

**IMPLEMENTATION OF A HEALTH EDUCATION PROGRAMME RELATING TO  
RISK FACTORS FOR CHRONIC DISEASES OF LIFESTYLE AMONGST HIGH  
SCHOOL LEARNERS IN THE AMAJUBA DISTRICT, KWAZULU NATAL**

The logo of the University of the Western Cape, featuring a classical building with a pediment and columns.

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A thesis submitted in partial fulfilment of the requirements for the degree of Master of Science (Physiotherapy) in the Department of Physiotherapy, University of the Western Cape.

Supervisor: Prof. Jose Frantz

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August 2010

**IMPLEMENTATION OF A HEALTH EDUCATION PROGRAMME RELATING TO  
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Serena Chutergon

**KEYWORDS**

Knowledge

High School learners

Intervention

Schools

Chronic diseases

Risk factors



## DECLARATION

I declare that *Implementation of a Health Education Programme Relating to Risk Factors for Chronic Diseases of Lifestyle amongst High School Learners in the Amajuba District, Kwazulu Natal* is my own work, that it has not been submitted before any degree or examination in any other university, and that all sources I have used or quoted have been indicated and acknowledged as complete references.

Serena Chutergon

August 2010

Signed:.....

Witness:

.....

Prof.J.M. Frantz

## DEDICATION

To my husband for his continuous support and love through the study, and to my only daughter Makayla who was so understanding over this past year. May god continue to bless you both, I love you guys very much.





## ACKNOWLEDGEMENTS

Firstly, I would like to thank the Lord Almighty for his blessings and providing me with the opportunity to study. I would like to thank my supervisor, Prof Jose Frantz for her support, encouragement, continuous guidance and commitment over the past year. To the KZN Department of Education for allowing me to conduct my study, I am ever so grateful. To the Principal of Newcastle High School Mr Govender, and the principal of St Oswalds High School, Dr Singh, this study would have not been possible without your guys approval and support. To the learners of both Newcastle High School and St Oswalds High School, I thank you. Thank you to Mr Nick Swanepoel for his assistance with data analysis. Last but not least I would like to thank my family for all their support and care. To my husband, you have always supported my studies, and for that I am ever so indebted to you. I love you.



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## ABSTRACT

Currently, chronic diseases are a growing cause of death and disability in South Africa. This study was an experimental study using a pretest-posttest control group design. The study population was made up of two conveniently selected high schools located in the Amajuba District, Northern Kwazulu Natal. The total population for the intervention school was 1050 learners and for the control school were 945 learners. Chronic diseases of lifestyle are a group of diseases that share similar risk factors as a result of exposure, over many decades, to unhealthy diets, smoking, lack of exercise and stress. The major risk factors include high blood pressure, tobacco addiction, high blood cholesterol, diabetes and obesity. The study aimed to evaluate the effects of a health care education programme on the knowledge of high school learners as it relates to risk factors for chronic diseases of lifestyle in the Amajuba District, Northern Kwazulu Natal, through the implementation of a health education programme in the intervention school and a 45 min talk on chronic diseases of lifestyle in the control school. In addition, the study also determined the prevalence of risk factors for chronic diseases of lifestyles among high school learners in the Amajuba District, Northern Kwazulu Natal. The survey tool used in this study was two self administered questionnaires. The first being the Youth risk behavioural survey which assessed the learners' diet information, tobacco use, alcohol use and physical activity of which was used to collect information on the health risk behaviours of the learners. This was a validated and reliable questionnaire (chronbachs alpha of 0,897). The second, a knowledge questionnaire for risk factors which assessed the knowledge of learners, regarding chronic

diseases of lifestyle. Demographic data and data regarding diabetes, hypertension, stroke, diet information, tobacco use information, alcohol use information and physical activity were initially coded and entered into the Excel program, whereupon the Statistical Package for Social Science (SPSS) version 13 was used to analyse the data. The pre-test scores collected from the knowledge questionnaire showed that the mean for the intervention school was 12.8 (SD=4.3) and for the control school was 14.2 (SD=4.5). The post-test score for the intervention school (24.65) was significantly higher ( $p<0.005$ ) than the post-test score for control group (18.40). Thus, the implementation of the health education programme at the intervention school made much more significant difference to the knowledge of the pupils regarding chronic diseases of lifestyle than the 45 minute talk at the control school. Based on the Youth risk behavioural survey, it was found that 60% of the total number of participants smoked, 67% drank alcohol, 33% were physically inactive. In addition 35% were classified as overweight and 6% as hypertensive. The outcome of this study thus suggests that the high prevalence of risk factors for chronic diseases of lifestyle in the Amajuba District, Northern Kwazulu Natal should be of great concern as it places learners at a high risk for developing chronic diseases of lifestyle, as they grow older. Therefore preventive, promotive strategies and programs like the health education programme must be put in place and implemented in the communities within the Amajuba District, Northern Kwazulu Natal.

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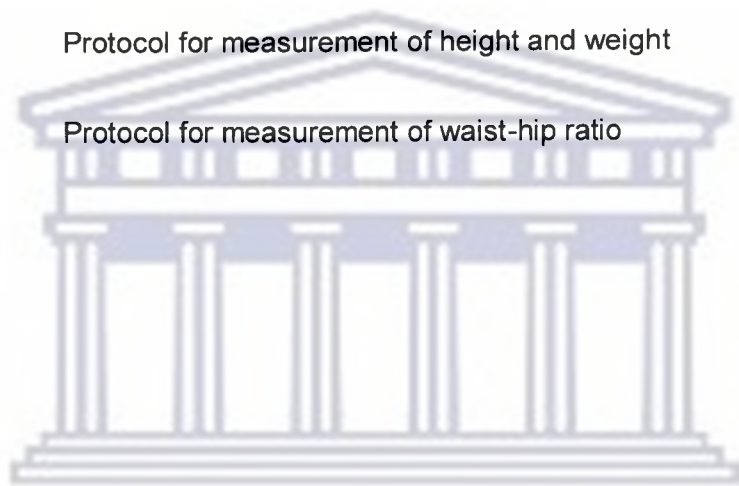
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# CHAPTER ONE

## INTRODUCTION

### 1.1 BACKGROUND

Chronic diseases of lifestyle has been defined as “a group of diseases that share similar risk factors as a result of exposure, over many decades, to unhealthy diets, smoking, lack of exercise and stress” (Steyn, Fourie & Bradshaw, 1992). Internationally these diseases are also called ‘Non Communicable Diseases (NCD’S) or Degenerative Diseases’. In South Africa, chronic diseases have been proven to be a growing cause of death and disability. The major risk factors include high blood pressure, tobacco use, high blood cholesterol, diabetes, physical inactivity and obesity (Bradshaw, Schneider, Norman & Bourne, 2006).

Research conducted by Bradshaw, Groenewald, Laubsher, Nannan, Nojilana, Piterse and Schneider (2003) revealed that risk factors such as high blood pressure, tobacco use, high blood cholesterol, diabetes, physical inactivity and obesity, result in various disease processes such as cardiovascular disease (strokes, heart attacks), cancers, chronic respiratory disorders, emphysema and many others that culminate in high mortality and morbidity rates. A study by Steyn et al (2002) in South Africa, has revealed that chronic disease of lifestyles accounted for 28 % deaths of all adults between the ages of 35 and 64 years and 56 % of South Africans have at least one modified risk factor for chronic diseases of lifestyle.

Further, three years later statistics released by Statistics South Africa in the year 2005 on the national causes of death, showed that 20% of deaths in the 35 to 64 year age group were a result of chronic diseases of lifestyle. Frantz (2006) in a study conducted among high school learners in the Western Cape, reported that 31% of adolescents had more than one modifiable risk factor for chronic diseases of lifestyle. According to the use of the Actuarial Society of South Africa's Demographic and Health Model, 565 people died from NCD'S per day in 2000 in South Africa and this should reach 666 deaths per day in 2010. It is also predicted that globally, deaths from noncommunicable diseases (NCD'S) between the period of 1990 and 2020 will increase by 77% (Murray & Lopez, 1996). This means that economies will most likely be threatened by recession as the bulk of the affected people are the older and experienced members of the workforce.

Over the centuries infectious diseases were the main cause of death worldwide, however, deaths due to non communicable diseases are increasing worldwide while infectious diseases remain a major cause of deaths in developed countries (Alberti, 2001). A study conducted by WHO (2008) estimated that non-communicable diseases accounted for 6 out of 10 deaths globally. The most prominent non-communicable diseases according to the World Health Organisation (WHO, 2008) are cardiovascular disease, followed by cancer. In view of the many deaths caused by chronic diseases of lifestyles, many countries now recognize the need for action to strengthen control and prevention measures to address the spread of chronic diseases. Such is reflected by the growing interests and concern shown by WHO Member States, international and bilateral agencies and non governmental

organisations in addressing health promotion, food and nutrition and strategies for the control and prevention of chronic diseases WHO, 2008). The above recognition for the need for action to strengthen control and prevention of CDL was initially identified at the 1992 International Conference on Nutrition (WHO, 1992).

Further, at the 53<sup>rd</sup> World Health Assembly in May 2000 the resolution on Prevention and control on noncommunicable diseases (WHA53.17) was adopted that urged WHO Member States:

- *To develop, “ A national policy framework taking into account healthy public policies creating a conducive environment for health lifestyles; fiscal and taxation policies towards healthy and unhealthy goods and services”;*
- *To establish programmes for the prevention and control of noncommunicable diseases;*
- *To assess and monitor mortality and morbidity attributable to noncommunicable diseases; and*
- *To promote the effectiveness of secondary and tertiary prevention and support the development of guidelines of cost-effective screening, diagnosis and treatment for NCDs.*

The main objectives of the above resolution (WHA 53.17) was :

- *To map the emerging epidemics of noncommunicable diseases and to analyse their social, economic, behavioural and political determinants with particular reference to poor and disadvantage populations, in order to provide guidance for policy, legislative and financial measures related to the development of an environment supportive of control;*

- *To reduce the level of exposure of individuals and populations to common risk factors for noncommunicable diseases, namely tobacco consumption, un healthy diet and physical inactivity, and their determinants;*
- *To strengthen health care for people with noncommunicable diseases by developing norms and guidelines for cost-effective interventions, with priority given to cardiovascular diseases, cancers, chronic respiratory diseases and diabetes.*

However, between the period of 2003 and 2004 the World Health Assembly gave WHO an important additional set of mandates when the WHO Framework Convention on Tobacco Control and the Global Strategy on Diet, Physical Activity and Health was adopted. In 2007, the World Health Assembly requested the Director –General to translate the Global Strategy for the prevention and Control of noncommunicable diseases into an action plan and in 2008 WHO in conjunction with WHO Member States passed resolution (WHA61.14). Accordingly, the Action Plan for the global Strategy for prevention and Control of NCD'S was developed (WHO, 2008).

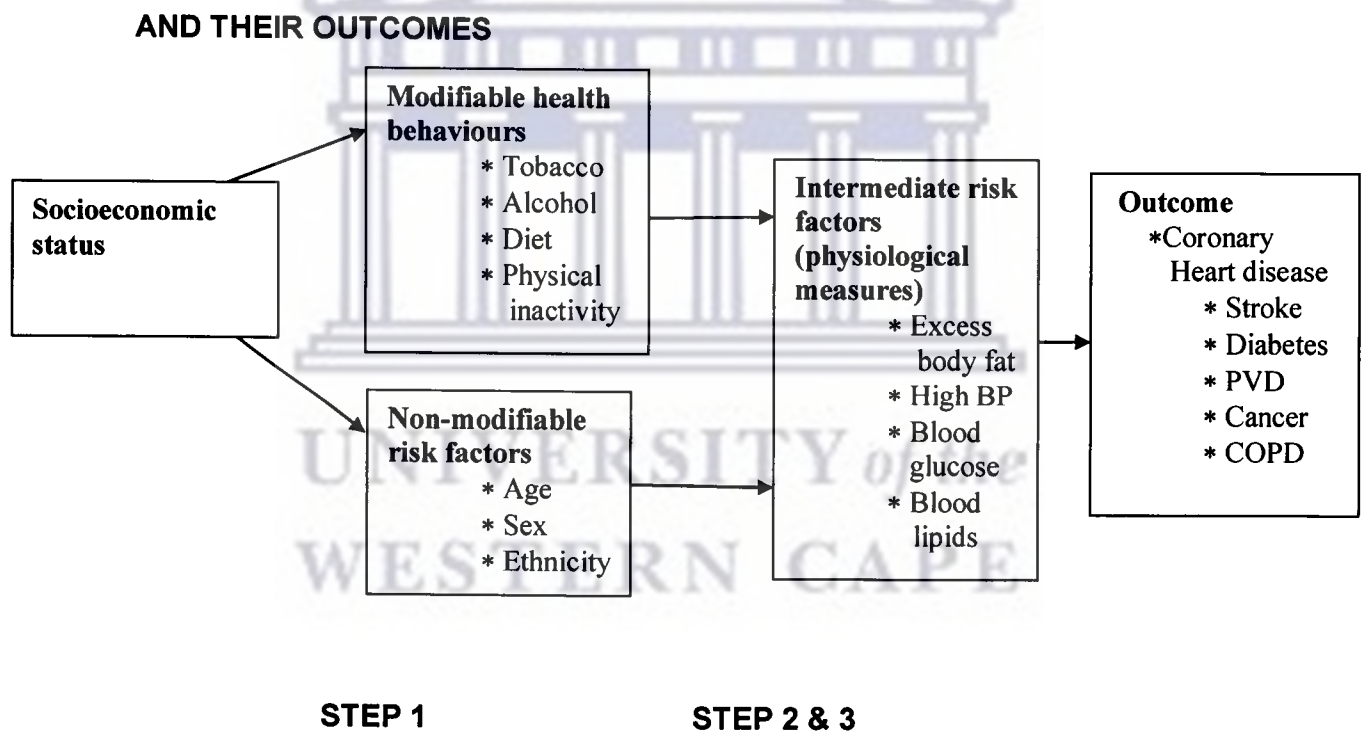
As a result of the above resolution, non-communicable disease prevention and control “in developing countries and other deprived populations” was placed on the public health agenda (WHO, 2008). Despite these explicit recommendations it is important to consider the multiple burdens of disease in the developing regions of the world. According to Bradshaw et al (2006), “a combination of poverty-related diseases together with the emerging chronic diseases associated with



industrialisation and a westernised lifestyle, result in developing countries experiencing a double burden of disease and in some cases, where there are high injury rates, a triple burden of disease". The rapid spread of HIV/AIDS on the African continent has changed the health profile and mortality patterns at an unprecedented pace (Dorrington, Bourne, Bradshaw, Laubscher, & Timaeus, 2001). This multiple burden of disease places an additional demand on the health services of already under resourced developing countries (WHO, 2003a). Steyn et al (2002), highlighted that there is a limited focus on efforts to combat the burden of chronic diseases of lifestyles (CDL) in South Africa. The authors further stated that "prevention of unhealthy lifestyles, early diagnosis and cost-effective management of chronic diseases of lifestyle risk factors are low on the list of priorities in relation to the other competing groups of disease". A study conducted by Van Zyl, Van De Merwe, Walsh, Van Rooyen, Van Wyk and Groenewald (2009) revealed that in order to reduce or control risk factors associated with chronic diseases of lifestyle, it is important to first identify the distinct risk-factor profile for a particular community. When such is been identified, for example high blood pressure, the implementation of intervention programmes is required. The authors go on to provide an example of an intervention programme such as adjustable diet which can aid in achieving lower blood pressure. It has thus become critical that South Africa utilises its limited resources optimally and implement cost-effective health-promotion interventions to prevent the predicted epidemic of CDL in the face of all the other health needs in this region (Murray & Lopez , 1996).

Therefore, in South Africa there exists the need for co-ordination between government agencies such as Department of Education, Department of Sports and Recreation and the Department of Health. WHO (2003b) introduced the stepwise approach that monitored the emergence of Non Communicable Diseases, of which was based on sequential levels of surveillance. The most common NCD's and their established behavioural and physiological risk factors within this approach that meet criteria for surveillance, are identified as illustrated in Figure 1.1.

**Figure 1.1 BEHAVIOURAL RISK FACTORS, INTERMEDIATE RISK FACTORS**



**Source: WHO 2003b**

The above Figure 1.1 suggests that socio-economic status influences modifiable health behaviours and non-modifiable risk factors which in turn influence intermediate risk factors. Risk factors such as excess body fat, high BP, high blood glucose and blood lipids strongly lead to outcomes such as coronary heart disease,



stroke, diabetes and cancer. Figure 1.1 therefore gives the indication that if primary prevention is practised that modifies the status of modifiable health behaviours, the outcome will be different and disease burden will be decreased.

## **1.2 RATIONALE OF THE STUDY**

Chronic disease such as stroke, hypertension and diabetes are preventable diseases of lifestyle and should be prevented at an early age. Provision for the prevention, early detection, and cost-effective management of CDL are currently inadequate. However, it is not always appropriate to use intervention models and materials developed in other countries as they may not always match the context of the relevant country. This implies that there is a need to either develop or utilize existing patient education and materials for the specific target groups and situations in South Africa. As health professionals, physiotherapy is therefore central to patient education and plays a vital role at all levels of health care. Physiotherapists can thus contribute to preventing chronic diseases of lifestyle by implementing effective health education and health promotion programmes.

## **1.3 AIM OF THE STUDY**

The aim of the study is to evaluate the effects of a health care education programme on the knowledge of high school learners as it relates to risk factors for chronic diseases of lifestyle in the Amajuba District, Northern Kwazulu Natal, South Africa.

## **1.4 OBJECTIVES OF THE STUDY**

The following objectives of this study were identified:

- To determine the prevalence of risk factors for chronic diseases of lifestyle amongst high school learners in the Amajuba District.
- To determine the knowledge of high school learners (grade eight) about factors relating to CDL such as stroke, diabetes and hypertension prior and after implementation of health education programmes.
- To evaluate the effects of a health education programme on the knowledge of high school learners about risk factors relating to CDL such as stroke, diabetes and hypertension.

