Research Article

Demographic Factors and Health Care Behavior of Hypertension Disease in Thailand

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Abstract

The purpose of this study is to examine demographic factors and health care behaviors associated with hypertension disease. A retrospective study was performed to analyze data from the Health and Welfare Survey of the National Statistical Office, Thailand (2007). The sample population consisted of 31,088 individuals. Analysis of the data found that females were 1.48 times more likely to suffer from hypertension disease than males. Aging individuals, 60 years old and older, were more likely to have hypertension disease. People who live in the Northeastern and the Southern regions of Thailand were less likely to have hypertension disease in comparison with individuals who live in Bangkok metropolitan areas. Males exercise more often than females, however, males are not able to reduce or discontinue smoking at a higher level than females. Males' reduction or discontinuation of alcohol consumption is at a lower level than females. Reduction or discontinuation of alcohol consumption of age group of 25-59 years old also is at a lower level than those 59 years old and older. People who live in the Central region have the lowest level of routine exercise, diet control, and weight reduction when compared to those in Bangkok, Northern, Southern, or Northeastern regions. People who live in the Northern region have the lowest reduction or discontinuation of smoking and consumption of alcohol in comparison with those in Bangkok, Central, Southern, and the Northeastern regions. Further research should consider the contextual differences in each region regarding health education and health promotion, especially exercise for people who live in the Central region, and the reduction or discontinuation of alcohol and smoking for those in the Northern region.

***Key Words*:** Demographic factor; Health care behavior; Hypertension disease; Thailand

Introduction

Morbidity and mortality rates among Thai people have shifted from infectious and communicable diseases to non-communicable diseases. These conditions, which include heart disease, cerebrovascular diseases, cancer, and accidents, have occurred as a result of daily lifestyle and behavioral changes. Globally, the number of people with hypertension has risen from 600 million in 1980 to 1 billion in 2008 (Danaei et al., 2011). The American Heart Association (2013) reported that 30 percent of adults in the United States had high blood pressure. Higher percentages of men under the age of 45 had higher blood pressure than women in the same age range, however, these percentages change after the age of 45. For those individuals between the ages of 45–64, the percentage of men and women with high blood pressure was similar. However, in the age range of 65 and older, women had higher blood pressure than

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men. In Thailand, the prevalent rate of hypertension is around 22 percent (95 percent confidence interval; 20.5-23.6) (Aekplakorn et al., 2008). Risk factors for hypertension include aging, high cholesterol levels, smoking, alcohol consumption, a diet high in sodium, a person's lifestyle and food habits, etc.

Food habits, traditional foods, and lifestyles vary according to the region to which people are exposed in their daily lives. These factors are known to contribute to the risk of hypertension and cerebrovascular diseases. Previous studies also have found differences in age, gender, location of region and the health care associated with hypertension (Frohlich and Lear, 2002). Frohlich and Lear's epidemiologic study showed that the prevalence of hypertension and cardiovascular disease was higher in women older than 75, compared with men in the same age group. Hypertension was undertreated (only 65 percent treated) and inadequately controlled (29 percent for age 70-79) in postmenopausal women (Sitthisook, 2012). Females had more than three times greater odds of having metabolic syndrome compared to males, whereas they had 50 percent lower odds of having hypertension, compared to men (Njelekela et al., 2009). And, female patients were found to be more likely to adhere to their medication, compared to their male counterparts (Ramli et al., 2012). Age and gender were related to behaviors associated with drug adherence and the control of hypertension (Morris et al., 2006). People living in urban areas had a higher rate of smoking and alcohol consumption than individuals living in rural areas (Podhisita et al., 2001). Most studies performed in Thailand did not focus on the demographic and health behavior distributions in different regions. This study focuses on the relationship between demographic characteristics, (age, gender, and location of region), and health care behavior of individuals with hypertension.

