



UNIVERSITI PUTRA MALAYSIA

***STRESS, DEMOGRAPHIC AND LIFE-STYLE FACTORS OF
NON-ACADEMIC STAFF WITH HYPERTENSION IN
MALAYSIAN PUBLIC UNIVERSITY***

OSMAN ABUBAKAR HAJI MOHAMED

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UNIVERSITI PUTRA MALAYSIA
BERILMU BERBAKTI

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By

OSMAN ABUBAKAR HAJI MOHAMED

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in
Fulfilment of the Requirements for the Degree of Master of Science**

April 2016

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DEDICATIONS

*To spirits of my
dear Mum, Faduma Mohamed Ali, my dear Dad, Abubakar Haji Mohamed, my
bloody brother Mohmaed abubakar Haji Mohamed and my Lovely wife, Dunio
Hassan Ali whom I can feel every where, every time.*



Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Master of Science

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OSMAN ABUBAKAR HAJI MOHAMED

April 2016

Chairman : Huda Binti Zainuddin.
Faculty : Faculty of Medicine and Health Science

Background: Hypertension is a phenomenon which has been the main cause of high morbidity and mortality rate in both developing and developed countries will continue to prevail if the right action is not taken. the aim was To determine the relationship between the Stress, demographic and lifestyle factors and hypertension among Univeriti Putra Malaysia non-academic staff, aged 25 years old and above.

Methodology: Analytical cross-sectional study was conducted after obtaining ethical approval from JKEUPM. Respondents were selected using a simple random sampling with probability proportional to size. The data was collected from October 2014 to January 2015 by using pre-tested self-administered questionnaire and blood pressure measurements.

Results: Response rate was 69%. Overall proportion of hypertension among respondents was 8.8%. The proportion hypertension was higher among Females, Malays, Married, Less Educated (Secondary), Less income, supporting staff, moderate duration employment, those with low income, those with positive family history of hypertension and those who were Obese and those who have light physical activity. Result of Chi-Square showed that proportion of hypertension among UPM non-academic staff is lower than prevalence of hypertension among all Universiti Putra Malaysia staff, irrespective cadre. Socio-demographic Factors, Age, Educational Level and Employment Duration were significantly associated with hypertension. Similarly, Body Mass Index was observed to be significantly associated with hypertension. Results of logistic regression showed that the only Predictors of Hypertension in this study was age, Body Mass Index, Physical Indicator. The respondents at the age group 55 years and above have 71 times higher odds of having hypertension compared to those between 25–34

years old ($OR = 71.498$, $95\% CI 9.360 - 546.149$, $P = 0.0001$). Respondents in age group between 45–54 have 21 times higher odds ratio of having hypertension compared to those in age group of 25 – 34 years $OR = 21.198$; $95\% CI (3.756 - 119.647)$, $p = 0.0001$. This association do not have statistical significance. Finally those in age group 35 – 44years were also found to be about 2 times more likely to have hypertension than those in age group 25 – 34years, ($OR=2.349$, $95\% CI 0.415-13.288$, $P=0.334$), Meanwhile, odds of having hypertension were observed to be 11 times higher in those with High BMI compared to those with Lower Body Mass Index $OR = 10.780$; $95\% CI (4.065-28.588)$, $p < 0.0001$. The odds ratio of having hypertension was observed to be 4 times higher among physical Indicator respondents compared to those who were not physical indicator ($OR = 4.126$, $95\% CI 1.347 - 12.639$, $P = 0.013$). Conclusion: The study revealed that among all the factors examined, only Age, Body Mass Index, Physical Indicator significantly predicted hypertension. This finding have significant implication on prevention and control of hypertension among non-academic staff in University Putra Malaysia.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Master Sains

**STRES, DEMOGRAFIK DAN GAYA HIDUP DI KALANGAN STAF
BUKON AKADEMIK YANG MENGHIDAP HIPERTENSI DI
SEBUAH UNIVERSITI AWAM , MALAYSIA**