## **1.5 SIGNIFICANCE OF THE STUDY**

Currently within the schools in Kwazulu Natal, very little health education programmes relating to risk factors for chronic disease of lifestyle are implemented. Youth, especially high school learners, are unaware of chronic diseases of lifestyle and are unable to make informed decisions regarding personal and community health as it relates to CDL. This study will therefore assist in adding to the baseline data of risk factors for chronic disease of lifestyles among school going children. In addition, if this intervention helps to improve their knowledge regarding the risk factors for CDL, it could assist the youth in making the correct choices regarding their health.

## 1.6 DESCRIPTION OF THE KEY TERMS USED

**High school learners:** High school learners are learners aged 13 to 18 years who attend a secondary school.

**Health Education Programme:** A structured 5 week program regarding chronic diseases of lifestyle implemented at a secondary school amongst grade 8 learners.

**Hypertension:** The definition of hypertension in children and adolescents is based on the normative distribution of blood pressure in healthy children. Normal blood pressure is classified as <90th percentile for systolic blood pressure or diastolic blood pressure, the percentile being for the gender, age and height measured on at least three occasions. Pre-hypertension is the 90th to <95th percentile, or if blood pressure exceeds 120/80mmHG even if it is <90th percentile up to <95th percentile. When systolic and diastolic blood pressures fall into different categories, the higher category should be selected to classify the individual's blood pressure status, (American College of Sports Medicine 6th Edition, 2000).

**Obesity and overweight:** Obesity is defined as a body mass index (BMI = weight in kilograms divided by height in metres squared) of >95th percentile for age of the population, while overweight is defined as a BMI between 85th and 95th for age (American College of Sports Medicine 6<sup>th</sup> Edition, 2000).

## 1.7 ABBREVIATIONS:

The following abbreviations have been used in this thesis:

BMI: Body mass index

CDL: Chronic Diseases of Lifestyle

CDC: Centre for Disease Control and Prevention

IHD: Ischaemic Heart Disease

NCD: Non-communicable Diseases

WHA: World Health Assembly

WHO: World Health Organisation



## 1.8 SUMMARY OF CHAPTERS

Chapter one presents an overview of literature regarding the background of chronic diseases of lifestyle past and present documented research. The first section outlines the background of CDL and the second section outlines the prevalence of CDL. The third section highlights the 53<sup>rd</sup> World Health Assembly (WHA) May 2000 resolution on the prevention and control of non communicable diseases. The fourth section looks at the focussed efforts to combat the burden of CDL with behavioural factors, intermediate risk factors and their outcomes. The chapter ends with the rationale and aims of the study as well as the objectives and significance of the study.

In chapter two, the literature highlights the prevalence of risk factors for chronic diseases of lifestyle among youth and looks at the impact of chronic diseases. Thereafter, literature illustrating the methods of reducing chronic diseases of lifestyle and the need for health promotion and an effective health education programme are presented.

Chapter three outlines the research setting and research design used in the study. It also presents the details of the study population and provides an in depth description of the data collection methods. This includes the tools used in data collection and data collection procedures. The chapter ends by giving the methods of data analysis and ethical considerations.

Chapter four describes the results of the study according to the bio-demographic data and anthropometric measurements of the study population. In addition, the health risk behavioural information of learners is also presented with the knowledge scores regarding hypertension, diabetes and stroke prior and after the implementation of the intervention.

Chapter five provides a discussion of the study by looking at the prevalence of health risk behaviours, effects of health education in schools and schools as a setting for health education.

Chapter six provides a summary of the study and draws conclusions on the findings. In addition, recommendations based on the main findings of this study are given.

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## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 INTRODUCTION**

In this chapter literature is reviewed that is relevant to chronic diseases of lifestyle. It examines studies focusing on the prevalence of risk factors for chronic diseases of lifestyle, the impact of chronic diseases of lifestyle and ways of reducing risk factors for chronic diseases of lifestyle are also reviewed. The chapter concludes by looking at the importance of health promotion and health education programmes.

#### **2.2 PREVALENCE OF RISK FACTORS FOR CHRONIC DISEASES OF LIFESTYLE AMONG YOUTH**

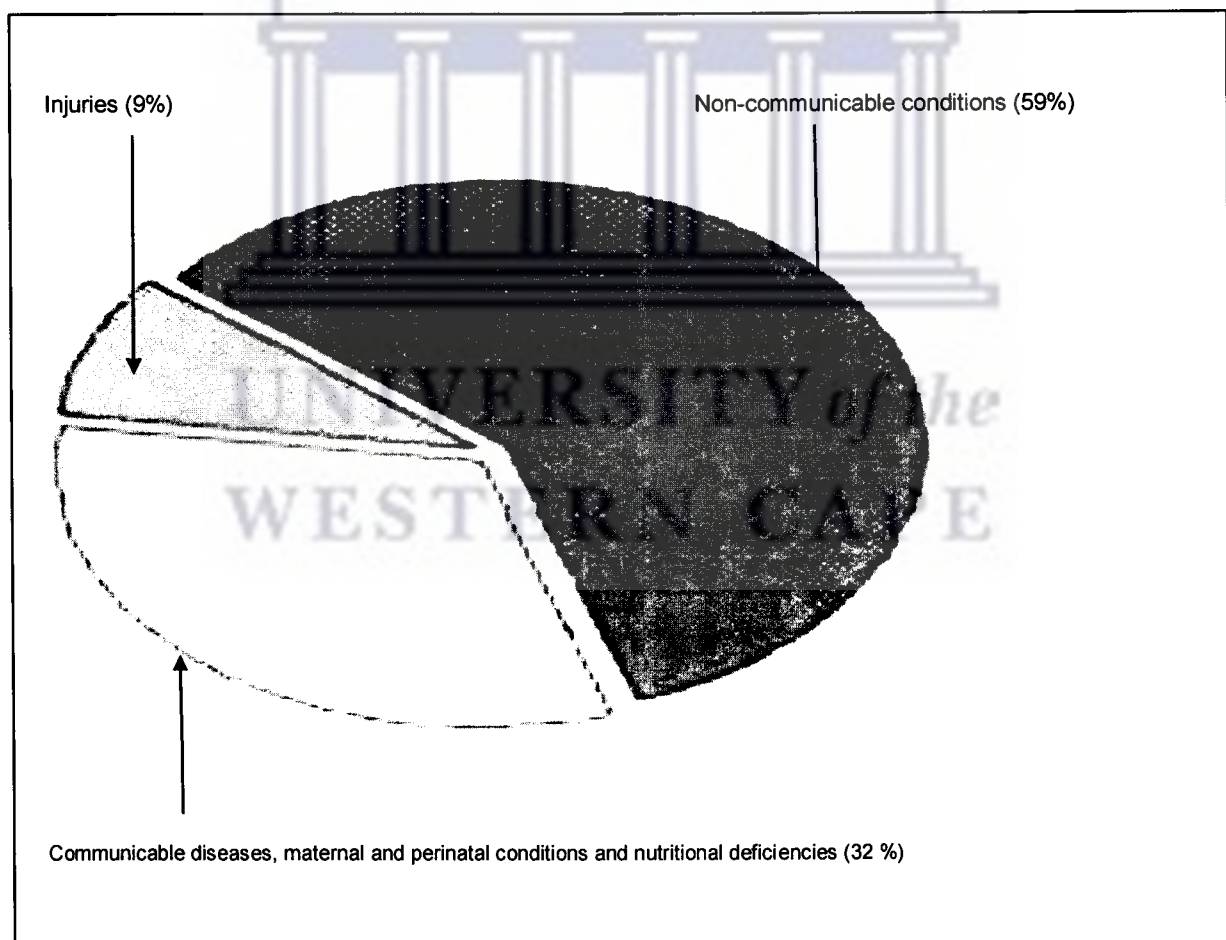
A study conducted by the Centre for Chronic Diseases, Prevention and Control (2003) shows that the factors contributing to increases in the prevalence of risk factors for chronic diseases of lifestyle include unhealthy lifestyle habits, increasing life expectancy and ageing of the population, increasing urbanisation as well as psychosocial factors. Research performed by Fields, Burt, Cutler, Hughes, Rocella and Sorlie (2004) has shown that nearly one in three adults in the United States of America has hypertension whilst high blood pressure is the most important risk factor for stroke. Stroke in the United States of America also accounted for one in every sixteen deaths in the year 2004. Conner, Rheeder and Bryer (2005) in a South African study revealed that the overall prevalence of hypertension in a study population of 9731 people was 55%. A study by WHO (1998) had projected that by

the year 2020, chronic diseases will account for almost three quarters of all deaths worldwide and 71 % of deaths due to ischaemic heart disease (IHD), 70 % due to diabetes and 75 % due to stroke. They further projected that the number of diabetic people in developing countries will increase by more than 2.5 % from 84 million in 1995 to 228 million in 2025. According to a study by WHO (2002), cardiovascular diseases are more numerous in India and China than in all other developed countries. The current prevalence of overweight and obesity of youth globally has reached unprecedented levels (Popkin, 2002). India currently faces a combination of communicable and chronic diseases, but communicable diseases will still occupy an important position up to 2020 (Murray & Lopez, 1996). In South Africa, the pattern of diseases is one with a triple burden of disease which is exacerbated by an exploding epidemic of HIV/AIDS (Steyn, Fourie & Temple, 2006).

In the Western Cape, South Africa, chronic diseases of lifestyle are the leading cause of deaths (Bradshaw, Schneider, Norman & Bourne, 2006). The diseases identified included cardiovascular disease (stroke), diabetes and obesity. A global survey by WHO (2003b) concurs with the findings of Bradshaw and his colleagues (2006) that urbanisation, globalisation, the media and advertising are underlying influences on emerging chronic diseases of lifestyle risk factors among youth. Research conducted by Frantz (2006) using surveys conducted in schools in the Western Cape, South Africa, also revealed the existence of a high prevalence of risk factors for chronic diseases of lifestyle among adolescents and youth. The four major factors determined by social context and individual behaviour which place youth at risk included tobacco use, physical inactivity, being overweight and psychosocial



stress (Frantz, 2006). Further, a joint study by WHO/FAO (2003a) also looked at four factors in the epidemiology of chronic diseases – poor diet, physical inactivity as well as tobacco and alcohol use, which are extremely important to public health. Currently the world's health is facing an unprecedented transition on the epidemiological, nutritional and demographic front. Scientific evidence substantiates such whereby there is a broad shift in disease burden from infectious diseases to non-communicable diseases. Figure 2.1 shows that the majority of deaths (59%) are from NCD'S (WHO, 2002).



**Figure 2.1 Death by broad cause group** Source: WHO Health Report 2002

A study by WHO (2003b) suggests that a vast body of knowledge exists about risk factors for chronic diseases of lifestyle but that most of the information is from developed countries. The World Health Report (WHO, 2002) mentions that the top ten risk factors globally and regionally in terms of burden of disease, account for more than one third of deaths worldwide. Most of these risk factors for chronic diseases are due to lifestyles and are preventable. Common risk factors for these diseases include smoking, physical inactivity, obesity and poor diet (WHO, 2002). The risk of noncommunicable diseases in developing countries is inextricably linked to economic and cultural globalisation.

The study by WHO (2003b) identified five out of ten leading global disease burden risk factors as high blood pressure, high cholesterol, obesity, physical inactivity and unhealthy diet. These preventable risk factors together with alcohol and tobacco use play a key role in the development of chronic diseases. In some parts of the world, population growth and rapid economic and political changes contribute to the amplification and spread of the disease (WHO, 2003b). Table 2.1 shows the differences in leading risk factors between developed and developing countries.

**TABLE 2.1 LEADING RISK FACTORS AS CAUSES OF BURDEN AND DISEASE  
IN DEVELOPING AND DEVELOPED COUNTRIES**

| Developing countries (e.g. South Africa, Brazil)<br>High Mortality | Developing countries (e.g. South Africa; Brazil) Low mortality rates | Developed countries (e.g. America; Australia) |
|--|--|---|
| 1 Underweight  | 1 Alcohol  | 1 Tobacco                                     |
| 2 Unsafe sex   | 2 Blood Pressure   | 2 Blood pressure                              |
| 3 Unsafe water   | 3 Tobacco  | 3 Alcohol                                     |
| 4 Indoor smoke   | 4 Underweight  | 4 Cholesterol                                 |
| 5 Zinc deficiency  | 5 Body mass index  | 5 Body mass index                             |
| 6 Iron deficiency  | 6 Cholesterol  | 6 Low fruit & veg. Intake                     |
| 7 Vitamin A deficiency   | 7 Low fruit & veg. Intake  | 7 Physical inactivity                         |
| 8 Blood pressure   | 8 Indoor smoke   | 8 Illicit drugs                               |
| 9 Tobacco  | 9 Iron deficiency  | 9 Unsafe sex                                  |
| 10 Cholesterol   | 10 Unsafe water  | 10 Iron deficiency                            |
| 11 Alcohol   | 11 Unsafe sex  | 11 Lead exposure                              |
| 12 Low fruit & veg. Intake   | 12 Lead exposure   | 12 Childhood sexual abuse                     |

Adapted from WHO/NMH/CCS13/08/10

### 2.2.1 SUMMARY

Various research has shown that the adoption of an unhealthy lifestyle coupled with CDL risk factors such as obesity, high blood pressure, tobacco addiction, high blood cholesterol and diabetes contribute to a range of disease processes like stroke, ischaemic heart diseases, cardiac failure and end organ damage. Knowledge and an understanding of these risk factors can be used to shift population distributions of the

factors in a positive direction. As many of the risk factors for chronic diseases of lifestyle are preventable, it is important that effective prevention programs are in place. There must also be proper coordination between different government agencies such as Department of Education, Department of Sport and Recreation and Department of Health. Governments at national and provincial level need to also plan to control the emerging noncommunicable disease epidemic.

### **2.3 THE IMPACT OF CHRONIC DISEASES OF LIFESTYLE (CDL)**

The impact of chronic diseases of lifestyle is a key impediment to social and economic progress. Yach (2002), in his study argues that in order to address the challenges of CDL, one should focus on current prevalence and trends of CDL. This approach is particularly important as it will assist in planning health delivery in communities exposed to high levels of CDL risk factors and attempt to combat the increase of CDL rates. It has become evident that factors such as urbanisation have an impact on the emergence of CDL risk factors in sub-Saharan African countries (WHO, 2003a). Urbanisation holistically affects the lifestyles of migrants leading to increased levels of CDL, influencing ones diets, exercise patterns and tobacco consumption. According to a study performed by WHO (2003a), urbanisation associated with a change in diet, less physical activity and a rise in socioeconomic status will lead to an increase in the prevalence of overweight and obese people. Within developing countries like India, Mexico, Nigeria and Tunisia children face an increase in the prevalence of being overweight (de Onis & Blossner, 2000). Physical inactivity is an increasingly growing problem in the above developing countries.

This phenomenon was further illustrated in a study by Lambert et al (2000) conducted among school children in the Western Cape between the ages of 12 to 18 years whom participated in a health and fitness survey and results were inversely associated with current body mass index (BMI) in both boys and girls (Lambert et al, 2000). Further, with the use of BMI projection formulas, Lambert et al (2002) in their study of the school children in the Western Cape were also able to predict future body mass index of participants, which suggested that 24,5 % of females and 12,8 % of males will be overweight at the age of 18 years of age. Research by Fountain et al (2003) has shown that, by being overweight, one generally increases the risks for conditions associated with type 2 diabetes, hypertension, dyslipidemia, sleep apnea, osteoarthritis and lower back pain. The most recent study pertaining to the impact of chronic diseases of lifestyle was conducted by Reddy, James, Sewpaul, Koopman, Funani, Sifunda, Josie, Masuka, Kambaran and Omardien (2008) amongst high school learners in South Africa, which showed that 20% of the total number of participants (N=10270) were classified as overweight, 34% physically inactive, 30% smoked and 35% drank alcohol. Further, a study by Thomas (2009) amongst high school learners in the districts of Johannesburg, South Africa, reported that 39% of the total number of participants (N=1139) smoked and 65% drank alcohol.

A recent Global Youth Tobacco Survey Collaborative Group by WHO (2002) has indicated that most youth between the ages of 13 to 15 indulge in smoking of cigarettes, 10 percent were offered free cigarettes by manufacturers and 40 percent of the participants in the survey assumed that boys who smoked had more friends. Most countries saw that there was a need for tobacco control initiatives and started



to implement stricter control initiatives. This could be due to the fact that research has shown that smoking has been linked to an increase in the mortality risk of cancer (WHO, 2002).

A study by Steyn and others (1992) has indicated that smoking increases the risk for illnesses other than lung cancer such as heart disease, emphysema, stroke and oral cancer. Further, the above study by Steyn et al (1992) has also shown that risks from smoking, as they relate to lung disease, may include, but are not limited to chronic bronchitis, emphysema and lung cancers. According to Bradshaw et al (2006), "a combination of poverty-related diseases together with the emerging chronic diseases associated with industrialisation and a westernised lifestyle, result in developing countries experiencing a double burden of disease and in some cases, where there are high injury rates a triple burden of disease" (Bradshaw, et al 2006). The rapid spread of HIV/AIDS on the African continent has changed the health profile and mortality patterns at an unprecedented pace (Dorrington et al, 2001). This multiple burden of disease places an additional demand on the health services of already under resourced developing countries. The complex disease pattern places a high demand on health services which are faced with shrinking budgets and infrastructure development demands. These include the provision of primary health care for the majority of previously disadvantaged populations who were neglected in the previous regime

### **2.3.1 SUMMARY**

The impact of chronic diseases of lifestyle is a key impediment to social and economic progress. The spread of CDL is amplified by population growth as well as rapid economic and political changes in some parts of the world. Therefore, in order to prevent the epidemic of chronic diseases of lifestyle, both the immediate and root causes of these diseases must be identified. The WHO has identified a method of monitoring risk factors for chronic diseases of lifestyle. This information would assist in identifying suitable interventions for various populations.

### **2.4 METHODS OF REDUCING RISK FACTORS FOR CHRONIC DISEASES OF LIFESTYLE**

Various research has shown that chronic diseases of lifestyle are preventable diseases. The current scientific evidence available provides strong basis that links diet to health. Primary intervention besides the use of medication for those already affected, is considered to be most cost effective, affordable and sustainable course of action to deal with the worldwide epidemic of chronic diseases of lifestyle (WHA61.14, 2008). A study conducted by Van Zyl et al (2009) revealed that in order to reduce or control risk factors associated with chronic diseases of lifestyle, it is important to first identify the distinct risk-factor profile for a particular community. When such has been identified, for example high blood pressure, the implementation of intervention programmes at community level is required. The authors go on to provide an example of an intervention programme such as adjustable diet program which can aid in achieving lower blood pressure.

