthcare among people with hypertension.

## Methods

In this research, a cross-sectional study was conducted based on The Indonesian Family Life Survey Wave 5 (IFLS-5) database, which was fielded on the full sample in 2014-2015. IFLS5 contains detailed information collected at the individual and household levels, including multiple indicators of socioeconomics and health. It is the only large-scale longitudinal survey available for Indonesia and conducted by multistage random sampling method, which was conducted in 13 Provinces representing 83% of the population in Indonesia(19).

We included respondents aged 40 years and older and had hypertension categorized by measurement systolic > 140 mmhg or diastolic > 90 mmhg on 3 times the measurement of blood pressure. Based on the inclusion criteria, a sample of 6302 people was obtained. The dependent variable in this study is the number of unmet need for health services. The definition of unmet need for health services is if the respondent has hypertension but does not access health services such as primary health care, clinics and hospitals in the last 4 weeks.

## Covariates

We use some variable to investigate unmet need health care based on socio-economic and demographic status at the level individual. Economic status was measured from variable log household expenditure and the number of health post for elderly (*Posyandu Lansia*) at the community level. *Posyandu lansia* is a community-organised health promotion centre at village level supervised by staff from the nearest community health centre. Since the mid-1980s, the Indonesia Ministry of Health has launched services to older people through *Posyandu Lansia*. To deal with the increasing prevalence of hypertension and other chronic conditions, several preventive and health promotion activities are provided by local communities

through *Posyandu Lansia*(20). Older people frequently obtained anti-hypertensive medications (26%) through community health centers performed by its health staff members (midwives or nurses)(21). Other covariates at the individual level are age, sex (female and male as reference), educational attainment (primary school or less as reference; secondary class; and college or higher), marital status (married as reference; single; divorced, and widower), employment status (casual workers as reference; government workers; private workers; self-employed, and not working), health insurance ownership. We also provide the descriptive statistics of age categorized in eight groups (40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, +75),

## Statistical analysis

We conducted data analysis in two steps: bivariate analysis and multivariate analysis. The bivariate analysis assessed the relationship between two variables: 1) the area of residence and 2) each of its determinants (separately). We used Kruskal-Wallis one-way analysis of variance for numerical variables and ordinal chi-square tests for categorical variables. The multivariate analysis identified the association between the healthcare utilization and all of the risk factors together using tree-level hierarchical logistic regression models to take into account of the household and community level information available from the IFLS. The first level comprised individual characteristics, the second level was household characteristics, and community characteristics made up the third level. Considering individual  $i$  nested in a household, and community  $k$ :

$$Y_{ijk} = Y_{000} + \sum Y_{00k}U_k + \sum Y_{0jk}W_{jk} + \sum \beta_{ijk}X_{ijk} + u_{00j} + r_{0jk} + \epsilon_{ijk}$$

with:

$Y_{ijk}$  = cognitive function as an ordinal variable (normal, CIND and dementia) for the individual in household  $j$  in community  $k$ .

$U_k$  is a set of community characteristics,

$W_{jk}$  is a set of household and community characteristics,

$X_{ijk}$  is a set of individual characteristics,

$u_{00j}$  are the random intercept varying over the household

$r_{0jk}$  is the random intercept varying over household and community

$\epsilon_{ijk}$  is normally distributed with mean zero and variance  $\sigma_\epsilon^2$ .

The multivariate analysis used two models. The first model included only the individual-level variables, including socio-demographic variables of age, gender, marital status, education, employment status, and health insurance ownership. We added the household expenditure as the household level determinant, and rural/urban category and the number of *Posyandu Lansia* as the community level determinants in

the second model. We conducted the hierarchical logit regression using `xtmelogit` commands in STATA 14.0 software(22).

