

Gender Disparity In Awareness and Disease Control among Indonesia Hypertension Adults Aged ≥ 40 : Study from Indonesia Family Life Survey Wave 5

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Abstract: Hypertension is a known major avoidable risk factor for cerebro- and cardiovascular disease. Awareness of the disease is required for medication adherence to prevent the complication. Using a cross-sectional population-based survey data (Indonesia Family Life Survey (IFLS)), we observed the determinant factors in hypertension awareness and disease control among Indonesia Hypertension adults aged ≥ 40 (N=2676). Our finding suggested that 56% of 2676 hypertensive patients were women. Among those patients, only 42.8 % aware that they had high blood pressure and only 14.6 % had the anti-hypertensive drugs. Women were more aware of hypertension and disease control compared than men. Men and older patients (>60 years old) were more vulnerable to have undiagnosed and untreated hypertensive status. It is substantial to do regular health screening and society education to improve hypertension awareness and to reduce gender disparity in cardiovascular problem among Indonesian adults.

1 INTRODUCTION

Hypertension is an important public health issue since it is a major avoidable risk factor for cerebro- and cardiovascular diseases, and kidney failure in Indonesia as one of a low- and middle-income country (WHO, 2014; Castillo, 2016; Perkovic, 2007). Despite decades of public education efforts to get lower community-blood pressure, the disease prevalence remains high due to various factors affected, such as sociodemographic (older age, female or male gender, lower education level and lower household income), geolocality (urban residence), body size, health behaviour and psychosocial stress (Ezzati, 2015; Kearney, 2004; Pereira, 2009). Increasing elder population, unfavourable behavioural risk factor, low patient awareness and their adherence to treatment are some of its challenges (Ong, 2007; Daugherty, 2011). Precise prevention and treatment strategy is required to reduce hypertension-related complications and mortality (Daugherty, 2011).

The management and control of hypertension is also affected by sex, age and other various factors (Daugherty, 2011; Sanberg, 2012; Chu, 2015).

However, a study showed that only two-thirds of adults and the elderly aware of their hypertension status and gender is known as one of important factor (Chu, 2015). Determining gender patterns in hypertension awareness and factors which affect these patterns in life stage is critical to improve hypertensive control and reduce cardiovascular disease risk. In this study, using national-based survey source, we aimed to investigate sex difference in hypertension awareness and control among Indonesian adults aged ≥ 40 years.

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2 METHODS

2.1 Study Population

We used data from the “Indonesia Family Life Survey (IFLS-5)”, a sustaining demographic and health survey that started in 1993 and had four rounds of data collection, with the fifth wave (IFLS-5) having been completed in 2015. The surveys

collected data on individual, household and community level using a multistage stratified sampling. The original sampling frame of the first survey in 1993 was based on households from 13 of 27 provinces in Indonesia, which represented approximately 84% of the Indonesian population in 1993. The detail description of the sampling and survey methods has been explained elsewhere (Strauss, 2016).

Randomly selected household members were asked to provide detailed individual information. In the IFLS-5, 16,204 households and 29,965 18 years and older individuals were interviewed and had complete blood pressure measurements. In the fifth wave of IFLS, the recontact rate is 92% and for individual target households, the recontact rate is 90.5% (Strauss, 2016). The survey run longitudinally and we restricted the data for participants aged ≥ 40 years.

In this study, we sorted and filtered the data to participants aged ≥ 40 years who had high blood pressure measurements (systolic blood pressure ≥ 140 mmHg and diastolic blood pressure ≥ 90 mmHg) and complete information on other sociodemographic, body size, self-reported hypertension and information about medication. Participants who had not complete information were excluded.

2.2 Measurement

Measurement included in this study were blood pressure measurements, anthropometric measurements, and questionnaire items on sociodemographic factors and tobacco use.