Research performed by Steyn, Fourie and Temple (2006), the Nutritional Society, the Association for Dietetics in South Africa, industry and the Department of Health, provide guidelines that are relevant to the prevention of chronic diseases, such as IHD and type 2 diabetes, all of which concur with the above findings of Van Zyl et al (2009). By reducing the risks factors for chronic diseases of lifestyles and by educating the population on the risk factors of CDL, one will be able to decrease the incidence of chronic diseases of lifestyle significantly (Nissen et al 2001). However, various other researches show that prevention of the emergence of risk factors receives the least attention in South Africa's activities relating to health promotion. Fortunately, WHO (2002) in their World Health Report has stressed the need for adequate prevention of chronic diseases of lifestyle by quantifying the global impacts of several major risk factors with regard to current mortality and overall burden of diseases. Further, the benefits of effective intervention programmes and the cost-effectiveness of them in comparison to many other medical interventions were also highlighted in the World Health Report. Secondary chronic diseases of lifestyle prevention can also make a strong impact on patients by reducing CDL risk factors. Yach (2002) in his study questions the public health community as to why such low priorities are given to effective preventative measures for chronic diseases seeing that their cost effectiveness has been shown to be high. The author further suggests possible answers to the question and argues that by slowing the incidence of new cases of almost entirely preventable chronic diseases of lifestyle by cost-effectively addressing CDL risk factors such as tobacco use, unhealthy diets and physical inactivity, one can reduce the burden of CDL.



Various literature on possible methods of reducing the risk factors associated with CDL, suggest that it is important that intervention programs aimed at educating the communities on the prevention of chronic diseases of lifestyle are performed with strong emphasis on physical activity, abstaining from excessive alcohol intake, tobacco use and diet. Research performed by Canon (2001) suggests that in order to prevent CDL at an individual and community level, both the immediate and root causes of these diseases must be identified. Physical inactivity is one of the immediate causes of chronic diseases coupled with tobacco use, malnutrition and urbanisation. In order to address these risk factors, effective prevention programmes need to be in place. One way of achieving the above would be to first create an awareness of the risk factors associated with CDL. Then to evaluate the current knowledge of CDL in the training of health professionals and the knowledge of school children regarding the risk factors of CDL, with access to health education materials or a health education program to both. Prevention programmes can also be aimed at the individual level and community level and in various settings.

## **2.5 IMPORTANCE OF HEALTH PROMOTION AND HEALTH EDUCATION PROGRAMME**

Often developing countries formulate health promotion material and programmes developed in the industrial world without the necessary consideration of the local culture or the realities of people living in impoverished settings. As a result, often such an approach is doomed to fail, therefore WHO (1986) in their first international conference on health promotion in Ottawa, highlighted that the only way to achieve

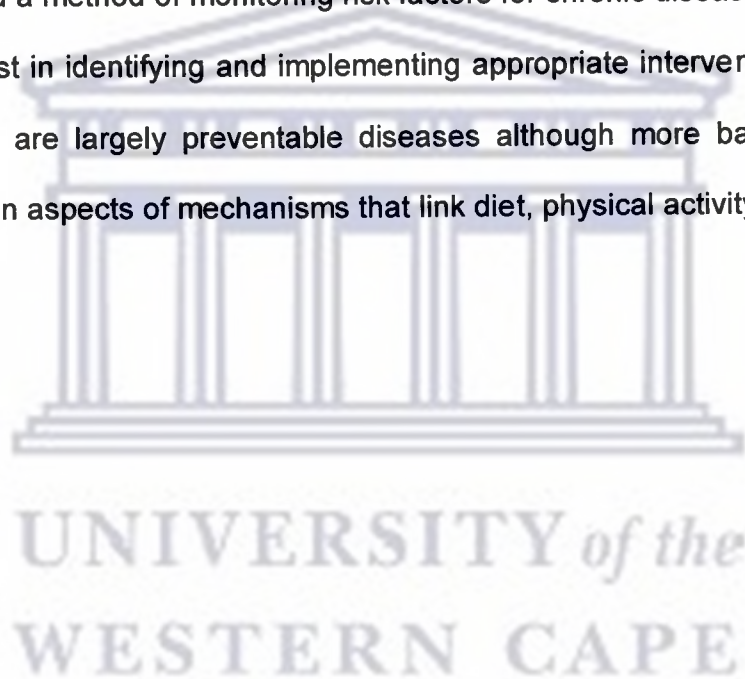
success is to develop either new locally appropriate health promotion programmes, or carefully adopt material from other settings to fulfil local requirements. This implies that there is a need to develop patient education and materials for the specific target groups and situations in South Africa. Therefore, as health professionals, physiotherapy is central to patient education and can play a vital role at all levels of health care.

Physiotherapists can contribute to preventing chronic diseases of lifestyle by implementing effective health education and health promotion programmes. Murray and Lopez (1996) in their study have shown that due to limited focussed efforts to combat the burden of CDL, there is a great need for South Africa to utilise its limited resources optimally and implement cost-effective health promotion interventions to prevent the predicted epidemic of CDL in the face of all other health needs in this region. From reviewing the various literatures on CDL, health care information regarding effectiveness of CDL treatment is very rarely collected and in most cases does not inform health care services. On the other hand, therapeutic guidelines for CDL management are mostly formulated by international agencies for global use and are frequently unrealistic for South Africa or other countries in the region with scarce resources. Coupled with the above, some therapeutic guidelines target either medically qualified personnel or professional nurses whom have special training in CDL care of which, in rural areas, such a person is often unavailable. As a result this leads to inadequate care for patients with CDL or their risk factors (Steyn, Gaziano & Bradshaw, 1998). A study by Gahimer and Domholt (1996) also

highlighted the above, which stated that the physiotherapy profession should include more opportunities for health education and health promotion.

## **2.6 SUMMARY**

From the literature reviewed it can be seen that chronic diseases of lifestyle is a global problem with statistics increasing drastically. The World Health Organisation has also identified a method of monitoring risk factors for chronic diseases of lifestyle of which will assist in identifying and implementing appropriate interventions. Lastly, chronic diseases are largely preventable diseases although more basic research may be needed on aspects of mechanisms that link diet, physical activity and health.



## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.1 INTRODUCTION**

This chapter gives a broad description of the research setting in which the study was conducted. Research design as well as the study population, sampling methods and instrumentation are also described. The data collection and methods of data analysis as well as the implementation of the health education programme are explained. Lastly the areas of ethical consideration are discussed.

#### **3.2 RESEARCH SETTING**

The study was conducted in two (2) high schools located in Newcastle within the Amajuba District, Northern Kwazulu Natal. Newcastle is the third largest urban centre in Kwazulu Natal and is the biggest city within the Amajuba District. Newcastle is located in the North West corner of the Kwazulu Natal province along the Ncandu river and is moderately industrial. Newcastle has a population of 332981 people, consisting of 302578 African, 2244 Coloured, 10129 Indian and 18030 White people.

Both schools used in this study are government institutions located in communities which are demographically representative of the Amajuba District, Northern Kwazulu Natal. All the learners at the schools come from the community and both schools have no active health education programme.

### **3.3 RESEARCH DESIGN**

The study was an experimental study using a pretest-posttest control group design. This design is an improvement on a simple pretest-posttest design in that we can determine whether there is a change in behavior and outcomes as a result of the intervention and thus decrease the chances of confounding due to other factors. The use of a control group also assists in improving internal validity of the study.

### **3.4 POPULATION AND SAMPLING**

The study was conducted in two conveniently selected high schools. The total population for the intervention school was 1050 learners and for the control school were 945 learners. The total number of grade eight learners at the intervention school was 298 and at the control school were 177. All the grade eight learners at the two schools were invited to participate in the study for the basic data of health risk behaviours and the knowledge questionnaire regarding CDL.

### **3.5 DATA COLLECTION METHODS**

#### **3.5.1 Instrument**

The survey tools used in this study were two self administered questionnaires. The first instrument used was a knowledge questionnaire for risk factors (Appendix 1), which assessed the knowledge of learners regarding CDL. This was a validated and reliable questionnaire (chronbachs alpha of 0,897) that had been used in the South African context (Frantz, 2008). The second being the Youth Risk Behavioural

Survey (Appendix 2) which assessed the learners' diet information, tobacco use, alcohol use and physical activity levels (CDC, 2002). This tool gave the baseline data for the health risk behaviours of the learners. Both the questionnaires used in this study were anonymous self administered questionnaires and took about 30minutes to complete.

### **3.5.2 Intervention**

#### **Intervention School**

The health education programme (Appendix 3) that was used in this study was a standardized programme designed by Frantz (2008). The health education programme was implemented in the intervention school for a period of 5 weeks per class from the 12<sup>th</sup> July 2010 up until 13<sup>th</sup> August 2010. The programme was presented as part of the life orientation class of the grade 8 classes. Each session lasted for the duration of a normal class period. At the end of the 5 weeks, the knowledge survey was administered at both schools again.

#### **Control School**

For the control school, the researcher only implemented a 45 minute talk on chronic diseases of lifestyle identifying risk factors such as tobacco use, physical inactivity, being overweight and psychosocial stress.



**TABLE 3.1 OVERVIEW OF HEALTH EDUCATION PROGRAMME**

| WEEK | OBJECTIVE                                       | CONTENT  | TIME ANDFORMAT  | OUTCOME  |
|------|---|--|---|--|
| 1    | Overview of chronic diseases of lifestyle       | Knowledge of risk factors and health risk behaviour at it relates to chronic diseases of lifestyle.<br>. What?<br>. Why?<br>. How?                       | 45min Presentation by the researcher followed by a question and answer session        | Introduction of the concept of CDL and the risk factors for CDL  |
| 2    | Identifying risk factors as it relates to CDL   | Learners will be given a case study and they must identify the risk factors present and go and research why?<br>. Diabetes<br>. Hypertension<br>. Stroke | 45 minutes<br>Group work: Class is divided into groups of six                         | Personal interaction with a case/someone relating to CDL where learners are able to relate to each another |
| 3    | Research information relating to CDL identified | Learners required to bring research material and pictures to make a poster that will highlight the risk factors for chronic diseases of lifestyle        | 45 minutes<br>Group work: Poster design and making or power point presentation design | Learners were able to personally identify risk factors in their own personal situation.                    |
| 4    | Poster design and presentation                  | Sharing of information gathered  | 1hr 30 minutes<br>Group presentations<br>Question and answer sessions                 | A poster was designed to create awareness on CDL and its risk factors.                                     |
| 5    | Recap   | Evaluation of knowledge  | 45 minutes<br>Discussion and feedback   | Learners were able to share knowledge gained in a formal setting   |
|      |   | Knowledge questionnaire administered   |   |  |



### 3.6 PROCEDURE

Ethical clearance was obtained from the University of Western Cape (Appendix 4) and with permission from the KZN Department of Education (Appendix 5), as well as the participating school heads (Appendix 6), all the learners at the school from grade 8 were included in the study for the basic data of health risk behaviours and the knowledge questionnaire regarding CDL. Those who agreed to voluntarily participate, were given letters that explained the purpose of the research. This allowed for parents and learners to give informed written consent (Appendix 7 and 8). Only learners who had consent, were allowed to participate in the study. All these learners were sent to the designated classroom where the research was to take place.

At this venue the researcher informed all the learners about the study and they were given a chance to again withdraw at this stage. Thereafter, all learners were given verbal introductions to the survey. These remarks described the purpose of the survey, the anonymous and voluntary nature of the survey and instructions for completing the survey. The knowledge questionnaire was completed first in both schools and following completion of the above questionnaires, the students placed them in a box that was placed in the classroom thus ensuring the anonymity of the questionnaires.

Upon completion of the above, the researcher then commenced with the health education programme at the intervention school from the 12<sup>th</sup> July 2010 which was

structured over a 5 week period. Lessons were conducted during school hours between 8:00 am and 10:00 am. The health education programme was completed on the 13<sup>th</sup> August 2010. On the 19 July 2010 the researcher implemented a 45 minute talk on chronic diseases of lifestyle at the control school, identifying risk factors such as tobacco use, physical inactivity, being overweight and psychosocial stress. Upon completion of the health education programme and the 45 minute talk, learners at both schools were given the health education knowledge questionnaire to complete on the 20<sup>th</sup> July 2010. Again the completed questionnaires were placed in boxes situated in the classroom. Thereafter, immediately upon completion of the knowledge questionnaire the learners at both schools were given the youth risk behavioural survey to complete. Here, the researcher had to take measurements such as blood pressure, height, weight and waist circumference and all these measurements were taken twice to ensure reliability and the average of the two readings was used. The protocols for these measurements are recorded in appendix 9, 10 and 11. The learners were advised on the purpose of these tests.

### **3.7 ANALYSIS OF DATA**

Demographic data and data regarding diabetes, hypertension, stroke, diet information, tobacco use information, alcohol use information and physical activity were initially coded and entered into the Excel program, to allow for initial ordering and capturing of data. The Statistical Package for Social Science (SPSS) version 13 was used to analyse the data. In analysing the quantitative results, descriptive statistics were conducted to obtain a profile of the study population. Demographic characteristics and health-related behaviours were then presented using frequency

tables, giving frequencies of responses with percentages. Inferential statistics in the form of cross-tabulations using the chi-square was done to determine associations between various variables. Descriptive data reported was presented in table form and the Mann-Whitney U test was used to compare the differences in knowledge score before and after the intervention.

### **3.8 ETHICAL CONSIDERATIONS**

Permission was obtained from UWC Research and Ethics Committee (Appendix 9), Department of Education, KZN as well as the participating school heads. Informed written consent was obtained from the learners and their parents. To ensure confidentiality, questionnaires were coded, with no names or any identifiers recorded. Participants were at all times informed about the study and made aware that they can withdraw at any stage. If any learners found themselves at risk when answering the questions, arrangements were made for them to obtain the necessary help needed. Information was provided to the participating schools in the form of resource files and flash drives and CD's with the presentations.

## CHAPTER FOUR

### RESULTS OF BASELINE QUANTITATIVE INVESTIGATIONS

#### 4.1 INTRODUCTION

In this chapter the bio-demographic data and anthropometric measurements of the study population are described. The learners' responses in regard to the knowledge questionnaire and the health risk behavioural questionnaire are also presented with a summary of the final data analysis.

#### 4.2 BIO-DEMOGRAPHIC, ANTHROPOMETRIC AND PHYSIOLOGICAL DATA OF THE LEARNERS

A total of 475 grade 8 learners were eligible to participate in the study. However, only 240 learners volunteered, yielding a response rate of 50%. Of the 240 learners, 22 learners withdrew from the study, leaving 218 learners for the first part of the study. Of these, 116 were from the intervention school and 102 were from the control school. The majority of the learners who participated in the study were female, 56% from the intervention school and 51% from the control school. The mean age of the population was 13.7 years (SD=0.7).

**TABLE 4.1 BIODEMOGRAPHIC, ANTHROPOMETRIC AND PHYSIOLOGICAL MEASUREMENTS OF LEARNERS (N=218)**

| <b>VARIABLE</b>       |  | <b>Control School<br/>n =116</b> | <b>Intervention School<br/>n=102</b> |
|-----------------------|--|----------------------------------|--------------------------------------|
| <b>GENDER</b>         | <b>Male</b>  | 57 (49%)                         | 45 (44%)                             |
|                       | <b>Female</b>  | 59 (51%)                         | 57 (56%)                             |
| <b>AGE</b>            | <b>13 years</b>  | 57 (49%)                         | 47 (46%)                             |
|                       | <b>14 years</b>  | 45 (39%)                         | 40 (39%)                             |
|                       | <b>15 years</b>  | 12 (10%)                         | 15 (15%)                             |
|                       | <b>16 years</b>  | 2 (2%)                           | 0 (0%)                               |
| <b>RACE</b>           | <b>Black</b>   | 77 (66%)                         | 90 (88%)                             |
|                       | <b>Coloured</b>  | 3 (3%)                           | 3 (3%)                               |
|                       | <b>Indian</b>  | 36 (31%)                         | 8 (8%)                               |
|                       | <b>White</b>   | 0%                               | 1 (1%)                               |
| <b>Weight (kg)</b>    | <b>Mean</b>  | 52,9                             | 58,6                                 |
|                       | <b>Maximum</b>   | 82                               | 88                                   |
|                       | <b>Minimum</b>   | 32                               | 34                                   |
| <b>Height (m)</b>     | <b>Mean</b>  | 159,7                            | 159,9                                |
|                       | <b>Maximum</b>   | 187                              | 182                                  |
|                       | <b>Minimum</b>   | 145                              | 114                                  |
| <b>BMI</b>            | <b>Underweight (&lt;16.1)</b>  | 9 (8%)                           | 4 (4%)                               |
|                       | <b>Normal (16.1-23.4)</b>  | 79 (68%)                         | 50 (49%)                             |
|                       | <b>Overweight (&gt;23.5)</b>   | 28 (24%)                         | 48 (47%)                             |
| <b>Systolic BP</b>    | <b>Mean</b>  | 106                              | 111,1                                |
|                       | <b>Maximum</b>   | 129                              | 121                                  |
|                       | <b>Minimum</b>   | 83                               | 96                                   |
| <b>Diastolic BP</b>   | <b>Mean</b>  | 76,9                             | 73,9                                 |
|                       | <b>Maximum</b>   | 92                               | 84                                   |
|                       | <b>Minimum</b>   | 39                               | 69                                   |
| <b>BLOOD PRESSURE</b> | <b>Normal (systolic &lt;129 and diastolic &lt;85)</b>  | 110 (95%)                        | 102 (100%)                           |
|                       | <b>At risk for hypertension(systolic bet. 130-139 or &gt;140) and (diastolic bet. 86-90 or &gt;90)</b> | 12 (6%)                          | 0 (0%)                               |

From Table 4.1 approximately 6% of the learners from the control school were tending towards being hypertensive with regards to their systolic and diastolic blood pressure. A total of 24% of participants from the control school and 47% participants from the intervention school was overweight. A study by Himes and Dietz (1994), recommends that to classify BMI-for-age at or above the 95<sup>th</sup> percentile as overweight and between the 85<sup>th</sup> and 95<sup>th</sup> percentile as at risk of overweight.