## Results

A total of 6,302 respondents aged 40 years and over were initially included in this study. About 78.4% of respondents with hypertension did not receive healthcare service (see table 1). The average respondent's age was 57 years old. 16.80% of respondents were 50-54 years old. More than half of the respondents (56.50%) were female. Most of the respondents had low education attainment (63.4%), married (74.3%), not working (90.7%), and have no health insurance (54.24%). Household expenditure Rp 953,005.12 (Rp 606,991.47) for total, Rp 968,233.01 (Rp 779,509.13) for urban area and Rp 932,716.29 (Rp 221,659.79) for rural area. The average numbers of *Posyandu Lansia* per village were 2.

The bivariate logistic regression model in table 1 shows that four predictions are statistically significant, with met needs at 1 % level. The proportion of respondent with unmet need in urban is higher than rural. At the individual level, age, educational level, employment status, having insurance all correlate positively with met needs. Household expenditure is statistically significant, with met needs at 5 % level. Sex and marital status are elements that both fail to achieve statistical significance.

Factors associated with unmet healthcare, as revealed by the multivariate analysis, are presented in table 2. Older age is associated with lower odds of having unmet need of healthcare services (Odds Ratio=0.987;  $p<0.001$ ) in the first model, but this association is diminished after household and community level variable were included in the second model (OR=0.989;  $p<0.05$ ). Being female and having health insurance has negative and significant associations with the unmet need for healthcare services. Single respondents have higher odds of having unmet needs of healthcare services than married respondents. Respondents living in urban areas have lower odds of having unmet needs of healthcare services than those living in rural areas (OR=0.774;  $p<0.001$ ). The number of *Posyandu Lansia* in the community has a negative and significant association with the unmet need of healthcare services (OR=0.72;  $p<0.001$ ).

Table 1  
Characteristics of the participants

	<b>Total n = 6,302</b>	<b>Urban n = 3,600</b>	<b>Rural n = 2,702</b>	<b>P- value</b>
Individual-level				
<i>Healthcare utilization</i>				< 0.001
No	4,940 (78.40)	2,757	2,183	
Yes	1362 (21.60)	843	519	
Age (years)	57.17 (16.62)	56.53(19.31)	58.02 (12.10)	< 0.001
<i>Age group</i>				< 0.001
40–44	929 (14.70)	565	364	
45–49	1038 (16.50)	621	417	
50–54	1,056 (16.80)	602	454	
55–59	896 (14.20)	537	359	
60–64	823 (13.10)	476	347	
65–69	504 (8.00)	284	220	
70–74	498 (7.90)	251	247	
75+	558 (8.90)	264	294	
Sex				0.730
Male	2,741 (43.50)	1,573	1,168	
Female	3,561 (56.50)	2,027	1,534	
<i>Educational level</i>				< 0.001
Primary school or less	3998 (63.4)	1901	2097	
Secondary school	1807 (28.7)	1330	477	
College or higher	497 (7.9)	369	128	
<i>Marital status</i>				0.068

**Note:** Presented are mean (SD) or number (%)

	<b>Total</b> <b>n = 6,302</b>	<b>Urban</b> <b>n = 3,600</b>	<b>Rural</b> <b>n = 2,702</b>	<b>P-value</b>
Single	118 (1.9)	80	38	
Married	4682 (74.3)	2687	2004	
Divorced	1471 (23.3)	822	649	
Widower	31 (0.5)	20	11	
<i>Employment status</i>				< 0.001
Casual workers	53 (0.8)	25	28	
Government workers	81 (1.3)	69	12	
Private workers	209 (3.3)	177	32	
Self-employed	241 (3.8)	124	117	
Not working	5718 (90.7)	3205	2513	
<i>Health insurance ownership</i>				< 0.001
No	3,226 (54.24)	1,563	1,663	
Yes	3,076(45.76)	2,037	1,039	
Mean systolic BP (mmHg)	161.23 (21.26)	160.68 (21.18)	162.00 (21.35)	0.015
Mean diastolic BP (mmHg)	92.41 (12.62)	92.94 (12.19)	91.71 (13.13)	< 0.001
<i>Household-level</i>				
Household expenditure	953,005.12 (606,991.47)	968,233.01 (779,509.13)	932,716.29(221,659.79)	0.009
<i>Community-level</i>				-
Number of <i>Posyandu Lansia</i>	2 (0.00)	2 (0.00)	2 (0.00)	
<b>Note:</b> Presented are mean (SD) or number (%)				

