RELATIONSHIP BETWEEN PARTICIPATION IN PHYSICAL ACTIVITY AND HEALTH RISK BEHAVIOURS AMONG YOUTH IN HIGH SCHOOLS IN MTWARA REGION, TANZANIA

By

Edgar Boniface Nannyambe

A mini-thesis submitted in partial fulfilment of the requirements for a degree of Masters of Science in **Physiotherapy** in the Faculty of Community and Health Sciences, University of the Western Cape

SUPERVISOR

Mr. HAMILTON PHARAOH

10 September 2007

ABSTRACT

Physical inactivity is one of the leading risk factors for major non-communicable diseases, which contribute substantially to the global burden of chronic diseases, disability and death. The burden of disability, morbidity and mortality, attributable to non-communicable diseases, is currently enormous in the developed countries and is increasingly growing in the developing countries. It has been observed that there is a great decline in physical activity during the transition from high school to higher education centres. The purpose of the study was to investigate the relationship between participation in physical activity and health risk behaviours among high school students in the Mtwara region, Tanzania. The objectives of this study were: (1) to identify the physical activity levels among high school students in Mtwara region, Tanzania, (2) to identify health risk behaviours among the above mentioned high school students, (3) to identify the factors that influenced them to engage in health risk behaviours and (4) to establish the relationship between physical activity and health risk behaviours. A descriptive quantitative study design was used whereby a stratified sample of high school students, including boys and girls between the ages of 17 to 26 years, was selected to complete self-administered questionnaires. The study measured health risk behaviours such as alcohol use, smoking cigarettes, drug abuse, sedentary life and sexual behaviour. Quantitative data was captured and analyzed using SAS 9.1 and Statistical Package for Social Science (SPSS) version 13.0 programmes. The Kruskal-Wallis' test was used to test the means between variables and the Spearman's correlation coefficient test was utilized to test associations between variables related to health risk behaviour and demographic variables. Two hundred (200) high school students, with a mean age of 20.47 (SD=1.493) participated in the study. Of the total number of participants,

67.0% (n=134) of the sample was not participating in physical activity. Furthermore, 26% of the sample smoked cigarettes; 93% consumed alcohol; 9.5% used drugs while 93% was involved in risky sexual behaviours. The study identified relationships between participation in physical activity and health risk behaviours. The youth involved in risky behaviours like consuming alcoholic drinks and smoking cigarettes were less physically active. The results of this study provide valuable information for the relevant policy-makers and stakeholders for reasons for the implementation of physical activity programmes classes in schools of the Mtwara region and in Tanzania as a whole. If all of these risk behaviours are coupled with the rising threat of HIV/AIDS, the combined impact may be devastating on the nation, unless effective preventive and promotive strategies are put in place.

Keywords: Relationship, physical activity, perceived benefits, health risk behaviours, health promotion, sedentary life, chronic diseases of lifestyle, prevention, Tanzania.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

DECLARATION

I hereby declare that ***"Relationship between participation in physical activity and health risk behaviours among youth in high schools in Mtwara region, Tanzania"*** is my own work, that it has not been submitted for any degree or examination in any other university, and that all the sources I have used or quoted have been indicated and acknowledged by complete references.

Signature ----------

EDGAR BONIFACE NANNYAMBE

Witness: ----------

Mr. HAMILTON PHARAOH

DEDICATION

To my parents Monika Amandus Nannyambe and Boniface Bakili Mtungwe of Luagala Village, Tandahimba district, Mtwara region, Tanzania. Thank you for your parenting care. May God bless you.

ACKNOWLEDGEMENTS

First and foremost, I thank God for everything He made me pass through.

Secondly, I would like to acknowledge the efforts made by Abbot Siegfried OSB through St. Benedict's Ndanda Hospital in financing my studies in the University of the Western Cape, South Africa. It would not have been possible for me to pursue this study without financial support.

I'm incredibly grateful to Ndanda hospital doctor-incharge "Dr Chrispin Sapuli", the Hospital Administrators, the late Mr Louis Ph. Jucker-Vella and Mr Piet Hein Meckmann who is still an administrator in Ndanda Hospital as well as the hospital management team for their hospitality, cardinal decision, encouragement and total support rendered to me during the long journey throughout my study time. Please accept my sincere appreciation.

Special thanks go to Br Engelbert OSB, for his precious device, encouragement and financial support through my entire study.

I would like to extend my gratitude to my parents, Mr Boniface Bakili and his wife Monika Amandus, for being my best advisers, comforters and pillars of strength when circumstances/things seemed impossible.

To my sisters (Severina, Emenilde, Sr Agnelah and Frida) for their encouragements and prayers.

I must extend my cardinal thanks to my beloved wife Mrs Nannyambe ABE Habil Kasoyaga for her tremendous encouragement, love, hugs and continuous motivation especially during the stressful times in my absence. I am forever thankful; I love you. May God bless her.

To my children (Abate, Lulu and Pamela without forgetting Furaha-Stuwart Kasoyaga) for their patience, inspiration, hope and discipline while I was away.

To my mother-in-law (Christine Habil Kasoyaga) for her endless kindness and her time she used to visit my family now and then when I was away.

I also extend my sincere gratitude to my supervisor Mr Hamilton Pharaoh for giving me the courage, positive criticism, deligent guidance and for sacrificing much of his time to enable me produce this thesis.

Most important, I believe that the support, patience and valuable inputs of Professor Jose' Frantz and Dr Julie Phillips was extremely important. I will never and ever forget that.

I am grateful to Professor Emeritus Richard W. Madsen, of the University of Missouri Health Care, Columbia and Mr. Zakaryia Mohamed for assistance in statistical analysis and critiquing the work during the stage of data analysis.

Many thanks to all those who assisted me during data collection, particularly all students of Ndanda Secondary School, Mtwara Girls secondary school and Ocean Secondary school for participating in this study and voluntarily contributing their views and perceptions.

My heartfelt appreciation goes to Fr. Manfred Mpanda and Fr. Yohannes A. Nachihangu for their constant telephonic encouragements, moral support, kindness and friendship.

To Miss Flora A. Mboya for her wonderful, marvelous and motherly care she is giving to our son Abate in my absence. I really appreciate your efforts and may God continue to bless you.

To my colleagues (Egfried M. Mkoba, John Tesha, Epiphania M. Temu, Joanne Kibethi and Herman Kazibwe), I want to motivate and encourage you to continue the battle and thank you for the encouragement and cooperation we always made during our study time in the physiotherapy-container.

Thank you to Dr Ingrid Willenberg for the academic advices and support you made during my early stages of my proposal writing.

Finally, I would like to extend my gratitude to Sr. Dr. Birgitta Schnell OSB, Sr. Stephanie Mshemwa OSB, Sr. Constantia OSB and Sr. Beatte OSB for mentoring me in Physiotherapy. I will not forget the evening of 3rd July 1987, in room 56 at St. Benedict's Ndanda Hospital, when you implanted physiotherapy in me and therefore this achievement is the reaping of the seeds you have sown. Thank you very much.

ABBREVIATIONS

AMREF	African Medical and Research Foundation
CDC	Centre for Disease Control
CDL	Chronic Diseases of Lifestyle
CVD	Cardiovascular Disease
HRB	Health Risk Behaviours
NCD	Non Communicable Disease
OSB	Order of Saint Benedict
PA	Physical Activity
USA	United States of America
USDHHS	United State Department of Health and Human Services
US	United States
WHO	World Health Organization
WHR	World Health Report
DALY	Disability-Adjusted Life Year

C H A P T E R O N E

INTRODUCTION

1.1 INTRODUCTION

In this chapter the researcher describes the background information on physical activities and the related health risk conditions as a result of physical inactivity. The chapter also reflects on the levels of physical activity among young adults worldwide. The chapter further includes the aims of the study, objectives and the significance of the study and definition of terms. It ends with the summary of the chapters used in the study.

1.2 BACKGROUND TO THE STUDY

The consequences of inactive lifestyles have been well established. According to current World Health Organization estimates, lack of physical activity leads to more than 2 million deaths annually worldwide (WHO, 2002). Statistics from the World Health Organization (2002) show that the mortality is due to, among other factors: heart disease and stroke (50% of all deaths); and type 2 diabetes (50% of all occurrences). Other conditions created or exacerbated by the lack of physical activity include obesity, osteoporosis (leading to up to 50% of hip fractures in women); knee and back pain, stress, anxiety and depression (WHO, 2002). Booth (2000) reported that physical inactivity is an established risk factor for cardiovascular disease, non-insulin-dependent diabetes, overweight, hypertension, depression and anxiety. According to the director of

the Division for the Prevention of Non-Communicable diseases at AFRO, physical activity need not be strenuous to promote health (WHO, 2002). He further stated that it should also not be seen as a 'new' action but as part of a people's daily life settings and activities, such as walking, the most practiced and most recommended form of physical activity that is absolutely free. Study by Frantz (2004) done to the high school learners in Belhar reported the importance of physical activities in high schools and revealed that when these activities are used properly the chance for a decrease of health risk behaviours among youths is huge. In her study, data of physical activity levels showed that about 32% of high school learners (n=951) in that community were physically inactive and 50% of them were not able to meet the norms for various health-related fitness tests. The study also showed that the physically inactive learners were more likely to participate in health risk behaviours like smoking and drinking.

Among other countless simple activities recommended by experts are running, fast walking, biking, dancing, football, playing netball, rope skating/jumping and swimming. household chores such as sweeping and / or vacuum cleaning; dusting windows or furniture; gardening; cycling; riding a stationary bicycle while watching television; and getting up and manually operating the television and video cassette recorder rather than using the remote control (WHO, 2003a). According to WHO (2002), the goal of physical activities is to be active for at least 30 minutes over the course of the day, or at the very least three days in a week.

Currently, the situation is alarming where an existing burden of infectious diseases is compounded by the HIV/AIDS epidemics (WHO, 2002b). Nyamwaya in WHO (2002b) reported that in Africa, as elsewhere in the World,

non-communicable diseases have become a major epidemic due, in part, to a rapid transition in lifestyle leading to reduced physical activity, changing diets and tobacco use (WHO, 2002b). Nyamwaya further stated that although distinct physical activity patterns are not yet discernible in Africa, "there is a clear and unmistakable tendency towards sedentary lifestyle among all age groups". He cites, as proof, the report of a WHO-commissioned survey in 1999/2000 which showed a general decline in physical activity among school-going children not only in Africa, but also in other regions of the world. A rise in chronic disease mortality has been projected for all developing regions of the World, due to an anticipated increase in life expectancy, changes in diets and lifestyle associated with industrialization and urbanization (WHO, 2002a).

Advances in technology have shown some pre-disposing factors to the rise of chronic diseases of lifestyle (Biddle & Mutrie, 2001). Although reports from the United States show that there is an increase in the number of youngsters joining competitive games and sports clubs (Coakley & White, 1992), there still is an increase in obesity and overweight among young people. The level of sedentary living, long hours of watching television and playing video games have increased in the developed countries (Bar-Or et al, 1998; Cooper et al, 2002). Lowry et al. (2002) reported that there is evidence of high school students, in United States, having overweight, decreased physical activity and unhealthy dietary behaviours as a result of television viewing.