Materials and Methods

A retrospective study was performed to analyze data from a Health and Welfare Survey of the National Statistical Office, 2007. *A stratified two-stage cluster sample* design was used to determine sample size from the population. The population was divided into 76 stratums by province, 2 stratums of municipalities, and stratums outside of the municipalities. The sample households were selected systematically from a complete list of households in sample blocks within villages. The sample population for this study consisted of 31,088 individuals. Individuals aged 15 years and over were interviewed about the occurrence of hypertension disease. People who had hypertension disease were identified. Follow up questions were asked to determine the hypertension disease knowledge levels of individuals regarding medication dosage, dietary control, weight reduction, exercise, reduction or discontinuation of smoking and consumption of alcohol. Independent variables were identified as gender, age, region, and healthcare behaviors, while the dependent variable was hypertension disease. Percentages were used to describe demographic factors and health care behaviors of hypertensive patients. Using the Multiple Logistic Regression Model, analysis of the demographic factors showed that there are relationships with hypertension disease. Dependent variable was categorized by person as hypertension disease equaled 1 and non-hypertension disease equaled 0. All independent variables were entered into the model associated with hypertension disease at a statistical significance of 0.05 ($p<0.05$).

Results and Discussion

The 31,088 persons in the study were both hypertension and non-hypertension patients. Table 1 showed demographic factors associated with hypertension disease, using multiple logistic regression analysis. Tables 2-4 show

Table1 Relationship between gender, age, region and hypertension disease

Variable	n	OR	95%CI
Gender			
Male	11,914	1	
Female	19,174	1.48*	1.37-1.60
Age group			
15-24	2,560	1	
25-59	21,700	22.29*	11.96-41.57
60 and over	6,828	104.11*	55.82-194.21
Region			
Bangkok	1,508	1	
Central	8,948	0.88	0.74-1.04
North	8,247	0.89	0.75-1.06
Northeast	8,016	0.56*	0.47-0.67
South	4,369	0.59*	0.49-0.72

** $p < 0.05$*

health care behaviors of hypertension patients, classified by gender, age group, and region. Results show that females were 1.48 times more likely to have hypertension disease than males, in regards to age and region. Utilization of medical services has been shown to be higher in females than males (Ladwig et al., 2000). Individuals aged 25-59 were 22 times more likely to have hypertension disease than those aged 15-24. Individuals aged 60 years old and over were 104 times more likely to have hypertension disease than individuals aged 15-24. Thus, aging individuals are more likely to have increased risk of hypertension disease. Similar to previous studies, hypertension disease was associated with age (Puavilai et al., 2011, Thawornchaisit et al., 2013). People who are living in the Northeastern and the Southern regions of Thailand are less likely to have hypertension disease than those living in Bangkok metropolitan area, in regards to age and gender (Table 1). Similar to a previous study, data showed that persons with hypertension disease correlated with their geographical region (Aekplakorn et al., 2008). For example, our data showed that people in the Northeastern region had the lowest prevalence of hypertension disease, similar to the findings of a previous study from the National Health Examination Survey (Aekplakorn et al., 2008). In the same residential area, there was not different prevalence between males and females. In the Northeastern region, people are more likely to be unaware that they had hypertension disease (Aekplakorn et al., 2008).

Data also shows that people who have hypertension disease show no difference in behaviors regarding medication dosage, diet control, or weight reduction for both men and women. But, health behaviors relating to exercise, reduction or discontinuation of smoking and the consumption of alcohol are different between males and females. Males exercise more often than females (45.5 percent and 37.9 percent respectively). Males reduced or discontinued smoking at a lower level than females (47.4 percent and 60.8 percent respectively). This is similar to the finding that the reduction or discontinuation of alcohol consumption was at a lower level for males than females (50.1 percent and 61.7 percent respectively) (Table 2). Individuals in the age group of 25-59 years old reduced or discontinued the consumption of alcohol at a lower level than individuals in the age group of 59 years old and over (48 percent and 62.3 percent, respectively). The age group of 59 years old and over reported the highest level for routinely taking medication and controlling diet when compared with other groups (Table 3). Our results corresponded with a previous study reporting that alcohol usage among adolescent students in Thailand was 14.8 percent (21.2 percent males and 9.3 percent females) (Pengpid, 2012). Tobacco use of all adults was 27.2 percent, (46.4 percent for males and 9.1 percent for females) (WHO, 2009). And, data shows that children 11-14 years of age exercise the most, and working people, 25-59 years of age, the least (Thai Health Promotion Foundation, 2009).Regional location has influence on health care behavior differences. People who live in the Central region of the

Table 2 Percentage of health care behaviors for hypertension disease, classified by gender

