การเข้าถึงแหล่งความรู้ เรื่อง ปัจจัยเสี่ยง การป้องกัน และพฤติกรรมการป้องกัน
โรคหลอดเลือดหัวใจของประชากรอายุ 30 ปีขึ้นไป
ในเมืองมาเล ประเทศมัลดีฟส์

นางสาวคาดีจา อับดุลลา

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาสาธารณสุขศาสตรมหาบัณฑิต
สาขาวิชาพัฒนาระบบสาธารณสุข
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ปีการศึกษา 2551
ลิขสิทธิ์ของ จุฬาลงกรณ์มหาวิทยาลัย

ACCESIBILITY TO KNOWLEDGE AND INFORMATION ON RISK FACTORS

AND PREVENTION OF CARDIOVASCULAR DISEASES, AND

PREVENTIVE BHEAVIORS OF RESIDENTS ABOVE 30

YEARS IN MALE'-MALDIVES

Ms. Khadeeja Abdulla
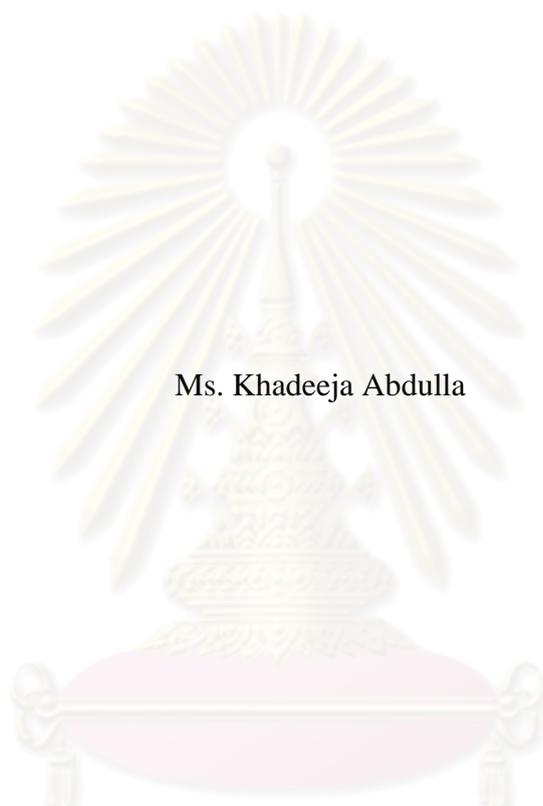
A Thesis Submitted in Partial Fulfillment of the Requirements

for the Degree of Master of Public Health Program in Health Systems Development

College of Public Health Sciences

Chulalongkorn University

Academic Year 2008

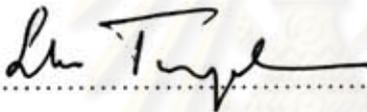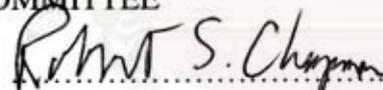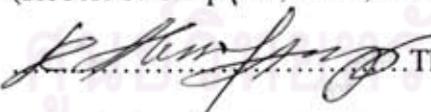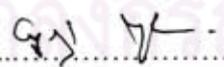|	
Thesis Title	ACCESIBILITY TO KNOWLEDGE AND INFORMATION ON RISK FACTORS AND PREVENTION OF CARDIOVASCULAR DISEASES, AND PREVENTIVE BHEAVIORS OF RESIDENTS ABOVE 30 YEARS IN MALE'-MALDIVES
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คาดีจา อับดุลลา: การเข้าถึงแหล่งความรู้ เรื่อง ปัจจัยเสี่ยง การป้องกัน และพฤติกรรมการป้องกัน
โรคหลอดเลือดหัวใจของประชากรอายุ 30 ปีขึ้นไป ในเมืองมาเล ประเทศมัลดีฟส์
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OF RESIDENTS ABOVE 30 YEARS IN MALE'-MALDIVES) อ.ที่ปรึกษาวิทยานิพนธ์หลัก:
อ. นพ.อเลซซิโอ พันซ่า, 67 หน้า.

การศึกษานี้มีวัตถุประสงค์เพื่อหาความสัมพันธ์ระหว่างการเข้าถึงข้อมูลข่าวสารและความรู้ในด้านปัจจัย
เสี่ยงและพฤติกรรมการป้องกันโรคหัวใจและหลอดเลือด รวมทั้งพฤติกรรมสุขภาพและการปฏิบัติตัวที่เกี่ยวข้อง
กับโรคหัวใจและหลอดเลือด ในเพศชายอายุ 30 ปีขึ้นไปที่อาศัยอยู่ในเมืองหลวงของประเทศมัลดีฟส์ ในการ
ศึกษานี้ยังได้อธิบายถึงลักษณะทางประชากรและสังคม แหล่งข้อมูลข่าวสารด้านปัจจัยเสี่ยงต่อโรคหัวใจและ
หลอดเลือด และพฤติกรรมต่างๆในการป้องกันอีกด้วย

รูปแบบการศึกษาเป็นการวิเคราะห์ในเชิงพรรณนาแบบภาคตัดขวาง โดยใช้แบบสอบถามที่ตอบด้วยตน
เองโดยไม่ระบุชื่อ พร้อมทั้งมีวิธีการสุ่มตัวอย่างอย่างเป็นระบบ โดยใช้ 1 คน ต่อ 1 ครัวเรือน ผลการศึกษาแสดง
ให้เห็นว่ามีร้อยละ 52 จากจำนวนผู้ตอบทั้งหมดที่มีความรู้เกี่ยวกับปัจจัยเสี่ยงและการป้องกันโรคหัวใจและหลอด
เลือด การสำรวจนี้แสดงให้เห็นว่าความรู้มีความสัมพันธ์อย่างมีนัยสำคัญกับสถานภาพสมรส (p<0.004) และ
อาชีพ (p<0.001) โดยผู้ตอบที่มีความรู้น้อยมีอาชีพเกษตรกรรมและประมง นอกจากนี้ยังพบว่ามีความสัมพันธ์
ระหว่างระดับของความรู้กับอัตราการมีกิจกรรมทางกายด้วย แหล่งข้อมูลข่าวสารในด้านปัจจัยเสี่ยงต่อโรคหัวใจ
และหลอดเลือด และพฤติกรรมในการป้องกันนั้นมาจากโทรทัศน์เป็นหลัก โดยพบว่ามีความสัมพันธ์กันระหว่าง
การเข้าถึงข้อมูลข่าวสารที่เกี่ยวกับโรคหัวใจและหลอดเลือด ความรู้ในด้านปัจจัยเสี่ยงต่อโรคหัวใจและหลอด
เลือด และพฤติกรรมในการป้องกัน

จากผลการศึกษาที่ได้นี้ แสดงให้เห็นว่ามีเพียงร้อยละ 21.1 ของผู้ตอบทั้งหมดที่บริโภคผักและผลไม้ได้
ตามปริมาณที่กำหนด มีเพียงร้อยละ 26.1 ของผู้ตอบทั้งหมดที่มีกิจกรรมทางกายอย่างต่อเนื่องได้ 30 นาที อย่าง
น้อย 3 ครั้งต่อสัปดาห์ และร้อยละ 25.6 ของผู้ตอบทั้งหมดยังคงสูบบุหรี่ในปัจจุบัน อย่างไรก็ตาม ผู้ตอบส่วนใหญ่
มีความตั้งใจที่จะเปลี่ยนพฤติกรรมของตนเองให้ดีขึ้นเพื่อสุขภาพ โดยมีร้อยละ 92.5 ของผู้ตอบทั้งหมดมีความตั้ง
ใจที่จะบริโภคผักและผลไม้มากขึ้น มีร้อยละ 92.1 ของผู้ตอบทั้งหมดและร้อยละ 69.6 ของผู้ตอบที่ปัจจุบันสูบ
บุหรี่มีความตั้งใจที่จะเลิกสูบบุหรี่ ผู้ชายมีแนวโน้มที่จะมีการปฏิบัติตัวได้มากตามระดับที่กำหนด โดยในกลุ่มอายุ
ที่น้อยกว่าส่วนมาก (อายุ 30 -40 ปี) มีกิจกรรมทางกายได้ตามระดับที่กำหนด รวมทั้งในผู้ที่มีประวัติการเจ็บป่วย
จากโรคหัวใจและหลอดเลือดด้วยเช่นกันที่มีกิจกรรมทางกายได้ตามอัตรา ที่กำหนด ผลการศึกษานี้ยังแสดงให้เห็น
ว่าผู้ตอบที่เคยมีประวัติการเจ็บป่วยมีการบริโภคผักและผลไม้ที่มากกว่า ซึ่งมีความสัมพันธ์กันเป็นอย่างยิ่งระหว่าง
เพศ (p<0.001) และอาชีพ (p<0.001) กับการสูบบุหรี่ ซึ่งพบในผู้ชายสูบบุหรี่ที่มากกว่านี้ในกลุ่มผู้ที่ประกอบอาชีพ
เกษตรกรรมและประมง

สาขาวิชา   การพัฒนาระบบสาธารณสุข   ลายมือชื่อนิสิต
ปีการศึกษา 2551   ลายมือ อ.ที่ปรึกษาวิทยานิพนธ์หลัก

5179103653: MAJOR HEALTH SYSTEMS DEVELOPMENT
KEY WORDS: CARDIOVASCULAR DISEASE/RISK FACTORS/ PREVENTION/ KNOWLEDGE/ INFORMATION/ ACCESIBILITY/ PREVENTIVE BEHAVIOUR/ MALE'-MALDIVES

KHADEEJA ABDULLA: ACCESIBILITY TO KNOWLEDGE AND INFORMATION ON RISK FACTORS AND PREVENTION OF CARDIOVASCULAR DISEASES, AND PREVENTIVE BHEAVIOURS OF RESIDENTS ABOVE 30 YEARS IN MALE'-MALDIVES.THESIS ADVISOR ALESSIO PANZA, M.D, M.C.H., 67pp.

The purpose of the study is to find the relationship between the accessibility to information and the knowledge of the risk factors and preventive behaviours of CVDs and the practice of CVD related healthy behaviours among individuals above 30 y of age in the Maldives capital, Male'. The study also describes socio-demographic characteristics, source of information on cardiovascular disease risk factors and preventive behaviours.

A cross sectional descriptive and analytical study with a self-administered anonymous questionnaire with a systematic sampling method, using one adult per household. The results showed that about 52% of the respondents had moderate knowledge about prevention and risk factors of CVD. The survey showed that the knowledge had a significant association with marital status (p<0.004) and occupation (p<0.001). Respondents from the fishing and agriculture sector had less knowledge. There was a significant association between level of knowledge score and rate of physical activities. And the main source of information on CVD risk factors and preventive behaviours were from TV. There was a significant association between accessibility to information on CVD and knowledge on CVD risk factors and preventive behaviours.