Data from the United Republic of Tanzania suggests that the prevalence of diabetes, hypertension and cardiovascular diseases are increasing, and mortality due to strokes is high (Swai et al., 1993; Kitange et al., 1993., Masau & Makene, 2004).

Unwin (2001) reported that age-specific death rates from chronic disease of lifestyle (CDL's) in developing countries are higher than in wealthier countries. Obesity, a risk factor for hypertension and cardiovascular disease, is still perceived as good health in African countries and is common even in poor and middle income urban areas where regular exercise is rarely practiced (Bovet et al., 2002). These authors further stated that cigarette smoking, another risk factor, is also more frequently observed in poor people, probably because of the affordability of cigarettes.

A study to assess behavioural risk factors associated with HIV infection among youth (15-24 years) in Moshi rural district in northern Tanzania showed that, 60% of youth reported to consume alcohol and 50% of the sexually experienced females reported to have received a gift for their sexual encounter (Tengia-Kessy, Msamanga & Moshiro, 1998). The study further found that cultural constraints and lack of awareness of risk factors calls for an urgent need to target health information and education interventions to bring about a change in behaviour among the youth.

Despite active media involvement, levels of awareness of benefits of physical activity in the population remain very low (Shirima, 2003). The multi-sectoral committee on diet, spearheaded by the Tanzanian Food and Nutrition Centre, provides advice on healthy eating and promotes healthy lifestyles, but does not currently give practical advice on physical activity.

Strategies such as active media involvement and awareness campaigns are very important in developing countries where there is an un-representative set of clubs and sport facilities and the presence of conditions for sedentary living. Thus, with the exception of students in private schools, the majority of learners are not adequately exposed to sports and sports related activities. Instead they

are left with leisure times to concentrate on unhealthy behaviour which in the long run will put them in chronic conditions like substance abuse, obesity, teenage pregnancy, depression, anxiety, stress and heart problems (Travill, 1997).

The implication for children and youth with regards to fitness especially in the context of their school life and experience is that, it does not only affect their health status but also their academic performance. Studies show that, children and youth who are physically fit do better academically than those that are not physically fit (American Academy of Paediatrics, 2000). Therefore, physical activities in schools can be meaningful in preventing health risk conditions that might come as a result of inactivity. It is envisaged that the outcome of this study will contribute to the establishment of trends in the well-being of youth in Tanzania.

1.3 STATEMENT OF PROBLEM

The lifestyle among youths in high schools of Mtwara region, Tanzania is characterised by a number of anticipatory behaviours including alcohol consumption; cigarettes smoking; use of dangerous drugs of addiction; practicing unsafe sex; and sedentary lifestyle. These behaviours have been recognized by the World Health Organization as risk factors which may contribute to ill health. Like the youth of any other place in the universe, the youths of Mtwara region are as well inclined to ill health following the practice of such behaviours. To the researcher's knowledge, there has not been any reported study in the studied region on the health risk behaviours among the youth and thus the need for the study was made.

1.4 THE RESEARCH QUESTION

Is there a relationship between participation in physical activity and health risk behaviours among youth in high schools in Mtwara region, Tanzania?

1.5 THE AIM OF THE STUDY

The aim of the study was to investigate the relationship between participation in physical activity and health risk behaviours among youth in high schools in the Mtwara Region, Tanzania.

1.6 OBJECTIVES OF THE STUDY

The specific objectives of this study were:

- To identify the levels of physical activity among high school students.
- To identify the health risk behaviours among high school students.
- To identify the factors influencing youth to engage in health risk behaviours.
- To establish the relationship between physical activity and health risk behaviours.

1.7 SIGNIFICANCE OF THE STUDY

Literature searches have shown no studies exist on health-risk behaviours related to physical inactivity, tobacco use, drug use, alcohol consumption and practicing unsafe sexual practices among youth in Mtwara region Tanzania. Therefore, the findings of this study may be used as an initiative to design a

health promotion programme not only in the high schools of Mtwara region Tanzania but also to other schools in Tanzania and Africa as a whole. Its outcome may serve as a base of reference when studying further on the physiotherapy management of the health risk behaviours episodes and may also motivate the Ministry of Education to incorporate health related physical activities in physical education classes as an important facet of the educational curriculum.

1.8 DEFINITION OF THE TERMS USED

Bhangi: a local name (Kiswahili word for) for Marijuana

Chronic Disease of Lifestyle: These are a group of diseases that share similar risk factors as a result of exposure over many decades, to unhealthy diets, smoking etc, lack of exercises and possibly stress. The major risk factors include high blood pressure, tobacco addiction, diabetes, obesity and high blood cholesterol. These diseases are also called non-communicable diseases or degenerative diseases (Fourie, 2001).

Health Promotion: Is a process of enabling people to increase control over and to improve their health to a state of complete physical, mental and social well-being (Coulson, Goldstein & Ntuli, 2002**)**.

Health-risk behaviour: Has been defined as "behaviours that increase the likelihood of adverse physical, social, or psychological consequences" (Carr-Gregg, Enderby & Griver, 2003).

Leisure: Freedom from time-consuming duties/activities. Individuals are involved in activities which are to their own benefit, which they perform voluntarily and without any pressure being exerted on them (Gouwin, 1997).

Physical Activity: Is defined as bodily movement produced by skeletal muscle contractions that substantially increase energy expenditure, (U.S Department of Health and Human Services, 1996).

Physical education: A compulsory school activity which encompasses a wide range of physical skills and activities that are taught to students. It represents that component of sports which occurs as part of the formal curriculum of the school (Centre for Education Policy Development Evaluation and Management & Education Policy Unit, 1999).

Physical Inactivity: Is defined as a state in which bodily movement is minimal. In terms of energy expenditure, inactivity represents a state or behaviour for which energy expenditure approximates resting metabolic rate (Dietz, 1996)

Physiotherapy: Is a health profession concerned with:

- Assessing, diagnosing, treating and preventing human movement disorders.
- Restoring normal function or minimizing dysfunction and pain in adult and children with physical impairment to enable them to achieve the highest possible level of independence in their lives.
- Preventing recurring injuries and disability in the working place, at home or during Recreational activities.
- Promoting community Health for all age groups (University of KwaZulu -Natal, 2005**).**

Sedentary lifestyle: Life in which an individual spends a lot of time sitting and not moving (Hornby, 2000).

1.9 SUMMARY OF CHAPTERS

In chapter one the researcher describes the background information on physical activities and the related health risk conditions as a result of physical inactivity. In this chapter introduction to the study is presented. The chapter also reflects on the levels of physical activity among youth and young adults worldwide. The chapter further includes the aims of the study, objectives, the problem statement and the significance of the study. It ends with the definition of terms used in the study.

Chapter two is the literature review for this study where literatures in relation with the physical activity and health risk behaviours have been identified. Factors influencing health risk behaviours, the burden of chronic diseases of lifestyle and health benefits of physical activities in general are discussed. It further reviews literature pertaining to the use of physical activities as an intervention to minimize some health risk taking behaviours among youth. Lastly, the chapter reviews literature regarding the role of the physiotherapist in promotion of physical activity.

Chapter three highlights on the methodology that this study used whereby details concerning the study population and the sampling techniques are given. An in-depth description of data collection method is presented including tools used in data collection, data collection procedures and issues of trustworthiness, reliability and validity. The chapter ends by giving the method of data analysis and showing how ethical issues would be addressed.

Chapter four describes the results of the study according to the demographic characteristics of the study population. Both descriptive and inferential statistic

results of the study are presented. The results are interpreted and described with the aid of graphs and tables. The relationship between demographic characteristics, participants' level of participation in physical activity and health risk behaviours are described.

Chapter five discusses the results of this study in relation to chapter two. It describes the prevalence of participants at risk for engaging in health risk behaviours in the studied community. The chapter also discusses the findings of the current study and compares them with similar studies. The limitations and the strengths of the study are also discussed.

The last chapter presents a summary of the study and draws conclusions based on the main findings and finally recommendations following the results of the study are made.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter reviewed the literature about the health risk behaviours among youth, factors influencing these health risk behaviours, and the benefits of physical activities in general. It further reviewed literature pertaining to the use of physical activities as an intervention to minimize some health risk taking behaviours among youth. Lastly, the chapter reviewed literature regarding the role of the physiotherapist in promotion of physical activity.

2.2 PREVALENCE OF HEALTH RISK BEHAVIOURS

Advances made in medicine have largely reduced the illness, disability and death that common infectious diseases once caused among children. Today, the health of young people, and the adults they will become, is critically linked to the health-related behaviours that contribute markedly to causes of death such as heart disease, cancer and injuries. The health risk behaviours of young people include tobacco use, alcohol and drug use, unhealthy dietary behaviours, excessive television viewing, physical inactivity, engaging in sexual risk behaviours that can cause HIV infection, other sexually transmitted diseases and unplanned pregnancies (Lowry, Howell, Galuska, Fulton and Laura, 2002).

Jessor (1991) argues that an early age of onset of health risk behaviours is associated with an increased likelihood that adolescents will engage in multiple risk behaviours as they progress through adolescence stages. It is thus clear that

in order for this study to contribute to the prevention of health risk behaviours among adolescents, what need to be empirically determined are the co-occurrence of specific health risk behaviours and the variable distribution of the multiple risk behaviours by demographic factors.

A study concerning prevalence of health-related behaviours among high school students staying in the hostel compared with students attending high schools but staying at home reported that, students who were staying at home while attending high schools were at significantly greater risk than students in the hostel for violence-related injury, suicide, human immunodeficiency virus infection or other sexually transmitted diseases; pregnancy; and development of chronic disease related to tobacco use, unhealthy eating habits and lack of vigorous activity (Grunbaum, Lowry and Kann, 2001).

2.2.1 Smoking

There are approximately 1.1 billion smokers in the world today, representing about one-third of the global population aged 15 years and over. Of these, 800 million are in the developing countries (Jha and Chalaupka, 1999). Several researchers have established that between 80% and 90% of adults who are regular smokers started smoking before 18 years of age (US Department of Health & Human Services, 1994; Alexander et al., 2001; Call et al., 2002). According to Ozcan and Ozcan (2002) it is estimated that worldwide, between 14 000 to 15 000 children and young people are smoking per day. In this group it increases to 68 000 to 84 000 per day in middle-and low-income countries.

Tobacco use among adolescents is considered an area of considerable public health concern (Upadhaya, Drobes and Thomas, 2004; International Clinical Epidemiology Network, 2002; Unger and Rohrbach, 2002; Call et al (2002);

Teall & Graham, 2001). According to the International Clinical Epidemiology Network (2002) one third to one half of young people who experiment with cigarettes become regular smokers, most of them within one year. Most young people are influenced by advertising or adults who smoke and they perceive smoking as sophisticated or fun. It must be noted that the motivation to engage in smoking differs from adolescent girls and boys (Phillips, 2001). Research indicates that adolescent girls may use smoking as a weight control strategy (French, Perry, Leon and Fulkerson, 1994; Crocker, Kowalski, Chad, Humbert and Forrester, 2001). Gender differential patterns have also been noted in other psychosocial correlates of smoking. According to Killen, Robinson and Haydel (1997) higher levels of sociability were found to influence smoking onset in girls. The WHO indicates that pronounced gender differences in tobacco use are seen throughout the world (The Global Youth Tobacco Survey Collaborating Group, 2003).