Table 2  
Determinants of unmet need of healthcare services among sample with hypertension

	Model 1	Model 2
<i>Individual-level</i>		
Age	0.987 (0.003)‡	0.989 (0.004)†
Female	0.600 (0.046)‡	0.638 (0.059)‡
<i>Marital status, reference: married</i>		
Single	5.201 (2.305)‡	6.941 (3.802)‡
Divorced	1.150 (0.108)	1.192 (0.132)
Widower	2.086 (1.223)	3.502 (2.855)
<i>Education, reference: primary</i>		
Secondary	0.930 (0.079)	1.004 (0.109)
College and higher	1.024 (0.144)	1.298 (0.265)
<i>Employment status, reference: Casual workers</i>		
Government workers	1.136 (0.520)	1.428 (0.779)
Private workers	1.118 (0.445)	1.352 (0.600)
Self-employed	0.950 (0.368)	1.205 (0.501)
Not working	1.297 (0.463)	1.950 (0.744)*
Having insurance	0.693 (0.051)‡	0.721 (0.065)‡
<i>Household-level</i>		
Log household expenditure		0.610 (0.044)‡
<i>Community-level</i>		
Living in an urban area		0.774 (0.084)†
Number of <i>Posyandu Lansia</i>		0.864 (0.048)‡
Constant	11.290 (5.055)‡	8116.32 (9112.02)‡
Variance between households	0.18	0.17
Variance between communities	0.57	0.72
Log-likelihood	35.63	27.85
<b>Note:</b> Reported are odds ratios (standard errors). Sig.: *significant at 10% or less; †significant at 5% or less; ‡significant at 1% or less.		

## Discussion

Hypertension is one of the NCDs that is commonly found in developing countries, including Indonesia. Therefore, Indonesia Ministry of Health launched a programme concerning the implementation of PIS-PK in 2016 and hypertension care is one indicator of the healthy family. Various studies have reported the risk factors of hypertension. Previous research has shown that at a university student in Thailand, older age, obesity and underlying morbidity due to diabetes, high blood lipids and kidney disease were strongly associated with increased risk of incident hypertension(23). Other similar research revealed that hypertension in the urban slum Nairobi, Kenya is a public health problem affecting at least one in three adults aged 35–64 years and several variables, such as age, marital status, wealth index, physical inactivity and body mass index are important risk factors associated with hypertension(24). An analysis of the SAGE dataset from households within China, Ghana, India, Mexico, Russia, and South Africa, illustrated that obesity emerged as a noticeably common correlate to hypertension, along with increasing age(25). This also found from a study in Varanasi, India that increasing age and sex (specifically men) are proved to be independent risk factors for hypertension(26). Other protective risk factors of hypertension among urban residents were being unemployed retired and student status(27).

Several national studies investigate the determinant of unmet need for healthcare among people with hypertension in Indonesia. Using a recent national survey, it was identified that poor access to healthcare facilities become one of the determinant factors(28). This study shows that unmet healthcare found in more than three-quarter of people with hypertension in Indonesia. At the level of the individual, age, being female, and having health insurance is an important determinant in explaining in unmet need healthcare among people with hypertension. Age has a positive correlation with having met a need for health care. The increasing number of health problems with age, which increases the probability of having unmet health care needs(29). Female have a higher likelihood of healthcare care than male. Previous research described a higher number of unmet healthcare needs among females(30)(31). Having health insurance has a positive correlation with unmet need health care. The study shows that respondents who have health insurance are more likely to receive healthcare. The previous research shows that uninsured respondent who adults are significantly more likely to have unmet needs for preventive services than insured adults(32).