From the results obtained from the study it is showed that only 12.1% of the respondents were consuming the recommended amount of fruits and vegetables, only 26.1% of the respondents were practicing 30 minutes of vigorous physical activity at least 3 times a week and 25.6% of the respondents were current smokers.

However, Majority of respondents intend to change their behaviour to healthier one. 92.5% of the respondents intended to eat more fruits and vegetables, 92.1% of the respondents and among the current smokers 69.6% intended to quit smoking. Men tend to practice more of the recommended level, Majority of younger age group (30-40 years) was following recommended level of physical activity and also people with history of CVD related illness were also following the recommended rate of physical activity. The results also showed that respondents with history of medical illness were eating more fruits and vegetables. There was a highly significant association between gender (p<0.001) and occupation (p<0.001) and consumption of tobacco. Males and people employed in fishing and agriculture were smoking more.

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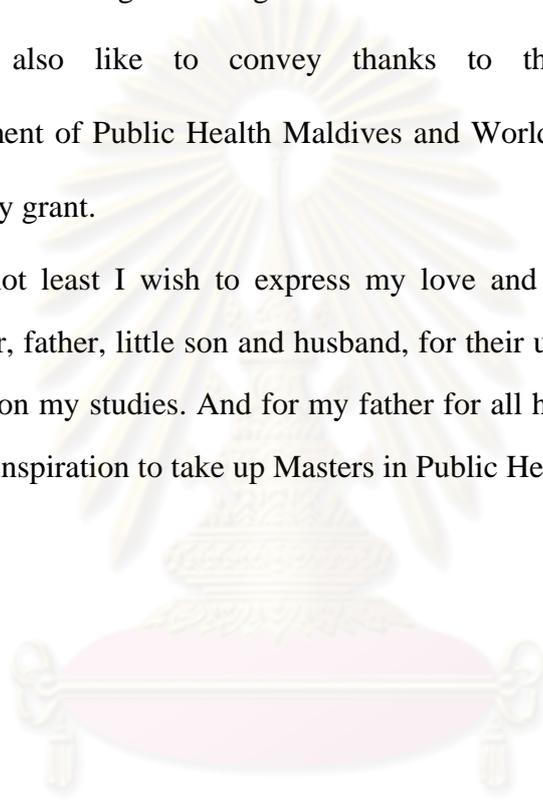
ACKNOWLEDGEMENTS

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LIST OF ABBREVIATIONS

CVD   Cardiovascular Diseases

NCD   Non-communicable Disease

MOH   Ministry of Health

DPH   Department of Public Health

NGO   Non-governmental Organizations

WHO   World Health Organization

IEC   Information Education Communication

BCC   Behaviour Change Communication

SCT   Social Cognitive Theory

DPAS   Diet Physical Activity and Health

CHAPTER I

INTRODUCTION

1.1.   Background

Chronic non-communicable diseases (NCDs) are the leading cause of mortality, morbidity and disability in the member countries of South-East Asia (SEA) region of the World Health Organization (WHO, 2007). Maldives during the last few decades has been experiencing a rapid socio economic development. With the success achieved in the control of communicable diseases, the life expectancy of the people have increased from around 46 years in 1980's to present level around 70 years. With the changes in demography, fast social and economic development, rapid urbanization, changes in food habits and lifestyles, Maldives is experiencing significant increases in hypertension, diabetes, obesity, tobacco use, and cardiovascular disease. According to the vital registration statistics published by Ministry of Health, 304 deaths occurred due to cardiovascular causes in 2005, along with a further 79 deaths due to cancers and 109 due to respiratory diseases. Cardiovascular Disease has become the major cause of death in the adult population in the Maldives accounting for 25-30% of all deaths.(Ministry of Health, 2004b)

During the past 20 years globally there has been a dramatic increase in public, private and professional interest in preventing disability and deaths by bringing positive changes in life-style. This is mainly due to epidemiological transition from infectious disease to chronic non communicable diseases and significant increase in morbidity & and mortality due to them. (Glanz, Barbara, & Frances, 2002)

Approximately 80% of cardiovascular diseases can be prevented and low-cost preventive strategies can save the lives of millions of people for whom treatment would be unaffordable either at individual or at national level (WHO, 2008) In order to minimize the impact of the ongoing epidemic of CVD in developing countries, prevention and control of modifiable risk factors must become a high health priority (Suh, 2001)

WHO's Global Strategy on Diet, Physical Activity and Health (DPAS), adopted in 2004, aims to reduce risk of NCDs across populations by addressing two of the main risk factors, unhealthy diet and physical inactivity, through comprehensive, multisectoral interventions. The overall goal of DPAS is to promote and protect health by guiding the development of an enabling environment for sustainable actions at individual, community, national and global levels that, when taken together, will lead to reduced disease and death rates related to unhealthy diet and physical inactivity (WHO, 2009).

Maldives government is committed to and gives high priority to Non Communicable disease prevention and promotion of healthy lifestyles. Focus is given on prevention at island level by strengthening of public health services together with increased access to primary health care and public health aspects (Ministry of Health, 2006). One major goal in the Maldives Health Master plan 2006-2015 is "To ensure people have appropriate knowledge and behaviours to protect and promote their health".

Limited data are available on the risk factors that contribute to growing number of noncommunicable diseases (NCD) which is estimated at 55% of deaths in Maldives. Adopting healthy behaviours such as eating nutritious foods, being

physically active, and avoiding tobacco use and controlling stress can prevent or control the adverse effects of these diseases (MOH,2007)

1.2. Rationale

Since the Health promotion review 2004, many of the programs in Ministry of Health (MOH) and Department of Public Health (DPH) involve health promotion and are focused on promoting healthy lifestyles. But there many constraints to the successful implementation of this health promotion programmes. There is a shortage of skilled staff, lack of evidence base, inadequate monitoring and evaluation and emphasis on health education materials rather than behaviour change communication (Department of Public Health, 2005). Also recent studies recommend that the developing countries should focus on the research agenda vital statistics and monitoring of cardiovascular diseases (Ebrahim & Smith, 2001)

There are important barriers that can hinder behaviour change such as inadequate accessibility to information, difficulties in interpreting information, beliefs about reliability and usefulness of such information. Furthermore, the history of health education has demonstrated that simply presenting information about health behaviour is insufficient (Pálsdóttir, 2008) and that targeted interventions for effective behaviour modifications are likely to increase the acceptability and actual practice of positive behaviour and adoption of healthy lifestyles by high risk groups (Morowatisharifabad, 2006)

Behaviour related factors such as being a regular smoker, stress, having high blood pressure, high cholesterol level, being overweight, being physically inactive can increase the risk of CVD (Choiniere, 2000). The high level of risk factors among the population explains the current epidemiological situation, and points to future

increases in NCD prevalence and deaths. At least 80% of premature heart disease, stroke and diabetes and 40% of cancer could be prevented. We are currently in an era of behavioural health, in which human behaviour is looked at as a source of chronic disease risk factor and their prevention (Elder, 2001).The most successful strategies employ a range of population-wide and high risk focused approaches based on health promotion, prevention and cost-effective management of major NCDs and their common risk factors (Ministry of Health, 2008)

Cardiovascular Disease (CVD) risk factor awareness and knowledge are believed to be prerequisites for adopting healthy lifestyle behaviours (Homko, 2008) With the growing number of cardiovascular diseases in Maldives, public health challenges can be better addressed if credible information about health risk and effective public health practices can be made readily available to the young people (age 11-24, according to UN agencies definition) and population at large, in an effective manner. Along with the increased availability and accessibility to appropriate knowledge, attempts will need to be focused on adopting healthy lifestyles and other positive behaviour changes in order to effectively prevent and control CVDs among individuals in the high risk groups (according to EU guidelines 2003 high risk groups, by physiologic factors, for CVDs are those with: Blood pressure >140/90 mm Hg; Total cholesterol >150 mg/dL; LDL cholesterol >115 mg/dl and bad glycemic control in all persons with diabetes).

In order to prove the effectiveness of CVDs prevention interventions using IEC materials it is important to get an accurate picture of the baseline situation in the Maldives among people above 30 years of age with regard to the magnitude of the risk factors and existing knowledge on CVD risk factors and preventive behaviours as

well as intention and reported practices CVD related preventive behaviour. This study aims at conducting a research in the capital city of Maldives on potential risk factors for CVDs such as family history, food habit, tobacco consumption, physical inactivity and other lifestyle related risk factors. In addition the study will attempt to assess the existing knowledge, the availability as well as accessibility to necessary information on the risk factors that lead to CVDs as well as actual practice of healthy behaviours and/or intention to practice healthy behaviours to avoid CVDs.

1.3. Research questions

1. What is the relationship between socio demographic factors and practice of healthy behaviours for CVDs prevention among residents of Male'-Maldives above 30 y of age?

2. What is the relationship between the accessibility to information on risk factors & preventive behaviours on CVDs and practice and intention to practice healthy behaviours among residents of Male'-Maldives above 30 y of age?

3. What is the relationship between knowledge on risk factors & preventive behaviours on CVDs   and practice or intention to practice healthy behaviours among residents of Male'- Maldives above 30 y of age?

4. What is the relationship between socio demographic factors and knowledge on CVD risk factor and preventive behaviours?

5. What is the relationship between accessibility to information on CVD risk factors and preventive behaviours and knowledge?

Null Hypothesis

1. There is no relationship between socio demographic factors and practice of healthy behaviours for CVDs prevention.

2. There is no relationship between the accessibility to information on risk factors and prevention measures for CVDs and practice of healthy behaviours for CVDs prevention.

3. There is no relationship between knowledge on risk factors and prevention measures for CVDs and practice of healthy behaviours for CVDs prevention.

4. There is no relationship between socio demographic factors and knowledge on CVD risk factor and preventive behaviours.

5. There is no relationship between accessibility to information on CVD risk factors and preventive behaviours and knowledge

1.4.   Objectives

General Objective

The purpose of the study was to find the relationship between the accessibility to information and the knowledge of the risk factors and preventive behaviours of CVDs and the practice of CVD related behaviours among individuals above 30 years of age in the Maldives capital, Male'.

Specific Objectives

1. To determine the association between socio demographic factors and the reported practice or intention to practice CVD related healthy behaviours.

2. To study the level of knowledge regarding CVD risk factors and preventive behaviours and their association with reported practice or intention to practice CVD related healthy behaviours.

3. To study the accessibility to information regarding CVD risk factors and preventive behaviours and their association with reported practice and intention to practice CVD related healthy behaviours.

1.5. Conception framework

Independent Variables	Dependent Variables

Socio Demographic factors

- Gender
- Age
- Education
- Marital Status
- Occupation
- Reported history of CVD related illness

Knowledge on CVD risk factors and preventive behaviours

Accessibility to information on CVD risk factors and preventive behaviours

Reported Practice of CVD related healthy behaviours

- Physical activities
- Healthy eating behaviours
- smoking

Figure 1. Conceptual framework

1.6.   Operational definitions:

Socio Demographic factors covers the gender, age, education, marital status, occupation, employment and history of CVDs related illnesses of males and females above 40y of age resident in Male'.