Johnston, O'Malley and Bachman (2002a) estimated that 17% of US high school seniors smoke daily with more than one-third of all high school students reporting some form of recent tobacco use. MacDonald and Wright (2002) stated that by the time students reach grade 10, nearly two-thirds of Canadian adolescents have tried smoking. In Australia a similar prevalence of smoking is noted. Snow and Bruce (2003) observed a prevalence rate of 49.8 % for cigarette smoking of which 15.8 % could be classified as current smokers and 33.8 % were experimental smokers.

The smoking prevalence in developing countries is no better than their developed counterparts. Ozcan and Ozcan (2002) found that 24 % of their sample of middle and high school students in Ankara, Turkey, was classified as smokers. In South Africa, Swart, Reddy, Pit and Panday (2001) found that 46.7% of the learners reported ever having smoked cigarettes and 28.0 % of

them reported being current smokers. Tobacco use in South Africa is an ever-increasing health problem and the prevalence of smoking is increasing like in other developing countries. South Africa is yet to experience the full impact of the epidemic of smoking related deaths due to the tobacco industry targeting the youth and the developing populations in marketing their products (Steyn, Fourie and Bradshaw 1992). In spite of increasing evidence that cigarette smoking has an adverse effect on health, it still remains an important preventable determinant of morbidity and mortality in South Africa (Madu and Matla, 2003). In South Africa about one in nine deaths was shown to be tobacco related in the early 1990's (Yach et al., 1992). According to Swart et al. (1998) the highest rate of tobacco-related deaths (1 in 5) occurs in the province of the Western Cape.

The study done by Jagoe et al.(2002) in Dar es salaam Tanzania found that smoking is more common in Tanzanian men than women in a middle income area of Dar es Salaam. The prevalence of tobacco smoking is 27% in males and 5% in females after direct standardization to the new world population. These findings are similar to the WHO estimated smoking prevalence in Africa and other areas of Africa where population based studies have been carried out (Jagoe, Edwards, Mugusi, Whiting and Unwin, 2002). We believe the results provide a good estimate of smoking prevalence in this population (Idris, Ibrahim and Warnakulasuriya, 1998).

2.2.2 Alcohol use

According to the World Health Report, global alcohol consumption has increased in recent decades, with most of this increase occurring in the developing countries (WHO, 2002). Despite alcohol being consumed by many people for centuries, the considerable and varied adverse health effects have

only been characterized recently (Rehm, Gutjahr and Gmel, 2001). The high social acceptability of alcohol use and the widespread experimentation with alcohol during adolescence are also great areas of concern (Ellickson, Tucker, Klein and McGuigan, 2001). Eaton, Forthofer, Zapata, McCormack, Brown, Bryant, McDermott and Reynolds et al (2004) also emphasized that alcohol use continues to be one of the most significant risk behaviours engaged in by adolescents. Alcohol use continues to grow in popularity in the youth culture (Eaton et al., 2004). Of great concern are the results of resent analysis of the National Longitudinal Alcohol Epidemiology Survey done in the USA that indicated that early age of drinking onset is associated with frequent heavy drinking in life (Hingson, Heeren, Jamarka and Howland, 2000). Epstein, Griffin and Botvin (2004) also expressed concern that the allure of alcohol for adolescents remains strong and widespread alcohol use among adolescents remain common.

A survey in1996 of nearly 30 000 Australian secondary school students between the ages of 12 and 17 years highlighted similar patterns. In this survey only fifth of boys and a quarter of girls had not tried alcohol by the age of 12 (White, Hill and Letcher, 2000). In nationwide surveys of Japanese adolescents, 60% of junior high school students and 70% of senior high school students reported having drinking experiences in 1996(Takara and Wake, 2003).According to Peltzer and Phaswana (2001) there is also much concern in South Africa about alcohol misuse among young people. Flisher, Parry, Evans, Lombard and Muller (1998) found that 50.2% of males and 31.9% of female secondary school pupils reported alcohol use in the past month.

Alcohol use not only has a negative impact on the health sector , but also impacts negatively on the family and society in terms of crime and negative effects on economic and social development (Parry, 2000). According to the

South African Health Review (2000) there are many signs that alcohol has a major detrimental effect on health in South Africa. In a study done by Ouellette, Gerrard, Gibbons and Reis-Bergan (1999) 83% of adolescents who reported drinking, said that they had experienced at least one alcohol-related problem in the past twelve months. These include hangovers, getting into arguments, behaving in ways they regretted and being unable to remember parts of the evening. Of greater concern however, are the alcohol-related motor vehicle accidents among adolescents. Eaton et al. (2004) also expressed concern around the negative outcomes associated with adolescent alcohol use, specifically the risk of accidental death largely resulting from motor vehicle crashes. This is emphasized by the SAHR (2000), which showed that almost 50% of the victims of homicide and fatal traffic collision have raised blood alcohol levels. Homicide, suicide, sexually transmitted infection, teenage pregnancy, juvenile delinquency, other criminal behaviour and impaired physical, social and mental development, are some of the negative outcomes associated with adolescent alcohol use (Windle, Shope and Burkstein, 1996; and Foster, Vaughan, Foster and Califano, 2003).

According to (Twisk, 1997), long-term smoking behaviour and long-term alcohol consumption contribute to cardiovascular diseases., A report from the study concerning causes of death done by the Department of Kinesiology and Health at Georgia State University, United States 1994 reported that tobacco use, lack of exercise/ poor diet and alcohol consumption participated a lot in causing death (Health and Smith 1994).

2.2.3 Drug use

Drugs use among young people is a widespread problem with serious health and social consequences and it is a matter of continuing public concern (Gil, Wagner and Tubman, 2004; Ellickson et al., 2004). According to the WHO

(1998) illicit drug use among adolescents could be a reflection of youthful exploration at risk taking. Bonomo (2003) however argued that although drug use may be a manifestation of experimentation in adolescents development, it still has serious implications threatening their current and future well-being. Numerous researchers have established that initiating drug use at an early age increases the risk of experiencing problems with drug use by late adolescence and young adulthood (De Wit, Hance, Offord and Ogborn, 2000; Grant and Dawson, 1998; Gil et al., 2004). Ellickson et al. (2004) also suggest that initiation of drug use before age 15 significantly increase the risk for later heavy drug use as well as dependence or abuse of alcohol and other illicit drugs.

Data from the 2001 Monitoring the Future Study found that large numbers of high school students reported illicit drug use (41.4%) during the past years (Johnston, O'Malley and Bachman, 2002b). Madu and Matla (2003) found that the prevalence of drug use in their sample of high school students in the Northern Province of South Africa, being 12.0% less than that of their counterparts in the United States of America. Flisher et al. (1998) however found a prevalence of drug use of 20.4% among adolescents in the Western Cape province in South Africa. The difference in the above mentioned studies could be accounted to that fact the first authors' study took place in the Northern Province that is predominantly rural.

According to the World Drug Report by the United Nations (2003), the rapid social and cultural changes which developing countries are experiencing have created a breeding ground for the increased use of drugs. It becomes evident that the young generation in developing countries makes up a market potential that may ensure profits at a time when consumption in the developed world is levelling out (Ellickson et al. 2004). This has a negative impact on the

developing country's youth with regard to physical activity and general health. A recent study by Elder, Leaver-Dunn, Wang, Nagy, & Green (2000) found that adolescents who participate in organized group activities are less likely to smoke, drink, and use marijuana compared to non-participating peers. Page, Hammermeister, Scanlan, and Gilbert (1998) also found that adolescents who participate on a number of athletic activities are significantly less likely to use cigarettes, marijuana, cocaine, and other illegal drugs. Owing to this fact, the growth of drug market in the developing countries, therefore, exerts detrimental effects to the youth.

Numerous studies have interpreted that certain risks might be more important for girls, such as negative self-image or self-esteem, weight concerns, physical and sexual abuse, early onset of puberty, higher levels of anxiety, depression and boyfriend's drug abuse (Crump, Lillie-Blanton and Antony, 1997; Sarigian et al. 1999; Tschann, Adler, Irwin, Millstein, Turner and Kegeless, 1994).

2.2.4 Sexual risk behaviours

Sexual behaviour is another important area in which adolescents are risking their future health trajectories. Risk factors in the area of sexual and reproductive health can affect well-being in a number of ways. Unprotected sexual intercourse places adolescents at risk for human immunodeficiency virus (HIV) infection, other sexually transmitted diseases (STDs) and unintended pregnancy. Nahom, Wells, Gillmore, Hoppe, Morrison, Archibald, Murowchick et al, and Graham (2001) stated that the prevalence of sexual activity, pregnancy and STDs among US adolescents has caused much alarm. According to the WHO Report (2002) the prevalence of different sexual behaviours and characteristics vary greatly between regions. One million adolescent females become pregnant, and 3 million new cases of sexually

transmitted disease (STDs) occur each year in persons less than 20 years in the United States (Santelli, Kaiser, Hirsch, Radosh, Simkin and Middlestadt, 2004). In South Africa, 35% of women below the age of 20 years have been pregnant or have a child (Jewkes et al 2001). These authors and others (O'Donnel, Myint, O'Donnel and Stueve, 2003) highlighted the fact that a critical risk factor for both adolescent pregnancy and STDs is the early age at the initiation of sexual intercourse which has been associated with sexual risk behaviours including multiple sex partners and the failure to use contraceptive methods that protect against both pregnancy and STDs. Several researchers described outcomes associated with adolescent sexual behaviour ranging from "a public concern'' to a "near epidemic" (Nahom et al., 2001; Stevens, 1996; Beck and Davis, 1987).

Studies worldwide suggest that adolescents initiate sexual activity early and that alcohol and drug use is associated with it. Among primary school students, mostly aged 12 and 13 years old, in a study done in the USA, more than 13% of the students ever had sexual intercourse. In a study done in KwaZul-Natal, South Africa, 30% of those reported having a boyfriend /girlfriend was sexually active (Taylor, Dlamini, Kagoro, Jinabhai and de Vries, 2003). Of further concern is the fact that condom is rarely used at sexual initiation (Jewkes et al., 2001; Eaton et al., 2004). It is thus clear that adolescents put themselves at risk of HIV infection through unprotected sex. In the USA, the Centres of Disease Control and Prevention stated that 1 in 5 AIDS cases is diagnosed in the 20-29 years old age group and that most of these were likely to have resulted from HIV infections acquired up to 10 years earlier (CDC, 2000). These authors all stressed the importance to understand the behaviours that place youth at risk of HIV/AIDS.

2.2.5 Physical inactivity

Not only is physical inactivity a major public health concern worldwide, but the public health burden of inactivity is also substantial (Marcus, King, Clarke, Pinto and Bock, 1996; Colditz, 1999). The role of physical inactivity as an independent lifestyle risk factor for the development of cardiovascular disease, cancer, diabetes mellitus, obesity, depression and anxiety has been the subject of debate for a long time (Van Mechelen, 1997; Potvin, Gauvin and Nguyen, 1997). Physical inactivity can lead to conditions such as heart disease, hypertension, diabetes mellitus, osteoporosis, obesity and depression. The importance of physical activity in reducing morbidity and mortality from chronic disease and conditions has been well established (Prat, Macera, Wang, 2000; Shepherd and Shek, 1998; Dunn, Marcus, Kampert, Garcia, Kohl and Blair, 1997; Martinson, O'Connor and Pronk, 2001). According to Martinson et al. (2001) physical inactivity is a predictor of subsequent disability in midlife and older populations. The WHO Health Report (2002) indicated that physical inactivity was estimated to cause 1.9 million deaths and 19 million disability-adjusted life years [DALYs] globally. The report further stated that physical inactivity is also estimated to contribute about 10-16% of cases of breast-, colon- and rectal cancer and diabetes mellitus globally.