2.2.1 Blood Pressure Measurement

Systolic and diastolic blood pressure was measured three times with an Omron meter, HEM-3204, by regular trained interviewers on household members 18 years and older at home in a seated position. The first BP measurement was derived at the beginning of the interview and subsequent assessments derived during the interview (Strauss, 2016). The three BP measurements were recorded and the average BP was then calculated. Blood pressure was classified using JNC 7 algorithm, where "Hypertension was defined as systolic BP ≥ 140 mm Hg and/or DBP ≥ 90 mm Hg and/or current use of antihypertensive medication", while normotension was defined as BP values $< 120/80$

mm Hg in individuals who were not taking antihypertensive medication" (Chobanian, 2003).

Aware of being hypertensive was defined if the participants answered yes of having been diagnosed of hypertension by a doctor, nurse, paramedic, and trained mid-wife. Good control of hypertension was defined if participants responded yes of currently taking prescribed medication on a weekly basis to manage hypertension.

The analysis is limited to participants who had information on hypertension measurement, awareness, and medication. Participants with hypertension were defined if they had mean SBP ≥ 140 mmHg and or mean DBP ≥ 90 mmHg. Those hypertensive participants then classified as aware (or not) and are they on hypertensive medication (or not).

2.2.2 Anthropometric Measurements

Weights were measured using a Camry model EB1004 scale and height were measured using a Seca plastic height board (Strauss, 2016). Body mass index (BMI) was calculated as weight in kg divided by height in metre squared and classified according to Asian criteria: Underweight (BMI < 18.5 kg/m²), normal weight (18.5 to 24.9 kg/m²), overweight (25.0 to 29.9 kg/m²) and obese (BMI ≥ 30.0 kg/m²) (Wen CP, 2009). Waist and hip measurement were measured using a tape and the results was then recorded to the nearest 0.1 cm. Waist-hip ratio then calculated by dividing waist to hip measurement. The WH value > 0.9 for man and > 0.85 for woman were then classified as having central obese (Wen CP, 2009).

2.2.3 Sociodemographic Factors

Sociodemographic data was sourced by list of questionnaire about sex, age, smoking experience (ever smoked or not), residential area (urban or rural), highest level of education (unschooled, grade school (elementary level), high school (junior or senior high school) and graduate or above).

2.3 Statistical Analysis

Participants with complete information on blood pressure measurement and other factors were included in the analysis. The outcome variables were mean SBP and DBP, prevalence of hypertension awareness and disease control. Among hypertensive patients, the percentage of those aware or not, and on medication or not, were estimated. Percentage of factors contributed to gender differences were also

observed. Differences between the groups were tested using Chi-Square test to observe the proportion of each factors included. P-value to be included were set at 0.05. SPSS software version 23.0 were used to analyse the data.

3 RESULT AND DISCUSSION

We sorted and filtered 29,965 total participants aged ≥ 18 years who had blood pressure measurement to participants aged ≥ 40 years who had high blood pressure (systolic blood pressure ≥ 140 mmHg and diastolic blood pressure ≥ 90 mmHg) and had complete information on other sociodemographic, body size, self-reported hypertension and information about medication. Then we derived 2,893 hypertensive participants aged ≥ 40 years, but 213 had not complete information and finally 2,676 participants included.

Table 1: Sample Characteristics

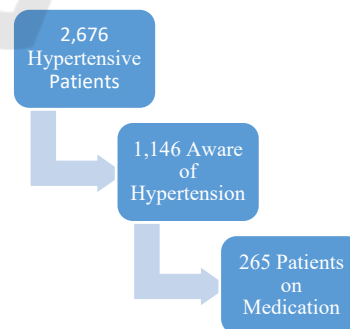
	Men (%)	Women (%)
Age group	44	56
40-49	37.8	36.3
50-59	36.7	36.3
60-69	18.5	18
≥ 70	6.9	9.3
Body Mass Index (BMI)		
Underweight	5.3	5.1
Normal	50.1	37.4
Overweight	34.7	39.5
Obese	9.9	18
Waist-Hip Ratio (>0.9 for men and >0.85 for women)	40.1	59.8
Residence Area		
Urban	61	57.7
Rural	38.9	42.3
Education		
Unschooling	4.2	14.9
Grade School	41.1	56.1
High School	40.4	23.3
Graduate or above	14.2	5.7
Smoking Experience		
Ever	74.6	6.4
Never	25.4	93.6

Of this 2,676 hypertensive participants, we found that 56% of these hypertensive patients were women. Women had higher percentage of being overweight and obese (57.7%), higher waist-hip

ratio (59.8%) and most of them (71%) had lower education level, compare to men group. It was consistent with other study in US, that in later life (>60 years), women had higher risk of being hypertensive compared to men in the same age group (Yang Y, 2012). This suggested that in Indonesia, while women have longer life expectancy, older women had poorer health than men. Thus, extending women's health needs across the life course beyond reproductive health should be taken into account.