Oleh

OSMAN ABUBAKAR HAJI MOHAMED

April 2016

Pengerusi : Huda Binti Zainuddin.
Fakulti : Fakulti Preubatan dan Sains Kasihatan

latar Belakang Tekanan darah tinggi adalah satu fenomena yang telah menjadi punca utama morbiditi yang tinggi dan kadar kematian di kedua-dua membangun dan negara-negara maju akan terus diguna pakai jika tindakan yang betul tidak diambil. Objektif kajian ini adalah untuk menentukan hubungan antara faktor psikososial dan tekanan darah tinggi di kalangan staf akademik bukan warganegara Malaysia berumur 25 tahun ke atas di Universiti Putra Malaysia. Metodologi: Kajian secara keratan rentas telah dijalankan setelah mendapat kelulusan etika daripada JKE-UPM. Data telah dikumpul di kalangan 580 responden dari Oktober 2014 hingga Januari 2015 dengan menggunakan soal selidik yang diisi sendiri setelah di pra-uji dan ukuran tekanan darah. Keputusan: Kadar jawapan adalah 69.0%. Secara keseluruhan, dapat dilihat bahawa kadar hipertensi adalah 8.8%. Kadar ini lebih tinggi dalam kalangan wanita, melayu, yang sudah berkahwin, kurang pendidikan (menengah), kurang pendapatan, staf sokongan, pekerjaan jangka panjang, berpendapatan tinggi, menhidapi obesiti, bekas perokok dan tidak aktif secara fizikal. Keputusan regresi logistic menunjukkan bahawa responden berumur 55 tahun ke atas 71 kali lebih berkemungkinan untuk mendapat hipertensi berbanding mereka yang berumur 25 ke 34 tahun ($OR = 71.498; 95\%CI 9.360 - 546, 149; P = 0.0001$). Responden berumur 45 - 54 mempunyai 21 kali lebih tinggi nisbah berkemungkinan untuk mendapat hipertensi berbanding mereka yg berumur 25-34 $OR = 21.198; 95\%CI (3.756 - 119 - 647); p = 0.0001$. Hubungan ini tidak mempunyai kepentingan statistik. Kemungkinan untuk mendapat hipertensi adalah 11 kali lebih tinggi di kalangan mereka yang mempunyai kadar BMI yang tinggi berbanding mereka dengan Indeks Jisim Badan yang rendah $OR = 10.780; 95\%CI (4.06528 - 588), p < 0.0001$. Nisbah kemungkinan un-

tuk mendapat hipertensi adalah 4 kali lebih tinggi di kalangan responden dengan tekanan fizikal berbanding mereka yang bukan penanda tekanan fizikal ($OR = 4.126; 95\%CI 1.347 - 12.639; P = 0.013$) . Kajian ini menunjukkan yang hipertensi di kalangan staf bukan akademik adalah lebih rendah berbanding staf UPM yang lain. Staf sokongan lebih mudah untuk mendapat hipertensi berbanding staf profesional. Kajian ini mendedahkan yang faktor Sosiodemografi, Umur, Tahap Pendidikan dan Tempoh Bekerja adalah berkait rapat dengan hipertensi. Indeks Jisim Badan juga mempunyai makna secara statistik. Kesimpulan: Kajian ini menunjukkan bahawa di antara semua faktor, hanya Umur, Indeks Jisim Badan, Penanda Fizikal yang boleh meramal hipertensi secara statistik. Kajian ini mempunyai implikasi dalam pencegahan dan kawalan hipertensi di kalangan staf bukan akademik di UPM. Staf yang berumur lebih dari 25 tahun terutamanya akan mendapat faedah dari pemeriksaan tekanan darah yang kerap beserta pemantauan dan campur tangan seperti meningkatkan aktiviti fizikal dan mengawal pemakanan.

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I certify that a Thesis Examination Committee has met on 13 April 2016 to conduct the final examination of Osman Abubakar Haji Mohamed on his thesis entitled "Stress, Demographic and Life-Style Factors of Non-Academic Staff with Hypertension in a Malaysian Public University" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Master of Science.