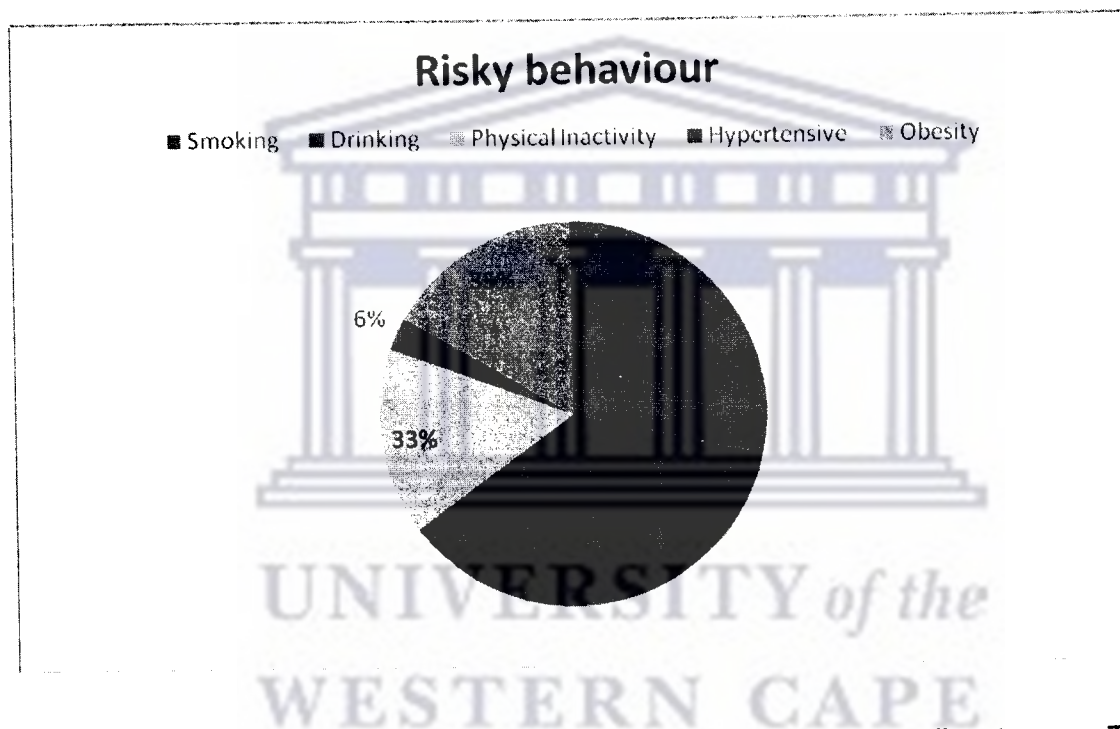
An independent samples t-test was applied to the figures in Table 4.1 to ascertain whether the above measurements differ significantly from one school to the other. Under the null hypothesis the average measurements are the same for both schools. Results of the t-test showed that the average weight for the intervention school (58.59kg) was significantly ( $p < .0005$ ) higher than the average weight for the control school (52.93kg). The average systolic BP for the intervention school (111.08mmHg) was significantly ( $p < .0005$ ) higher than the average systolic BP for the control school (105.97 mmHg); the average diastolic BP for the intervention school (73.92 mmHg) was however significantly ( $p < .0005$ ) lower than the average diastolic BP for the control school (76.99 mmHg). The other measurements were not significantly different.



### 4.3 HEALTH RISK BEHAVIOUR INFORMATION OF LEARNERS

The risk factors for noncommunicable diseases included in the current study were tobacco use, risky alcohol consumption, physical inactivity, risk for overweight/obesity and risk for hypertension. Figure 4.1 below highlights the percentage of participants involved in risky behaviour.

Figure 4.1 HEALTH RISK BEHAVIOUR OF PARTICIPANTS



Further analysis indicated a breakdown of risky behaviour according to age. Table 4.2 below illustrates the observed proportions of participants under each risk factor according to age.



**TABLE 4.2 RISK FACTORS ACCORDING TO PARTICIPANTS' AGE-GROUPS (N = 218)**

| Risk Factor                | Age – Groups (years) |            |            |           |                |
|----------------------------|----------------------|------------|------------|-----------|----------------|
|                            | 13<br>n=98           | 14<br>n=92 | 15<br>n=27 | 16<br>n=1 | Total<br>N=218 |
| <b>Tobacco use</b>         |                      |            |            |           |                |
| Smokers                    | 60 (61%)             | 52 (57%)   | 17 (63%)   | 1 (100%)  | 130 (60%)      |
| Non Smokers                | 38 (39%)             | 40 (43%)   | 10 (37%)   | 0 (0%)    | 88 (40%)       |
| <b>Alcohol Consumption</b> |                      |            |            |           |                |
| Risky Drinkers             | 63 (64%)             | 64 (70%)   | 18 (67%)   | 1 (100%)  | 146 (67%)      |
| Non Drinkers               | 35 (36%)             | 28 (30%)   | 9 (33%)    | 0 (0%)    | 72 (33%)       |
| <b>Physical Activity</b>   |                      |            |            |           |                |
| Sedentary                  | 36 (37%)             | 25 (26%)   | 12 (44%)   | 0 (0%)    | 73 (33%)       |
| Active                     | 62 (63%)             | 67 (73%)   | 15 (56%)   | 1 (100%)  | 145 (67%)      |
| <b>Body Mass Index</b>     |                      |            |            |           |                |
| Overweight / Obese         | 30 (31%)             | 39 (42%)   | 8 (30%)    | 0 (0%)    | 77 (35%)       |
| Normal Weight              | 61 (62%)             | 49 (53%)   | 17 (63%)   | 1 (100%)  | 128 (59%)      |
| Under Weight               | 7 (7%)               | 4 (4%)     | 2 (7%)     | 0 (0%)    | 13 (6%)        |
| <b>Hypertension</b>        |                      |            |            |           |                |
| Normal                     | 92(94%)              | 86 (93%)   | 27 (100%)  | 1(100%)   | 206 (94%)      |
| Hypertensive               | 2 (2%)               | 4 (4%)     | 6 (29%)    | 0 (0%)    | 12 ( 6%)       |

#### 4.3.1 SMOKING

Participants were defined as smokers if they used any tobacco products (cigarettes, cigars or pipes) daily or some days. In this current study 60% (n=130) of the respondents were smokers. The mean age at which participants started smoking was 13 years. The majority of the smokers, 61% (n/N=60/98) were among the 13

year age group. From the results obtained, it was found that significantly ( $p<.0005$ ) more than expected of those who smoke started at age 10 – 13 years and significantly ( $p<.0005$ ) more than expected of those who smoke selected the option that they smoked 1-2 days of the week. However, significantly ( $p=.026$ ) fewer than expected of those who smoked, smoke more than 10 cigarettes and significantly ( $p<.0005$ ) more than expected of those who smoke, smoke at school or at friends' homes. It was found that males started smoking at a significantly ( $p<0.05$ ) later age (14-15yrs) than females (10yrs). The study also found that 46% of the smokers had attempted to stop smoking at some point in their lives although 44% indicated that it was difficult to stop smoking. It is important to note that 52% of the participants had parents who smoke and although 60% of the participants themselves engaged in smoking, 95% and 90% respectively knew that smoking was harmful for their own health and the health of others. Of the total population 57% indicated that they had been taught about the harmful effects of smoking.

#### **4.3.2 ALCOHOL CONSUMPTION**

In this current study, 67% ( $n=146$ ) of the respondents were risky alcohol drinkers. The mean age at which participants started drinking was 13 years. The majority of the drinkers, 87% ( $n=127$ ) were aged between 13 and 14 years old. From the results obtained, it was found that significantly ( $p<.0005$ ) more than expected of those who drink had their first drink at age 10 – 13 years. It was also found that there was no significant difference between frequencies of 'number of drinks'. However, it was found that significantly ( $p<.0005$ ) more than expected of those who drink, drank with friends and not alone. Lastly, significantly ( $p<0.05$ ) more than expected males responded 'Yes' that they have been drunk at least once in their lifetime than

females. At least 38% of the participants had taken alcoholic drinks to the point where they were drunk. Of the respondents who drink, 30% had tried to stop drinking although 89% knew that drinking was harmful. In addition 64% had a parent/s that drank and 36% had been taught about the dangers of alcohol.

#### **4.3.3 PHYSICAL INACTIVITY**

Physical inactivity was defined as less than 30 minutes of light or moderate physical activities at a time for five or more times a week, or less than 20 minutes of vigorous activities at a time for three or more times a week. Heavy lifting and brisk walking represent vigorous and moderate physical activities respectively. In this current study, 33% (n=73) of the participants were found to be physically inactive. From the results obtained, significantly ( $p < 0.005$ ) more males responded that they had been physically active in the past week on a 'daily' basis. Of the total population, 49% indicated that their parents participate in some form of physical activity and 64% had been able to discuss the benefits of physical activity.

#### **4.3.4 BLOOD PRESSURE**

Blood pressure is one of the known intermediate risk factors for noncommunicable diseases (Poulter et al 1984). Participants were classified as having elevated blood pressure if the systolic pressure was greater than 140 mmHg and/or diastolic was greater than 90 mmHg. A proportion of 6% were classified as hypertensive. Inferential statistics indicated a significant association ( $p = 0.05$ ) between hypertension and participants' age and gender. Although a small number were hypertensive, females were found to be more hypertensive than males. Participants' increasing age was also proven to be a statistically significant positive predictor for

hypertension with most of the hypertensive participants aged between 14 to 15 years.

#### **4.3.5 BODY MASS INDEX (BMI)**

Body Mass Index (BMI) was in this study used as a standard measure for weight. Participants were therefore classified into underweight (<16.1), overweight (>23.5) or normal (between 16.1-23.4). Of the total population 35% of the participants were overweight. It is evident from the risk factor analysis that learners need to be informed about the implications of the presence of these risk factors as it relates to chronic diseases of lifestyle.

#### **4.4 KNOWLEDGE RESULTS OF LEARNERS (N=218) PRE – TEST**

The general knowledge of the learners regarding CDL was determined prior to the implementation of the health education programme at the intervention school and the 45 minute talk on CDL at the control school. Table 4.3 highlights the learners' responses to the general knowledge section of the knowledge questionnaire regarding chronic diseases of lifestyles.

**TABLE 4.3 GENERAL KNOWLEDGE OF LEARNERS AT BOTH SCHOOLS PRIOR TO THE INTERVENTION (N=218)**

|   |                          | <b>Control School<br/>N =116</b> | <b>Intervention School<br/>N = 102</b> |
|---|--------------------------|----------------------------------|--|
| <b>HEARD OF CDL</b>                                 | <b>Yes</b>               | 84 (72%)                         | 44 (43%)                               |
|   | <b>No</b>                | 32 (28%)                         | 58 (57%)                               |
| <b>HEARD OF STROKE</b>                              | <b>Yes</b>               | 115 (99%)                        | 95 (93%)                               |
|   | <b>No</b>                | 1 (1%)                           | 7 (7%)                                 |
| <b>HEARD OF HYPERTENSION</b>                        | <b>Yes</b>               | 73 (63%)                         | 32 (31%)                               |
|   | <b>No</b>                | 43 (37%)                         | 70 (69%)                               |
| <b>HEARD OF DIABETES</b>                            | <b>Yes</b>               | 104 (90%)                        | 90 (88%)                               |
|   | <b>No</b>                | 12 (10%)                         | 12 (12%)                               |
| <b>WHICH FACTORS<br/>CONTRIBUTE TO CDL:</b>         | <b>Smoking</b>           | 106 (91%)                        | 95 (93%)                               |
|   | <b>Physical activity</b> | 23 (20%)                         | 26 (25%)                               |
|   | <b>Loud music</b>        | 23 (20%)                         | 20 (20%)                               |
|   | <b>Obesity</b>           | 67 (58%)                         | 62 (61%)                               |
|   | <b>Alcohol</b>           | 30 (26%)                         | 20 (20%)                               |
|   | <b>Stress</b>            | 101 (87%)                        | 86 (84%)                               |
|   | <b>Balanced Diet</b>     | 99 (85%)                         | 80 (78%)                               |
|   | <b>Medication</b>        | 26 (22%)                         | 23 (23%)                               |
| <b>CAN CDL BE PREVENTED</b>                         | <b>Yes</b>               | 106 (91%)                        | 94 (92%)                               |
|   | <b>No</b>                | 10 (9%)                          | 8 (8%)                                 |
| <b>HAVE YOU BEEN TAUGHT<br/>IN SCHOOL ABOUT CDL</b> | <b>Yes</b>               | 36 (31%)                         | 30 (29%)                               |
|   | <b>No</b>                | 80 (69%)                         | 72 (71%)                               |

#### **4.4.1 KNOWLEDGE RESULTS REGARDING HYPERTENSION, DIABETES AND STROKE PRE AND POST TEST**

Table 4.4 presents the participants' responses regarding the section of the knowledge questionnaire pertaining to hypertension, diabetes and stroke before and after the implementation of a health education program at the intervention school

and a 45 minute talk on CDL at the control school. With regards to the pre-test scores, the mean for the intervention school was 12.8 (SD=4.3) and for the control school was 14.2 (SD=4.5). The relationship between the participants' gender, age and the way in which they responded to the knowledge questionnaire regarding CDL was also determined, significantly ( $p < .0005$ ) more than expected females responded "don't know" and significantly ( $p < .0005$ ) more than expected 15 and 16 years olds responded that they "don't know". Table 4.4 below summarises the number of correct responses per question.





**TABLE 4.4 LEARNERS KNOWLEDGE REGARDING HYPERTENSION, DIABETES AND**

**STROKE PRE AND POST TEST RESULTS**

| Question            | No. of correct responses (%) |       | No. of correct responses (%) |       |
|---------------------|------------------------------|-------|------------------------------|-------|
|                     | Control                      |       | Intervention                 |       |
| <b>Hypertension</b> | Pre                          | Post  | Pre                          | Post  |
| 1                   | 60%                          | 91%   | 67%                          | 97%   |
| 2                   | 14%                          | 11%   | 14%                          | 92%   |
| 3                   | 62%                          | 72%   | 61%                          | 96%   |
| 4                   | 60%                          | 76%   | 68%                          | 92%   |
| 5                   | 23%                          | 59%   | 23%                          | 72%   |
| <b>Diabetes</b>     | Pre:                         | Post: | Pre:                         | Post: |
| 1                   | 85%                          | 91%   | 88%                          | 100%  |
| 2                   | 24%                          | 43%   | 24%                          | 91%   |
| 3                   | 89%                          | 90%   | 68%                          | 91%   |
| 4                   | 35%                          | 84%   | 46%                          | 90%   |
| 5                   | 66%                          | 80%   | 66%                          | 93%   |
| 6                   | 22%                          | 63%   | 21%                          | 95%   |
| 7                   | 41%                          | 67%   | 32%                          | 98%   |
| 8                   | 55%                          | 78%   | 38%                          | 100%  |
| 9                   | 35%                          | 26%   | 36%                          | 100%  |
| 10                  | 41%                          | 80%   | 43%                          | 100%  |
| 11                  | 53%                          | 79%   | 37%                          | 89%   |
| <b>Stroke</b>       | Pre:                         | Post: | Pre:                         | Post: |
| 1                   | 83%                          | 89%   | 69%                          | 93%   |
| 2                   | 36%                          | 76%   | 19%                          | 100%  |
| 3                   | 83%                          | 80%   | 62%                          | 100%  |
| 4                   | 60%                          | 74%   | 45%                          | 100%  |
| 5                   | 77%                          | 77%   | 51%                          | 89%   |
| 6                   | 67%                          | 83%   | 58%                          | 88%   |
| 7                   | 86%                          | 85%   | 78%                          | 100%  |
| 8                   | 62%                          | 76%   | 67%                          | 100%  |
| 9                   | 67%                          | 83%   | 58%                          | 88%   |
| 10                  | 46%                          | 78%   | 33%                          | 100%  |



The results in Table 4.4 was further analysed using ANCOVA. The dependent variable was the post-test score; the independent variable was the grouping variable SCHOOL; and the covariate was the pre-test score. This study found that the post-test score for the intervention school (24.65) was significantly higher ( $p < 0.005$ ) than the post-test score for control group (18.40).

The more traditional ANCOVA test could not be used in this study as a result of violation of conditions and therefore, the non-parametric Mann-Whitney U test was applied to the gains scores (post-test – pre-test). This test reported the gain score rank to be significantly higher with a mean rank of 147, 58 for the intervention school and a mean rank of 76, 01 for the control school. Thus, from the results in Table 4.4, it can be seen that the implementation of the health education programme at the intervention school made much more significant difference to the knowledge of the pupils regarding chronic diseases of lifestyle than the 45 minute talk at the control school.



#### **4.5 SUMMARY**

Chapter four highlighted the bio-demographic and anthropometric measurements of learners and provided data on the health risk behaviours of learners and their knowledge regarding CDL prior and after the implementation of the intervention at both schools. Based on the youth risk behavioural survey administered in this study, it was found that 60% of the total number of participants smoked, 67% drank alcohol and 33% were physically inactive. In addition 35% were classified as overweight and

6% as hypertensive. The knowledge of participants regarding chronic diseases of lifestyle increased considerably as a result of the implementation of the health education programme at the intervention school.



## **CHAPTER FIVE**

### **DISCUSSION**

#### **5.1 INTRODUCTION**

The purpose of this study was to evaluate the effects of a health care education programme on the knowledge of high school learners as it relates to risk factors for chronic diseases of lifestyle in the Amajuba District, Newcastle. The motivation for the study was that chronic diseases such as stroke, diabetes and hypertension are preventable diseases of lifestyle and should be prevented at an early age. Provision for prevention, early detection and cost effective management of chronic diseases of lifestyle is currently questionable. One of the prevention shortages that needed further investigation was the development of patient education and materials for the specific target groups and situations in South Africa. This study thus aimed to determine the prevalence of risk factors for chronic disease of lifestyle amongst high school learners in the Amajuba District, Newcastle. In addition, the effects of a health education programme on the knowledge of high school learners about risk factors relating to CDL such as stroke, diabetes and hypertension was introduced as part of a prevention strategy.