Physical inactivity in youth is associated with other health-compromising behaviours including cigarette smoking, lower fruit and vegetable consumption, and more hours watching television (O'Loughlin, Paradis, Kishchuk, Barnett and Renaud, 1999). Heath, Pratt and Warren (1994) also stated that during adolescence, many risk factors like overweight, increased levels of blood lipids and cholesterol, increased anxiety and depression are linked to physical inactivity. Physical activity among adolescents is consistently related to higher levels of self-esteem and lower levels of anxiety, stress and high-risk health behaviours. Overweight during adolescence has

been found to be a more powerful predictor of increased mortality from all causes than obesity that begins in adulthood (Rich, 1999). The findings of a study on elementary schoolchildren in multi-ethnic, low income, inner-city neighborhoods in Montreal, Canada (O'Loughlin et al., 1999) suggested that solutions should be found to address the high levels of childhood physical inactivity.

2.3 PHYSICAL ACTIVITY AS AN INTERVENTION TO AFFECT RISK TAKING BEHAVIOUR IN YOUTH

Physical activity is one of the cornerstones of a healthy lifestyle (Frantz, 2005). Evidence suggests that people who are active when they are young are more likely to become active in later life (Raitakara et al., in Corbin, & Pangrazi, 1994). Several researchers have demonstrated that virtually all individuals can benefit from regular physical activity, whether they participate in vigorous exercise or some type of moderate-health–enhancing physical activity (WHO, 2002). Even among frail and very old adults, mobility and functioning can be improved through physical activity, (New York State Office for Aging, 2004).

2.3.1 Socio-economic Status

There is a significant relationship existing between family income and youth health. A Study done by Public Health Agency of Canada, 2004b revealed that, students whose families were relatively affluent or very affluent tended to report that they were healthy and satisfied with their lives which emphasize the link between socio-economic factors, self-reported health and life satisfaction among youth.

2.3.2 The School Experience

A study made to Canadian adolescents who spent a lot of their life in schools interacting with teachers and peers revealed that, students who had positive experiences at school were less likely to be involved in health risk behaviour such as smoking, drinking, and using marijuana. Therefore, if physical activity were encouraged at schools, students would be less likely to participate in health risk behaviours and instead would take time in involving in physical activities that would enhance their health and improve their ability while studying (Public Health Agency of Canada, 2004b). (Public Health Agency of Canada, 2004b). Allensworth et al., (1997) found that, children who are more physically active showed higher academic performance, self-concept and mental health.

2.3.3 Positive Peer influence

World Health Organization (2002b) reported that, regular physical activity provides young people with important physical, mental and social health benefits. Play, games and other physical activities give young people opportunities for self-expression, building self-confidence, feelings of achievement, social interaction and integration. These positive effects also help counteract the risks and harm caused by the demanding, competitive, stressful and sedentary way of life that is so common in young people's lives of today. Involvement in properly guided physical activity and sports can also foster the adoption of other healthy behaviour including avoidance of tobacco, alcohol and drug use and violent behaviour (WHO, 2002).

2.4 ROLE OF PHYSIOTHERAPIST IN HEALTH PROMOTION

Literature underscores that adolescents are vulnerable to an array of risks that may compromise their present and future health and development (Phillips, 2001). The motivation to engage in risk behaviour may stem from different reasons for adolescents. It is therefore important for researchers to examine these risk behaviours among adolescents in general. By better understanding the incidence of risk behaviour, more effective multi-dimensional prevention efforts may be developed.

Health promotion has become an increasingly important part of health and medical care (Centre for Disease Control and Prevention [CDC], 1997). Health professionals generally focus primarily on change processes that affect general well-being. The role of physiotherapists should be broader than provision of client's treatments in the hospital departments. Physiotherapists like any other health professionals are involved in teaching, advocating and administering health change programmes at the individual, organizational and community level (Huddleston, Mertesdorf & Araki, 2002).

Physiotherapists are best placed to play a vital role in health promotion, by accepting the challenge identified in the Ottawa Charter in 1986, beyond the physiotherapist/client partnership and, in turn, to address issues pertinent to groups, communities and societies (Copeland, 1999). Kennon, 1996 reported that Physiotherapists can assist the public by promoting physical activity and describing the type, quantity and quality of activity that confers health benefits. They recognize the physical and psychological benefits of physical activity and are well versed in the art of motivating people (Carter & O' Driscoll, 2000).

Physiotherapists are experts in exercise prescription for the fit, healthy person who requires specific fitness and injury-prevention advice, and the injured or

disabled person who has specific needs and considerations (Australian Physiotherapy Association, 2002). Physiotherapists with their expertise in body mechanics, anatomy and physiology can play a vital role in helping people develop appropriate and safe exercise programmes (Wilson, 2002). Physiotherapists consider areas such as lifestyle, work and leisure and help clients to self-manage their conditions (Frantz, 2005). Therefore, physiotherapists become crucial team members in promoting well being of the patients and support each other in providing measurements of health improvement, which are valid and objective (Carter & O'Driscoll, 2000).

CHAPTER THREE

METHODOLOGY

3.1 INTRODUCTION

Methodology will be discussed under the following sub-titles; research setting, research design, inclusion criteria, sampling/subjects, data collection instrument, pilot study, data analysis and ethical considerations.

3.2 RESEARCH SETTING

The study was carried out in selected high schools within the United Republic of Tanzania, particularly in Mtwara Region (see appendix L). Tanzania is one of the three East-African countries. It is bordered by Kenya and Uganda in the north, Indian Ocean in the East, Democratic Republic of Congo in the north-West, Malawi in Western part, Zambia and Mozambique in the southern part. Tanzania was formed by a union of two countries, Tanganyika and Zanzibar isles in 1964. According to the National Census of 2002, Tanzania has a population of 34.443,603 million people. Of this 16, 829,861million are male and 17, 613, 742 million are female. The community includes people ranging from low to high socio-economic groups. Tanzania is divided into twenty-six (26) administrative regions, of which twenty-one are in mainland and five (5) in the Isles (Tanzania Government, 2002). Mtwara region is situated in the southern part and it is comprised of three high schools. Two schools are the government schools while one is a private school. The study was conducted

from January to February 2006. This period was appropriate because the schools were in session.

3.3 RESEARCH DESIGN

The research design adopted in this study is primarily cross-sectional descriptive quantitative research. The reason why the study uses a quantitative paradigm is largely because the researcher is interested in quantifying relationships between variables. A descriptive study is therefore best placed to establish associations between variables under investigation in this study. According to Hopkins and Glass (1978) descriptive studies need hundreds of subjects to give acceptable confidence intervals (or to ensure statistical significance) for small effects. This implies that the sample size should be large enough for the researcher to be sure of detecting the smallest worthwhile effect or relationship between the variables. A quantitative approach was also chosen over a qualitative approach as it best suits a population survey addressing the scientific study of human behaviour (Mashego, 2003). Furthermore, Mouton (2001) recommends descriptive quantitative research design as the best design for social scientists interested in collecting original data for describing a population too large to observe directly.

3.4 STUDY POPULATION

The study population comprised of registered full time high school students from three high schools in the Mtwara region Tanzania in the 2006/2007 academic year. At the beginning of the year 2006/2007 academic year, 875 students were enrolled in these three high schools.

3.5 INCLUSION CRITERIA

The sample consisted of all students meeting the following eligibility criteria:

- Between ages 15-24
- Must be a registered student in one of the three identified high schools in Mtwara region
- Must be willing to volunteer their time for the study
- Those whose parents gave consent (all those under 18 years old).

3.6 SAMPLING

The actual sample for this study was determined using the following three factors (i) the estimated prevalence of the health risk behaviours (estimated at roughly 20%) (ii) the desired level of confidence (95%)and (iii) the acceptable margin of error (5%). Using this formula it was determined that the sample size should be approximately 245. This would be approximately 28% of the study population. A total of two hundred high school students from the three selected schools in Mtwara region formed the study sample for this study i.e. approximately 23% of the total population. The sample comprised of both form five and six students and was grouped according to their classes. That is, students in form five were in one stratum and those in form six were in the second stratum. According to the education system in Tanzania, Secondary education is a six years program. The first four-years cycle is called (Ordinary level secondary school).It is an extension of seven years of primary education. Ordinary levels secondary school is consisted of classes called ***forms*** to include ***form one to form four***. The second two-years studying cycle consist of two classes called ***form five*** and ***form six.*** This is a high school level (A-level). A stratified random sampling technique was used to select the sample which ranged between 25-75 students depending on the number of students in each school. According to De Vos (2002), this type of sampling is suitable for

heterogeneous population because it ensures the percentage of inclusion of small groups.

3.7 INSTRUMENT

A reliable and validated questionnaire which was used by the World Health Organization to assess the level of physical activity and health risk behaviours in Tanzania in 2004 titled: "Global school-based student health survey (GSHS) was adapted and was used. The survey was about assessing students' health and the things that student's do that may affect their health. The Original questionnaire was adjusted to fit with the objectives of this study by excluding questions which seemed not to fit with the study and remained with the once which fitted to the study.

3.8 PILOT STUDY

A pilot study was carried out to clarify understanding of the questionnaire and to determine how long the questionnaire would take to complete. Ten (10) students, who were not included in the main study, were conveniently selected and used in the pilot study. The pilot study revealed that the students took to long (1 hour) to complete the questionnaire in comparison to the expected completion time (10 minutes). It also emerged that some of the students had difficulty with understanding question 7 in section B and questions 22 and 36 section of C. This was attributed to the fact that English is not the first language of the respondents. As a result of this, professional translators were used to translate the questions into Kiswahili which is the language used by many people in Tanzania, so as to improve their understanding of the questions in the actual questionnaire used in data collection (appendix H). In order to ensure the intent of the content to remain similar, another experienced translator was used to translate the instrument from Kiswahili version back to English and the

meaning corresponded to that in the original instrument (appendix G). A second pilot study was done to compare the participants' understanding of the adapted, translated and validated questionnaire. The result revealed that participants had quick understanding and approximately took fewer minutes (15 minutes) than it was before (1hour) to complete the questionnaire. In order to give the freedom of choice, the researcher then presented both versions (English & Kiswahili) to the studied participants.

3.9 DATA COLLECTION INSTRUMENT

Following the observations from the pilot study, the researcher revised the questionnaire into a structured self-administered tool comprising of closed questions. The questionnaire had 36 questions which were divided into three sections namely section "A," which had three questions that sought to denote the demographic data of the participants. Section "B" had six questions (questions number 4 to 9) which aimed at measuring the participants' levels of physical activities and Section "C" had twenty seven questions (questions number 10 to 36) which determined the participants' health risk behaviours.