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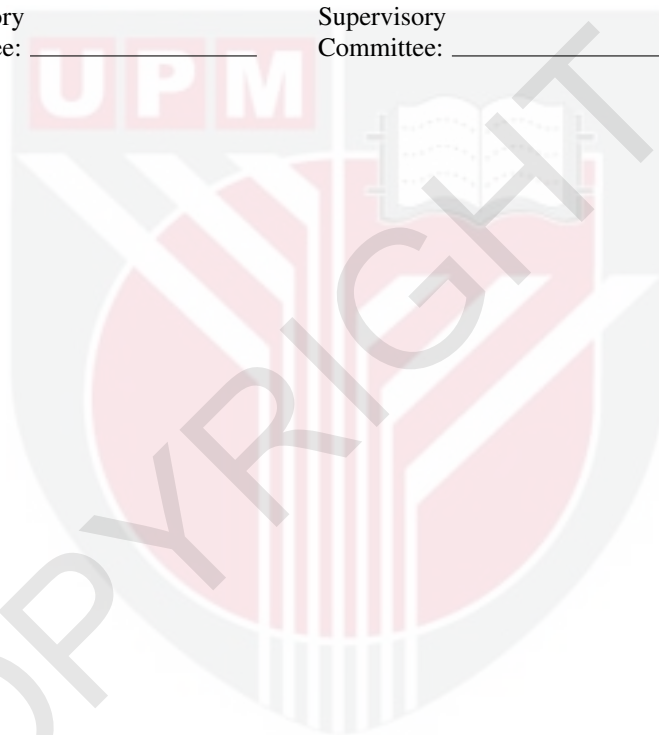


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LIST OF ABBREVIATIONS

CVD	Cardiovascular Disease
HTN	Hypertension
BP	Blood Pressure
SBP	Systolic Blood Pressure
DBP	Diastolic Blood Pressure
mmHg	Millimeter mercury
BMI	Body Mass Index
SES	Socioeconomic Status
UPM	Universiti Putra Malaysia
NHMS	National Health and Morbidity Survey
DALY	Daily Adjusted Life Years
NHANES	National Health and Nutrition Examination Survey
USA	United State America
JNC	Joint National Committee
LIMIC	Low and Middle-income Countries
WHO	World Health Organization
NCDs	Noncommunicable Diseases
MOH	Ministry Of health
isolated DBP	diastolic hypertension
ABPM	Ambulatory Blood Pressure Monitoring
OR	Odd Ratio



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CHAPTER 1

INTRODUCTION

This chapter contains background of the study, objectives of the study, research questions, problem statement, significance of the study and an explicit itemization of the hypothesis and conceptual frame work.

1.1 Background of the study

Cardiovascular disease is one of the diseases that account for about 17 million deaths a year worldwide with one third (9.4million) of it caused by hypertension. In a year 45% of deaths recorded are caused by hypertension while 51% is caused by stroke (Mendisi, 2013), Cardiovascular disease (CVD) is a worldwide phenomenon that is highly prevalent in low and middle income countries (LMIC) with potentially great implications for high-income countries. (Gersh et al., 2010). This phenomenon which has been the main cause of high morbidity and mortality rate in both developing and developed countries will continue to prevail if the right action is not taken (Nag and Ghosh, 2013). In the developing countries CVD is experienced from a younger age when compared to the developed countries; for example in Asia hypertension and stroke is being experienced from a much younger age (Tiwai et al., 2002). It is responsible for 30% of all deaths worldwide (Jamison et al., 2006). In India approximately 1.5 million annual deaths are caused cardiovascular diseases (CVDs); this implies that by 2020 the major cause of morbidity and mortality in India will be CVDs (Bansal et al., 2012). In the last 46 years CVD has been one of the major causes of death in Malaysia (Rampal et al., 2008).