#### **5.2 PREVALENCE OF HEALTH RISK BEHAVIOURS**

Based on the youth risk behavioural survey administered in this study, it was found that 60% of the total number of participants smoked, 67% drank alcohol and 33% were physically inactive. These are the key risk factors for CDL (Bradshaw, Schneider, Norman & Bourne, 2006). In addition 35% were classified as overweight

and 6% as hypertensive. The above findings can be compared to the most recent statistics released by a study conducted by Reddy, James, Sewpaul, Koopman, Funani, Sifunda, Josie, Masuka, Kambaran and Omardien (2008) amongst high school learners in South Africa, in which 20% of the total number of participants (N=10270) were classified as overweight, 34% physically inactive, 30% smoked and 35% drank alcohol. Further, a study by Thomas (2009) amongst high school learners in the districts of Johannesburg, South Africa, reported that 39% of the total number of participants (N=1139) smoked and 65% drank alcohol. Frantz (2006), in a study conducted among high school learners in the Western Cape in 2004, reported that 31% of adolescents had more than one modifiable risk factor for chronic diseases of lifestyle. Even though these problems were identified more than 5 years ago, the concern still exists among young people today as is evident from the findings of the current study.

Studies conducted by the Centre for Disease Control and Prevention (CDC, 2009) in United States of America among high school learners have shown that 46, 3% of learners smoke, 42% drank alcohol, 23% did not participate in any form of physical activity, 12% were obese and 16% of learners were overweight. A review by Maharaj, Nunes and Renwick (2009) among Caribbean adolescents highlighted the existence of health risk behaviours such as smoking (24%), obesity/overweight (18%) and high risk sexual activity (19%). In addition they concluded the need for designing and testing of interventions that would aim to alleviate these preventable risk factors. Lotrean, Laza, Lonut and de Vries (2010) highlighted similar problems among Romanian adolescents. Risky behaviour emphasised included smoking,

alcohol use and precocious sexual behaviour. The authors also concluded that there is a need to develop prevention programmes that address the risky behaviours identified. It is thus evident that these alarming risk factors of youth worldwide are a public health concern that calls for the implementation of effective interventions. A report by WHO (2003), highlighted that the incidence of risk factors for chronic diseases of lifestyle are on the increase not only in developed countries but also in developing countries. With a focus on Africa, the report highlighted that there are obstacles to implementing prevention activities and they include seeing “CDL as a disease of the affluent” and a lack of understanding that prevention strategies can impact this rise in chronic diseases of lifestyle. A simple strategy to start implementing to address this obvious concern is a health education programme targeting specific populations.

### **5.3 EFFECTS OF A HEALTH EDUCATION PROGRAMME IN SCHOOLS**

Health education programmes can be used to provide the participants with the opportunity to think about health and to choose to make voluntary changes to their health-related behaviour. These programmes include the provision of information and could explore the values and attitudes of the participants. In most cases, health education programmes are aimed at helping people make decisions about their health and acquiring the necessary skills to change their behaviour. If successfully implemented, they can assist in encouraging self-esteem and assist in empowering participants to take action about their health. Research conducted by Coleman-Wallace, Lee, Montgomery, Blix and Wang (1999) indicates that evaluations of the impact of health education in the primary and high school have often shown



significant changes in knowledge, attitudes and behaviours of those students exposed to a health education programme. Results from a study performed by Perry, Sellers, Johnson, Pedersen, Bachman and Parcel (1997) amongst high school learners in United States showed that children at the intervention school, subjected to a health education programme relating to cardiovascular risk factors, had lower consumption of fat and saturated fat and higher levels of self reported physical activity when compared to those in the control school.

In this current study, prior to the implementation of the intervention, participants had a very poor knowledge of chronic diseases of lifestyle and the risk factors associated with CDL. However, results of the study indicate an improvement in the mean scores of knowledge relating to risk factors in the intervention group compared to the control school. In addition, the health education programme helped to increase the awareness of risk factors associated with CDL. Most health education research in the past has focused mainly on the development of effective classroom teaching which has only targeted present and future health and health behaviours such as smoking and nutrition (Murray, Pirie, Leupker & Pallonen, 1989; Peters & Paulussen, 1994). This current research has however identified that effective school health promotion is obtained through both teaching activities focusing on knowledge and skills related to health promoting behaviour and by creating a health promoting school. This approach concurs with the working strategies in the European and Australian networks of Health Promoting Schools, which aim to promote health and well-being for all in school (Hurrelmann, Leppin & Nordlohne, 1995; Tones, 1996).



The current curriculum within schools is based on the National Curriculum Statement which has life orientation as a subject offered to learners with specific learning outcomes. Learners are taught about specific health behaviours with learning outcomes such as skills, knowledge and appropriate decisions regarding health conditions. A study performed by Resnicow, Reddy, James, Ouardien, Kambaran and Langer (2008) concurs with the findings of this current study that to effect change in the spread of health risk behaviours, there need to be a systematic approach to intervention development and evaluation, based on knowledge of learners relating to risk factors for CDL. Thus, a well developed curriculum within schools, educator training together with the implementation of a health education programme, can decrease the spread of CDL. James, Reddy, Ruiter, McCauley and van den Bourn (2006) in their study mention that in order to meet learning outcomes for health education, there must be adherence to the programme goals, thorough and relevant content development and fidelity to programme implementation. It is therefore important to initiate systematic monitoring of health risk behaviours that place young people at risk, so as to develop an evidence base for intervention planning and implementation of health education programmes similar to this current study.

#### **5.4 SCHOOLS AS A SETTING FOR HEALTH EDUCATION**

Crockett and Petersen (1993), Parcel, Keider and Basen-Engouist (2000) in their studies indicate that classrooms within schools are important settings for adolescent health promotion. In 1994, the ministries of Health, Education and Welfare within South Africa adopted the health promoting school concept. As a guide to develop schools as a setting for health promotion, the principles of an integrated, holistic and

co-ordinated approach, quality assurance, capacity building, utilization of existing resources, ownership and sustainability, equity and redress were proposed and adopted (Health Promotion-Task Team, 2000). A study by Hurrelmann, Leppin and Nordlohne (1995) mentions that student perceptions of and experiences in the school dramatically influence the development of their self esteem, self-perception and health behaviours, all of which affect the students' present and future health and well being. Statistics on the education system in South Africa obtained from the Department of Education (2008) showed that there are about 5670 secondary schools accommodating about 3831937 learners. This amounts for 70% of young people who are of school going age and who are in schools. Schools provide a direct access to young people for educational programs and are totally amenable to intervention. However, schools can be both a risk and a resource for the development of students' health behaviours and general health (Samdal, Nutbeam, Wold & Kannas, 1998). Those students with a negative perception about school and who dislike school, are at a greatest risk of adopting unhealthy behaviours exhibiting psychosomatic problems and experiencing reduced quality of life (Nutbeam, Smith, Moore & Bauman, 1993).

A study by Perry, Kelder and Komro (1993) goes on to mention that those students who dislike school, often go on to find arenas where they can rebel against the school and in this search they come across groups of peers indulging in health risk behaviours such as smoking and drinking. Research conducted by Fraser (1994) shows that those students who have a positive view about school, are better motivated and achieve much more according to their ability level. As children of

school-going age spend much of their time at school and do most of their learning at schools, schools have great opportunities to change social norms (Samdal et al, 1998). Schools, therefore are the ideal venue in which to implement and evaluate interventions that are designed for young people and aimed at reducing the behaviours. The evidence presented in the study by Reddy et al (2008) and this current study, show that young people who are attending school are experiencing a high prevalence of health risk behaviours that could impact on their future health, mortality and morbidity. Thus the need for needs based school health education programmes is evident and should be considered as it can be used effectively to improve knowledge around certain topics.

## **5.5 PHYSIOTHERAPY IN HEALTH PROMOTION AND EDUCATION**

It is believed that physiotherapists are uniquely qualified to assume leadership positions in interprofessional teams in efforts to promote health and to prevent injury, disability and disease. Health promotion and education activities should aim to promote positive self-esteem of individuals, families and communities; to help people understand the determinants of health; and to help individuals increase their control over the determinants of health and well-being. Physiotherapists design health education and health promotion programmes and information leaflets to provide patients and communities with relevant information. The effectiveness of these information and prevention programmes will depend largely on whether the participants recognise this as a need and whether the information provided is understood. It is evident from the current study that the prevalence of the risk factors for chronic diseases of lifestyle in this community highlights the need for this health

education programme. Although this programme was not evaluated by the participants in this study, Frantz (2009) reported on a similar intervention that evaluated the views of the participants that the majority found it to be relevant, appropriate and allowing for personal development. Literature indicates that physiotherapy aims to play a role in health promotion in various settings (MacFarlane & Stiller, 2009; Perreault, 2008). These are also highlighted in the standards of practice in various countries (Australian Physiotherapy Council, 2010). Thus it becomes important for physiotherapists to identify the needs in various communities and in various settings and implement effective prevention strategies. Physiotherapy can therefore assist in health promotion and disease prevention strategies as well as in the identification and remediation of a myriad of health conditions.

## **5.6 CONCLUSION**

It is thus evident that the results of this study do indicate that a high percentage of learners at both the control and intervention school are classified as being overweight, indulging in health risk behaviours such as alcohol and tobacco use and not participating in any form of physical activity. The implementation of a 5 week health education programme at the intervention school and the 45 min talk at the control school was beneficial in creating an awareness of CDL and increasing the learners' knowledge regarding risk factors associated with CDL. This study will therefore assist in adding to the baseline data of risk factors for chronic diseases of lifestyle among school going children. In addition, if this intervention helps to improve

their knowledge regarding the risk factors for CDL, it could assist the youth in making the correct choices regarding their health.



## CHAPTER SIX

### SUMMARY, RECOMMENDATIONS, LIMITATIONS

#### 6.1 SUMMARY

Chronic diseases of lifestyle are the leading causes of death in the world, led by cardiovascular disease followed by cancer and diabetes mellitus (WHO, 2008). The key risk factors that these diseases share are tobacco use, unhealthy diets, lack of physical activity and alcohol use (Bradshaw, Schneider, Norman, Bourne, 2006). The outcome of this study suggests that the high prevalence of risk factors for chronic diseases of lifestyle amongst both the learners at the control and the intervention school should be of great concern, as it places learners at a high risk of developing CDL as they grow older.

Economic, personal and social costs of CDL, coupled with disability and possible loss in quality of life may be high in the Amajuba District, Northern Kwazulu Natal. Chronic diseases of lifestyles, the threat of HIV/AIDS and shrinking budgets and other infrastructure further suggest, that effective, preventive and promotive strategies must be implemented in the Amajuba District, Northern Kwazulu Natal. Currently, the South African government has somewhat recognised the need for health care education among youth and many initiatives is underway to promote healthy lifestyles. One of these initiatives are the introduction of the health promoting school concept in the various provinces which has allowed for schools to co-ordinate and set up structures and projects that promote health in schools.



However, high level commitment and concrete action are often not present at national level. CDL prevention and control programmes remain extremely under-funded at the national and global levels and have been excluded from the global agenda. Currently CDL prevention is not present in the Millennium Development Goals. It is therefore imperative that all stakeholders intensify and harmonize their efforts at preventing and managing CDL so that help can be made available to millions of people suffering needlessly from CDL.

## **6.2 RECOMMENDATIONS**

Based on the findings of the study, the following recommendations are divided into short-term recommendations and long-term recommendations.

### **6.2.1 SHORT TERM RECOMMENDATIONS**

1. The health education programme should be continued at the schools annually, thus creating awareness around CDL and ensuring that youth are made aware of the risk factors associated with CDL.
2. Awareness programs should be initiated by primary care providers, particularly physiotherapists and dieticians, who should be encouraged to continue with intervention programmes that highlight the risk factors associated with CDL within the community of Amajuba District, Newcastle.
3. A larger group of learners from more schools within the Amajuba District should be encouraged to participate in a similar programme.

4. Both parents, teachers and learners need to be targeted to improve their knowledge regarding risk factors relating to CDL and the effects of health risk behaviours that lead to CDL.

### **6.2.2 LONG TERM RECOMMENDATIONS**

1. Chronic diseases of lifestyles need to be positioned high on the political and health agenda of the community of Amajuba District, Newcastle.

2. Community partnerships should also be established with tertiary institutions to conduct research to monitor the impact of CDL and to evaluate the financial costs.

3. Co-operation between Department of Education, tertiary institutions, communities and schools should be encouraged in ensuring that implementation of initiatives like the healthy education programme are rolled out at schools.

4. Measures to control risk factors for CDL need to be implemented in the communities of Amajuba District.

5. The Youth Risk Behaviour survey be repeated on a triennial basis within the Amajuba District, to provide a long term mechanism:

\* To monitor and track the prevalence of health risk behaviours among the youth in the Amajuba District

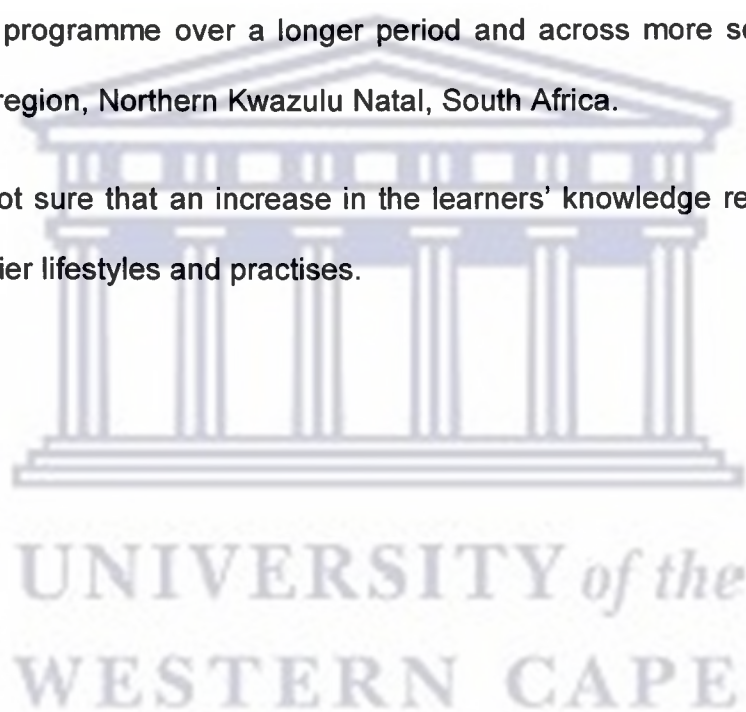
\* To monitor the socio-demographic transition affecting youth

6. The National Youth Development Agency (NYDA) needs to be made aware of the findings of this current study to initiate programme development and implement priority programmes aimed at combating substance abuse and social decay.

### **6.3 LIMITATIONS OF THE STUDY**

1. At this stage of the study, a limitation will be the need to monitor the effects of the health education programme over a longer period and across more schools in the Amajuba District region, Northern Kwazulu Natal, South Africa.

2. We are also not sure that an increase in the learners' knowledge regarding CDL will lead to healthier lifestyles and practises.



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## APPENDIX 1

Please answer the following questions to the best of your ability

### BIODEMOGRAPHIC DATA

|   |                      |        |  |
|---|----------------------|--------|--|
| 1 | What is your gender? | Male   |  |
|   |                      | Female |  |

|   |                  |                    |  |
|---|------------------|--------------------|--|
| 2 | How old are you? | 13 years           |  |
|   |                  | 14 years           |  |
|   |                  | 15 years           |  |
|   |                  | 16 years           |  |
|   |                  | 17 years           |  |
|   |                  | 18 years and older |  |

|   |                     |    |  |
|---|---------------------|----|--|
| 3 | What grade are you? | 8  |  |
|   |                     | 9  |  |
|   |                     | 10 |  |
|   |                     | 11 |  |
|   |                     | 12 |  |

|   |                    |          |  |
|---|--------------------|----------|--|
| 4 | What race are you? | Black    |  |
|   |                    | Coloured |  |
|   |                    | Indian   |  |
|   |                    | White    |  |

### GENERAL KNOWLEDGE

|   |  |     |  |
|---|--|-----|--|
| 5 | Have you ever heard of chronic diseases of lifestyle | Yes |  |
|   |  | No  |  |

|   |  |        |     |  |
|---|--|--------|-----|--|
| 6 | Have you ever heard of the following diseases? | stroke | yes |  |
|   |  |        | no  |  |
|   | hypertension                                   | yes    |     |  |
|   |  | no     |     |  |
|   | diabetes                                       | yes    |     |  |
|   |  | no     |     |  |

|   |   |                   |   |
|---|---|-------------------|---|
| 7 | Which of the following factors contribute to chronic diseases?<br>Tick as many answers as you think | smoking           | 1 |
|   |   | physical activity | 1 |
|   |   | loud music        |   |
|   |   | obesity           | 1 |
|   |   | balanced diet     |   |
|   |   | alcohol           | 1 |
|   |   | stress            | 1 |
|   |   | medication        |   |

|   |  |     |  |
|---|--|-----|--|
| 8 | Can chronic diseases of lifestyle be prevented | Yes |  |
|   |  | No  |  |

|   |   |     |  |
|---|---|-----|--|
| 9 | Have you been taught in school about chronic diseases | Yes |  |
|   |   | No  |  |

STATE WHETHER TRUE OR FALSE OR DON'T KNOW

**HYPERTENSION**

|    |  |            |   |
|----|--|------------|---|
| 10 | Hypertension is another name for high blood pressure                                   | TRUE       | 1 |
|    |  | FALSE      | 0 |
|    |  | Don't know | 0 |
| 11 | The following blood pressure is considered to be high<br>130/80                        | TRUE       | 1 |
|    |  | FALSE      | 0 |
|    |  | Don't know | 0 |
| 12 | Hypertension can be treated with medication, exercise and weight loss                  | TRUE       | 1 |
|    |  | FALSE      | 0 |
|    |  | Don't know | 0 |
| 13 | Lifestyle changes such as stopping smoking, loss of weight can decrease blood pressure | TRUE       | 1 |
|    |  | FALSE      | 0 |
|    |  | Don't know | 0 |
| 14 | Damage to the kidney is a sign of high blood pressure                                  | TRUE       | 1 |
|    |  | FALSE      | 0 |
|    |  | Don't know | 0 |
|    |  | Score      | 5 |