3.10 DATA COLLECTION PROCEDURE

Permission to carry out the research was obtained from the University of the Western Cape, the Ministry of Education, asking permission for access to the schools and finally permission from the heads of the institutions to authorize the researcher to conduct the research (see appendix A and D respectively). After getting written permission from two schools (appendices Ma & Mb) and a verbal permission from one school, the researcher embarked on identifying the sample and setting dates for the completion of the questionnaire. This was done with the help of the teachers in the various schools.

On the appropriate dates, the researcher sought the participants' consent form to be involved in the research and explained the purpose of the research. The participants were assured of confidentiality and anonymity of their information. The researcher also explained to the participants that they had the right to withdraw from the study at any time (see appendix G front page) and assured them that the feedback of the study will be readily available to those who desired it. The researcher then distributed the questionnaires to the participants with a clear explanation of what was expected. The participants were then given time to complete the questionnaire. The researcher remained in the vicinity to answer or explain any questions that arose from the exercise. When the questionnaires were duly completed, the researcher collected all of them in readiness for data entry.

3.11 DATA ANALYSIS

The data was entered into Excel and the "double data entry" method was used to eliminate data entry errors. In this method, data is entered twice with each entry on separate spreadsheet in the Microsoft Excel computer program after which the two spreadsheets are compared for similarities and differences. This study used the method to eliminate any non-matching observations in the two spreadsheets. Where there was an error, the error was corrected immediately through verification from the questionnaire. The Statistical Package for Social Science (SPSS) version 13 and SAS version 9.1 were then used to analyze the data. The questionnaire was coded to suit this package prior to data collection. Physical activities were grouped into sedentary, light, moderate and vigorous activity. Sedentary activity included sleeping, sitting for a long time watching television, plaiting hair and study related tasks. Light activities included household chores and walking for at least 5 minutes. Moderate activities

included activities such as gardening and pushing things like trolleys, cats etc, Vigorous activities included sporting activities like fast walking, running, biking, dancing, ball games like playing football or netball, rope jumping and swimming. To be classified as physically active, the participant needed to be involved in moderate to vigorous activity for 30 minutes per day or more for at least seven days per week. Therefore, a minimum of 3.5 hours per week of moderate to vigorous activity could be classified as being active. Basic descriptive statistical measures such as mean, median and standard deviation were used to describe the sample. The primary method of analysis for the research question about the relationship between the physical activity and health risk behaviours was done using correlations. The Kruskal-Wallis test was used to compare the means between various variables used in the questionnaire.

In view of the fact that the variables determining activity and risk behaviour are nominal in nature, Spearman correlations were used as the measure of correlation to calculate the strength of the relationship between variables. A level of significance of 0.05 was used. The descriptive data were presented using frequency tables, pie charts and bar graphs. The inferential statistics in a form of cross-tabulation was done to determine the association between variables (such as parental and schools, health risk behaviours and person's activity etc) and they were reported in terms of chi-square and p-values.

3.12 ETHICAL CONSIDERATIONS

Permission to carry out the study was obtained from the Senate Higher Degree Committee at the University of the Western Cape before conducting the study (see appendix A). The explanation concerning the purpose of the study was provided to the Ministries of Education and Health and to the principals of the

three schools that participated in the study (appendixes B, C and E respectively). Permission for the students to participate in the study was obtained from both the authorities of the respective schools and the students' parents (see appendix Ma and Mb). The nature, aim and importance of the study to the students were clearly explained to the authorities and students. Their consent was sought before their data collection. A consent form (appendix I) was attached to the questionnaire and was signed by the participants under 18 years old.

Participation was voluntary and all the information collected was confidential and anonymity was ensured. The right to withdraw from the study at any time was guaranteed to every participant. Feedback of the results was promised to be given to the various stakeholders. Finally, the data were collected from only those whose informed consent was obtained and who were ready to voluntarily participate in the study.

CHAPTER FOUR

RESULTS

4.1 INTRODUCTION

In this chapter, both descriptive and inferential statistic results of the study are presented. The results are interpreted and described with the aid of graphs and tables. The demographic characteristics of the study population are described. The relationship between demographic characteristics, participants' level of participation in physical activity and health risk behaviours are described.

4.2 DEMOGRAPHIC CHARACTERISTICS

Two hundred (200) questionnaires were distributed to high school students of three secondary schools of Mtwara region, Tanzania. The questionnaires were completed and returned over a period of six working days giving a response rate of hundred percent (100%). Table 4.1 describes the demographic characteristics of the participants.

Table 4.1 Students' demographic characteristics (N=200).

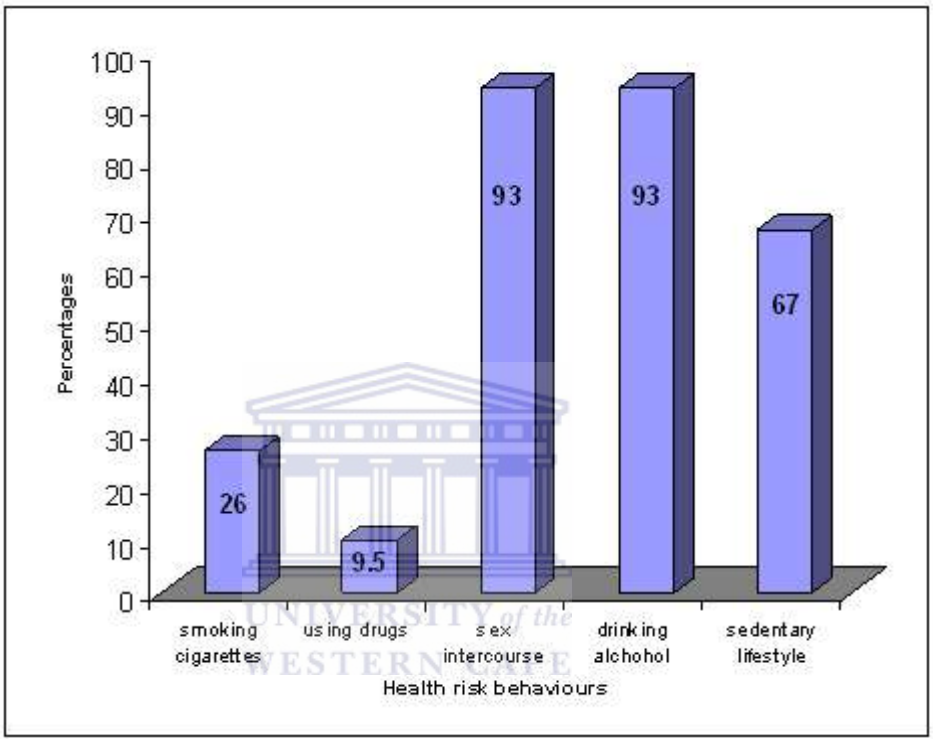
Variable measured	Characteristics	Frequency	Percent	Mean age	Standard deviation
Age	17	1	0.5		
	18	14	7.0		
	19	36	18.0		
	20	63	31.5	20.47	1.493
	21	37	18.5		
	22	32	16.0		
	23	13	6.5		
	24	2	1.0		
	26	2	1.0		
Gender	Male	104	52.0		
	Female	96	48.0	1.48	0.501
Class	Form five	87	43.5		
	Form six	113	56.5	1.57	0.497

The sample consisted of 200 participants of whom, 52% (n=104) were males and 48% (n=96) were females. The participants' age ranged from 17 years to 26 years with a mean age of 20.47 years and a standard deviation of 1.493. Most of the participants 56.5 % (n=113) were in form six, and 43% (n=87) of them were in form five.

4.3 HEALTH RISK BEHAVIOURS AMONG HIGH SCHOOL STUDENTS IN MTWARA REGION, TANZANIA.

The study investigated whether the participants were found to engage in health risk behaviours such as smoking cigarettes, drinking alcohol, using drugs, engaging in unprotected sex and living a sedentary lifestyle. Figure 4.1 highlights the distribution of participants' participation in health risk behaviours.

Figure 4.1 Health risk behaviours among high school students in Mtwara region, Tanzania (N=200).



Of the total number of participants, 26% involved themselves in smoking cigarettes, 9.5% used drugs such as bhangi/cocaine, 93% practiced sexual intercourse, 93% consumed alcohol and 67% lived sedentary lifestyles.

4.3.1 Cigarettes use

Of the 200 participants, 26% (n=52) responded to participate in smoking cigarettes. Table 4.2 below illustrates all the responses identified among the smoking participants.

Table 4.2 Starting age and gender involvement in smoking

Gender	Age	Yes	Percent
Males (n=34)	10	1	17 %
	11	1	
	12	3	
	13	3	
	14	4	
	15	6	
	16	3	
	17	10	
	18	1	
	19	1	
	21	1	
Females (n=18)	10	1	9 %
	11	0	
	12	1	
	13	0	
	14	4	
	15	4	
	16	1	
	17	4	
	18	3	
	19	0	
	21	0	
Total		**52**	**26 %**

Of those who smoked (n=52), 34 participants were males and 18 were females. Majority of the participants who smoked started smoking cigarettes at the age of 17 years

Table 4.3 Age, days and cigarettes smoked in a 30-days period.

Variable measured	Mean	Std. Deviation	Range	Minimum	Maximum
Age at first tried cigarette	15.27	2.285	11	10	21
Days smoked cigarettes	16.40	9.728	28	2	30
Cigarettes smoked per day	6.45	4.449	14	1	15

Table 4.3 summarizes the mean age at which participants started smoking, mean number of days they smoked in the last 30 days and the mean number of cigarettes smoked during the 30-day period.

The youngest age that the participants started smoking cigarettes was 10 years, the mean age was 15.27 years and the eldest age was 21 years, with standard deviation of 2.285 years. Within a period of 30 days which were asked in the questionnaires, the participants were found to smoke on a minimum of two days, with an average of 16.40 days and a maximum of 30 days. Some participants were found to smoke cigarettes daily with the minimum of one cigarette and a maximum of 15 cigarettes per day. About 6.5 cigarettes were the mean cigarettes smoked per smoker.

4.3.2 Use of drugs.

Table 4.4 below shows how participants involved themselves in using drugs such as bhangi and cocaine. Within the overall sample, the issue of participants using drugs was established though not in a big percentage.

Table 4.4 Use of drugs (N= 200).

