UNIVERSITI TEKNOLOGI MARA

CARDIOVASCULAR RISK PERCEPTION AMONG ADULTS IN A RURAL POPULATION OF MALAYSIA

NAZAR MOHD ZABADI BIN MOHD AZAHAR

Thesis submitted in fulfilment
of the requirements for the degree of
Master of Science Medicine

Faculty of Medicine

December 2013

AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the result of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

Name of Student	:	Nazar Mohd Zabadi bin Mohd Azahar
Student I.D. No.	:	2009372077
Programme	:	Master of Science Medicine (MD780)
Faculty	:	Faculty of Medicine
Thesis Title	:	Cardiovascular Risk Perception among Adults in a Rural Population of Malaysia
Signature of Student	:	.....
Date	:	December 2013

ABSTRACT

Risk perception is an important component which would bring about changes in unhealthy lifestyle. Underestimation of risk would reduce the commitment of individuals from making a significant change in their lifestyle including dietary habits, activity levels, and tobacco usage to decrease their risk for CVD. The objectives of this study are (i) To determine the proportion of cardiovascular risk factors in the studied population. (ii) To determine the Framingham Risk Score in the studied population. (iii) To determine the association between cardiovascular risk perception with socio-demographic characteristics. (iv) To determine the level of cardiovascular risk perception with respect to cardiovascular risk factors and (v) To determine the association between cardiovascular risk perception with Framingham risk scores. This cross-sectional study was conducted between July 2010 to June 2011 in Raub, Malaysia involving adults aged 30 years and above. Sampling of subjects was done based on purposive convenient sampling. Blood pressure measurement was taken twice and an average was recorded. Anthropometric measurement was done for BMI and WHR determination. Venous blood samples were obtained for Fasting Blood Glucose and Fasting Serum Lipid Assays. Framingham Risk Score was calculated using the "General Cardiovascular Risk Profile for Use in Primary Care: The Framingham Heart Study online calculator". A set of modified Risk and Health Behaviours Questionnaire was used to measure the cardiovascular risk perception scores. Prior to the study, a pilot study was done to evaluate the reliability of the questionnaire. The Cronbach's alpha was 0.972 for this questionnaire. A total of 600 rural respondents (mean±SD of age: 59.5±10.7 years; 41.7% males) participated in this study. A majority were married (80.9%), had primary education (64.8%), housewives (44.3%) and had a monthly household income of RM501-RM1500 (57.9%). The proportion with hypertension was 63.8%, smoking was 14.3%, obesity was 30.2%, elevated WHR was 77.1%, diabetes was 23.7% and dyslipidemia was 83.7%. Based on Framingham risk score, 42.4% of the respondents were at high risk for cardiovascular diseases (CVD) in the next 10 years. A majority of males (63.2%) were at high risk for CVD while 44.5% of females were in the low risk group. Cardiovascular risk perception scores were found to be significantly negatively correlated with age ($r=-0.097$, $p=0.018$) and waist hip ratio ($r=-0.098$, $p=0.017$). Monthly household income of the respondents was significantly associated with the cardiovascular risk perception scores ($F(3,573)=10.649$, $p<0.001$). Hypertensives who took anti-hypertensive medications had significantly higher cardiovascular risk perception scores ($t(371)=2.110$, $p=0.036$). Hypertensives who were aware of their hypertension had significantly higher cardiovascular risk perception score ($t(361)=2.189$, $p=0.029$). Among respondents who were on anti-hypertensive medications and successful in controlling their blood pressure had significantly higher cardiovascular risk perception score ($t(171)=2.640$, $p=0.009$). Framingham Risk Score was found to be significantly associated with cardiovascular risk perception score ($F(2,433)=3.352$, $p=0.036$). Almost half of the rural respondents had high risk for developing CVD. Increasing age, low monthly household income, elevated WHR, hypertensive who were not on treatment, unaware of their hypertension status and unsuccessful in controlling their blood pressure had low cardiovascular risk perception. Framingham Risk Score was significantly associated with cardiovascular risk perception score. Healthcare providers should develop relevant strategies to improve the cardiovascular risk perception among the rural population to augment better control of CVD risk factors.

ACKNOWLEDGEMENTS

First of all, I would like to praise the almighty ALLAH for giving me the chance, patience and strength in completing this study.

This research thesis would not have been possible without the help and support of many people. I am sincerely thankful to everyone who supported and encouraged me during the period to finish my Masters study.

I would like to thank my supervisor Professor Dato' Dr. Khalid Yusoff as my main supervisor, Associate Professor Dr Ambigga Devi S. Krishnapillai and Dr Mohd Shahril Ahmad Saman as my co-supervisor for continually supporting, guiding, and advice me through this scientific period.

I also would like to extend my gratitude to the staff from Centre for Translational Research (CenTRE) for their guidance and help me to complete this research. Furthermore, I also would like to thank the Clinical Research Laboratories for their help in biochemical assessment.

I wish to acknowledge the time and willingness of the subjects who participated in this study. My appreciation also goes to the nurses from clinic throughout Raub and villages head and their respective committees for their help in collecting the data.

I would like to thank the lecturers and administrative staff of Faculty of Medicine, University Teknologi MARA. Also, I would like to acknowledge the Ministry of Science, Technology and Innovation (MOSTI) and Ministry of Higher Education (MOHE) for the LRGS grant (Grant Nbr: 600-RMI/LRGS 5/3 (2/2011) and (Grant Nbr: 100-IRDC/BIOTEK 16/6/2 (13/2007).

Last but not least, I am deeply thankful to my dearest family for their support, encouragement, patience and understanding at all times. Without their love and understanding, I would not have been able to complete this study.

CHAPTER ONE
INTRODUCTION

Cardiovascular disease (CVD), primarily ischaemic heart disease and cerebrovascular disease, is the world's most important cause of death (WHO 2003). The World Health Organization (WHO) estimates that about 17 million people globally die of CVD each year (WHO 2003). In 2008, CVD overtook the other causes of death in developing countries and became the leading cause of death (WHO, 2011).

Cardiovascular disease also drives high healthcare costs in those surviving events such as acute myocardial infarction, stroke and heart failure. Better strategies to ensure the prevention and treatment of CVD have become a major priority for most healthcare systems (Richard, 2007). These strategies are derived from and/or lead to numerous clinical research focused on treatment and prevention of heart disease and stroke in order to improve the prognosis (Janet et al. 2006).

The major modifiable risk factors for cardiovascular disease are well recognized. The five major risk factors are: 1) abnormal plasma lipid levels (high level of low-density lipoprotein cholesterol [LDL-C] and triglycerides, and low levels of high-density lipoprotein [HDL-C]) (Verschuren et al. 1995); 2) hypertension (MacMahon et al. 1990); 3) smoking, 4) diabetes and 5) increased body weight (Greenland et al. 2003). Additional cardiovascular risk factors include older age (≥55 years), male sex, presence of other vascular diseases (stroke or peripheral arterial disease), diabetes mellitus, proteinuria, left ventricular hypertrophy and family history of premature coronary heart disease (Richard, 2007).

Cardiovascular risk factors rarely occur in isolation and many subjects present with a combination of these risk factors that exacerbate their total risk of cardiovascular disease (Jackson et al. 2005). The Framingham Heart Study reported that, 78% of hypertensive men and 82% of hypertensive women have at least one other cardiovascular risk factor (Kannel, 2000). Similar findings were seen in France; 84% of hypertensive men and 77% of hypertensive women have at least one other