**DIABETES**

|    |   |            |   |
|----|---|------------|---|
| 15 | Diabetes is commonly known as "sugar" sickness                      | TRUE       | 1 |
|    |   | FALSE      | 0 |
|    |   | Don't know | 0 |
| 16 | The following is normal blood glucose levels<br>3.8 - 7.7           | TRUE       | 1 |
|    |   | FALSE      | 0 |
|    |   | Don't know | 0 |
| 17 | Eating too much sugar and other sweet foods is a cause for diabetes | TRUE       | 1 |
|    |   | FALSE      | 0 |
|    |   | Don't know | 0 |
| 18 | Diabetes can be cured   | TRUE       | 0 |
|    |   | FALSE      | 1 |
|    |   | Don't know | 0 |
| 19 | Shaking and sweating are signs of high sugar levels                 | TRUE       | 1 |
|    |   | FALSE      | 0 |
|    |   | Don't know | 0 |
| 20 | Kidney produce insulin  | TRUE       | 1 |
|    |   | FALSE      | 0 |
|    |   | Don't know | 0 |

|    |   |            |    |
|----|---|------------|----|
| 21 | The usual cause of diabetes is lack of effective insulin in the body    | TRUE       | 1  |
|    |   | FALSE      | 0  |
|    |   | Don't know | 0  |
| 22 | Diabetes causes poor circulation  | TRUE       | 1  |
|    |   | FALSE      | 0  |
|    |   | Don't know | 0  |
| 23 | Medication is more important than diet and exercise to control diabetes | TRUE       | 1  |
|    |   | FALSE      | 0  |
|    |   | Don't know | 0  |
| 24 | There are 2 types of diabetes namely Type 1 and Type 2                  | TRUE       | 1  |
|    |   | FALSE      | 0  |
|    |   | Don't know | 0  |
| 25 | Diabetes can damage my kidneys  | TRUE       | 1  |
|    |   | FALSE      | 0  |
|    |   | Don't know | 0  |
|    |   | Score      | 11 |

### STROKE

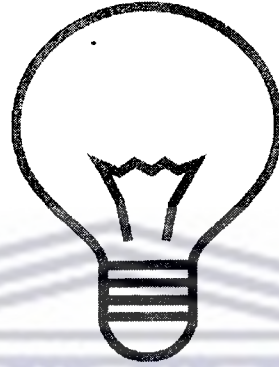
|    |   |            |   |
|----|---|------------|---|
| 26 | The most common type of stroke is when the blood supply to the brain is blocked                 | TRUE       | 1 |
|    |   | FALSE      | 0 |
|    |   | Don't know | 0 |
| 27 | Another name for stroke is cerebrovascular accident   | TRUE       | 1 |
|    |   | FALSE      | 0 |
|    |   | Don't know | 0 |
| 28 | Signs of a stroke include blurred vision, paralysis on one side of the body and severe headache | TRUE       | 1 |
|    |   | FALSE      | 0 |
|    |   | Don't know | 0 |
| 29 | You are at risk of getting a stroke if you are obese  | TRUE       | 1 |
|    |   | FALSE      | 0 |
|    |   | DON'T KNOW | 0 |
| 30 | The most common known risk factor for stroke is high blood pressure                             | TRUE       | 1 |
|    |   | FALSE      | 0 |
|    |   | Don't know | 0 |
| 31 | If you drink lots of alcohol you are less likely to have a stroke                               | TRUE       | 0 |
|    |   | FALSE      | 1 |
|    |   | DON'T KNOW | 0 |
| 32 | To reduce the risk of stroke you need to eat well and exercise regularly                        | TRUE       | 1 |
|    |   | FALSE      | 0 |
|    |   | Don't know | 0 |
| 33 | Right arm paralysis could be a physical disability caused by stroke                             | TRUE       | 1 |
|    |   | FALSE      | 0 |
|    |   | Don't know | 0 |
| 34 | If you stop smoking you decrease the risk of having a stroke                                    | TRUE       | 1 |
|    |   | FALSE      | 0 |
|    |   | DON'T KNOW | 0 |

|    |  |            |   |
|----|--|------------|---|
| 35 | Diabetes and stroke are closely linked | TRUE       | 1 |
|    |  | FALSE      | 0 |
|    |  | DON'T KNOW | 0 |

Score 10

TOTAL 26

THANK YOU FOR YOUR PARTICIPATION



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**APPENDIX 2**

**HEALTH RISK BEHAVIOUR SURVEY**

**SECTION A: BIODEMOGRAPHIC DATA**

|   |  |          |  |
|---|--|----------|--|
| 1 | What is your gender?   | Male     |  |
|   |  | Female   |  |
| 2 | How old are you?   | 13 years |  |
|   |  | 14 years |  |
|   |  | 15 years |  |
|   |  | 16 years |  |
|   |  | 17 years |  |
| 3 | What grade are you?  | 8        |  |
|   |  | 9        |  |
|   |  | 10       |  |
|   |  | 11       |  |
| 4 | What race are you?   | Black    |  |
|   |  | Coloured |  |
|   |  | Indian   |  |
|   |  | White    |  |
| 5 | How would you rate your situation at home?<br>a) enough money for important things but few extras<br>b) enough money for extra things like luxuries and holidays<br>c) enough money for food/clothes but short of many things<br>d) not always enough money fo basic things such as clothes and food |          |  |
|   |  |          |  |
|   |  |          |  |
|   |  |          |  |

**Please note that the following measurements will be taken by the researcher**

|    |  |            |  |
|----|--|------------|--|
| 6  | How tall are you without your shoes on?      | Reading 1: |  |
|    |  | Reading 2: |  |
| 7  | How much do you weigh without your shoes on? | Reading 1: |  |
|    |  | Reading 2: |  |
| 8  | What is your blood pressure?                 | Reading 1: |  |
|    |  | Reading 2: |  |
| 9  | What is your wasit circumference?            | Reading 1: |  |
|    |  | Reading 2: |  |
| 10 | What is your hip circumference?              | Reading 1: |  |
|    |  | Reading 2: |  |

**SECTION B: DIET INFORMATION**

|    |  |                    |  |
|----|--|--------------------|--|
| 11 | In the past week, how often did you have breakfast | Never              |  |
|    |  | At least 3x a week |  |
|    |  | Daily              |  |
| 12 | In the past week, how often did you have lunch     | Never              |  |
|    |  | At least 3x a week |  |
|    |  | Daily              |  |
| 13 | In the past week, how often did you eat fruit      | Never              |  |



|    |  |                    |  |
|----|--|--------------------|--|
|    |  | At least 3x a week |  |
|    |  | Daily              |  |
| 14 | In the past week, how often did you eat vegetables | Never              |  |
|    |  | At least 3x a week |  |
|    |  | Daily              |  |

**SECTION C: TOBACCO USE INFORMATION**

|    |                                  |     |  |
|----|----------------------------------|-----|--|
| 15 | Have you ever smoked cigarettes? | Yes |  |
|    |                                  | No  |  |

|    |   |                     |  |
|----|---|---------------------|--|
| 16 | How old were you when you first started smoking cigarettes? | I have never smoked |  |
|    |   | < 10 years          |  |
|    |   | 10-13 years         |  |
|    |   | 14-15 years         |  |
|    |   | 15 and older        |  |

|    |  |     |  |
|----|--|-----|--|
| 17 | Have you smoked cigarettes in the last week? | Yes |  |
|    |  | No  |  |

|    |                                     |                      |  |
|----|-------------------------------------|----------------------|--|
| 18 | How often did you smoke cigarettes? | Never                |  |
|    |                                     | Daily                |  |
|    |                                     | 1-2 days of the week |  |
|    |                                     | 3-5 days of the week |  |

|    |   |                         |  |
|----|---|-------------------------|--|
| 19 | How many cigarettes did you smoke in the past week? | none                    |  |
|    |   | less than 5             |  |
|    |   | 5- 10 cigarettes        |  |
|    |   | more than 10 cigarettes |  |

|    |  |                         |  |
|----|--|-------------------------|--|
| 20 | Where do you usually smoke (choose one option) | never smoked cigarettes |  |
|    |  | At home                 |  |
|    |  | At school               |  |
|    |  | At friends homes        |  |
|    |  | In public places        |  |

|    |                                      |     |  |
|----|--------------------------------------|-----|--|
| 21 | Have you ever tried to stop smoking? | Yes |  |
|    |                                      | No  |  |

|    |  |     |  |
|----|--|-----|--|
| 22 | Do you think smoking cigarettes is harmful to your health? | Yes |  |
|    |  | No  |  |

|    |   |     |  |
|----|---|-----|--|
| 23 | Do you think the smoke from other people's cigarettes is harmful to your health | Yes |  |
|    |   | No  |  |

|    |   |     |  |
|----|---|-----|--|
| 24 | Once you have started smoking, do you think it would be difficult to stop | Yes |  |
|    |   | No  |  |

|    |  |     |  |
|----|--|-----|--|
| 25 | Do any of your parents smoke cigarettes? | Yes |  |
|    |  | No  |  |

|    |   |     |  |
|----|---|-----|--|
| 26 | Has anyone in your family discussed the harmful effects of smoking cigarettes with you? | Yes |  |
|    |   | No  |  |

|    |  |     |  |
|----|--|-----|--|
| 27 | During this school year, were you taught in any of your classes about the dangers of smoking cigarettes? | Yes |  |
|    |  | No  |  |



**SECTION D: INFORMATION OF ALCOHOL USE**

|    |  |                              |  |
|----|--|------------------------------|--|
| 28 | How old were you when you had your first alcoholic drink?                                      | I have never drunk           |  |
|    |  | < 10 years                   |  |
|    |  | 10-13 years                  |  |
|    |  | 14-15 years                  |  |
|    |  | 15 and older                 |  |
| 29 | Have you had an alcoholic drink in the last week?  | Yes                          |  |
|    |  | No                           |  |
| 30 | How many alcoholic drinks did you have when you drank?   | Never had an alcoholic drink |  |
|    |  | 1 drink                      |  |
|    |  | 2-3 drinks                   |  |
|    |  | more than 3 drinks           |  |
|    |  |                              |  |
| 31 | With whom do you usually drink alcohol<br>(choose one option)                                  | I do not drink               |  |
|    |  | I usually drink alone        |  |
|    |  | I usually drink with family  |  |
|    |  | I usually drink with friends |  |
|    |  | In public places             |  |
| 32 | During your lifetime, have you ever drunk so much alcohol that you were drunk?                 | Yes                          |  |
|    |  | No                           |  |
| 33 | Have you ever tried to stop drinking alcohol?  | Yes                          |  |
|    |  | No                           |  |
| 34 | Do you think drinking alcohol is harmful to your health?                                       | Yes                          |  |
|    |  | No                           |  |
| 35 | Once you have started drinking, do you think it would be difficult to stop                     | Yes                          |  |
|    |  | No                           |  |
| 36 | Do any of your parents drink?  | Yes                          |  |
|    |  | No                           |  |
| 37 | Has anyone in your family discussed the harmful effects of drinking with you?                  | Yes                          |  |
|    |  | No                           |  |
| 38 | During this school year, were you taught in any of your classes about the dangers of drinking? | Yes                          |  |
|    |  | No                           |  |

**SECTION E: PHYSICAL ACTIVITY INFORMATION**

|   |   |          |  |
|---|---|----------|--|
| <b>Physical activity is any activity that increases your heart rate and makes you get out of breath some of the time. It can be done at school, with friends or walking to school</b> |   |          |  |
| 39  | During the past 7 days, how many days were you physically active for at least 30-60 minutes | 0 days   |  |
|   |   | 1-2 days |  |
|   |   | 3 days   |  |
|   |   | 4-5 days |  |
|   |   | Daily    |  |
|   |   |          |  |
| 40  | During a usual week, how many days will you be physically active for at least 30-60 minutes | 0 days   |  |
|   |   | 1-2 days |  |
|   |   | 3 days   |  |
|   |   | 4-5 days |  |
|   |   | Daily    |  |
|   |   |          |  |

|    |  |                          |  |
|----|--|--------------------------|--|
| 41 | How much time do you spend during a usual day sitting and watching TV, playing computer games or just sitting doing nothing? | Less than 1 hour per day |  |
|    |  | 1-2 hours                |  |
|    |  | 3-4 hours                |  |
|    |  | 5-6 hours                |  |
|    |  | More than 6 hours        |  |
| 42 | Do any of your parents participate in any form of exercise?  | Yes                      |  |
|    |  | No                       |  |
| 43 | Has anyone in your family discussed the benefits of participating in physical activity?                                      | Yes                      |  |
|    |  | No                       |  |
| 44 | During this school year, were you taught in any of your classes about the benefits of physical activity                      | Yes                      |  |
|    |  | No                       |  |

THANK YOU FOR PARTICIPATING



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## HEALTH EDUCATION PROGRAMME

- **HYPERTENSION**
  - **DIABETES**
  - **STROKE**

PREPARED BY :

PROF JM FRANTZ

UNIVERSITY OF THE WESTERN CAPE

PRESENTED BY :

**SERENA CHUTERGON PHYSIOTHERAPIST**

**&**

**MSC STUDENT**

## HEALTH EDUCATION PROGRAMME

This workbook will consist of :

1. Outline programme
2. Educators guide and resources
3. Learners Guide
4. Worksheets for learners
5. Knowledge Questionnaire
6. Risk Questionnaire
7. Course Evaluation

### LEARNING OUTCOME: HEALTH PROMOTION

**AIM:** The learner will be able to make informed decisions regarding personal and community health as it relates to chronic diseases of lifestyle.

### ASSESSMENT STANDARDS

Learner demonstrates the ability to:

- Identify and evaluate personal risk factors for chronic diseases of lifestyle
- Apply knowledge gained in personal situations as well as in the school and community setting
- Discuss ways to apply information gained in a health education programme at school.

**WEEK 1:**

## Overview:

Knowledge of risk factors and health risk behavior as it relates to chronic diseases of lifestyle

- What?
- Why?
- How?

**WEEK 2:**

Give a case and learners must identify the risk factors present and go and research why?

- Diabetes
- Hypertension
- Stroke

**WEEK 3:**

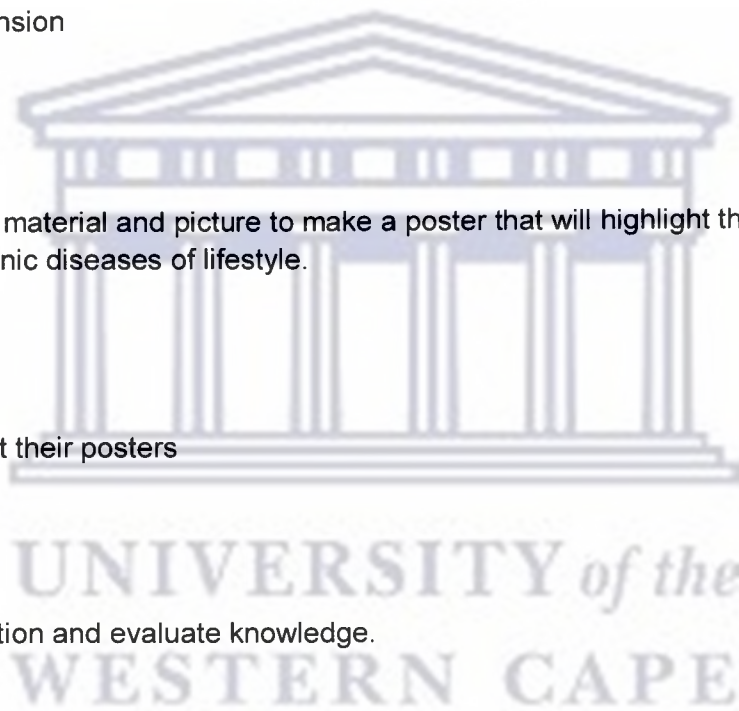
Bring research material and picture to make a poster that will highlight the risk factors for chronic diseases of lifestyle.

**WEEK 4:**

Groups present their posters

**WEEK 5:**

Recap information and evaluate knowledge.



## HEALTH EDUCATION PROGRAMME

### LESSON 1:

**Objectives:** To introduce the concept of the chronic diseases if lifestyle and the risk factors for chronic diseases of lifestyle to the learners.

**Activity:** Knowledge Based

- Information on what is chronic diseases of lifestyle
- Prevalence of chronic disease of lifestyle in South Africa
- Prevalence of chronic disease of lifestyle in the Province
- Risk factors for chronic disease
- What can we do?

**Resource Material:**

- World map
- Map of South Africa
- Map of Western Cape Province
- Data Projector
- Work Sheets

**Prior to Starting :**

- Learners complete knowledge questionnaire (Included as Appendix 1)



## LESSON 2:

Objectives: To personally interact with someone or a case relating to chronic diseases of lifestyle

### Activity: Case – Related

- Real person (interview)
- Case study (present subjective and the objective history)
- Divide the class into 3 groups dealing with hypertension, diabetes and stroke
- Learners must identify the disorder and possible risk factors
- Introduction of new terms relating to the disease e.g. diabetes, stroke and hypertension

### Resources:

- Glossary of terms
- 3 worksheets
- Presentation of learners on newsprint
- Koki's
- Cases (Appendix 2)

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### LESSON 3:

Objectives: To allow learners to personally identify risk factors in their own situation

Activity: Individual task and group work

- Learners complete questionnaire relating to own risk factors
- Break up into groups
- Learners identify different risk factors presents in the group
- Learners identify the disease that could be linked to the collective risk factors
- Identify a modifiable risk factor
- Plan an intervention to address the risk factors
- Learners go an research the disease and the risk factors

Resources :

- Newsprint
- Koki's
- Access to computer and internet
- Risk Questionnaire (Appendix 3)

#### LESSON 4:

Objectives: Design a presentation or poster on the disease and risk factors

#### Activity:

- Collate all information
- Plan a presentation of the information
- Must include planning of a visual presentations (poster, Power-Point etc)

#### Resources:

- Information gathered
- Data projector
- Computer/Laptop



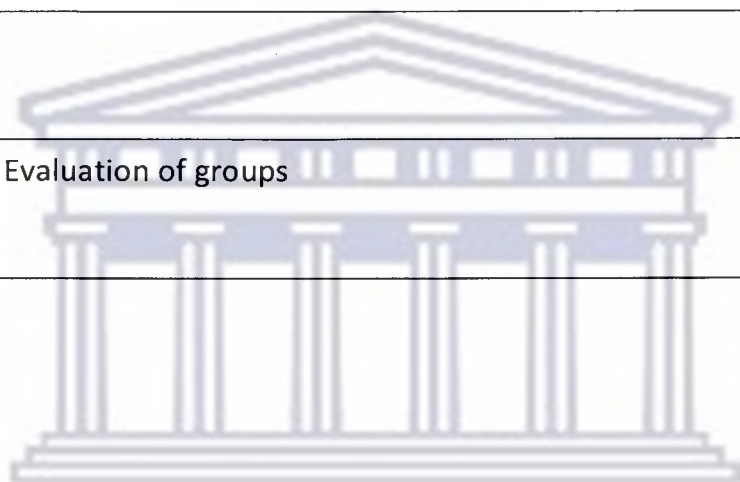
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## LESSON 5:

Objective: Demonstrate the ability to share knowledge gained in a formal setting

Activity: Group presentation

Resources: Evaluation of groups



THANK YOU!