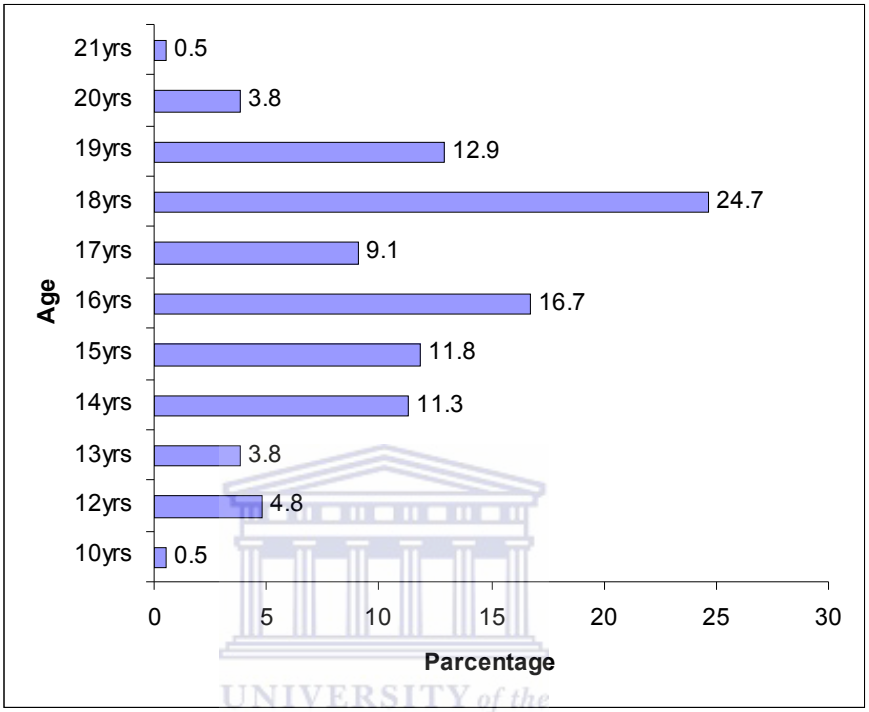
Variable measured	response	frequency	percent
Time used in using drugs.	0 time	181	90.5
	1 or 2 times	14	7
	3 to 9 times	3	1.5
	10 or more times	2	1
Total		**200**	**100**

One percent (2 participants) was found to use drugs for more than ten times per day. Three participants (1.5%) were found to use drugs for approximately "3 to 9 times" and only 14 participants (7%) were involved in using drugs for "one to two" times a day. The majority of the participants (90.5 %) did not use drugs.

4.3.3 Sexually active

In this study it was found that 93% (n=186) of the participants engaged in sexual intercourse. The earliest age that the respondents first started sexual intercourse was 10 (0.5%) years old. The majority of them reported having first sexual intercourse at the age of 18 (24.7%) years. Figure 4.2 below illustrates age at first sexual intercourse.

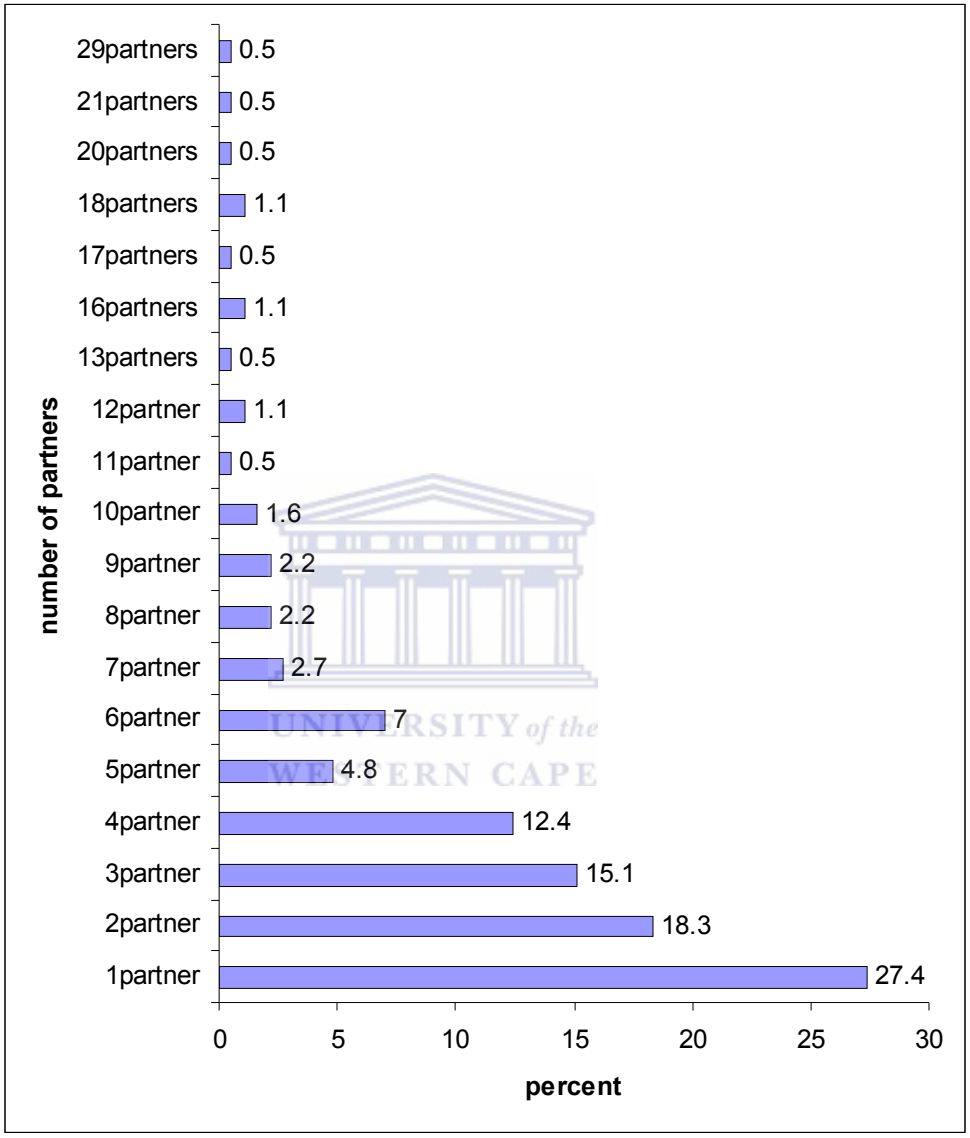
Figure 4.2 Age at first sexual intercourse (N= 186).



4.3.3.1 Partners involved in sexual intercourse.

Though the study revealed some participants to have one sexual partner since they started sexual practices, others indicated to have more than one sexual partner. The highest number of partners for one individual was recorded as 29 partners. Figure 4.3 below shows the findings.

Figure 4.3 Partners involved in sexual intercourse (N=186).

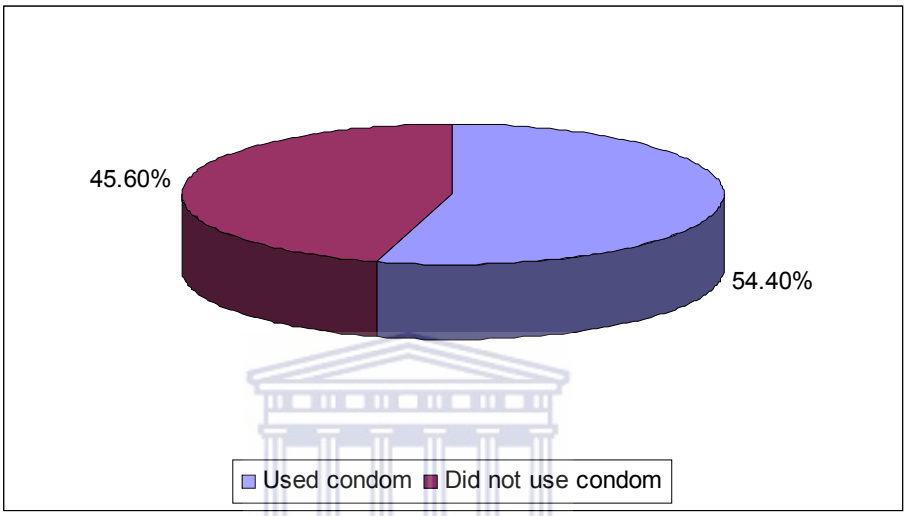


4.3.3.2 Use of Condom during sexual intercourse

The study also showed that only 109, which is 54.5% of the participants used condoms as a preventive/protective measure against sexually transmitted

diseases when engaging in sexual intercourse and the rest did not use condoms. Figure 4.4 below demonstrates the findings.

Figure 4.4 Use of condom during sexual intercourse (N=200)



4.3.4 Drinking alcohol

The responses of the participants illustrate that the consumption of alcohol is a prevalent habit. Table 4.5 shows the number of drinks containing alcohol taken by each participant per a day in 30 days as asked in the questionnaire. From a sample of 200, only seventy one participants responded to the question on alcohol consumption and 129 (64.5%) did not answer the question asked.

Table 4.5 Consumption of alcoholic drinks in the 30 days (N= 200).

Drinks taken per day	Students	Percent
2	25	12.5
3	20	10.0
4	17	8.5
5	3	1.5
6	4	2.0
7	2	1.0
Total	**71**	**35.5**
Missing value	129	64.5
Total	**200**	**100.0**

The number of drinks ranged from 2 to 7. When participants were asked: "With whom do you usually drink alcohol", almost every age group had something to say concerning partaking in drinking alcohol habit. The following table (Table 4.6) below illustrates the findings.

Table 4.6 Participants' companionship in drinking alcohol (N=200)

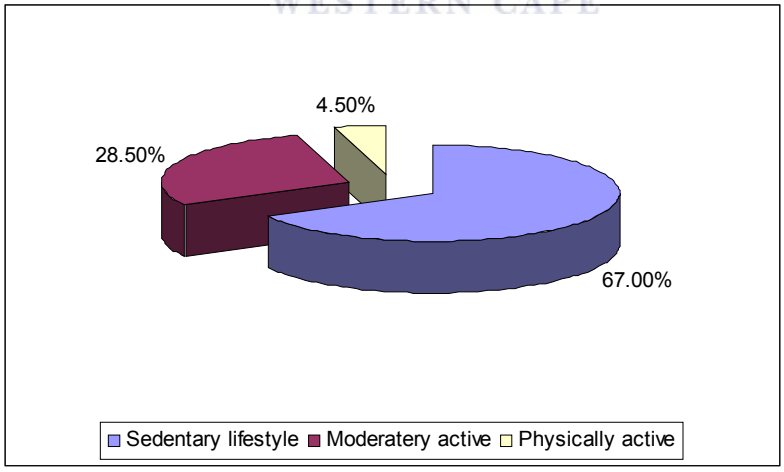
		With whom do you usually drink alcohol?					Total
		I do not drink	with my friends	with my family	with persons I have just met	I usually drink alone	
Age	17	1	0	0	0	0	1
	18	9	4	0	1	0	14
	19	19	15	0	1	1	36
	20	40	17	4	0	2	63
	21	24	12	0	0	1	37
	22	21	8	1	2	2	32
	23	4	6	1	1	1	13
	24	1	1	0	0	0	2
	26	2	0	0	0	0	2
	Total	**121**	**63**	**6**	**5**	**5**	**200**
Gender	Male	58	37	2	3	4	104
	Female	63	26	4	2	1	96
	Total	**121**	**63**	**6**	**5**	**5**	**200**

The majority of the participants used drinks containing alcohol with their friends (n=63), fewer with their parents or guardians and others with just a person they met in a place. Further analysis of the question was done to understand the distribution of gender in participating in drinking alcohols as presented in table 4.6 above. It is interesting to reveal that, there was no big difference in drinking participation between males and females. Of 200 participants responded to the question, 104 participants were males and 96 participants were females.

4.3.5 Participation in physical activity

Figure 4.5 below illustrates the sample's level of physical activity. It is evident from the figure that the majority of the participants 67.0% (n=134) were physically inactive meaning that they were living a sedentary lifestyle and only 4.5% could be classified as being physically active.

Figure 4.5 Participation in physical activity (N=200).