Health care behavior	Male n(%)	Female n(%)
Health care for hypertension disease (1 year before interview)		
Take Medication		
Routinely	1,003(88.1)	2,214(89.7)
Sometimes	76(6.7)	162(6.6)
None	59(5.2)	93(3.8)
Total	1,138(100.0)	2,469(100.0)
Control Diet		
Continually	691(63.5)	1,544(65.1)
Sometimes	247(22.7)	524(22.1)
None	151(13.9)	302(12.7)
Total	1,089(100.0)	2,370(100.0)
Reduce Weight		
Continually	304(37.8)	671(37.6)
Sometimes	202(25.1)	414(23.2)
None	299(37.1)	699(39.2)
Total	805(100.0)	1,784(100.0)
Exercise		
Continually	493(45.5)	869(37.9)
Sometimes	293(27.0)	612(26.7)
None	298(27.5)	809(35.3)
Total	1,084(100.0)	2,290(100.0)
Reduction/discontinuation of smoking		
Continually	246(47.4)	219(60.8)
Sometimes	86(16.6)	30(8.3)
None	187(36.0)	111(30.8)
Total	519(100.0)	360(100.0)
Reduction/discontinuation of alcohol consumption		
Continually	265(50.1)	219(61.7)
Sometimes	142(26.8)	28(7.9)
None	122(23.1)	108(30.4)
Total	529(100.0)	355(100.0)

Table 3 Percentage of health care behaviors for hypertension disease, classified by age group

Health care	Age groups		
	15-24 n(%)	25-59 n(%)	>59 n(%)
Health care for hypertension disease (1 year before interview)			
Take Medicine			
Routinely	8(80.0)	1,434(85.0)	1,775(92.9)
Sometimes	1(10.0)	154(9.1)	83(4.3)
None	1(10.0)	99(5.9)	52(2.7)
Total	10(100.0)	1,687(100.0)	1,910(100.0)
Control Diet			
Continually	5(50.0)	1,023(62.1)	1,207(67.0)
Sometimes	4(40.0)	402(24.4)	365(20.3)
None	1(10.0)	222(13.5)	230(12.8)
Total	10(100.0)	1,647(100.0)	1,802(100.0)
Reduce Weight			
Continually	5(50.0)	496(38.3)	474(36.9)
Sometimes	2(20.0)	347(26.8)	267(20.8)
None	3(30.0)	451(34.9)	544(42.3)
Total	10(100.0)	1,294(100.0)	1,285(100.0)
Exercise			
Continually	4(40.0)	621(38.8)	737(41.8)
Sometimes	2(20.0)	441(27.5)	462(26.2)
None	4(40.0)	539(33.7)	564(32.0)
Total	10(100.0)	1,601(100.0)	1,763(100.0)
Reduction/discontinuation of smoking			
Continually	1(50.0)	218(50.1)	246(55.7)
Sometimes	1(50.0)	68(15.6)	47(10.6)
None	-	149(34.3)	149(33.7)
Total	2(100.0)	435(100.0)	442(100.0)
Reduction/discontinuation of alcohol consumption			
Continually	1(100.0)	224(48.0)	259(62.3)
Sometimes	-	121(25.9)	49(11.8)
None	-	122(26.1)	108(26.0)
Total	1(100.0)	467(100.0)	416(100.0)

country have the lowest reported level of exercise (32.8 percent), diet control (62.2 percent), and continuous weight reduction (30.9 percent) than other regions. This can be explained in terms of lifestyle, social well-being and urbanization. Low exercise results from the fact that most people live fast lifestyles, experience social and work related stress, and seem to be unconcerned about their health or quality of life (Tanvatanakul et al., 2007). Weight reduction is low in the Central region. Similar to a previous study, the residents in

Table 4 Percentage of health care behaviors for hypertension disease, classified by region