This is the first study to report on factors associated with unmet need for healthcare among people with hypertension in Indonesia using national survey datasets. Focusing on household determinants, we found that household expenditure is an important determinant in explaining unmet need healthcare among people with hypertension. This result supports findings from the previous study that the poor individual increases the risk of having unmet need healthcare(33).

Turning to community-level determinants, living in urban and number of *Posyandu Lansia* in the community are important determinants in explaining in met need healthcare among people with hypertension. Focus on the residency areas, living in an urban area is correlated with a lower probability of having unmet need health care. Furthermore, this study shows that the respondent who has to live in

urban are more likely to receive healthcare services. The findings in this study are consistent with the previous research which found that residing in urban area is significantly associated with the met need for cardiovascular(33)(33)(32)(31)(30)(29)(28)(34). The number of *Posyandu Lansia* in the community has a positive correlation with met need health care. The availability of healthcare facilities is one of the factors contributing to unmet health care(35). The previous study mentioned that individual perception of healthcare availability plays an important factor in the experience of unmet healthcare needs(36).

This study has some limitations. Firstly, it used a cross-sectional design therefore, the observed associations cannot be assumed to be causal. Secondly, some variable that may affect the unmet need healthcare services cannot explore due to the unavailability of the data, such as the quality of healthcare. Quality of healthcare is an important element to explain unmet need healthcare. Several previous studies showed that perception of health care quality as a possible factor associated with demand for health care(31)(37)(38).

Despite its limitations, this study has several strengths. Firstly, we used a nationally representative sample from a population-based survey that has high response rate and use standardized methodology. Secondly, included in this survey are not only individual-level or household-level determinants but also factors at the community level. Our study can thus capture real conditions of the population using multilevel modelling analysis, which allows us to examine the clustering effect of the outcome variables.

## Conclusion

This study revealed determinants of unmet need for healthcare among people with hypertension at the individual, household and community levels in Indonesia. With a multilevel regression analysis, we found that the unmet needs for health care among people with hypertension is still prevalent in Indonesia. The Indonesian government should improve equity in healthcare by expanding health insurance, provide availability number of *Posyandu Lansia*, and distribute healthcare service need both rural and urban. Future studies are required to understand other factors associated with healthcare utilization among people with hypertension, in particular how the role of cadres, family and health workers may have an association with their demand to healthcare.

## List Of Abbreviations

NCDs: Noncommunicable diseases; Riskesdas: Riset Kesehatan Dasar; PIS-PK; Program Indonesia Sehat dengan Pendekatan Keluarga; IKS: Indeks Keluarga Sehat; HIV/AIDS: human immunodeficiency virus/acquired immune deficiency syndrome; IFLS-5: Indonesia Family Life Survey 5; Posyandu Lansia: Pos Pelayanan Terpadu bagi Lanjut Usia.

## Declarations

### Ethics approval and consent to participate

The primary data in this study was taken from the IFLS-5, a survey conducted and made freely available by RAND Corporation with the help from a non-government research agency Surveymeter. The IFLS-5 and their procedures were properly reviewed and approved by IRBs (Institutional Review Boards) in the United States (at RAND) and in Indonesia at the University of Gadjah Mada (UGM). This study has passed the ethics review from the Ethics Review Center of the Faculty of Public Health, Sriwijaya University, with a letter of ethical qualification No. 176/UN9.1.10/KKE/2020.

### **Consent for publication**

Not applicable.

### **Availability of data and materials**

The datasets generated and/or analyzed during the current study are freely available in the RAND repository, <https://www.rand.org/labor/FLS/IFLS.html>

### **Competing interests**

The authors declare that they have no competing interests.

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### **Authors' contributions**

AA and AM conceptualized the study design and contributed to smoothing out the text. AR and AM acquired the raw data for analysis and performed data interpretation. AA and HI conceptualized for the article then prepared the original draft of the manuscript. All authors read and approved the final manuscript.

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