4.4 FACTORS INFLUENCING PARTICIPATION IN HEALTH RISK BEHAVIOURS

4.4.1 Family

According to the responding participants, it was noted that most young people who had good relationships with their parents, based on effective communication, trust and understanding, were far more likely to be well adjusted in all aspects of their life. While those who did not have good relationship at home were more likely to engage in health-risk behaviour such as, smoking cigarettes, drinking alcohol, engaging in sexual intercourse, drug use and sometimes experience adjustment problems at school. Table 4.7 below indicates the parents' involvement in health risk behaviours.

Table 4.7 Parents involvement in health risk behaviours (N=200)

Which of your parents or guardians				
Drink Alcohol			Smoke cigarettes	
Response	**Freq**	**%**	**Freq**	**%**
Neither	78	39.0	120	60.0
My father	41	20.5	54	27.0
My mother	15	7.5	2	1.0
Both	59	29.5	10	5.0
I don't know	7	3.5	14	7.0
Total	**200**	**100**	**200**	**100**

The results show that 29.5% (n=59) of the participants indicated that both of their parents drank alcohol, while 5% (n=10) of the participants indicted that both of their parents smoked cigarettes. The results also revealed that 120 which is 60% of the participants came from families where neither of the

parents/guardians smoked cigarettes during the last 30 days asked in the questionnaire, those 54 participants which is 27% came from the family that had the father or male guardians who used any form of tobacco and the family that the only mother or female guardian was smoking cigarettes had only two participants who were smoking cigarettes. The study had fourteen participants who did not know whether their parents/guardians were smokers of cigarette or not.

The link between parental involvements in smoking cigarettes behaviour and children smoking habit was conducted and the results were as table 4.8 below indicates:

Table 4.8 Parental habits and children involvement in smoking behaviour (N=186)

Variable measured	Response	Parents Smoking		
		Yes	No	Total
	Yes	23	23	46
	No	43	97	140
Total		**66**	**120**	**186**

Chi-square=5.625; df = 1; p= 0.018

In totality, 186 were the number of participants who responded to the question asked as whether they had ever smoked cigarettes or not. Out of them, a hundred and forty (n=140) participants responded not to have ever been engaged themselves in smoking cigarettes had ninety-seven (n= 97) parents who also did not smoke cigarettes and 43 parents whom did smoke cigarettes.

Forty six (n=46) participants who responded to participate in smoking cigarettes had (n=23) parents/ guardians who smoked cigarettes and (n=23) parents/guardians who did not smoke cigarettes. When an association test was done to measure the relationship between the parent's smoking habit and children's health risk behaviour, demonstrated the significant to be high

(p=0.018). Therefore, this explains that there was a relationship between having parents/guardians smoking and having children smoking.

Table 4.9 below explains the relationship between children who partook drinks containing alcohol and parental involvement in the same habit.

Table 4.9 Parental habits and children involvement in drinking alcohol (N=193).

Variable measured	Response	Parents not Drinking	Parents Drinking	Total
Children taking drinks containing alcohol	I do not drink	62	54	116
	I do drink	16	61	77
Total		**78**	**115**	**193**

Chi-square=20.511; df=1; p=0.000

One hundred and sixteen (n=116) participants who responded not taking drinks containing alcohol had parents (n=54) whom were also taking drinks containing alcohol and 62 parents who were not taking drinks containing alcohol. The study also found that out of 193 respondents, seventy seven (n=77) participants responded to have involved themselves in drinking alcohol. These participants had 61 parents drinking alcohol and sixteen (n=16) parents who did not drink drinks containing alcohol. When a Pearson's Chi-Square test was done to find out the relationship between those parents/guardians drinking alcohol and drinking behaviour of their children, the association between the two variables was found to be highly significant (p=0.000). It also demonstrated a direct relationship between having parents/guardians drinking alcohol and having children possessing drinking habit.

4.4.2 The schools

The study also indicated that the school is another factor that influenced the respondents' involvement in the health risk behaviours. For instance it was noted that where students learnt about health risk behaviours (HRB) at schools, there was less involvement in health risk behaviours. On the other hand the opposite showed an increase in that rate of health risk behaviours (see Table 4.10). The table explains the participants' responses on questions asked as to whether they were taught in any of their classes about the dangers of partaking in the mentioned health risk behaviours.

Table 4.10 Education at schools on HRB

Variable measured	Yes frequency	%	No frequency	%	Total
Smoking cigarettes	74	37.2	125	62.8	199
Drinking alcohol	75	37.5	125	62.5	200
Using drugs	89	44.5	111	55.5	200
Sex infection	125	62.5	75	37.5	200

Chi-square = 1.2451; df = 1; p = 0.2645

On looking for the relationship between smoking behaviour and schools teaching about the dangers of smoking any kind of tobacco, there was no statistical significance (p = 0.2645).

4.5 EDUCATION ABOUT HEALTH RISK BEHAVIOURS

4.5.1 Family

Table 4.11 illustrates how the family in particular (parents or guardians) participated in educating their children as regards harmful effects of taking

health risk behaviours like smoking, drinking alcohol, using drugs and partaking in unprotected sexual intercourse.

Table 4.11 Parents education on the harmful effects of H R B.

Has any one in your family discussed with you the harmful effects of HRB							
Smoking cigarettes		Drinking alcohol		Drug use		Sex & HIV/AIDS infection	
YES	NO	YES	NO	YES	NO	YES	NO
67 (33.5%)	133 (66.5%)	76 (38.0%)	124 (62.0%)	NA	NA	138 (69.0%)	62 (31.0%)

Note: NA=Not Asked (in the questionnaire).
HRB=Health Risk Behaviours (Smoking cigarettes, Drinking alcohol, Drug use and Unprotected Sex Intercourse)

In the study, the majority of the participants 66.5% (n =133) were found not to have had discussion about the harmful effects of smoking cigarettes with their parents/guardians and only 33.5 % (n=67) participants had discussion with the parents or guardians.

The researcher also wanted to know as to whether the parents/guardians did education about the harmful effects of drinking alcohol to their children. The results showed that the majority of the participants (62.0%) did not discuss with their parents/guardians the effects of alcohol consumption. However, 76 (38.0 %) of the participants discussed the harmful effect of drinking alcohol with their parents/guardians in the family. Even though 69% (n=138) of the participants indicated that they got information regarding HIV/AIDS awareness from their families, it is worth noting that a significant 31% (n=62) of the participants did not discuss HIV/AIDS at home with their parents.

4.5.2 Schools

Table 4.12 Schools education on the harmful effects of H R B.

During this school year, were you taught in any of your classes about the dangers of HRB							
Smoking cigarettes		Drinking alcohol		Using drugs such as Bhangi/cocaine		Sex & HIV/AIDS infection	
YES	NO	YES	NO	YES	NO	YES	NO
74 (37.2%)	125 (62.8%)	75 (37.5%)	125 (62.5%)	89 (44.5%)	111 (55.5%)	125 (62.5%)	75 (37.5%)

Even the schools also seem to have fewer participants 37.2% (n = 74) who attended classes where they were taught about the dangers of smoking cigarettes. The majority 62.8% (n=125) of the participants reported not to have classes talking about the dangers of smoking cigarettes in their schools.

The study also revealed that the participants are not taught about the dangers of drinking alcohol in schools and a total of (n= 125) that is 62.5% confirmed this observation. On the other hand 37.5 % (n= 75) of the participants have attended classes where they are taught about the dangers of drinking alcohol.

Concerning use of drugs, the results show that most of the participants 55.5% (n=111) did not have information about the harmful effects of drugs such as bhangi or cocaine on human beings from the schools. Meanwhile, in one school, 44.5% (n=89) of the participants agreed to have fewer classes talking about harmful effects/dangers of using drugs in class. The study reveals that 62.5% (n=125) of the participants pointed out that they had been taught about the dangers of HIV/AIDS infection in school classes and only 37.5 % (n=75) were ignorant of the pandemic.

4.6 BENEFITS OF PHYSICAL ACTIVITY

Researcher was interested to investigate as to whether schools took part in teaching students about the benefit of physical activity. The following table (4.13) below demonstrates the responses of the participants following the

question (question 6 in the questionnaire) asked about the benefits of physical activity.

Table 4.13 Classes about the benefit of physical activity (N=200).

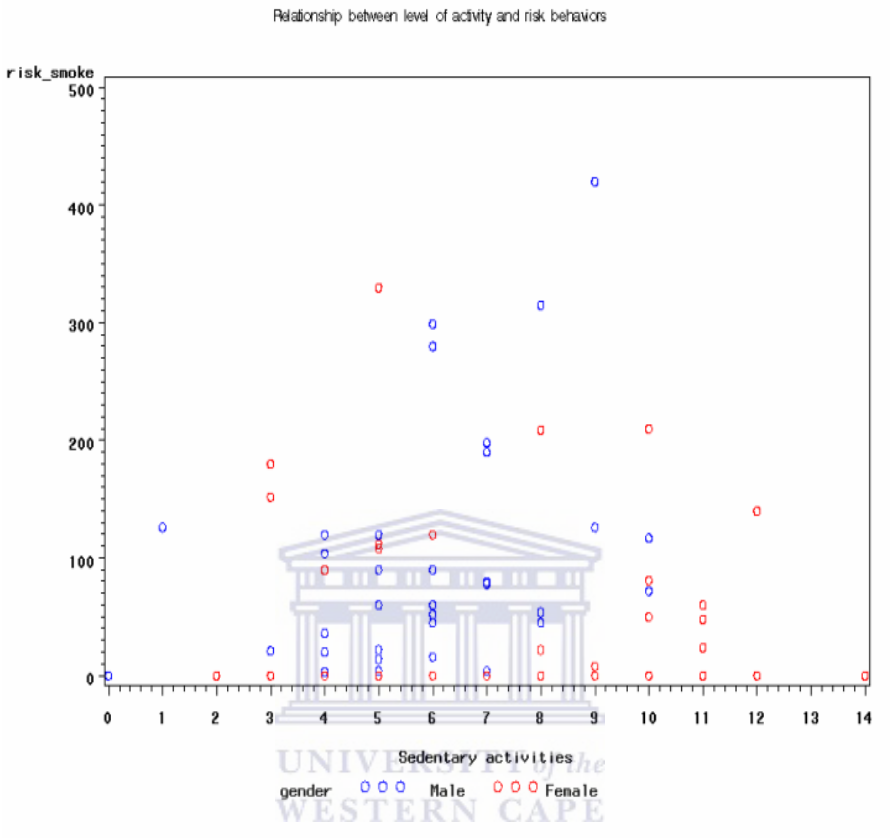
Variable measured	Response	Frequency	percent
Were you taught any benefits of physical activity?	No	144	72
	Yes	14	7
	I don't know	42	21
	Total	**200**	**100**

The majority of the participants 72 % (n=144) reported not to have been taught any benefits of physical activities in any of their classes in their schools, 21% (n=42) participants were not sure about the answers and only 7% (n=14) reported to have classes in their schools.

4.7 RELATIONSHIP BETWEEN PHYSICAL ACTIVITY AND HEALTH RISK BEHAVIOURS

The scatter plot (figure 4.6) below illustrates the relationship between gender and participation in physical activity and health risk behaviours among the studied population in Mtwara region Tanzania.

Figure 4.6 Relationship between smoking and sedentary activity.