Hypertension is a major risk factors for CVDs like myocardial infarction and stroke which is extremely increasing in developing countries while undergoing a demographic change. Hypertension (HTN) which is the leading risk factor for stroke, renal disease, congestive heart failure and coronary heart disease has become a global challenge for public health and is now considered the commonest and most challenging cardiovascular disorders. (Bani, 2011). It's one of the commonest cardiovascular disorders and now regarded as a major public health problem. This cardiovascular disorder is the most prevailing chronic health conditions affecting 70% of adults in developed countries like Poland and one third of adults in US. Hypertension is the major cause of cardiovascular as well as cerebrovascular. , (Borzecki et al., 2010). It affects approximately one third of adults in the United States and is a major risk factor for cardiovascular disease morbidity and mortality. it's the commonest cardiovascular disorder as well as cerebrovascular. (WHO, 2003). In the year 2000 the total world population of adult that were hypertensive was approximated at 972 million which is 26.4% of the total world population. It is projected that by 2025 the number of people with hypertension will increase to 29.2% which is 1.56 billion of the total world population (Chataut et al., 2012).

Findings from previous studies have shown that life expectancy can be shortened by 5 years if hypertension is not treated (Franco et al., 2005). Moreover, It has been predicted that by 2025 the rate of hypertension in developed countries will increase by 24% and by 80% in developing countries which implies that one third of hypertensive patients in the world will be in developing countries by 2025 (Kearney et al., 2005). Hypertension is also a risk factor for aneurysms of the arteries, heart failure as well as peripheral arterial disease; it is also the cause of acute kidney disease. Shortened life expectancy and disability can also be related to just moderate rise in arterial blood pressure (WHO, 2014). It is estimated that 972 million adults are hypertensive, In economically developing countries 639 million adults out of the 972 million adults are hypertensive while in economically developed countries 333 million adults are hypertensive(Kearney et al., 2005). Approximately 40% of adults within the age range of 25 and above were diagnosed with hypertension in 2008 (WHO, 2014).

According to a world Health report out of the 57 million global deaths that occurred in 2012, 63% of it was caused by non-communicable diseases in which 48% was caused by cardiovascular diseases. One of the physiological risk factors of attributable deaths is raised blood which accounts for 13% of deaths that occur globally. In developing countries hypertension is the fourth factor that contributes to premature while in the developed countries it is the seventh factor that contributes to premature deaths (Hosseinpoor et al., 2012).

In the 19th and 20th century there were varying prevalence rates recorded by different studies in different parts of the world. For instance, in India it ranged from 2 to 15% in the urban areas and from 2to8% in the rural areas (Hosseinpoor et al., 2012).The overall global prevalence of high blood pressure in 2008 among adults aged 25 and above was about 40%. (WHO, 2014). WHO reports that Africa had the highest prevalence rate of hypertension which was about 46% while America had the lowest rate of prevalence of about 35%. (Mancia et al., 2013a). Findings of recent studies have also shown that in Europe 30% of people are hypertensive. It is projected that by 2025 the number of adult with hypertension will rise to 60% which is 1.56 billion of the global adult population. Hypertension might be the major contributor of 9.4 million deaths annually (WHO, 2014).

Hypertension is also described as a silent killer due to the absence of symptoms in the early stage. The key to taking precautionary action towards preventing and reducing its complications is early detection. This can be detected at an early stage by constant check of blood pressure (WHO, 2014). There are health and economic benefits of effective prevention and control to both individual and the government because complications like cardiac bypass surgery, dialysis and carotid artery surgery can be reduced or avoided through adequate treatment and control; effective treatment and control reduces the economic implication (WHO, 2014).

In the United States 31.5% of adults have high blood pressure which is a major contributor of 326,000 of deaths that were recorded in 2006. The cost of health care services and medication in US was 76.6 million in 2010 because 70% of patients with hypertension were on medication as their health insurance was not sufficient enough to cover the control of the disease; among the hypertensive patients the control rate

was 46.6%. There is an increasing prevalence rate of high blood pressure among the youths (Falkner, 2010). Even though previous studies have provided the statistics for prevalence rate of hypertension in different parts of the world, none have been able to give a report on the world wide prevalence rate. (Kearney et al., 2004). Studies on cost of illness have shown that the economic weight of any disease often rest on the society. Hypertension is one of the cardiovascular diseases with high cost and less care. (Al-Efan, 2009).