Gender covers equal number of male and female

 Age refers to the age of the respondent at the time of the interview and all participants are age 30 and above

Education refers to the level of education of the respondent and is classified in 5 groups which are basic education, primary education, secondary education, diploma and graduate/post graduate.

Marital status refers to the legal conjugal status of each individual in relation to the marriage laws or customs. This is categorized into 3 groups, never married, married, divorced/separated/widowed.

Occupation refers to the type of job the respondent is in. Occupation is classified in 5 groups, which are government sector, private sector, agriculture/fishing, house keeper and unemployed.

Reported history of CVD related illness refers to any history of CVD related medical condition such as hypertension, coronary heart disease or (diabetes) of the respondent.

2. **Accessibility of information on CVD** refers to the CVD related information that the respondent has access to whether information is within easy reach of the public, And the availability of the appropriate printed materials, access to radio/TV programs and that the required information is being disseminated in an effective manner by mass media.

3. **Knowledge on CVD risk factors and preventive behaviours** refers to the amount of knowledge people have regarding the dangers of tobacco consumption, how it is a preventable risk factor to CVD, knowledge of physical activity the need for 30 minutes or more of vigorous activities at least 3 times a week, how exercise is both preventable and a remedy. Also the amount of knowledge people have on risk factors related to obesity and their relationship to CVDs. Likewise regarding the related risk factors such as smoking, unhealthy diet and preventive eating fewer high-fat and high-cholesterol foods and positive implications of the CVD related healthy behaviours

4. **Intention to and reported practice of CVD healthy behaviours** refers to relationship between intention and practice of CVD related healthy behaviours.

Physical activity behaviours refers to practicing of 30 minutes of vigorous physical activities at least 3 times a week.

CVD related healthy eating behaviours refer to eating 5 potions of fruits and vegetables once a day. "Potion" is half a cup.

Current smoker refers to respondents who currently smoke.

CHAPTER II

LITERATURE REVIEW

2.1. Current status of CVD

Cardiovascular diseases include coronary heart disease (heart attacks), cerebrovascular disease, raised blood pressure (hypertension), peripheral artery disease, rheumatic heart disease, congenital heart disease and heart failure. The major causes of cardiovascular disease are tobacco use, physical inactivity, and an unhealthy diet. Cardio Vascular Diseases are major but preventable killers worldwide. Over 80% of cardiovascular disease deaths take place in low-and middle-income countries and occur almost equally in men and women (WHO, 2008) Maldives, one of the developing countries where Communicable diseases and infant mortality have fallen significantly , but Cardiovascular and respiratory diseases and cancers are the 3 leading cause of death in the country (Afaal, 2003)

In developing countries, deaths due to CVD tend to occur a decade or two earlier than they do in Western countries. Nearly half occur before 70 years of age as compared to one fifth in the West (Ambul).CVD related risk factors such as hypertension, diabetes, smoking, physical inactivity and obesity can be preventable if appropriate action is taken against them in a timely manner (WHO, 2002)

The very first research on the prevalence of non-communicable disease was conducted in Male'-Maldives in 2004. The STEPS instrument developed by WHO covered all three STEPS, which included data on behavioural measures, physiological

and biological measures. The situation of tobacco use, high levels of physical inactivity, low consumption of fruits and vegetables, prevalence of obesity and excess body fat are important prevention areas that can be worked with effective information, education and communication programmes (IEC). The survey on the risk factors among the population of Male' can be considered strong evidence base for taking appropriate intervention to reduce the risk and behavioural patterns that lead to Cardiovascular disease (Department of Public Health, 2008 ; Ministry of Health, 2004b) All these risk factors lead to CVD such as hypertension, stroke, cancer and diabetics (WHO, 2008)

Also in the survey it was shown that risk factor such as tobacco consumption was high, more than 90%of the respondents reported they were physically inactive. Sporadic surveys have found out that tobacco use, nutrition status of mother and child, little or no knowledge about physical activity dietary habits and life style related behaviours may have counted for increasing number of Cardiovascular disease and other Noncommunicable disease in the Maldives. (Department of Public Health, 2008 ; Ministry of Health, 2004b) Also the survey recommends awareness creation and health promotion.

Studies indicate that although doctors are knowledgeable about the risks of CVDs associated with tobacco smoking, they are not sufficiently prepared to help their patients to stop smoking. Even though physicians identify a substantial number of smokers during consultations, for example, many patients do not receive counselling to help them quit. Smoking cessation is the most cost-effective intervention for patients with documented CVDs, and efficacious programmes have

been developed. The challenge is to get these programmes more widely used, and doctors and nurses should seize every opportunity to encourage patients to stop smoking (WHO, CVD control and prevention: missed opportunities).Without action to address the causes, deaths from NCDs will increase by 17% between 2005 and 2015.

2.2. Accessibility of information on CVD risk factors and preventive behaviours

Cardiovascular Disease (CVD) risk factor awareness and knowledge are believed to be prerequisites for adopting healthy lifestyle behaviours (Homko, 2008). With the growing number of cardiovascular diseases in Maldives, public health challenges can be better addressed if credible information about health risk and effective public health practices can be made readily available to the youth and population at large, in an effective manner.

The Strategic Plan for Control and Prevention of Noncommunicable Disease suggested the most successful strategy is to employ a range of population-wide and high risk related approaches focusing on health promotion, prevention and cost-effective management of major NCDs and their common risk factors (Ministry of Health, 2008).

'Healthy Lifestyle' has been the focus of the activities of Health Promotion Unit for several years. Healthy life style are promoted through sustained mass media campaigns such as nutrition campaign, largely through several radio channels and two national television channels. In addition many homes have access to cable TV. The daily newspapers with wide circulations are distributed from Male' to the other

islands. Each newspaper has a weekly health page focusing on the most recent and important health issues for the public. Health topics are also covered in editorials (Brown, 2004). High profile events are organized every year for World Health Day, World No Tobacco Day, Diabetes Day and Heart Day. These internationally sponsored events are favourably received by the mass media, which permits to disseminate a wide range of health education programs inexpensively. NGO's, other government sectors and private sectors such as Society for Health Education, Diabetes and Cancer Society of Maldives etc, contribute to gaining media attention, through press release, video materials creation of media events etc. Success of a communication program is determined by a variety of factors including, how much access the target audience has to the information, whether the people are exposed to the media advertisement and whether the target audience have enough knowledge and skills to perform the target behaviour also the opportunity to perform the behaviour (Elder, 2001).

Making use of multiple communication channels, using them overtime, encouraging social diffusion of messages and controlling the level of exposure are basic necessities for successful program design also public health communication includes variety of techniques but specifically emphasizes a few practical and simple messages through as many channels as possible (Elder, 2001; Hornick C, 2002)

A workshop on using mass media for health promotion was held in Male' **in** September 2006, from the meeting it was evident that health promotion is a process of enabling people to increase control over their health and its determinant and thereby improve their health. And Health Education alone is information and

education where Heath Promotion is involvement of other partners to address determinants of health (Munoduwafa, 2006)

A national committee on tobacco control has been set up and is working towards the development of a national tobacco control program including appropriate legislation (Afaal, 2003) Also screening programs that are conducted in work places and public places permit to detect persons with high blood pressure and with diabetes

The main approaches to promoting healthy lifestyles have been the production and distribution of IEC materials. (Ministry of Health, 2007) But there is a need to improve the storage and distribution of IEC materials. And there is a need to pre-test and adapt the materials according to the target audience. Communication campaigns play an important role in disease prevention and health promotion. However designing effective campaigns about health is a difficult role (Maibach, 1995).

There is a need to further improve promotion, prevention and effective management of non-communicable disease like CVD. As Arkin (1989) notes, "Health information is often complex and technical. In addition, the information may be inconclusive, controversial, contradictory and subject to change as new research findings are released"(Maibach, 1995).

Cardio Vascular Diseases are a leading cause of illness and death in Maldives, but this is not matched by their profile in health promotion activities. DPH/MOH programme managers (nutrition, tobacco control, health promotion) conduct activities based on different risk factors, but these efforts are not closely coordinated. Several NGO's contribute to NCD risk factor prevention. But limited communication between the government and NGO sector means that there maybe

duplication of effort and gaps in provision of the services. There is a great potential for improving health promotion through the mass media in both print and broadcast media, which have regular health related outputs but journalist are keen on greater expert input (Brown, 2004). Also it is important to understand that health programs intend to influence people's behaviour, relying on free public announcement and broadcasted rarely and at late hours should not be surprised by failure. The more people are reached with a message the more people hear it and the more likely they will respond (Hornick C, 2002).

It is well known that people's lifestyles affect their health and well-being. Media can play a strong advocacy role by transferring the focus of health issues from individuals to policy makers, planners and executives whose decisions influence health policy programme and budget (WHO/SEARO, 1998)

However, in spite of campaigns aimed at educating people about healthy living, there are indications that gaps exist between different groups in society, with some groups able to benefit more from these campaigns than others (Pálsdóttir, 2008).There is also a need for systematic monitoring and evaluation (M&E) of communication materials, process and effects. To determine if communication can help bring about changes in knowledge, attitude and practices, then a monitoring and evaluation framework has to be in place. Furthermore systemic monitoring and evaluation is needed to develop program content and set targets, to understand cause and affect relationships, to quantify effects and impact and to help improve future communication strategies (Devcompage, 2008)

According to 2002 IEC material impact evaluation, regional and atoll hospital receive 82% of the materials send from Male'. Atoll centres receive 53% , health post

receive 55% and family health sections receive 51%, health facilities receive 45% of the materials. In 43% of cases materials are used in during health promotion activities, other uses include keeping them at health facility to be read by clients, to take home and distributing it to public. People who have seen the leaflets, as the evaluation has shown, have better knowledge than those who have not seen them. This suggests that these materials have a positive impact on knowledge. Health personnel are the main source of information on health matters, followed by radio and TV programmes. And 24% of people do not have immediate information needs, 18% wants more information generally on health, 40% of respondents prefer health workers as source of information, 19% prefer leaflets/posters (Brown, 2004)

Overall these results show that these materials are good sources of information and are likely to have a positive impact on health-related knowledge of the population in general. However we do not know whether these have any impact on behaviour change. There is a need to encourage people to behave in ways that enhance their health, but also to know the importance of enabling people to acquire the necessary skills that allow them to benefit from the knowledge that is available about healthy lifestyles. Sustained efforts for improving health practices will only occur if there are recognizable successes with the initial targets achieved and accomplished with technology that is affordable and available not setting criteria that are set too high to be achieved (Elder, 2001).An understanding of people's information behaviour, and the abilities that different groups within society have to take advantage of information about healthy behaviour, is of importance to improve the outcome of health educational efforts (Pálsdóttir, 2008). To improve the present health promotion strategies it is important to find out if the knowledge lead to healthy outcomes such as

vigorous exercise up to 30 minutes 3 times a week, not consuming tobacco, fruit and vegetable consumption and body weight control.