Among those hypertensive patients, only 42.8 % aware that they had high blood pressure and women were significantly higher than men patients (65%, p-value <0.05). Only 14.6 % of the total sample had the anti-hypertensive drugs, and women were also significantly higher in men (68%, p-value <0.05). This result indicates that women had good awareness of their health condition compared to men. Other works in US showed that men was more aware of their hypertension status compared to women (Guo et al., 2012). The small percentage of patients who aware of their high blood pressure could be due to the method we used in collecting data. In this study, we collected objective measures of systolic and diastolic blood pressure (hypertensive patients), followed by self-reported hypertension, because we thought that the only self-reported morbidities in general without objective measurement is a known potential problem in measuring population health status (Zajacova et al., 2010).

Schema 1. Prevalence of Awareness and Control of Hypertensive patients



In our data, respondents aged <60 years old tend to be more aware of their hypertensive status (69%) because they more likely to see physicians on a regular basis, increasing the likelihood that they

will get the accurate and up-to-date knowledge of their blood pressure status.

Both men and women patients (aged >60 years) had low levels of hypertension awareness and treatment control compared to those younger patients aged 40-59 years (31% vs 65%; p-value <0.05). Body status and education level were significantly different between men and women in those who aware. However, area of residence was not significantly different in awareness and disease control.

Table 2. Hypertension Characteristic of Study Sample

	Men (%)	Women (%)	p-value
Aware of Hypertension	401 (34)	745 (65)	<0.05
Age Range			
40-59	276 (24)	523 (45)	
>60	125 (10)	222 (19)	
BMI (Overweight & obese)	223 (55.8)	418 (56.8)	<0.05
Residence Area (Urban)	248 (61.8)	452 (60.7)	0.70
Education Level (High School & graduate)	223 (51.8)	214 (28.9)	<0.05
Control of Hypertension	125 (31)	265 (68)	<0.05
Age Range			
40-59	83 (31)	172 (65)	
>60	42 (15)	93 (35)	

Observed gender disparity in health, typically in hypertension, is due to both biological (sex hormones, chromosomal differences, and other biological differences) and behavioural factors (high BMI, smoking, physical activity) (Sandberg and Ji, 2012). Our result showed that women had higher BMI and waist-hip ratio, since men had smoking a lot compared to women. The wide range of this behaviour might be closely related to Indonesia's culture, where smoking is considered forbidden for women but a symbol of masculinity and bravery for men, socially. Higher percentage of

women with lower education could also be related to lower socioeconomic status, which limit their access to employment and curtail opportunities for practicing healthy lifestyle.

The study described the gender and age proportion in Indonesia adults with hypertensive status, and the difference of predicting factors for awareness and disease control, among men and women. The study did not assess the biological factors or diet habits, which may alter the results. This study focused on the gender differences in hypertension, the importance of universal health screening access and society education to be delivered to both men and women.

4 CONCLUSIONS

In our study, hypertensive women patients were more than men, and they also had good awareness of high blood pressure and the disease control. Men and those of older age patients (>60 years old) were more vulnerable to have undiagnosed and untreated hypertensive status. It is substantial to do regular health screening and society education to improve hypertension awareness and to reduce gender disparity in cardiovascular problem among Indonesian adults.