In the Asian Pacific region the prevalence rate of hypertension has been on the increase due to epidemiological transition from communicable to non-communicable diseases with an increase of 20 to 35% prevalence rate across the region where the prevalence rate between urban and rural dwellers is similar. (Morgan, 2008). However, a difference exists between the number of people that are aware they are hypertensive, the number of people controlling it and the number of people being treated. There is an improvement in countries with active awareness campaigns and education programs. Studies have shown that the prevalence rate of hypertension in Malaysia, China Thailand and Australia is similar. Over the years there has been an increase in some of the countries and also varying prevalence rate among male and female in numerous countries.

A National Health and Morbidity Survey (NHMS II) which was carried out among adults aged 30 and above in 1996 showed that the prevalence rate of hypertension in Malaysia had increased to 32.9% with a cut off point of 140/90. Results of a national study that was carried in Malaysia showed that there was an increase in the prevalence rate of hypertension from 32.9% in 1996 to 40.5% in 2004 (*cut oBP140/90*) among adults aged 30 and above. (Rampal et al., 2008). Findings of the 2005/2006 Malaysian NCD Surveillance –1 (*MyNCDS – 1*) showed that the overall prevalence of hypertension in both male and female was 25.7% with a slightly higher rate in males (26.3%) than females (25.1%). The study showed that the total number of adults that had high blood pressure was 3.1 *million* which consisted of 1.7 *million* newly diagnosed cases and 1.4 *million* known cases. Furthermore, the findings revealed that there was a higher prevalence rate among Chinese (31.0%) as compared to Malays (23.4%) and Indians (21.6%). Overall, there was a rising trend in the prevalence of hypertension in adults 30 years was 32.9% (30%–35.8%) in 1996, 42.6% (37.5%–43.5%) in 2006, and 43.5% (40.4%– 46.6%) in 2011, with a significant increase of 32%. from 1996 to 2011 ($P=0.001$) and of 29% from 1996 to 2006 ($P=0.01$), but only a small change of 1% from 2006 to 2011 ($P=0.06$) (Naing et al., 2016).

However, findings of few studies have shown that the prevalence rate of hypertension in government workers is higher than that of the general population because they have higher level of educational qualification which gives them jobs with regular work schedule that does not allow them engage in any form of physical exercise. Malaysia which is a country under epidemiological transition may even face increased prevalence rate in the future and so therefore there is an urgent need to examine the factors that contribute to its prevalence in order to know the measures and the approach to take in preventing and controlling it (Reichert et al., 2009). Another study carried out in 2011 by Rampal et al in 2011 among university employees aged 30 *years* and above estimated the prevalence of hypertension at 34.4% (cut o BP 140=90). The findings of all these studies imply that the prevalence rate of hypertension in Malaysia is still high thus further

research are needed because hypertension has no definite cure (Muntner et al., 2004).

1.2 Problem statement

One of the major global issues of public health is hypertension as this reflected in the drastic increase in the number of people suffering from it from 600 *million* in 1980 to 1 *billion* in 2008. This disease is expensive to health care system; in 2001, 10% of the global health expenditure was spent on suboptimal blood pressure (Alwan et al., 2010). In Malaysia, which was ranked as a middle income country in 2011 (World Bank country-classification), hypertension prevalence is still high. Hypertension is costly to health care system. It was estimated that about (10%) of global health care expenditure went out on suboptimal blood pressure in 2001 (Gaziano et al., 2009). about RM 215.9 *million* was spent on antihypertensive medicines alone in the year 2005 (Sameerah and Sarojini, 2007). The direct cost of pre-hypertension as estimated by another study is about RM161,238 for Pre-hypertension, RM1741,85 for stage1 hypertension and RM271,821 for stage 2 hypertension (Al-Efan, 2009). Hospital data of inpatient obtained from the ministry of health revealed that there was an increase in the prevalence rate of hypertension from 26,876 cases in 1990 to 37,580 cases in 2005 which is 40% increase in 15 years while that of outpatient was 393,407. (Ministry of Health 2006). At 2003, the number of patients with a diagnosis of hypertension at government outpatient health facilities was estimated at 393,407 (Omar et al., 2004).