Experience has shown that providing people with information and telling them how they should behave ("teaching" them) is not enough to bring about behaviour change. Knowing does not understand, understanding is not practicing, the interest to change people's behaviour gave birth to health promotion. Information, education and communication (IEC) is an important part of behaviour change communication (behaviour change communication) but having information only is not enough to bring a behaviour change. Behaviour change also requires a supportive environment. (Munoduwafa, 2006)

The central concern of health promotion and health education is health behaviour. Positive informed changes in health behaviour are the ultimate aims of health promotion and education programs (Glanz et al., 2002). It is important to understand the behaviour change theories such as the social cognitive theory by Albert Bandura , which have improved the understanding of how intrapersonal factors such as knowledge and beliefs, the social environment and behaviour, work together in a complex relationship (Pálsdóttir, 2008) The social cognitive theory (SCT) describes human behaviour as being reciprocally determined by internal personal factors and the environment in which a personal lives (Bandura 1986). The social cognitive perspective on health behaviour change is that individual behaviour change can be facilitated by modifying people's personal factors and by altering environmental factors to encourage healthy behaviour. (Maibach, 1995). According to Bandura the individual would need to see other people performing the behaviour, develop the necessary confidence about the act, and believe that reinforcement will be

optimal and or punishment minimal level to promote sufficient behaviour change(Elder, 2001). Bandura proposed that self efficacy which is confidence a person feels about performing a particular activity including confidence in overcoming the barriers to performing that behaviour is the most important prerequisite for behaviour change. Self efficacy influences peoples behaviour for example, smokers with low efficacy to control their smoking behaviour attempt to quit less often than those who judge themselves more efficacious (Maibach, 1995). Self efficacy also has an important role in self control, affecting a persons selection of the extent of behaviour change and his or her practice in building confidence is self regulation (Glanz et al., 2002). In a weight control programme cutting down on sweets may be too vague to produce observable results, instead aiming to eat 5 sweets instead of 8 maybe more realistic. Health messages should therefore encourage people to try out the new behaviour in some manageable fashion and in an environment in which they are most likely to succeed.

2.3.   Role of knowledge

Knowledge is necessary for behaviour change. People must have the knowledge both about the risk factors and preventive behaviours. Without such knowledge, people are unlikely to engage in any process that would lead to behaviour change. Knowledge comes before the behaviour change and knowledge itself is not enough to bring behaviour change.(Maibach, 1995).

Knowledge is gained through communication. Health communication campaigns can be highly effective at generating knowledge to the appropriate level of knowledge among the member s of the target audience. One reason why knowledge

gains do not lead to behaviour change is the lack of skills necessary to perform the behaviour. Several health promoting campaigns in Maldives such as the cessation pack have failed to reach the target audience due to lack of appropriate skills. Adoption of a new health-promoting behaviour often requires complex cognitive, social, behavioural and self regulatory skills. For an example in order to exercise regularly we need motivation also the importance and benefit of the exercise and also an idea of kinds of exercises. For CVD prevention it is necessary to exercise vigorously for half an hour at least three times a week, not just a moderate walk or a workout. Without the necessary skills to support a new health behaviour people are unlikely to initiate and less likely to sustain behaviour change efforts (Maibach, 1995).
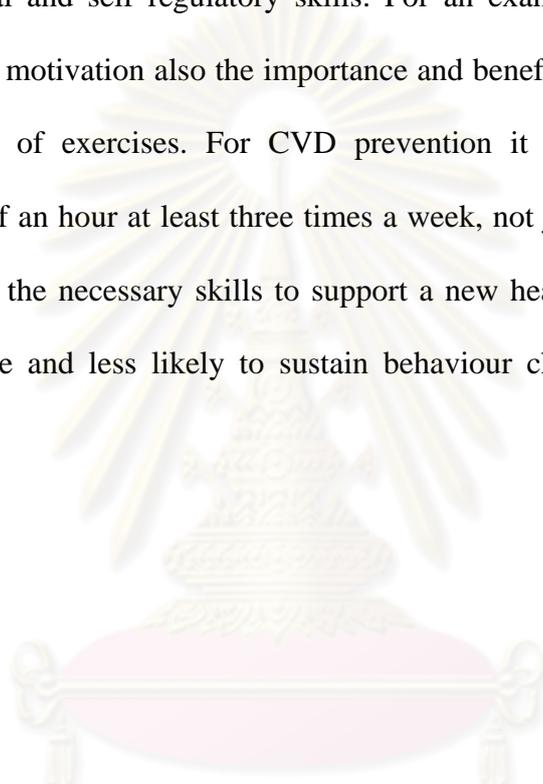
CHAPTER III

RESEARCH METHODOLOGY

3.1. Study design

The study design was a cross -sectional descriptive and analytical study of accessibility to knowledge on risk factors and prevention of cardiovascular diseases and preventive behaviours of residents above age 30 years of age in Male'-Maldives.

3.2. Study area

This study was carried out in Male' the capital of Maldives instead of the whole country. Also due to limited resources and time and also since Male' consists of almost 28% of the total population of the country.

3.3. Study Population

The population in this study consisted of 399 participants. There were equal number of male and female from the age group 30 years and above and living in Male'-Maldives.

3.4. Sampling Technique

Sampling method used for selecting the sample was systemic random sampling from a selected list of sampling units, the households. Household were considered as primary sampling unit. Household listing of four wards, of Male'-Maldives, namely Henveiru, Maafannu, Macchangoalhi, Galolhu based on the latest census was the sampling frame used for selecting households. Household from each ward was selected from the listing of each ward and the selection was based on

population proportionate to the size in order to make more distributed sample. The criterion for one person per household was used for selection of participants. One person=one house criterion was followed to selected equal proportion of men and women participants from the age group above 30.

Inclusion criteria

Males and females of age group 30 years and above from Male', Maldives. People willing to respond to the questionnaire were included in the study.

For the part on the availability of IEC information on CVD risk and prevention the research l enquired from government agencies, media and NGO's that do health promoting work to promote CVD related healthy lifestyle.

Exclusion criteria

Male and female under the age group 30 years and below.

3.5. Sample Size

The author did not find published literature on knowledge of risks factors and practice of preventive behaviours for CVDs in the Maldives. A review of literature from industrialised countries (De Backer et al., 2003), has shown that the prevalence of such knowledge varies from 60 per cent for behavioural risk factors to 20% for physiologic risk factors. A 40% prevalence of knowledge (half way between 60 and 20%) is assumed for this research purpose. Therefore using 40% prevalence the sample size of this research is as follow:

$$n = \frac{z^2 \times p \times (1-p)}{d^2}$$

Where

n = calculated sample size

z = value from normal distribution associated with 95% confidence interval 1.96 (ά = 0.05)

p = is the expected proportion of who knowledge and information risk factor and preventive behaviour (40%) = 0.40

d = error allowance (degree of accuracy desired) i.e. 5%

$$n = \frac{(1.96)^2 \times 0.40 \times (1- 0.40)}{(0.05)^2}$$

$$= 367$$

A sample size of 400 was used to allow for refusals and missing date

3.6. Data Collection

Data was collected through self administered anonymous questionnaires. The questionnaires were checked for completeness and pretested and where necessary clarifications were sought from respondents.

3.7. Variables

Independent variables

1. Socio-demographic factors

2. Knowledge on CVD risk factors and preventive behaviours

3. Accessibility to information on CVD risk factors and preventive behaviours

Dependent variables

4. Practice of CVD related preventive behaviours

3.8.   Questionnaire development and data collection

The questionnaire for the survey was constructed from various research papers and also from WHO STEPS Manual for chronic disease. The STEPS Manual provides guidelines and supporting material that can be used to undertake chronic disease risk factor surveillance. The questionnaire was pretested in Male'. Reliability was calculated on the knowledge questions and a Cronbach's alpha of 0.904 was obtained with the intra class correlation coefficient being highly significant ($p<0.001$) - see appendix C. Eight trained research assistants collected data.

Contents of the questionnaire: the questionnaire was divided into 4 parts:

1. **Socio Demographic factors:** This section included gender, age, education, marital status, educational level, occupation, history of medical illness.

2. **Knowledge on CVD risk factors and preventive behaviours.**

   There were a total of 23 questions on CVD, tobacco, exercise and diet, knowledge on preventive behaviours and risk factors.

   Scoring criteria

   Right

   Wrong

   Do not know

3. **Availability and accessibility of information on Cardiovascular disease risk factors and preventive behaviours and lifestyle and behaviour**

There were 11 questions about availability and accessibility of information on cardiovascular disease.

4. **Questions on lifestyle, tobacco consumption, dietary habits and physical activity level.**

    There were 5 questions on consumption of tobacco and intention to stop tobacco, there were 6 questions on diet, consumption of fruits and vegetables and dietary habits and there were 11 questions on physical activity and time you spend doing work.

    Scoring criteria

    Always/Often   3

    Occasionally   2

    Rarely/Never   1

3.9.   Data analysis

The data was analyzed by Statistical Package for Social Science (SPSS) version 16.

-   Descriptive statistics: the socio-demographic characteristics and general information has been presented by frequency, percentage, mean and standard deviation.

    Inferential statistics: the relationship between two categorical variables was analyzed using Chi square. One way ANOVA was used to analyse the relationship between categorical and continuous variables.

3.10. Ethical consideration

The study took place after an approval of Ethical Committee at Chulalongkorn University (through the College of Public Health Sciences) and Ministry of Health Maldives. Before interviewing the subjects the purpose of the study was explained and their consent was obtained. In case they were not willing to participate in this study, they could withdraw at any time with no impact on them whatsoever. The name of the subjects was not recorded and their given information was kept confidentially. Respondent confidentiality were foremost in the planning

3.11. Study period

The study took place from February to March 200
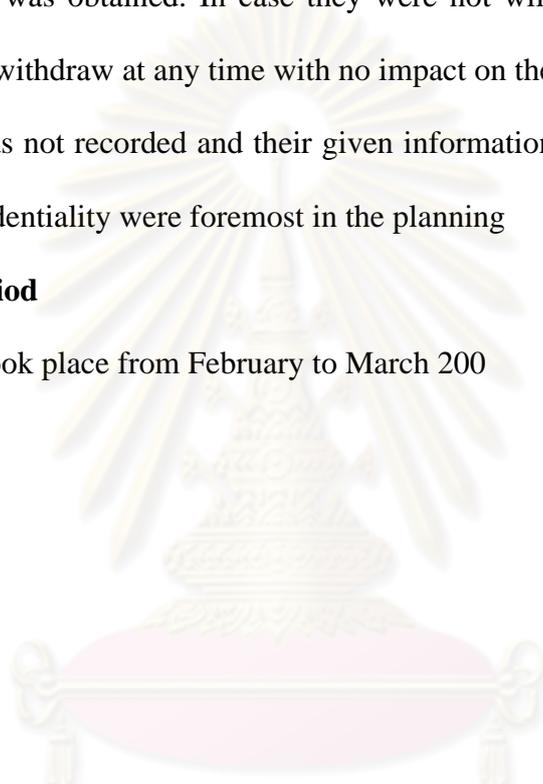
CHAPTER IV

RESEARCH RESULTS

The study was a cross-sectional descriptive and analytical study about accessibility to information and knowledge on prevention of cardiovascular disease and practice and intention to practice CVD related healthy behaviours among the residents of Male'. Total subjects were 399 equal number of male and female (>=30 years old) from Male'-Maldives.