REFERENCES

- World Health Organization (WHO). Non communicable diseases country problems 2014. http://apps.who.int/iris/bitstream/10995/128048/1/i38i26150350i_eng.pdf
- R. Castillo, "Prevalence and management of hypertension in Southeast Asia," *JHypertens*, supplement 1, p. e6, 2016.
- Perkovic V, Huxley R, Wu Y, Prabhakaran D, MacMahon S. The burden of blood pressure-related disease: A neglected priority for global health. *Hypertension*. 2007; 50:991–997. PMID: 17954719
- Ezzati M, Obermeyer Z, Tzoulaki I, Mayosi BM, Elliott P, Leon DA. Contributions of risk factors and medical care to cardiovascular mortality trends. *Nat Rev Cardiol*. 2015; 12:508–530. doi: 10.1038/nrcardio.2015.82 PMID: 26076950
- Kearney PM, Whelton M, Reynolds K, Whelton PK, He J. Worldwide prevalence of hypertension: A systematic review. *J Hypertens*. 2004; 22(1):11–19. PMID: 15106785
- Pereira M, Lunet N, Azevedo A, Barros H. Differences in prevalence, awareness, treatment and control of hypertension between developing and developed

- countries. *J Hypertens*. 2009; 27(5):963–975. PMID: 19402221
- Ong KL, Cheung BMY, Man YB, Lau CP, Lam KSL. Prevalence, Awareness, Treatment, and Control of Hypertension Among United States Adults 1999±2004. *Hypertension* 2007; 49(1):69-75. <https://doi.org/10.1161/01.HYP.0000252676.46043.18> PMID: 17159087
- Daugherty SL, Masoudi FA, Ellis JL, Ho PM, Schmittiel JA, Tavel HM, et al. Age Dependent Gender Differences in Hypertension Management. *Journal of Hypertension* 2011; 29(5):1005±1011. <https://doi.org/10.1097/HJH.0b013e3283449512> PMID: 21330934
- Sandberg K, Ji H. Sex differences in primary hypertension. *Biology of Sex Differences* 2012; 3:7-7. <https://doi.org/10.1186/2042-6410-3-7> PMID: 22417477
- Chu SH, Baek JW, Kim ES, Stefani KM, Lee WJ, Park Y-R, et al. Gender Differences in Hypertension Control Among Older Korean Adults: Korean Social Life, Health, and Aging Project. *Journal of Preventive Medicine and Public Health* 2015; 48(1):38±47. <https://doi.org/10.3961/jpmph.14.043> PMID:25652709
- J. Strauss, F. Witoelar, and B. Sikoki, The Fifth-Wave of the Indonesia Family Life Survey (IFLS-5): Overview and Field Report, vol. 1, RAND Corporation, 2016.
- A. V. Chobanian, G. L. Bakris, and H. R. Black, “Seventh report of the Joint National Committee on prevention, detection, evaluation, and treatment of high blood pressure,” *Hypertension*, vol.42, no.6, pp.1206–1252,2003.
- C. P. Wen, T. Y. David Cheng, S. P. Tsai et al., “Are Asians at greater mortality risks for being overweight than Caucasians? Redehning obesity for Asians,” *Public Health Nutrition*, vol.12, no.4, pp.497–506,2009.
- Alexandra Kautzky-Willer caTD, 2 Ann Jensby,2 and Anita Rieder2. Women show a closer association between educational level and hypertension or diabetes mellitus than males: a secondary analysis from the Austrian HIS. 2012 May 30.
- Everett B, Zajacova A. Gender Differences in Hypertension and Hypertension Awareness Among Young Adults. *Biodemography and social biology* 2015; 61(1):1±17. <https://doi.org/10.1080/19485565.2014.929488> PMID: 25879259
- Yang Y, Kozloski M. Change of Sex gaps in total and cause-specific mortality over the life span in the US. *Ann Epidemiol*. 2012; 22:94-103
- Guo F, He D, Zhang W, et al., Trends in prevalence, awareness, management and control of hypertension among United States adults, 1999 to 2010. *J Am Coll Cardiol*. 2012;60(7):599-606.
- Zacacova A, Dowd JB, Schoeni RF, et al., Consistency and precision of cancer reporting in a multiwave national panel survey. *Popul Health Metr*. 2010;8:1-11