the current study was conducted with the main aim of exploring if the general population has the same prevalence as the special population which was just described. The study was conducted among employees of Universiti Putra Malaysia with the hope of contributing to existing body of knowledge especially knowledge regarding hypertension among the study population. Therefore it is important that drastic measures be taken towards managing and controlling hypertension. In addition, knowledge and awareness play a big role in the control of hypertension. Thus it has been assumed that the increase in prevalence rate is due to public unawareness, insufficient identification of risk factor as well as lack of intervention and as such more steps should be taken towards identifying risk factors in order to support prevention and control measures (Helen Ann Halpin PhD et al., 2010).

1.3 Significance of the study

This study provides the proportion of hypertension among Universiti Putra Malaysia non-academic Staff and it also provides an opportunity for better understanding of distribution of hypertension and its risk factors. The results of this study would serve as baseline data for Universiti Putra Malaysia management to facilitate planning of intervention programs for preventing and controlling of hypertension among their non-academic staff. Early detection is a critical first step towards control of hypertension, using a population approach. This approach offers a potential synergistic effect for effective prevention and control when it is implemented together with an enhanced risk

factor identification and intervention program targeted at individuals with high risk of developing the condition, in a high risk approach.

1.4 Research Questions

1. What are the Socio-demographic characteristics (age, gender, marital status, educational level, ethnicity, working position, employment duration, income, family history) of hypertension among nonacademic staff in Universiti Putra Malaysia.
2. What are the lifestyle characteristics of hypertension among nonacademic staff in Universiti Putra Malaysia.
3. What are the the proportion of hypertension among nonacademic staff in Universiti Putra Malaysia.
4. What are the association between socio-demographic factors (age, sex, marital status, race, working position, employment duration, income, educational level, family history) and hypertension.
5. What are the association between lifestyle characteristics and hypertension among Universiti Putra Malaysia non-academic staff.
6. What are the association between Stress and hypertension among non-academic staff.
7. What are the predictors of hypertension among Universiti Putra Malaysia nonacademic staff.

1.5 Objectives of the research

1.5.1 General objectives

1. The general objective of this study is to determine the association between psychosocial factors (Stress) and Hyper-tension among non-academic staff of Universiti Putra Malaysia.

1.5.2 Specific objectives

The Specific objectives of this research are:

1. To determine the socio-demographic characteristics (age, gender, marital status, educational level, ethnicity, working position, employment duration, income, family history) of hypertension among nonacademic staff in UniversitiPutra Malaysia.
2. To determine the lifestyle characteristics of hypertension among nonacademic staff in UniversitiPutra Malaysia.
3. To determine the other risk factors of hypertension among nonacademic staff in UniversitiPutra Malaysia.
4. To determine the proportion of hypertension among nonacademic staff in UniversitiPutra Malaysia.
5. To determine the association between socio-demographic factors (age, sex, marital status, race, working position, employment duration, income, educational level, family history) and hypertension among nonacademic staff in UniversitiPutra Malaysia.
6. To determine the association between lifestyle characteristics and hypertension among nonacademic staff in UniversitiPutra Malaysia.
7. To determine the association between psychosocial factors and hypertension among nonacademic staff in UniversitiPutra Malaysia.
8. To determine the predictors of hypertension among nonacademic staff in UniversitiPutra Malaysia.

1.6 Study hypothesis

H_1 : There is a significant association between socio-demographic factors and hypertension among Universiti Putra Malaysia non-academic staff.

H_1 : There is a significant association between lifestyle characteristic and hypertension among Universiti Putra Malaysia nonacademic staff .

H_1 : There is a significant association between other factors and hypertension among Universiti Putra Malaysia.

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