This chapter presents the findings from the data analysis. The data analysis reports on the survey, outcomes and results, in the following orders:

4.1 General characteristic of the study subjects

4.2 Knowledge on CVD risk factors and CVD preventive behaviours

4.3 Accessibility to information on CVD risk factors and preventive behaviours.

4.4 Reported practice of CVD related healthy behaviours.

4.5 Intention to practice of CVD related healthy behaviours.

4.6 Association between socio-demographic factors and knowledge on CVD risk factors

4.7 Association between knowledge on CVD preventive behaviours and practice of recommended level of physical activities

4.8 Association between knowledge on CVD preventive behaviours and risk factors and smoking

4.9 Association between knowledge on CVD preventive behaviours and risk factors and CVD related healthy eating behaviour

4.10 Association between accessibility of information on CVD risk factors and preventive behaviours and knowledge on CVD risk factors and preventive behaviours.

4.11 Association between Socio Demographic factor and practice of physical activities

4.12 Association between socio-demographic factors and practice of CVD related healthy eating.

4.13 Association between Socio Demographic factor and Smoking

4.1.   General characteristic of the study subjects

The description of general characteristic of the study subjects includes, gender, age, education, marital status, occupation, employment, reported history of CVD related illness.

Gender

Among the respondents 50.4% were male and 49.6% were female. There were total of 399 respondents

Age

Regarding the age all the respondents were from age 30 and above. The mean age was 40.5 and SD was 9.8. The majority of respondents (61.7%) were from age group 30 -40 years. Only a few were from the age group 60 years and above(4.5%).

Education status

Education status of the subjects showed that majority of respondents (46.6%) finished secondary school and 19.5% finished primary school. 9% and 10.5% of the respondents completed diploma and graduate/postgraduate. And 10.5% respondents completed non formal education.

Occupation

Regarding the occupation of the majority of respondents 42.7% worked in the government sector , 35.4% worked for the private sector, only a small percent of the respondents were from the fishing and agriculture (3.8%). The rest were house keepers (11.8%) and unemployed (6.3%)

Table 4.1: Socio-demographic characteristics of respondents

Characteristic	Frequency	percentage
Gender		
Male	201	50.4
Female	198	49.6
Total	399	100.0
Age		
30-40	246	61.7
41-50	95	23.8
51-60	40	10.0
>60	18	4.5
Total	399	100.0
Mean (SD)	40.5 (9.8)	
Education status		
Primary	78	19.5
Secondary	186	46.6
Diploma	36	9.0
Graduate/post graduate	42	10.5
Basic education	57	14.3
Total	399	100.0
Marital status		
Never married	67	16.8
Married	273	68.4
Divorced/separated/widowed	59	14.8
Total	399	100.0
Occupation		
Government sector	170	42.7
Private sector	141	35.4
Agriculture	15	3.8
Housework	47	11.8
Unemployed	25	6.3
Total	398	100.0
History of CVD related illness or risk disease		
Yes	51	12.8
No	348	87.2
Total	399	100.0

4.2. **Knowledge on CVD risk factors and CVD preventive behaviours**

Table 4.2 displays the results of the knowledge section of the questionnaire.. Series of questions were asked to the respondents on knowledge on CVD risk factors and preventive behaviours such as diet, exercise, and tobacco control. There were 23 questions on knowledge, each right answer scored one point, wrong answer scored 0 and don't know scored 0 as well. The maximum score was 23. Among the respondents majority of them (51.9%) scored 11 to 15 points out of 23 points. Only 4.8% of respondents scored 0-5 points. None of the respondents were able to score the full 23 points. And 18.8% percent of the respondents scored 16-19 points. The mean score of the respondents were 12.2 with a standard deviation (SD) of 3.8.

Table 4.2: Distribution of Knowledge on CVD risk factors and preventive behaviours

Score	Frequency	Percentage
0-5	19	4.8
6-10	98	24.6
11-15	207	51.9
16-19	75	18.8
Total	399	100.0
Mean (SD)	12.2 (3.8)	

4.3.   Accessibility to information on CVD risk factors and preventive behaviours.

When the respondents were asked to name their main source of information for CVD prevention, majority (41%) responded that their main source of information was from CVD TV, and 26.1% responded radio, followed by doctors and health workers (9.8%), internet (7.8%), leaflets (6.3%), newspapers (4.8%) and posters (3.8%)- table 4.3.

Among the respondents a majority (59.9%) didn't have easy access to information on CVD, and 33.3% had easy access to the CVD risk factors and preventive behaviours (table 4.4).

Table 4.3: Distribution of main source of information on CVD

Source	Frequency	Percentage
TV	166	41.6
Radio	104	26.1
Leaflet	25	6.3
Posters	15	3.8
Doctor health worker	39	9.8
News paper	19	4.8
Internet	31	7.8
Total	399	100.0

Table 4.4: Distribution of easy access to information on CVD

Easy access to information on CVD	Frequency	Percentage
Yes	133	33.3
No	239	59.9
Not sure	27	6.8
Total	399	100.0

4.4.   Reported practice to practice of CVD related healthy behaviours.

Consumption of fruits and vegetables

Table 4.5 show the consumption of fruits and vegetables. Majority (87.9%) of respondents consumed 0-4 potions of fruits and vegetables a day while only (12%) of respondents consume more than 4 potions a day. A serving is measured as a half a cup.

Table 4.5: Distribution of fruits and vegetable intake

Number of fruit portions per day	Frequency	Percentage
0-4	335	87.9
5-10	46	12.1
Total	381	100.0

Physical activity

Table 4.6 displays the distribution of physical activity level. Physical activity was divided into leisure time related and work related. Only 25.4% of the respondents reported taking part in vigorous physical activity as a leisure time physical activities, the rest did not take part in vigorous physical activity as a leisure time activity. Among those who take part in physical activity as a leisure activity 52.5% spent at least 3 days per week. 27.25 respondents were involved in work related vigorous activity. Among them 76.6% were involved in physical activity at least 3 days a week. Only 26.1% of the respondents practiced the recommended level of CVD related physical activity work and leisure combined for 30 min 3 or more times a week.

Table 4.6: Distribution of physical activity level

Vigorous leisure time physical activities	Frequency	Percentage
Yes	99	25.4
No	291	74.6
Total	390	100.0
No. of days/week of leisure time physical activities		
<3	47	47.5
>=3	52	52.5
Total	99	100.0
No. of minutes/day of leisure time physical activities		
<30	54	54.5
>=30	45	45.5
Total	99	100.0
Does your work involve vigorous physical activity		
Yes	107	27.2
No	287	72.8
Total	394	100.0
Number of days per week of work related physical activity		
<3	25	23.4
>=3	82	76.6
Total	107	100.0
Leisure time physical activity		
>=3 days/week and >=30min/day	29	29.3
<3 days/week or <30 min/day	70	70.7
Total	99	100.0
Physical activity work related or leisure		
Not following recommended physical activity	295	73.9
>=3 days/week& >=30 min/day leisure time or work physical activity	104	26.1
Total	399	100.0

4.5. **Tobacco consumption**

About 26% of the respondents were current smokers as shown in table 4.7 below

Table 4.7: Distribution of Tobacco consumption

Current smoker	Frequency	Percentage
Yes	102	25.6
No	297	74.4
Total	399	100.0

4.6.   Intention to practice of CVD related healthy behaviours.

Table 4.8 show that out of the respondents who consumed tobacco the majority (69.6%) intend to quit smoking. 92.5% of the respondents intend to change the eating behaviour to a healthy one and 92.1% of the respondents intend to increase the physical activity level.

Table 4.8: Distribution of intention to practice of CVD related healthy behaviours.

Intention to stop smoking	Frequency	Percentage
Yes	71	69.6
No	31	30.4
Total	102	100.0
Intention to change your eating behaviour		
Yes	369	92.5
No	30	7.5
Intention to increase physical activity level		
Yes	360	92.1
No	31	7.9
Total	391	100.0

4.7. **Association between socio-demographic factors and knowledge on CVD risk factors**

Table 4.9 shows the results of association between socio-demographic factors and knowledge on CVD risk factors and preventive behaviours. There was a highly

significant association between marital status and knowledge on CVD risk factors and preventive behaviours(p=0.004). Those who are married had the highest mean of knowledge. There was a highly significant association with occupation and knowledge (p=0.001), those working in agriculture and fishing sector had the lowest level of knowledge. There were no significant association between age, gender, history of CVD related disease or educational level.

Table 4.9: Association between socio demographic factors and knowledge of CVD

Factor	N	Mean*	SD	SE	F	P value
Age (N= 399)					1.53	0.206
30-40	246	12.0	3.7	0.2		
41-50	95	12.7	3.8	0.4		
51-60	40	12.7	3.8	0.6		
>60	18	11.2	5.0	1.2		
Gender					1.77	0.184
Male	201	11.9	3.9	0.3		
Female	198	12.4	3.6	0.3		
Marital status (N = 399)					5.6	**0.004**
Never married	67	11.4	4.2	0.5		
Married	273	12.6	3.5	0.2		
Divorced/separated/widowed	59	11.1	4.1	0.5		
Occupation					4.8	**0.001**
government sector	170	12.5	3.4	0.3		
private sect	141	12.6	3.6	0.3		
Agric	15	8.9	5.3	1.4		
Housework	47	11.1	3.9	0.6		
Unemployed	25	11.8	4.5	0.9		
History of CVD related illness					2.128	0.145
Yes	51	12.9	3.7	0.5		
No	348	12.1	3.8	0.2		
Education level					0.959	0.453
Primary level	78	12.2	4.0	0.5		
O level	160	12.0	3.6	0.3		
A level	26	13.0	3.2	0.6		
Diploma	36	12.6	2.7	0.5		
Bachelors degree	23	13.3	2.7	0.6		
Masters	19	11.3	4.7	1.1		
Basic education	57	11.8	4.5	0.6		

* Of knowledge score

4.8.   Association between knowledge on CVD preventive behaviours and practice of recommended level of physical activities

Results in table 4.10 show that there was a significant association between knowledge and the level of physical activities. The chi-square value 8.28 with a P-value of 0.04. People with more knowledge of CVD risk factors tended to follow less the recommended level of physical activity.