Health care	Regions				
	Bangkok n(%)	Central n(%)	North n(%)	Northeast n(%)	South n(%)
Health care for hypertension disease (1 year before interview)					
Take Medication					
Routinely	160(86.0)	1,049(88.8)	1,032(91.2)	642(88.8)	334(86.8)
Sometimes	14(7.5)	81(6.9)	68(6.0)	41(5.7)	34(8.8)
None	12(6.5)	51(4.3)	32(2.8)	40(5.5)	17(4.4)
Total	186(100.0)	1,181(100.0)	1,132(100.0)	723(100.0)	385(100.0)
Control Diet					
Continually	111(59.0)	696(62.2)	665(63.3)	461(65.3)	302(76.5)
Sometimes	36(19.1)	271(24.2)	243(23.1)	165(23.4)	56(14.2)
None	41(21.8)	152(13.6)	143(13.6)	80(11.3)	37(9.4)
Total	188(100.0)	1,119(100.0)	1,051(100.0)	706(100.0)	395(100.0)
Reduce Weight					
Continually	60(35.1)	259(30.9)	266(38.1)	250(44.5)	140(43.9)
Sometimes	45(26.3)	209(24.9)	151(21.6)	128(22.8)	83(26.0)
None	66(38.6)	371(44.2)	281(40.3)	184(32.7)	96(30.1)
Total	171(100.0)	839(100.0)	698(100.0)	562(100.0)	319(100.0)
Exercise					
Continually	67(35.4)	359(32.8)	405(40.5)	334(47.0)	197(51.6)
Sometimes	53(28.0)	322(29.5)	244(24.4)	201(28.3)	85(22.3)
None	69(36.5)	412(37.7)	350(35.0)	176(24.8)	100(26.2)
Total	189(100.0)	1,093(100.0)	999(100.0)	711(100.0)	382(100.0)
Reduction/discontinuation of smoking					
Continually	44(62.0)	157(55.7)	106(42.4)	107(60.8)	51(51.0)
Sometimes	1(1.4)	33(11.7)	42(16.8)	20(11.4)	20(20.0)
None	26(36.6)	92(32.6)	102(40.8)	49(27.8)	29(29.0)
Total	71(100.0)	282(100.0)	250(100.0)	176(100.0)	100(100.0)
Reduction/discontinuation of alcohol consumption					
Continually	43(61.4)	166(57.8)	109(42.6)	112(61.9)	54(60.0)
Sometimes	5(7.1)	41(14.3)	66(25.8)	40(22.1)	18(20.0)
None	22(31.4)	80(27.9)	81(31.6)	29(16.0)	18(20.0)
Total	70(100.0)	287(100.0)	256(100.0)	181(100.0)	90(100.0)

urban areas have higher overweight or obesity occurrence when compared with rural residents (Srithara, 2003).

Several reasons for people being overweight may be related to food consumption behavior of Thai people. Thai people have changed eating habits according to changing lifestyles that are different for urban and rural residents (Thai Health Working Group, 2011). Urban residents tend to consume more meat and fat products, while eating fewer vegetables and fruits. Teenagers prefer western food to local

Thai food. A more hurried lifestyle has encouraged ready-to-cook or semi-cooked food. Regarding food expenditures, Bangkokians use fifty percent of their food spending budgets on ready-to-eat meals or pre-cooked food, whereas those who reside in rural areas spend only 20 percent for such food (Vinijjakul et al., 2003). In addition, these results show that people who live in the Northern regions of Thailand had the lowest reduction or discontinuation of smoking and alcohol than other regions (42.4 percent and 42.6 percent, respectively) (Table 4). Poor reduction or discontinuation of smoking is a result of the traditional cigar smoking culture in the Northern region (Simarak, et al., 1977). Furthermore, the North of Thailand had the highest number of smokers compared to other regions (Vatanasapt, et al., 2002). Chiang Mai, a province in the Northwest of Thailand, was ranked fourth among 77 provinces in Thailand to have the most female smokers (7.7 percent) (Chinwong, et al., 2012). A limitation of this study is that it uses secondary data that does not provide more detailed data analysis, or consider other risk factor variables that could be associated with hypertension disease, such as occupation, education, income, and medical data. Further researcher should be conducted about the contextual differences in each region regarding health education and health promotion, especially in the areas of exercise in the Central region, and the reduction or discontinuation of alcohol consumption and smoking in the Northern regions.

Conclusion

The study shows that gender, age, and region variables were statistically significant. Females are more likely to have hypertension disease than males. Aging individuals also are more likely to experience hypertension disease. People who live in the Northeastern and the Southern regions of Thailand are less likely to have hypertension disease in comparison with individuals who live in the Bangkok metropolitan area. Males exercise more than females, but males are not able to reduce or discontinue smoking at a higher level than females. And, males' reduction or discontinuation of alcohol consumption is at a lower level than females. Reduction or discontinuation of alcohol consumption of the age group 25-59 years old is at a lower level than those in the age group of 59 years old and older. People who live in the Central region have the lowest level of routine exercise, diet control, and weight reduction when compared to those in Bangkok, Northern, Southern, or Northeastern regions. People who live in the Northern region have the lowest reduction or discontinuation of smoking and consumption of alcohol when compared with those in the Bangkok, Central, Southern, or Northeastern regions.

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