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# TEACHERS INFORMATION GUIDE



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# TEACHERS INFORMATION GUIDE

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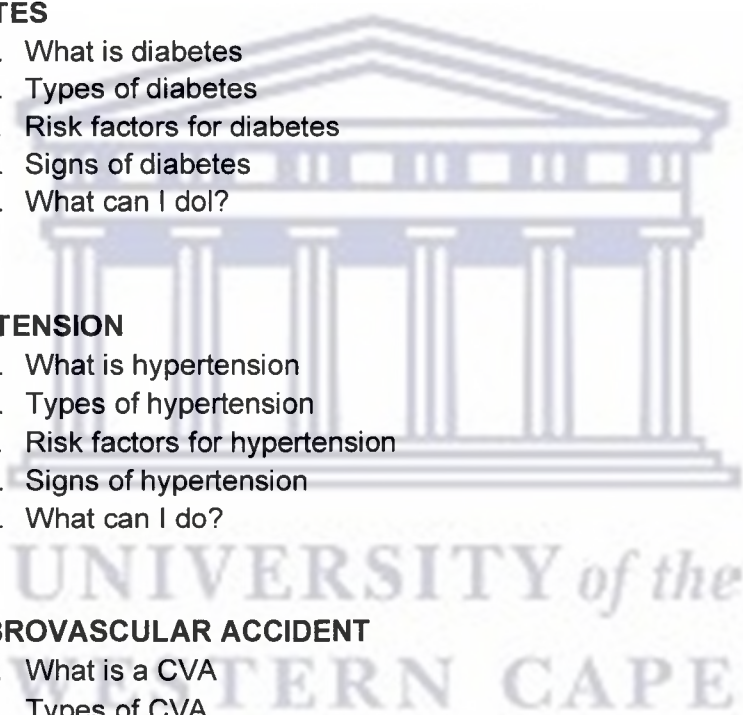
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## **1. INTRODUCTION**

### **1.1 WHAT IS CHRONIC DISEASES?**

Non-communicable diseases are the leading cause of death in the Western Province, South Africa (Bradshaw et al 2005). Chronic diseases such as heart disease, stroke, cancer and diabetes are a few of the non communicable diseases and are the leading causes of death worldwide. Various research has shown that by addressing the risk factors for non communicable diseases, this will assist in decreasing the incidence of non communicable diseases (Nissen et al 2001).

In South Africa, various research has been conducted focusing on the monitoring of non communicable diseases in the Western Cape (Bradshaw et al 2005). This merely indicates the rising concern regarding non communicable diseases. Various interventions have also been started including healthy schools but the impact of these programmes still needs to be evaluated. The need in the community seems to be bigger than the one trying to solve the problem. Studies from the Western Cape indicate that there is still a need for awareness to be created amongst the communities. Thus the aim of this project is to highlight the prevalence of risk factors for non communicable diseases among school going children, improve their knowledge regarding the risk factors and thus promote good health and correct choices regarding health.

### **1.2 TENS FACTS ABOUT CHRONIC DISEASES WORLDWIDE (WHO,2005)**

- Chronic disease is responsible for 60% of all deaths worldwide.
- 80% of chronic disease deaths occur in low and middle income countries.
- Almost half of the chronic diseases occur in people under the age of 70 years
- Around the world, chronic diseases affects women and men almost equally
- The major risk factors for chronic diseases are an unhealthy diet, physical inactivity and tobacco use
- Without action, 17 million people will die prematurely this year from chronic diseases
- One billion adults are overweight – without action, this figure will surpass 1.5 billion by 2015
- 22 million children under five years old are overweight
- Tobacco use causes at least 5 million deaths each year.
- IF THE MAJOR RISK FACTORS FOR CHRONIC DISEASES WERE ELIMINATED, AT LEAST 80 % OF HEART DISEASE, STROKE AND TYPE 2 DIABETES WOULD BE PREVENTED AND 40 % OF CANCER WOULD BE PREVENTED.

### **1.3 CHRONIC DISEASES OF LIFESTYLE AND YOUNG PEOPLE**

Surveys conducted in schools in the Western Cape revealed the existence of a high prevalence of risk factors for non –communicable diseases among adolescents and young people (Frants,2006; Frantz et al 2005; Phillips et al 2005). Research has indicated that adolescents are at the vulnerable age of engaging in risky behavior without realizing the consequences of their actions. There are at least four major factors, determined by social context and individual behavior, which place young people at risk: tobacco use, poor diet, and physical inactivity, being overweight and psychosocial stresses.

This trend is of concern to health professionals as these risk factors contribute to the leading causes of death such as cardiovascular disease and cancer. More specifically this increase is evident amongst adolescents. Healthy lifestyle practice needs to be nurtured from an early age. School children are considered to be an important target group for various health education activities with the underlying objective of improving healthy lifestyles. The main risk factors identified include increased physical inactivity, obesity, poor diet and participation in risky behavior such as smoking and drinking alcohol. The school is a key setting in which to improve both health and educational achievement. Good health and effective learning go hand in hand, and schools have the potential to play an active part in shaping attitudes to health. Schools in South Africa have selected a life orientation module as part of their curriculum which includes a section on health and health promotion. There is a need to increased knowledge relating to risky behavior in order to prevent early onset of chronic diseases of lifestyle.

### **1.4 RISK FACTORS FOR CHRONIC DISEASES OF LIFESTYLE**

The main risk factors for chronic diseases of lifestyle are:

1. Physical inactivity
2. Unhealthy diet
3. Smoking
4. Obesity

### **1.5 OUR ROLE IN PREVENTING THE CHRONIC DISEASES**

WHO has embarked on a strategy to combat these diseases called: “STOP THE GLOBAL EPIDEMIC OF CHRONIC DISEASE: The vision of this programme is to achieve a health promoting world, free of preventable chronic diseases.

## **PROMOTE**

Promote healthy living (better diet, more physical activity and no smoking) and healthy communities, especially for the poor and those living in disadvantaged communities. Start at our school.

## **PREVENT**

Prevent premature deaths and avoid unnecessary disability due to chronic diseases. The solutions exist now and many are simple, cheap and cost effective. And schools have the perfect opportunity to provide the stepping stones for prevention activities.

## **TREAT**

Treat chronic diseases effectively, using the latest available knowledge. Make treatment available to all.

## **CARE**

Let's help provide care by facilitating equitable and good quality health care in the form of health education for major chronic diseases.

## **2. THE ROLE OF HEALTH PROMOTING SCHOOLS IN IMPROVING SOUTH AFRICAN CHILDREN'S HEALTH**

Schools provide an ideal setting and a great opportunity to provide young people with a better understanding of the impact of their current behavior on their future health. As children of school-going age spend much of their time at school and do most of their learning at schools, schools have great opportunities to change social norms. Schools can do this by creating a favourable environment to make the healthy choices the easy choices for learners, teachers and parents. A healthy school environment can improve a child's health and effective learning and this contribute to creating healthy adults.

### **2.1 WHAT IS A HEALTH PROMOTING SCHOOL?**

WHO defines a health promoting school as "one that constantly strengthens its capacity as a healthy setting for living and working". A healthy school environment is one where learners and teachers are protected against immediate injury and disease and promotes prevention activities and attitudes against risk factors that might lead to future disease or disability.

A health promoting school:

- Fosters health and learning with all its resources
- Engage health and education officials, teachers, learners, parents and health care providers in efforts to make the school a healthy place.
- Strives to provide a healthy environment for all and thus embarks on projects and outreach and outreach programmes for staff, learners and the community.
- Implements policies and practices that respect an individual's well being and provide opportunities for success and acknowledgement of good efforts and intentions
- Strives to improve health of schools personnel, families and communities as well as pupils.

*Therefore health promoting schools focus on:*

- Caring for oneself and others
- Making healthy decisions and taking control of your health
- Creating conditions that are conducive to health through policies and projects
- Building capacities for peace, education, income, equity, sustainable and projects
- Building capacities for peace, education, income, equity, sustainable development
- Preventing leading causes of death, disease and disability by embarking on programmes related to tobacco use, HIV/AIDS, sedentary lifestyle, drugs and alcohol etc.
- Influencing health related behaviours: knowledge, beliefs, skills, attitudes, values and support

### **Ethos and environment**

The ethos, or distinctive character and fundamental values of a school, reflects the extent to which the schools, under the principal's leadership, promotes the moral, intellectual, social, emotional and personal development of the whole school community. The ethos and environment of the school provide learners with 'hidden messages' beyond the taught curriculum. A healthy school will ensure that these messages support and reinforce the messages taught in the health curriculum such as the life orientation module.

## **Quality of learning and teaching**

Learning and teaching form the core of a school's work in education and the promotion of the health, well being and personal development of the whole school community. The quality of teaching has a direct influence on the effectiveness of learning. An effective whole school curriculum is central to the development of a healthy school. A well organized healthy school which takes account of knowledge, skills and attitudes can help young people meet their full potential.

## **Quality Management**

Effective and efficient management supports the development of a healthy school both in policy and practice. All staff, in partnership with families, communities and outside agencies, should be aware of and involved in the development and implementation of a school's health related policies and programmes.

## **2.2 EVIDENCE OF A HEALTH PROMOTING SCHOOL**

"A healthy school should plan and implement a coherent curriculum which promotes health and wellbeing, complies with the statutory requirements and is accessible to all pupils."

### **Suggested indicators of good practice:**

- Ethos and environment
  - There is sensitivity to the range of cultural, religious and social values and beliefs of pupils, families and communities;
  - Parents and families are involved in the promotion of healthy choices through consultation in the development of health related policies and programmes;
  - There is a school culture and curriculum that takes account of the richness and diversity of the school community.

### **Quality of learning and teaching**

- The personal development area for learning (LIFE ORIENTATION) is coordinated across grades and is appropriate to the pupils' ages, abilities and levels of maturity;
- Appropriate teaching methods and resources are used in the delivery of the curriculum;
- Teachers make effective use of the findings from a pupil needs analysis;



- Activities are informed by regional and local data and information, and support regional strategies and priorities
- Through the revised curriculum personal development aims to promote self-confidence and encourage pupils to make correct choices regarding their own personal health and community health.

#### **Quality of management (including links with family and community)**

- Senior management actively support the coordination of the curriculum in the school;
- There is regular monitoring to ensure progression and continuity across grades including provision for learners with special education needs or disability;
- Sufficient status is given to the subjects that contribute to maintaining a healthy school;
- a sufficient percentage of the pupils' week is allocated to the delivery of personal development;
- health related teaching resources are identified and accessible;
- staff development and training support the delivery of the curriculum and health related activities;



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### **3. DIABETES**

#### **3.1 WHAT IS DIABETES?**

Diabetes means that your blood sugar is too high. Your blood always has some sugar in it because the body uses sugar for energy; it's the fuel that keeps you going. But too much sugar in the blood is not good for your health. Your body changes most of the food you eat into sugar. Your blood takes the sugar to the cells throughout your body. The sugar needs insulin to get into the body's cells. Insulin is a hormone made in the pancreas, an organ near the stomach. The pancreas releases insulin into the blood. Insulin helps the sugar from food get into body cells. If your body does not make insulin or the insulin does not work the sugar can't get into the cells, so it stays in the blood. This makes your blood sugar level high causing you to have diabetes. If not controlled diabetes can lead to blindness, heart disease, stroke, kidney failure and even amputations.

#### **3.2 TYPES OF DIABETES**

##### **Types 1**

Type 1 diabetes is commonly diagnosed in children and young adults. If you have this type of diabetes, your body does not make insulin, so you must take insulin every day. Treatment for type 1 diabetes includes taking insulin shots or using an insulin pump; eating healthy, exercising regularly, taking aspirin daily (for some), and controlling blood pressure and cholesterol.

##### **Type 2**

Type 2 diabetes is the most common form of diabetes. In type 2 diabetes, your body makes insulin, but the insulin can't do its job, so sugar is not getting into the cells. Treatment includes taking medicine, eating healthy, exercising regularly, taking aspirin daily (for some), and controlling blood pressure and cholesterol.

#### **3.3 WHEN ARE YOU AT RISK FOR DIABETES?**

- Overweight or obesity
- Family history of diabetes
- High blood pressure
- High cholesterol
- Physical inactivity
- Having a history of heart disease or stroke
- When you are older than 45
- Pregnancy

### **3.4 WHAT ARE THE SIGNS OF DIABETES?**

- Being very thirsty
- Urinating frequently
- Feeling very hungry all the time
- Feeling very tired
- Losing weight without trying
- Having dry, itchy skin
- Having blurry vision
- Having more infections than usual

IF YOU HAVE MORE THAN ONE OF THESE SIGNS THEN CONSULT YOUR DOCTOR

### **3.5 WHAT CAN I DO TO DECREASE THE RISK OF DIABETES**

- Eat properly
- Be active for at least 30-60 minutes 5 days of the week
- Lose weight if you are overweight
- Do not smoke and drink alcohol

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# HYPERTENSION

## 4.1 WHAT IS HYPERTENSION?

- Hypertension, or high blood pressure, is defined as a reading of 140/90 on three consecutive measurements at least six hours apart.
- Consistently high blood pressure causes the heart to work harder than it should and can damage the coronary arteries, the brain, the kidney, and the eyes.

## 4.2 TYPES OF HYPERTENSION

- Most high blood pressure cases occur without any known cause, and are referred to as primary hypertension or essential hypertension. In most situations, age, gender and genetics all play role in this type of hypertension, and each person has their own “ normal” set points as determined by these factors.
- On the other hand, secondary hypertension is the result of some other underlying medical condition, such as kidney disease, hormonal disorders, abnormal blood vessel development, and pregnancy.

## 4.3 WHEN ARE YOU AT RISK FOR HYPERTENSION?

A number of factors may increase one's risk of developing high blood pressure. Some factors, called non-modifiable factors, are beyond one's control such as:

- Age,
- Ethnic group,
- Gender and
- Family history.

If you are a man, you generally have a higher risk for developing hypertension and other cardiovascular diseases than a woman. However, after menopause, the risk of hypertension for women increases and becomes equal to that of men of the same age. In addition, because they live longer lives, women are more likely to suffer from problems related to long-term high blood pressure than men.

Family history of cardiovascular disease is a major risk factor for developing hypertension and associated illnesses. The environment and lifestyle habits you share with family members influence your risk. In addition, many genetic components also combine with lifestyle factors to promote hypertension. Different races have different tendencies for developing hypertension.

Other factors are modifiable risk factors, meaning that a person can control or change these factors, thereby preventing high blood pressure,

and they include:

- Diet
- Lifestyle
- Smoking and
- Alcohol uses

Some types of food may increase a person's risk for developing hypertension or make existing hypertension even worse. These include sodium (salt) and other minerals, fatty foods and alcohol. If you make even a small effort to limit these foods, it can have a significant effect on your blood pressure and improve your health.

People who exercise regularly and who experience little stress usually have lower blood pressure. Those who are overweight also have a higher risk of hypertension. Losing as little as 5kg reduces blood pressure and increases the effectiveness of blood pressure medications.

Tobacco products cause narrowing of the blood vessels. If you are a smoker, each cigarette you smoke causes a temporary but significant increase in blood pressure. Tobacco use can also lessen the effectiveness of some blood pressure medicines. One of the best ways to prevent or minimize hypertension and heart disease is to quit smoking!

#### **4.4 SIGNS OF HYPERTENSION**

- Headaches
- Dizziness
- Fatigue
- Poor vision
- Ringing in the ear (Tinnitus)

## **Exercising**

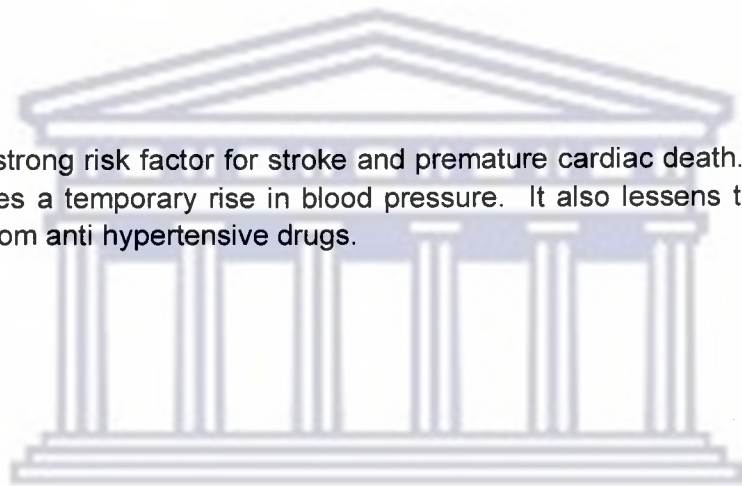
Regular exercisers tend to also eat healthy diets and control their weight – so join the group! Several studies have shown that 30-45 minutes of moderate physical activity most days of the week can lower blood pressure and help relieve stress.

## **Stress Reduction**

It is commonly held belief that “a high-stress lifestyle causes high blood pressure”. However, data suggest that while emotional stress can temporarily raise blood pressure, the effects of chronic stress on developing hypertension are much less clear. Emotional stress may precipitate symptoms of other cardiovascular disease such as chest pain. In general, it is better to avoid stress, and you may consider the use of relaxation techniques to achieve this goal.