Table 4.10: Association between knowledge on CVD risk factors and physical activity

Factor	Following recommended level of physical activity N (%)		Chi-square	P value
	No	**Yes**		
Knowledge score			8.28	0.04
0-5	12 (63.1)	7(36.9)		
6-10	64(157)	34(34.7)		
11-15	157(75.8)	50(24.1)		
16-19	62(82.7)	13(17.3		

4.9.   Association between knowledge on CVD preventive behaviours and risk factors and smoking

From table 4.11 of chi square below shows that there was no significant association between knowledge and smoking although people with less knowledge tended to have higher rate of smoking than those with higher knowledge.

Table 4.11: Association between knowledge and smoking

Knowledge score	Current smoker N (%)		Chi square	P value
	No	Yes		
		+	5.71	0.126
0-5	13 (68.4)	6 (31.6)		
6-10	66 (67.3)	32 (32.7)		
11-15	156 (75.4)	51 (24.6)		
16-19	62 (82.7)	13 (17.3)		

4.10. **Association between knowledge on CVD preventive behaviours and risk factors and CVD related healthy eating behaviour**

From the table 4.12 below it shows that there is no significant association between knowledge and consumption of 5 potions of fruits and vegetables a day. Respondents from the knowledge score group 11-15 points were healthy more fruits and vegetables compared to the group 0-5 eating less.

Table 4.12: Association between knowledge on CVD risk factors and eating

Factor	Number of fruit and vegetable portions per day		Chi-square	P value
	<5	>=5		
Knowledge score			0.64	0.888
0-5	15(93.8)	1(6.6)		
6-10	85(88.5)	11(11.6)		
11-15	171(87.2)	25(12.8)		
16-19	64(87.7)	9(12.3)		

4.11. **Association between accessibility of information on CVD risk factors and preventive behaviours and knowledge on CVD risk factors and preventive behaviours.**

The results in table 4.13 show that there was significant association between accessibility of information on CVD risk factors and preventive behaviours and knowledge on CVD risk factors and preventive behaviours. The mean score of people who had information was 12.6.

Table 4.13: Association between accessibility to information on CVD risk factors and preventive behaviours and knowledge on CVD risk factors and preventive behaviours

	N	Mean*	SD	SE	F	P value
Accessibility to information (N=399)					6.29	0.002
Yes	133	12.6	3.5	0.3		
No	239	12.2	3.8	0.2		
Not sure	27	9.8	4.0	0.8		

* Knowledge score

4.12. Association between Socio Demographic factor and practice of physical activities

The table 4.14 showed that there was a significant association between gender, marital status, history of CVD related medical illness and practice of recommended level of physical activities. Males (31.8%) tend to take part more in the recommended level of physical activities, also the rate of the physical activity was higher among the divorced/separated/widowed group (40.7%) and respondents with history or CVD related medical illness (27.6%). Age, education level and occupation had no significant association between practice of recommended level of physical activities. However, the younger age group (30-40) was more involved in the rate of recommended physical activity (28.9%), while the lower rate was from the age group 41 to 50 years (20.0%).

Table 4.14: Association between socio-demographic factors and physical activity

Factor	Following recommended level of physical activity N (%)		Chi-square	p value
	No	Yes		
Gender			7.01	0.008
Male	137 (68.2)	64 (31.8)		
Female	158 (79.9)	40 (20.2)		
Age			2.97	0.396
30-40	175 (71.2)	71 (28.9)		
41-50	76 (80.0)	19 (20.0)		
51-60	30 (75.0)	10 (25.0)		
>60	14 (77.8)	4 (22.2)		
Education level			3.39	0.495
Primary	55 (70.5)	23 (29.5)		
Secondary	141 (75.8)	45 (24.2)		
Diploma	26 (72.2)	10 (27.8)		
Graduate/postgraduate	30 (71.4)	12 (28.6)		
Basic education	43 (75.4)	14 (24.6)		
Occupation			0.67	0.955
Government sector	125 (73.5)	45 (26.5)		
Private sector	105 (74.5)	36 (25.5)		
Agricultural sector	10 (66.7)	5 (33.3)		
Housework	36 (76.6)	11 (23.4)		
Unemployed	19 (76.0)	6 (24.0)		
Marital status (N=399)			8.41	0.015
Never married	54 (80.6)	13 (19.4)		
Married	206 (75.5)	67 (24.5)		
Divorced/separated/widowed	35 (59.3)	24 (40.7)		
History of CVD related illness			3.27	0.071
Yes	43 (84.3)	8 (15.7)		
No	252 (72.4)	96 (27.6)		

4.13. Association between socio-demographic factors and practice of CVD related healthy eating.

There was a significant association between respondents with CVD related medical illness and consumption of CVD related healthy eating behaviour. It showed that those who were at risk were eating healthier.

Table 4.15: Association between socio-demographic factors and number of fruit portions per day

Factor	Number of fruit portions per day		Chi-square	P value
	<5	>=5		
Gender			2.66	0.103
Male	161 (85.2)	28 (14.8)		
Female	174 (90.6)	18 (9.4)		
Age			2.35	0.356
30-40	208 (88.9)	26 (11.1)		
41-50	82 (89.1)	10 (10.9)		
51-60	33 (84.6)	6 (15.4)		
>60	12 (75.0)	4 (25.0)		
Education level			2.11	0.716
Primary	67 (87.0)	10 (13.0)		
Secondary	153 (86.9)	23 (13.1)		
Diploma	33 (94.3)	2 (5.7)		
Graduate/post-graduate	35 (85.4)	6 (14.6)		
Basic education	47 (90.4)	5 (9.6)		
Occupation			3.9	0.42
Government sector	149 (90.9)	15 (9.1)		
Private sector	113 (85)	20 (15)		
Agricultural sector	11 (78.6)	3 (21.4)		
Housework	42 (89.4)	5 (10.6)		
Unemployed	20 (90.9)	2 (9.1)		
History of CVD related illness			8.64	0.003
Yes	36 (75.0)	12 (25.0)		
No	299 (89.8)	34 (10.2)		
Marital status (N=399)			2.92	0.232
Never married	55 (93.2)	4 (6.8)		
Married	229 (86.1)	37 (13.9)		
Divorced/separated/widowed	51 (91.1)	5 (8.9)		

4.14. Association between Socio Demographic factor and Smoking

Table 4.16 shows that there is a highly significant association (P<0.001) between gender, occupation and consumption of tobacco. The highest rate of smoking (46.7%) was in those employed in agriculture and fishing sector while the lowest rate (13.5%) was the government employees. More males (38.3%) smoked than females

(12.6%) which is highly significant (p<0.001). There was no association between age, education, marital status or history of CVD related medical illness and consumption of tobacco. However consumption of tobacco were lower among those with the from the education level groups graduate and postgraduate and diploma level education.

Table 4.16: Association between socio-demographic factors and smoking

Factor	Current smoker N (%)		Chi square	P value
	No	**Yes**		
Gender			34.57	<0.001
Male	124 (61.7)	77 (38.3)		
Female	173 (87.4)	25 (12.6)		
Age			2.62	0.454
30-40	189 (76.8)	57 (23.2)		
41-50	67 (70.5)	28 (29.5)		
51-60	27 (67.5)	13 (32.5)		
>60	14 (77.8)	4 (22.2)		
Education level			3.71065754	0.447
Primary	53 (67.9)	25 (32.1)		
Secondary	142 (76.3)	44 (23.7)		
Diploma	29 (80.6)	7 (19.4)		
Graduate/postgraduate	33 (78.6)	9 (21.4)		
Basic education	40 (70.2)	17 (29.8)		
Occupation			24.16	<0.001
Government sector	147 (86.5)	23 (13.5)		
Private sector	93 (66.0)	48 (34.0)		
Agricultural/fishing sector	8 (53.3)	7 (46.7)		
Housework	32 (68.1)	15 (31.9)		
Unemployed	16 (64.0)	9 (36.0)		
History of CVD related illness			0.455	0.5
Yes	36 (70.6)	15 (29.4)		
No	261 (75.0)	87 (25.0)		
Marital status			1.09	0.579
Never married	49 (73.1)	18 (26.9)		
Married	207 (75.8)	66 (24.2)		
Divorced/separated/widowed	41 (69.5)	18 (30.5)		

CHAPTER V

DISSCUSION

5.1. Discussion

The main purpose of this study was to find relationship between accessibility to knowledge and information on risk factors and preventive behaviours of residents above 30 year of age in Male' the capital of Maldives. It is important to find out the accessibility and knowledge of the information regarding cardiovascular diseases since it's the 55% of deaths in Maldives is due to Non Communicable disease. And as much as 80% of these deaths could be prevented through healthy diet, physical activities and not smoking. Without adequate knowledge and information on these preventive behaviours and risk factors it will be difficult to practice the CVD related healthy behaviours. According to the NCD risk factor survey 2004, which was the landmark study for knowing the situation of the people living in Male', little or nothing is known about the physical activity, dietary habits and lifestyle related behaviour that may have accounted for the increase in cardio vascular diseases in Maldives. Cardiovascular disease has been the major cause of death in Maldives accounting to 25%-30% of deaths every year.

5.1.1. General characteristic of the study subjects

There were almost 400 respondents aged 30years and above equal number of male and female took part in the study. The mean age was 40.5 years. The majority of the respondents were employed in the government and private sector. Only a small minority were from the agriculture and fishing sector. This was because of since its Male'the capital city and a lot of people work in the government sector. The

education level of the respondents showed that 46.6% completed secondary school and according to human development report it showed that adult literacy rate from2006 is 97%. Majority of respondents completed secondary level of education. Among the respondents, only 12.8% had CVD related illness or risk disease this may be since 61.7% of the respondents were from the age group 30-40 years and most likely not from the high risk group for CVD age. Studies that younger people (age 40 or younger) do not seem to be high risk for CVD although they may have CVD risk factor diseases such as diabetes(Booth GL, Kapral MK, & Fung K, 2006).

5.1.2. Knowledge on CVD risk factors and CVD preventive behaviours

Knowledge is an important part of behaviour change and people must have the necessary information on risk factors and preventive behaviours in order to practice preventive behaviours. From the knowledge score almost half of the respondents (51.9%) had moderate knowledge on risk factors and preventive behaviours of CVD. Only about 5% of the respondents had the minimum score (0-5 points), this showed that the respondents had fairly good idea of CVD risk factors and preventive behaviours. This is probably because of the recent health promotion campaigns that focused on CVD risk preventive behaviours such as global diabetic walk, national nutritional campaign and TV/Radio health programmes focusing on exercise and healthy eating. But it is important to know that knowledge alone doesn't translate to behaviour change and practice of healthy behaviours.

5.1.3. Accessibility to information on CVD risk factors and preventive behaviours

From the results obtained from the study it is shown that access to information had an impact on the knowledge. Television and radio was the main source of information for CVD risk factors and preventive behaviours. And newspapers, health leaflets and posters were among the least effective source of information on CVD risk factors and preventive behaviours These results were similar the Health Promotion review conducted in Maldives on 2004. Only 33.3% had the easy access to information on CVD risk factors and preventive behaviours. These results showed that television and radio were good sources of information and are likely to have positive impact on health related knowledge broadcasted. The results also showed that people who had accessibility to information had better knowledge on CVD risk factors and preventive behaviours. Also it was found out that health leaflets and health posters weren't a good source of information on CVD. Only a small percentage of people used posters and health leaflets to get the information. This may be due to mass media playing the major role in promoting health in Male'. A US study also showed that TV advertisements are the most frequently mentioned source of help among recent quitters of smoking also a number of studies have shown that mass media campaigns enhance improvements in attitude toward healthy behaviour, such as better diet, exercise and smoking cessation (Tokuda Y, Fujii S, & Jimba M, 2009).

5.1.4. Reported   practice of CVD related healthy behaviours

CVD is a lifestyle related disease, lifestyle modification and practicing of preventive behaviours such as physical activity, tobacco cessation are essential elements for prevention of CVD. On the survey of non communicable disease which was conducted on 2004 showed 91% of men and 95% of women were inactive at work, the results obtained fro this study showed that 72.8% of men and women were not performing the recommended level of physical activity.. Men tend to take more part in the recommended level of physical activity which is 30 minute of vigorous activity 3 times a week, This was both leisure and work combined, so it showed that men were more involved in more vigorous work related activity as well as vigorous leisure activity. Also the younger age group 30-40 was more active. Studies have shown that   This study has found and increased level of physical activity compared to the survey conducted in Male' in 2004, but its difficult to say whether the improvement is real or an effect of different methodology used in the previous study. An increase in physical activity has the same impact on lowering mortality rate in the long term as smoking cessation. Therefore, efforts for promotion of physical activity, even among middle-aged and older men, are important. Men who increase their level of exercise later in life can bring their mortality risk into line with their counterparts who have constantly exercised (Byberg Lisa, 2009).

5.1.5. Intention to practice of CVD related healthy behaviours

In general majority of respondents intended to change their behaviour to a more CVD related healthy such as quit smoking, increase physical activity level and eat healthy. These result showed that the respondents recognize that specified health

practices and plans to practice the healthy behaviour at some point. Intention is an important part in behaviour change but we should understand that for some, these intentions are translated in successful behaviour change. For many, however, such intentions never result in actual behaviour change or may do so only in the short term (Ogden, 2006).

5.1.6. Association between socio-demographic factors and knowledge on CVD risk factors

There was a significant association between knowledge and occupation. Respondents from the agriculture and fishing sector had lower knowledge scores compared to respondents working in government and private sectors. This could be due to the level of education and lifestyle. It was also found out that respondents who were married had more knowledge scores than the never married, divorced/seperarated/widowed group. Also it was found that that knowledge of CVD risk factors was also higher among younger (30-40), this may be due to education and more exposure to information sources. But no evidence was found between level of education and knowledge on CVD risk factors and preventive behaviour. This study was similar to a previous study done in USA on CVD risk factors and knowledge where they found no association between knowledge and education level (B. Lynch, 2006).

5.1.7. Association between knowledge on CVD preventive behaviours and practice of recommended level of physical activities

The results showed that respondents with less knowledge score were

involved in vigorous physical activity for at least half and hour 3 times a week. And the respondents with more knowledge on CVD risk factors were less physically active. Since physical activity was work and leisure combined this could be that the respondents with more knowledge were in jobs that required less physical activity or due to the nature of their work they didn't have time to engage in physical activity. This also shows that knowledge is only the first step in behaviour change cycle and knowledge alone is not enough to change behaviour.

5.1.8. Association between knowledge on CVD preventive behaviours and risk factors and smoking

There was no clear relationship with the amount of knowledge score and smoking, although people who had more knowledge score were more likely to smoke less. Anti tobacco campaigns have been a priority area in health promotion of Maldives. Every year high profile events to promote tobacco cessation take place on World No Tobacco day. Tobacco Cessation quit pack, which was aimed for doctors to help patients to quit smoking through various steps from the pack, was produced in 2004 but due to lack of monitoring and evaluation the cessation quit pack didn't become successful. Since studies show that advice from doctors helps people who smoke to quit. Even when doctors provide brief simple advice about quitting smoking this increases the likelihood that someone who smokes will successfully quit and remain a nonsmoker 12 months later. More intensive advice may result in slightly higher rates of quitting(Stead LF, Bergson G, & T, 2008).

5.1.9. Association between knowledge on CVD preventive behaviours and risk factors and CVD related healthy eating behaviour

Although there was no clear association the results showed the respondents who scored 11-15 points were eating more fruits and vegetables than the respondents from the groups 0-5 points and 6-10 points. In general it is important for the population to know the amount of fruits and vegetable to take in order to prevent CVD, more programmes should specifically focus on the amount to be consumed.

5.1.10. Association between accessibility of information on CVD risk factors and preventive behaviours and knowledge on CVD risk factors and preventive behaviours.

The results showed that there is a significant association between accessibility to information on CVD risk factors preventive behaviours and knowledge on CVD risk factors and preventive behaviour. Television has proved to be the main source of information on CVD risk factors and preventive behaviours. TV/Radio shows broadcast, series of exercise programmes in the popular morning show, and healthy lifestyle has been the main focus on many health shows in Maldives.

5.1.11. Association between Socio Demographic factor and practice of physical activities

The results showed that men were more involved in recommended level of physical activity there was a significant association with men and physical actitvity. Since the physical activity was measure work and leisure related mainly men were doing more physical activity related work. A study conducted in 2004 show that that only about 33%-41% of men and 20%-30% of women are active at recommended

levels, Physical activity varies considerably by age, with levels of physical activity decreasing rapidly amongst the older age groups(Morgan, 2004). It is important to provide more opportunity for older age group to practice physical activity.

From the results of the study it showed only 26.1% of respondents were practicing 30 minutes of more of physical activity 3 times a week

5.1.12. Association between socio-demographic factors and practice of CVD related healthy eating.

From the finding it was shown that only 12.1% of the respondents were consuming 5 or more potions.There were no clear association with gender, age, education level, occupation or marital status with consuming more fruits and vegetables Also the findings are very similar to the amount of fruits and vegetable consumption, in the survey of non communicable disease it was shown that 84% of people consumed less than 5 potions a day and this study showed that only 87.9% of people were consuming 5 or more potions of fruit and vegetable a day (Ministry of Health, 2004a). This showed that since 2004 there have not been much difference in the diet of the people, so more awareness should take place at all levels and there is a need to look into the reasons behind the low fruits and vegetable intake. Although there was no clear association between consumption of fruits and vegetable between age, gender, marital status, education level and occupation, there was a strong association between respondents with CVD related illness and consumption of fruits and vegetables. This may be due to physicians emphasizing the importance of diet. This shows that the physicians and health care providers should put some action into providing the general public information on fruits and vegetable consumption.

5.1.13. Association between Socio Demographic factor and Smoking

The results showed that 25.6% of the respondents were smoking daily this was again very similar to the previous study done on 2004 which showed 24.7% of the people in Male' were current smokers (Ministry of Health, 2004a). The relationship between gender and occupation was smoking was strong. Men and people working in the agriculture and fishing sector were more likely to smoke. Smoking is prohibited in the government offices and buildings, this could be the reason that the number of smokers were less among the government sectors, but it is not prohibited in the private and corporative sector (Afaal, 2003; Ministry of Health, 2007). The results also showed that there is a clear pattern of education level and smoking, those who had more education tend to smoke less but no significant association was found between these groups Government of Maldives gives a lot of importance to tobacco cessation programmes One of the major achievement in the recent years regarding tobacco control is the ratification of Framework Convention of Tobacco Control on 17th May 2004 (Ministry of Health, 2007). Studies indicate that although doctors are knowledgeable about the risks of CVDs associated with tobacco smoking, they are not sufficiently prepared to help their patients stop smoking.

5.2.   Limitations of the study

This study had several limitations; since it was a self administered questionnaire some respondents didn't complete the entire questionnaire. Since the study was conducted in Male' the capital of Maldives it is hard to get an accurate picture situation of the people from the rural islands.

CHAPTER VI

CONCLUSIONS AND RECOMMENDATIONS

6.1. Conclusion

Cardiovascular diseases have become the major cause of death in the adult population of the Maldives accounting for 25 – 30% of all deaths every year (Department of Public Health, 2008) From this study among the men and women 30 years and above age group in Male', showed very high risk levels associated with physical inactivity, unhealthy dietary habits.

According to WHO's Global Strategy to Diet, Physical Activity and Health(DPAS), over 2.7 million deaths are attributable to low fruit and vegetable intake and Overall, 1.9 million deaths are attributable to physical inactivity. Also under the DPAS, WHO recommends Governments should invest in surveillance, research and evaluation. Monitoring and surveillance are essential tools in the implementation of national strategies for healthy diet and physical activity (WHO, 2009). The overall goal of DPAS is to promote and protect health by guiding the development of an enabling environment for sustainable actions at individual, community, national and global levels that, when taken together, will lead to reduced disease and death rates related to unhealthy diet and physical inactivity (Ministry of Health, 2008).

The strategic plan for control of non-communicable disease was launched in Maldives 2008. The Strategic Plan is a good opportunity for Maldives since will enable the programme managers to organize, facilitate, support and conduct

comprehensive NCD control activities focusing on promotion of health, modification of high risk behaviours, early detection and cost-effective management of common NCDs (Ministry of Health, 2008).

6.2.   Recommendation

1.   .Since only 25.4% of the respondents were taking physical activities, there is a need to specifically promote CVD preventive exercise behaviours. Many people may be aware of the benefits of exercise but they may not be aware of how much time or how often they need to exercise. The levels of physical activities were higher among the respondents who had more knowledge on CVD risk factors and preventive behaviours.

2.   Knowledge is gained through communication, and health communication campaigns should focus on audience from different sectors, since respondents from agriculture and fishing had lower knowledge scores, it is important to make sure health messages are in a way to reach everyone. Knowledge is an important part for behaviour change, people must have knowledge on risk factors and preventive behaviours

3.   There is a need to make use of multiple communication channels and use them overtime, specifically emphasizing few practical messages through as many channels as possible. Also health messages should be broadcasted on tv and radio during prime time and not rely on free public announcement that are broadcasted rarely and at late hours.

4.   At a time when multinational companies such as tobacco, junk   food

manufacturers have enormous amount of funds at their disposal to promote their products, particularly targeting the youth,   it is imperative that adequate financial resources are made available   for the National Health education/promotion programmes to counter these activities through mass media.