## **Quit Smoking**

Smoking is a strong risk factor for stroke and premature cardiac death. Like stress, smoking causes a temporary rise in blood pressure. It also lessens the protection you may get from anti hypertensive drugs.



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## 5. CEREBROVASCULAR ACCIDENT (CVA)

### 5.1 WHAT IS A CVA?

Cerebrovascular accident: the sudden death of some brain cells due to lack of oxygen when the blood flow to the brain is impaired by blockage or rupture of an artery to the brain. A CVA is also referred to as a stroke.

A stroke is sometimes called a “brain attack”. A stroke can injure the brain like a heart attack can injure the heart. A stroke occurs when part of the brain doesn’t get the blood it needs.

### 5.2 TYPES OF CVA

#### *Ischaemic Stroke*

Ischaemic stroke (most common type). This type of stroke happens when blood is blocked from getting to the brain. This often happens because of the artery is clogged with fatty deposits (atherosclerosis) or a blood clot.

#### Hemorrhagic stroke

Hemorrhagic stroke- This type of stroke happens when a blood vessel in the brain bursts, and blood bleeds into the brain. This type of stroke can be caused by an aneurysm-a thin or weak spot in an artery that balloons out and can burst.

#### A mini-stroke

A “mini-stroke”, also called a transient ischaemic attack (TIA) happens when, for a short time, less blood than normal gets to the brain. You may have some signs of stroke or you may not notice any signs. Many people do not even know they have had a stroke.

### 5.3 RISK FACTORS FOR A CVA

It is a myth that stroke occurs only in older adults. A person of any age can have a stroke. But stroke risk does increase with age. Stroke seems to run in families and is more common in women. Risk factors such as age, family history and ethnicity cannot be controlled.

Other risk factors include:

- High blood pressure
- Heart disease
- Diabetes



- Smoking
- Hormonal changes with pregnancy

#### **5.4 SIGNS OF A CVA (STROKE)**

- Sudden numbness or weakness of face, arm, or leg (mainly on one side of the body)
- Sudden trouble seeing in one or both eyes
- Sudden trouble walking, dizziness, or loss of balance
- Sudden confusion or trouble talking or understanding speech
- Sudden bad headache with no known cause

Women may have unique symptoms:

- Sudden face and arm or leg pain
- Sudden hiccups
- Sudden nausea (feeling sick to your stomach)
- Sudden tiredness
- Sudden chest pain
- Sudden shortness of breath
- Sudden pounding or racing heart beat

#### **5.5 HOW CAN I PREVENT A CVA?**

- Know your blood pressure
- Don't smoke
- Get your cholesterol level tested
- Maintain a healthy weight
- Exercise
- Eat healthy foods

The logo of the University of the Western Cape, featuring a stylized building with columns and the text 'UNIVERSITY of the WESTERN CAPE' in a serif font.

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## 6. USEFUL INFORMATION

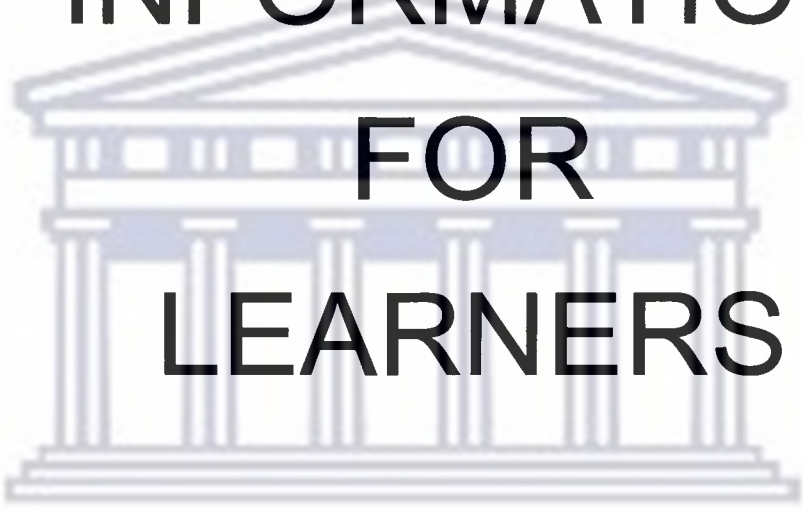
### 6.1 WEBSITES

| TOPIC                      | URL  |
|----------------------------|--|
| Centre for Disease control | <a href="http://www.cdc.gov">www.cdc.gov</a>   |
| World Health Organisation  | <a href="http://www.who.int">www.who.int</a>   |
| Health Promoting Schools   | <a href="http://www.healthpromotingschools.co.za">www.healthpromotingschools.co.za</a> |
| Diabetes in South Africa   | <a href="http://www.worlddiabetesfoundation.org">www.worlddiabetesfoundation.org</a>   |
| Hypertension and Stroke    | <a href="http://www.heartfoundation.co.za">www.heartfoundation.co.za</a>               |

### 6.2 CHECK LIST

#### Check list for each lesson

- Be sure to read the activity completely and carefully
- Prepare overheads or data projector and copy all the materials you will need
- Assess the usefulness and appropriateness of the activity for the target population
- Consider whether the method, skills and knowledge taught can be applied in real life situations of the learners and assist them in making the link
- Clearly describe the purpose of the activity, the skill to be practiced and the methods that will be used
- You can ask the learners to adapt the activity to make it more relevant to their setting
- Consider the best ways to divide the learners into small groups for activities
  - Allow the learners an opportunity to ask questions about the task

The logo of the University of the Western Cape, featuring a classical building with a pediment and columns.

# INFORMATION FOR LEARNERS

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## INFORMATION FOR LEARNERS

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- b. Ten facts about chronic diseases
- c. How does it affect me?

#### 2. WHAT IS MY ROLE IN THIS PROJECT

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- b. Changing behavior
- c. Assisting in changing the environment

#### 3. WHAT IS A HEALTH PROMOTING SCHOOL?

- a. Definition of a HPS
- b. How can we create a HPS environment?



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## 1. INTRODUCTION

Non-communicable diseases are the leading cause of death in the Western Province, South Africa (Bradshaw et al 2005). Chronic diseases such as heart disease, stroke, cancer and diabetes are a few of the non communicable diseases and are the leading causes of death worldwide. Surveys conducted in schools in the Western Cape reveal the existence of a high prevalence of risk factors for non-communicable diseases among adolescents and young people (Frantz, 2006; Frantz et al 2005; Phillips et al 2005).

Research has indicated that adolescents are at the vulnerable age of engaging in risky behaviour without realizing the consequences of their actions. There are at least four major factors, determined by social context and individual behaviour, that place young people at risk: tobacco use, poor diet, physical inactivity, being overweight and psychosocial stresses. Various research has shown that by addressing the risk factors for non communicable diseases, this will assist in decreasing the incidence of non communicable disease (Nissen et al 2001).

In South Africa, various research has been conducted focusing on the monitoring of non communicable diseases in the Western Cape (Bradshaw et al 2005). This merely indicated the rising concern regarding non communicable diseases. Various interventions have also been started including healthy schools but the impact of these programmes still need to be evaluated. The need in the community seems to be bigger than the one trying to solve the problem. Studies from the Western Cape indicate that there is still a need for awareness to be created amongst the communities. Thus the aim of this project is to highlight the prevalence of risk factors for non communicable diseases among school going children, improve their knowledge regarding the risk factors and this promote good health and correct choices regarding health.

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## TEN FACTS ABOUT CHRONIC DISEASES WORLDWIDE (WHO,2005)

- Chronic disease is responsible for 60% of all deaths worldwide
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## 2. WHAT IS MY ROLE IN THIS PROJECT?

### a. Improving knowledge

Involvement in this programme will assist in improving your knowledge as it relates to risk factors for chronic diseases of lifestyle. By improving your knowledge you will have another skill that will enable you to make healthy choices.

### b. Changing behavior

When individuals display inappropriate behaviour, our first response is to "cure" the individual. However, this approach places emphasis on the environment and how we can all adapt it to ensure that all of us are actively involved in changing behavior. This can only be achieved if the learner improves knowledge and together we apply the new knowledge in situations at school, in the family and in the community.

### c. Assisting in changing the environment

You can assist in changing the environment by

- Firstly equipping yourself with the knowledge of what are the potential problems,
- Identifying potential for change
- Raising awareness of the need for change
- Implementing relevant programmes.



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### **3. THE ROLE OF HEALTH PROMOTING SCHOOLS IN IMPROVING SOUTH AFRICAN CHILDREN'S HEALTH**

Schools provide an ideal setting and a great opportunity to provide young people with a better understanding of the impact of their current behaviour on their future health. As children of school-going age spend much of their time at school and do most of their learning at schools, schools have great opportunities to change social norms. Schools can do this by creating a favourable environment to make the healthy choices the easy choices for learners, teachers and parents. A healthy school environment can improve a child's health and effective learning and this contribute to creating healthy adults.

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A healthy promoting school:

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- Implements policies and practices that respect an individual's well being and provide opportunities for success and acknowledgement of good efforts and intentions
- Strives to improve health of school personnel, families and communities as well as pupils.

Thus health promoting schools focus on:

- Caring for oneself and others
- Making healthy decisions and taking control of your health
- Creating conditions that are conducive to health through policies and projects
- Building capacities for peace, education, income, equity, sustainable development

- Preventing leading causes of death, disease and disability by embarking on programmes related to tobacco use, HIV/AIDS, sedentary lifestyle, drugs and alcohol etc.
- Influencing health related behaviours: knowledge, beliefs, skills, attitudes, values and support.

### **3.2 HOW CAN WE ASSIST IN OUR SCHOOL BECOMING A HEALTH PROMOTING SCHOOL?**

You know your school better than anyone else. Once you have gone through this education programme and realize the potential risk factors that exist by making a difference in your school.

- Create awareness of the risk factors
- Share the message with others
- First target the leaders in the school so that they lead by example
- Target specific programmes such as non-smoking, healthy diet and physical activity. What is being sold at the tuck shop? What playground activities are taking place?
- Involve all key stakeholder



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**APPENDIX 4**

OFFICE OF THE DEAN  
DEPARTMENT OF RESEARCH  
DEVELOPMENT

Private Bag 11793, Bellville 7535  
Tel: 021 959 3000  
Fax: 021 959 3001  
E-mail: [dean@uwc.ac.za](mailto:dean@uwc.ac.za)  
[www.uwc.ac.za](http://www.uwc.ac.za)

2 June 2019

To Whom It May Concern

Thereby certify that the Senate Research Committee of the University of the Western Cape has approved the methodology and the ethics of the following research project by:  
Ms S Chutergeron (Physiotherapy)

Research Project: Implementation of health care education relating to risk factors for chronic diseases of lifestyle amongst high school learners in the Amajuba District Northern KwaZulu Natal, South Africa

Registration no: 10-17

*Patricia Sester  
Manager, Research Development Office  
University of the Western Cape*

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A place of quality - a place to grow, from hope to action through knowledge

## APPENDIX 5



kzn education

Department:  
Education  
KWAZULU-NATAL

S CHUTERGON  
BOX 15862  
NEWCASTLE  
2940

Enquiries: Sibusiso Alwar

Date: 14/05/2010

Reference: 0040/2010

### RESEARCH PROPOSAL: IMPLEMENTATION OF A HEALTH CARE EDUCATION, RELATING TO RISK FACTORS FOR CHRONIC DISEASES OF LIFESTYLE AMONGST HIGH SCHOOL LEARNERS IN THE AMAJUBA DISTRICT, NORTHERN KWAZULU-NATAL.

Your application to conduct the above-mentioned research in schools in the attached list has been approved subject to the following conditions:

1. Principals, educators and learners are under no obligation to assist you in your investigation.
2. Principals, educators, learners and schools should not be identifiable in any way from the results of the investigation.
3. You make all the arrangements concerning your investigation.
4. Educator programmes are not to be interrupted.
5. The investigation is to be conducted from 14 May 2010 to 14 May 2011.
6. Should you wish to extend the period of your survey at the school(s) please contact Mr Sibusiso Alwar at the contact numbers above.
7. A photocopy of this letter is submitted to the principal of the school where the intended research is to be conducted.
8. Your research will be limited to the schools submitted.
9. A brief summary of the content, findings and recommendations is provided to the Director: Resource Planning.

...dedicated to service and performance  
beyond the call of duty.

KWAZULU-NATAL DEPARTMENT OF EDUCATION

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kzn education

Department:  
Education  
KWAZULU-NATAL

10. The Department receives a copy of the completed report/dissertation/thesis addressed to:

The Director: Resource Planning  
Private Bag X9137  
Pietermaritzburg  
3200

We wish you success in your research.

Kind regards

**R. Cassius Lubisi (PhD)**  
Superintendent-General



UNIVERSITY of the  
WESTERN CAPE

dedicated to service and performance  
beyond the call of duty.

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## APPENDIX 6

**ATTENTION:** Principal

ST Oswalds High School

Newcastle High School

Sir,

**RE: PERMISSION TO CONDUCT RESEACRH (HEALTH EDUCATION PROGRAMME)**

1. The above refers.
2. Attached, please find a copy of the approval letter received from the KZN Department of Education granting permission for the above research to be conducted at your school, a detailed information sheet and a copy of the Health Education Programme, the contents all of which are self explanatory.
3. This serves to inform you that your further approval is hereby requested for the implementation and data collection regarding the above research at your school.
4. The target group are grade 8 learners, whereby they will be required (voluntary) to complete two questionnaires and be given a 45 minute lecture regarding the implementation of a health care education relating to risk factors for chronic diseases of lifestyle amongst high school learners in the Amajuba District.
5. Further, each learner will receive a copy of the detailed programme, consent forms and an information sheet detailing the entire research that will be conducted at your school.
6. Lastly, I look forward in conducting the above research at your school and can be contacted at any stage on my cell (0837979696) or landline (034-3171217) should you have any further queries.

Yours,

Serena Chutergon

Physiotherapist (MSC. Student)

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E-mail: [jfrantz@uwc.ac.za](mailto:jfrantz@uwc.ac.za)

## WRITTEN PARENTAL CONSENT FORM

**Title of Research Project: IMPLEMENTATION OF HEALTH CARE EDUCATION RELATING TO RISK FACTORS FOR CHRONIC DISEASES OF LIFESTYLE AMONGST HIGH SCHOOL LEARNERS IN THE AMAJUBA DISTRICT, NORTHERN KWAZULU NATAL, SOUTH AFRICA**

The study has been described to my child..... in language that he/she understand and he/she has freely and voluntarily agreed to participate. All of my child's questions about the study have been answered. I understand that my child's identity will not be disclosed and that he/she may withdraw from the study without giving a reason at any time and this will not negatively affect me in any way. It is for the above reasons I Mr/ Mrs.....hereby grant permission for my child to participate in the above study.

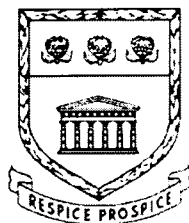
**Parents name:**

**Parents signature.....**

**Date:**

Should you have any questions regarding this study or wish to report any problems your child has experienced related to the study, please contact the study coordinator:

**Study Coordinator's Name: Ms Serena Chutergon**  
**University of the Western Cape**  
**Private Bag X17, Belville 7535, Telephone: (034) 317 1217, CELL: 0837979696**



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## WRITTEN LEARNER CONSENT FORM

**Title of Research Project: IMPLEMENTATION OF HEALTH CARE EDUCATION RELATING TO RISK FACTORS FOR CHRONIC DISEASES OF LIFESTYLE AMONGST HIGH SCHOOL LEARNERS IN THE AMAJUBA DISTRICT, NORTHERN KWAZULU NATAL, SOUTH AFRICA**

The study has been described to me in language that I understand and I freely and voluntarily agree to participate. My questions about the study have been answered. I understand that my identity will not be disclosed and that I may withdraw from the study without giving a reason at any time and this will not negatively affect me in any way.

**Participant's name:**

**Participant's signature**.....

**Date:**

Should you have any questions regarding this study or wish to report any problems you have experienced related to the study, please contact the study coordinator:

**Study Coordinator's Name: Ms Serena Chutergon**

**University of the Western Cape**

**Private Bag X17, Belville 7535, Telephone: (034) 317 1217, CELL: 0837979696**

## APPENDIX 9

### PROTOCOL FOR THE MEASUREMENT OF BLOOD PRESSURE

The resting blood pressure was recorded using a calibrated automatic sphygmomanometer equipped with a pulse-monitoring device in the cuff.

#### Procedure:

- The subject was made to sit for at least five minutes prior to testing.
- His/her right arm was bare and resting at an angle of 45 degrees on a table with palm up.
- A cuff of approximate size was wrapped firmly around the upper arm at heart level.
- The start button was then pressed and the cuff inflated.
- Once maximum inflation was reached the cuff automatically deflated, resting blood pressure was recorded.
- A blood pressure reading was done twice at one-minute intervals.



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## APPENDIX 10

### PROTOCOL FOR THE MEASUREMENT OF WEIGHT AND HEIGHT

WEIGHT: Weight was measured using a sochnic weighing scale.

#### Procedure

- The learners were asked to remove all excess clothing including their shoes and to stand only in their school clothes(pants/dress).
- The weight of the subject was recorded in kilograms to the nearest whole number.

HEIGHHT: A tape measure was taped against a wall with the tape measure 10 cm above ground level. The measurement from the floor to the highest point on head was measured.

#### Procedure

- The subject was expected to stand with heels, buttocks and upper back against wall.
- The subject had to remove his/her shoes and stand feet together.
- The subjects height was recorded in centimetres
- The height in metres was then squared. BMI was calculated using the formula:  
Body weight(kg)/height (m) squared.

## APPENDIX 11

### PROTOCOL FOR THE MEASUREMENT OF WAIST TO HIP RATIO

WAIST: With the abdomen relaxed, a horizontal measurement was taken at the level of the narrowest part of the torso below the twelfth rib using a tape measure. The learner was required to stand upright.

HIP: While the subject stood erect, a horizontal measurement was taken at the level of maximum circumference of the hips/buttocks.

#### Procedure

- The subject had to stand with feet together and the arms at the sides.
- The waist and hip circumferences was then measured.
- The tape had to be horizontal and around the entire circumference.
- The tape had to be pulled snugly but without causing an indentation in the skin.
- Measurements were recorded to the nearest millimeter.
- Duplicate measurements were taken and the average of scores recorded.



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