5. Health care providers should seize every opportunity to encourage patients to practice CVD related healthy behaviour. Smoking is still high among the respondents and despites there have been campaigns and IEC programmes the smoking rate has not decreased since the risk factor survey in 2004. Doctors advise patients to quit smoking, and these programmes should be more widely used.

6. There is a need for advocacy, communication and community mobilisation focusing on behavioural change. The health materials programmes should be more focused on behaviour change and quality of the production should also be improved. The results showed that health posters and leaflets are no longer effective in giving out the necessary health information.

7. To ensure that appropriately trained   human resources   are there to implement the Strategic Plan for control of Non-Communicable Disease and other related activities.

8. Since mass media has been the main source of health, there is a need to engage policy makers and other relevant sectors in order to get broad support for implementing mass media health promotion activities and networking and partnership with different sectors. Also to strengthen capacity at all sectors to develop and implement NCD prevention programmes.

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APPENDIX

APPENDIX A

QUESTIONNAIRE

Part 1: General information

Instruction: The following questions are about your socio demographic information please mark X on the parenthesis ( ) for the only one answer that fits yourself. Please also write down in the blank space provided.

1. Gender

( ) 1.1 male   ( ) 1.2   female

2. Age………………………years

3. Education

( ) 3.1 Primary level   ( ) 3.2 Secondary level

( ) 3.3 Lower Vocational School   ( ) 3.4 Higher Vocational School

( ) 3.5 Bachelor's degree   ( ) 3.6 Other……………

4. Marital Status

( ) 4.1 Single   ( ) 4.2 Married

( ) 4.3 Widowed   ( ) 4.4 Divorced

( ) 4.5 Separated   ( ) 4.6 Other……………

5. Occupation

( ) 5.1 Government Sector   ( ) 5.2 Private sector

( ) 5.3 Agriculture/Fishing sector   ( ) 5.4 Housekeeper

( ) 5.5 Retired person   ( ) 5.6 Other…………..

   9.   History of medical illness…………….

Part 2: Knowledge on CVD risk factors and preventive behaviors. Please respond to the following questions by marking X in the column for the one best answer only. Yes or no.

	Right	Wrong	Do not Know
CVD is the leading cause of death in Maldives			
Light walking for half and hour or less is a preventive factor for CVD			
Vigorous exercise for 30 min a day three times a week prevents CVD.			
One portion of fruits or vegetable a is enough to prevent from CVD			
CVD are mainly hereditary			
Smoking even one cigarette a day is a risk factor for CVD			
Controlling high fat food consumption is essential			
Excess weight gain is not a risk factor for CVD			
Diabetes can lead to CVDs			
Tobacco cessation programs are available in Male'			
Irregular eating patterns has no harm to your health			
Hypertension is a risk factor for CVD			
Doing housework is enough exercise for a day			
Stress is a major cause of many diseases			
If you have a slim body you don't need to work out			
Abdominal fat is a risk factor for CVD			
Exercise is both a preventive and a remedy to CVD			
Heart disease is the leading cause of diabetes related deaths			
The danger of heart attack increase with the number of risk factors present			
Fat intake should be no more than 30% of the calories			
Saturated fat should be less than 10% of the calories			

Yoga and breathing exercise have been proven to reduce stress			
All adults over 20 years and above should have their cholesterol checked once a year			

Part 3: Information on accessibility of knowledge on CVD risk factors and preventive behavior.
Instruction: **please mark X on the parenthesis ( ) for the only one answer that fits yourself. Please also write down in the blank space provided. Please tell us how satisfied or dissatisfied you were with each of the following.**

1) **From what sources do get your Information on CVD?**

( ) 1.1 Television   ( ) 1.2 Radio

( ) 1.3 Leaflets   ( ) 1.4 Posters

( ) 1.5 Doctors/Health worker   ( ) 1.6 Newspaper

( ) 1.6 Other………

2)**What is the most effective source of information?**

( ) 1.1 Television   ( ) 1.2 Radio

( ) 1.3 Leaflets   ( ) 1.4 Posters

( ) 1.5 Doctors/Health worker   ( ) 1.6 Newspaper

( ) 1.6 Other………

3)**Are the health messages and information easy to understand?**

( ) 3.1 Yes

( ) 3.2 No

( ) 3.3 Not Sure

4)**Are the health messages an important resources?**

( ) 4.1 Yes

( ) 4.2 No

( ) 4.3 Not Sure

5)Are the health visually interesting to look at ?

( ) 5.1 Yes

( ) 5.2 No

( ) 5.3 Not Sure

6)Are the health materials and programmes useful for promoting health?

( ) 6.1 Yes

( ) 6.2 No

( ) 6.3 Not sure

7)Are you happy with the overall quality of the materials and programmes?

( ) 7.1 Very satisfied

( ) 7.2 Somewhat satisfied

( ) 7.3 Undecided

( ) 7.4 Somewhat dissatisfied

( ) 7.5 Very dissatisfied

8)Do you have access to the immediate information you need on risk factors and prevention of CVD?

( ) 9.1 Yes

( ) 9.2 No

( ) 9.3 Not Sure

9)Is there a need maximise the impact of the information materials and programmes?

( ) 10.1 Yes

( ) 10.2 No

( ) 10.3 Not Sure

10) How satisfied were you with the information on CVD risk factors and preventive behaviors you have received?

      ( ) Very satisfied

      ( ) Somewhat satisfied

      ( ) Undecided

      ( ) Somewhat dissatisfied

      ( ) Very dissatisfied

11) Do you have access the Radio and TV health programmes?

      ( ) 9.1 Yes

      ( ) 9.2 No

      ( ) 9.3 Not Sure

Part 3.
Instruction: The following questions are about your lifestyle its covers, tobacco use, Diet and physical activites information, please mark X on the parenthesis ( ) for the only one answer that fits yourself. Please also write down in the blank space provided
TOBACCO USE
The questions below are on tobacco consumption

1. Do you currently smoke or use any tobacco products,
such as cigarettes, cigars, pipes, chew tobacco?

1.1 ( )Yes

1.2 ( )No

2. If yes, Do you currently smoke tobacco products only? such as cigarettes, cigars or pipes and not snuff or chew tobacco

2.1 ( )Yes

2.2 ( )No

3. If not currently a smoker-In the past, did you ever smoke regularly?

3.1 ( )Yes

3.2 (   )No

4. On average, how many times a day do you use tobacco

4.1Amount ……………………….

5. Do you intend to stop smoking?

5.1 (   )Yes

5.2 (   )No

DIET In this section we are going to ask you questions about fruits and vegetables that you usually eat and your dietary habits?
5. Are you on a special diet?

5.1(   ) Yes

5.2(   ) No

6. In a typical week, how many days do you eat fruits and vegetables?

6.1 Number of days………………

7. How often do you eat fruits and vegetables per day?

7.1 Number of servings…………………

8. Are your meals usually prepared at home?

8.1 (   )Yes

8.2 (   )No
9. What type of oils or fat is most often used for meal preparation in your household?

9.1. (   )Vegetable oil

9.2. (   )Olive oil

9.3. (   ) Butter or Ghee

9.4. (   )Margarine

9.5. (   )None in particular

9.6. (   )None used

9.7. (   )Other Specify_____

10. Do you intend to change your eating behavior to more healthy food?

10.1 (   )Yes

10.2 (   )No

PHYSICAL ACTIVITY
This section is about the time you spend doing different types of physical activity. Please
answer these questions even if you do not consider yourself to be an active person.
Think first about the time you spend doing work. Think of work as the things that you
have to do such as paid or unpaid work, household chores, digging, fishing , seeking
employment.

**11. Does your work involve mostly sitting or standing, with
    walking for no more that 10 minutes at a time?**

 11.1 (   )Yes

 11.2 (   ) No

**12. Does your work involve vigorous activity, like (heavy lifting, digging or
construction work) for at least 10 minutes at a time?**

 12.1 (   )Yes

 12.2 (   ) No

**13. In a typical week, on how many days do you do vigorous activities as part of
your work?**

13.1 Days a week……………………..

**14. On a typical day on which you do vigorous activity, how much time do you
spend doing such work?**

14.1Number of hours……………………..

15.How long is your typical working day?

15.1 Number of hours……………………..

Other than activities that you have already mentioned, I would like to ask you about the way you travel to and from places. For example to work, for shopping, to the field, to market, to the mosque,funerals, gatherings.

15. Do you walk for at least 10 minutes continuously to get to and from places?

15.1(   ) Yes

15.2(   ) No

16. How much time would you spend walking for any journey on a travel on a typical day?

In hours and minutes………………………..

The questions below ask about activities you do in your leisure time. Think about activities you do for recreation, fitness or sports. Do not include the physical activities you do at work or for travel

17. In your leisure time , do you do any vigorous activities like running or strenuous sports, weight lifting for at least 10 minutes at a time?

17.1(   ) Yes

17.2(   ) No (if No go toQ 21)

17. In a typical week, on how many days do you do vigorous activities as part of your leisure time?

17.1Days a week……………

19. How much time do you spend doing this (vigorous activities) on a typical day?

19.1 In hours and minute…………………..

20. In your leisure time, do you do any moderate activities such as brisk walking, cycling for at least 10 minutes at a time?

20.1(   ) Yes

20.2(   ) No (if No go to Q 24)

21. In a typical week, on how many days do you do moderate activities as part of leisure time?

21.1 Days a week……………

22. How much time do you spend doing this (moderate activities) on a typical day?

22.1 In hours and minute…………………..

23. The following question is about sitting or reclining. Think back over the past 7 days, to the time spent at work, at home, in leisure, including time spent sitting at a desk, visiting friends, reading, or watching television, but do not include time spent sleeping?

23.1 In hours and minute…………………..

24.Do you intend to increase your physical activity level in order to prevent from CVD risk factors?

24.1(   ) Yes

24.2(   ) No

APPENDIX C

RELIABITY TEST ON KNOWLEDGE OF RISK FACTORS AND

PREVENTIVE BEHAVIORS OF CVD

Reliability Statistics

Cronbach's Alpha	N of Items
.904	23

Intra class Correlation Coefficient

	Intraclass Correlation[a]	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	.291[b]	.193	.439	10.424	29	638	.000
Average Measures	.904[c]	.847	.947	10.424	29	638	.000

CURRICULUM VITAE

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EDUCATION
American Intercontinental University, London UK, August 1999
B.A. in Visual Communication

IB (International Baccalaureate), May 1995

EMPLOYMENT HISTORY

Communication Officer	**January - October 2000**
Society for Health Education, Maldives (NG0)	

Health Promotion Officer	
Health Promotion Unit	**February 2002- June**
2007	
Ministry of Health/Department of Public Health	
Maldives	

Senior Programme Officer	**May 2006 to Feb 2008**
Health Promotion Unit	
Department of Public Health	
Maldives	

Assistant Director of Health Promotion	**Feb 2008 to Present**