The figure 4.6 thus explains that as the habit of cigarettes smoking increases, the higher the degree of inactivity was experienced by the participants. Males were highly affected than females. When the Spearman Correlation test was conducted to find out the strength of relationships between males being inactive and the studied health risk behaviours, it was found that among males, smoking cigarettes and drinking alcohol had no relationships with sedentary activity by having correlation coefficient 0.0011 and 0.0015 respectively. But there was a weak positive relationship with risk behaviour using drugs (0.2059) and a strong relationship with sexual intercourse (0.6704). Table 4.14 below presents the findings.

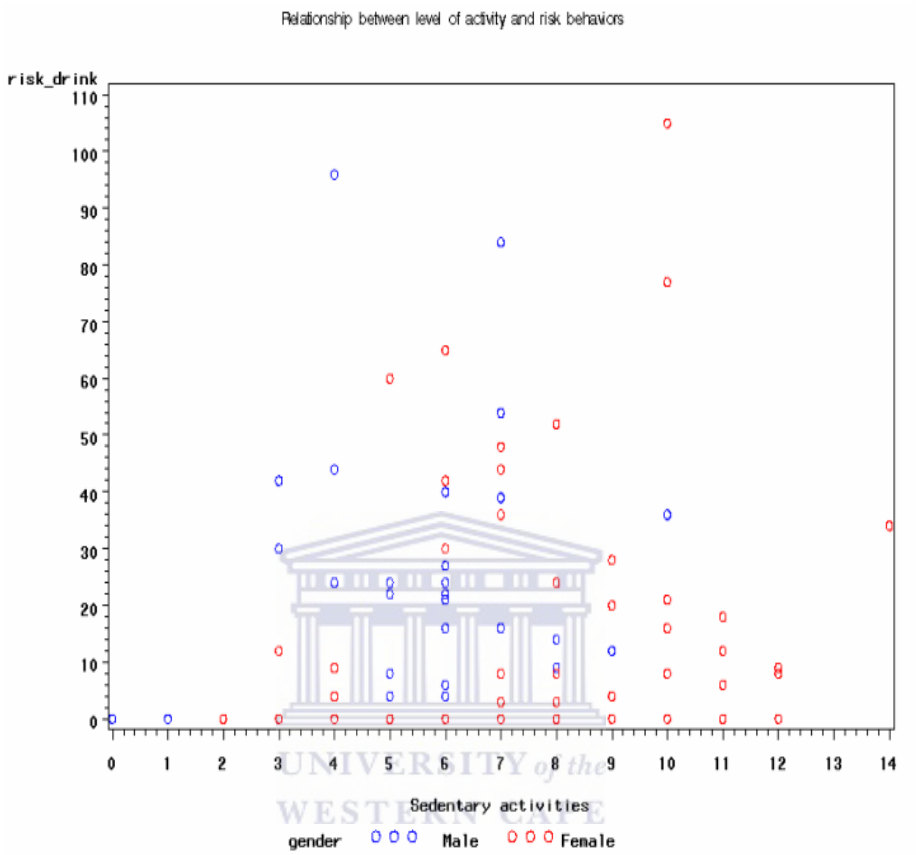
Table 4.14 Relationships between sedentary lifestyle and HRB

Variable measured		Risk behaviours correlation coefficient values			
		Smoking cigarettes	Drinking alcohol	Using drugs	Sexual intercourse
Sedentary activities	Males	0.0011	0.0015	0.2059	0.6704
	Females	0.2429	0.0005	0.3447	0.0399

When females were tested, the study showed that there was no relationship between drinking alcohol and being inactive by (0.0005); but there was a weak positive relationship between sedentary activity and the following health risk behaviours: smoking (0.2429), using drugs (0.3447) and sexual intercourse (0.0399).

Figure 4.7 below presents the scatter diagram showing the relationship between drinking alcohol and sedentary activities. As the level of alcohol intake increased, the level of inactivity also increased. Females were severely affected than boys.

Figure 4.7 Relationship between drinking alcohol and sedentary activity



CHAPTER FIVE

DISCUSSION

5.1 INTRODUCTION

In this chapter the results will be discussed with reference to the aim and objectives of the study comparing it with similar studies. The discussion will be organized to follow the objectives of the study. Finally the limitations and strengths of the study are discussed.

5.2 HEALTH RISK BEHAVIOURS

Literature has indicated a number of lifestyle behaviours which account for most of the mortality, morbidity and social problems in adolescents. These behaviours include excessive tobacco use, physical inactivity, alcohol consumption and other drug use, risky sexual behaviours, and behaviours that result in unintentional and intentional injuries (Muscari, 1999).Health risk behaviour is unintentional or intentional behaviour, is usually established during youth and extended into adulthood, and that contributes to the leading causes of mortality and morbidity (Kann 2000). There is substantial evidence based on the literature that physical inactivity, tobacco use, drinking alcohol, practicing unsafe sex and drug abuse are health risk behaviours that predisposes youth to ill health (Aronow, 2000, Kann et al., 2000 and Thomas, 2001).The results of this current study shows that health risk behaviours as has been aforementioned above are a subject matter to health of the adolescents in Mtwara high schools settings. The study showed a high prevalence of

participation in alcohol consumption (93 %), sexually active (93%) and participation in unsafe sex (53.5%). The mentioned habits are in part play a big role in increasing the incidence of HIV infection in Africa.

Physiotherapists often deal with people who are referred to them with a variety of conditions associated with diseases of lifestyle such as hypertension, cardiovascular diseases and diabetes mellitus, injuries and degeneration of the musculoskeletal systems. From the researcher's perspective there was thus a need to identify the prevalence of health risk behaviours among high school students, with a specific focus on health risk behaviours in high school students in Mtwara region, Tanzania.

5.2.1 Physical inactivity (sedentary lifestyle)

Respondents' level of participation in physical activity was described following the criteria recommended by World Health Organization (WHO, 2003c) for health-related physical activity which says, "for an average adult engaging in at least 30 minutes of the physical activity of moderate intensity every day, or on most days of the week, would be sufficient to gain health benefits". Moreover, those 30 minutes can be accumulated throughout the day in small bouts of activity or exercises.

On applying the above criteria 67.0 % of participants were classified as sedentary; 28.5% of the participants were moderately active and 4.5% of the participants were classified as physically active. Personal and school activities were common among the participants in the current study. However the frequency and the intensity of these activities were very low when compared to what is recommended in order to obtain the health benefits from physical activities. School activities included washing dishes, cleaning the dormitories

and the premises. In some circumstances, students used to do work that were relatively moderate and at certain times, performed vigorous physical activities. Their activities included gardening/cultivating, running, jogging, playing football, basketball, fast walking, rope jumping. Unfortunately, the majority (67%) of the respondents did not engage in heavy physical activities, instead they were spending most of their times in sitting activities like playing cards and computer games, watching Television, talking to friends, plaiting hairs and doing embroidery.

The prevalence of physically inactive students in the current study (67%) is much higher compared with that (37.5%) observed by Reddy et al. (2003) in the 1st South African Youth Risk Behaviour Survey. The findings of the present study are also in stark contrast with the one done in Northeast Florida USA by Moore and Werch (2005) which reported 35% of adolescents being inactive.

A study by Vilhjalmsson and Thorlindsson (1998) reported that schools play an important role in the enhancement of physical activity in adolescence. By taking individual preference and abilities into account and providing opportunities for individual success, physical education teachers can help in creating positive gym-class experiences among their students. It also appears that the schools can influence physical activity through their curriculum, particularly when it emphasizes the value and importance of sport and exercise (Pollock et al., 1998). Similarly, if the same strategies are applied in the high schools of Mtwara region Tanzania, it might enhance youth level of participation in physical activity.

5.2.2 Smoking Cigarettes

Tobacco use is one of the preventable causes of death in the world (World Health Report, 2002). In the 20th century, approximately 100 million people died world-wide from tobacco-associated diseases (cancer, chronic lung disease, cardiovascular disease and stroke). The deadly smoking habit is particularly worrying in Central and Eastern Europe and many developing and newly industrialized countries (WHO, 2002). The adverse health effects of tobacco use among smokers are well described. Tobacco use generally begins during adolescence and continues through adulthood sustained by addiction to nicotine (WHO, 2003). Recent trends indicate an earlier age of initiation and rising smoking prevalence rates among children and adolescents (Takara and Wake, 2003). One fifth or more of young people begin smoking before the age of 10 years. There is a higher risk of being addicted, or become heavy smokers when you initiate smoking so young (World Health Report, 2002).

More than a quarter (26%) of the students in the Mtwara region of Tanzania reported have smoked cigarettes. The youngest age that the students started smoking cigarettes was 10 years and the mean age for cigarette smoking initiation was 15.27 years. Of great concern was that some students reported having daily cigarette smoking with a mean number of 6.45 cigarettes smoked per day. If this trend continues tobacco use will result in the deaths of millions of the people who are children and adolescents today. The prevalence of smoking among the students in the current study (26%) compares with that of a South African study done by Phillips (2001) that found a prevalence of 32.5% for current smokers. These prevalence rates are also similar to findings in other South African and international studies made by (Madu and Matla, 2003; Reddy et al., 2003; Takara & Wake, 2003; Grunbaum et al., 2002). When considering these figures it is clear that strategies need to be in place to reduce

cigarette smoking among students worldwide. A WHO report reviews and recommends a number of strategies to reduce global tobacco consumption, requiring the coordinated involvement of government and community health organizations, health care professionals and individuals (WHO, 2003). To mention some of the effective strategies that has already been put by (WHO, 2003, World Bank, 1999 and Abadian, et al., 1998) to curb smoking cigarettes are:

- Excise tax policy based on raising the real price of tobacco;

- A total ban on all forms of advertising, sponsorship and promotion;

- A comprehensive and enforced approach to banning smoking in all enclosed public places, and the application of measures to minimize exposure to children and non-smokers;

- Dedicated ongoing funding for mass information campaigns, especially well-researched counter-advertising strategies;

- Comprehensive efforts to eliminate access of the young to tobacco products;

- The incorporation of advice on cessation and minimal intervention programmes into routine health care services and in community settings;

- Strong, prominent pack warnings, including generic packaging and full product disclosure and testing at manufacturer's expense;

- The ending of financial assistance to the tobacco industry, for production, sales or marketing.

5.2.3 Drinking alcohol

According to the World Health Report (2002), global alcohol consumption has increased in recent decades, with most of this increase occurring in developing countries. The current study done in the Mtwara region, Tanzania has found a high prevalence (93%) of alcohol use among both males and females students. These findings are in contrast to the findings of South African study (50.2%) (Flisher, Parry, Evans, Lombard and Mueller, 1998) and international studies (70%) (Takara and Wake, 2003). These findings could be due to the fact that access to alcohol is not limited to the youth in social occasions where parents and other adult family members could possibly control adolescents' alcohol consumption.

In keeping with resolutions passed by the World Health Assembly, the WHO encouraged its member states to improve the monitoring of alcohol consumption and its related health-risk problems. It has been acknowledged that approaches to alcohol must be consistent with local cultures and morals. Each country must develop its own unique mix of strategies. There is substantial evidence that the serious harms from alcohol use experienced by millions of people, drinkers and non-drinkers, across the globe are not inevitable (Phillips, 2001). Brief interventions have proven to be cost-effective for those with early problems related to alcohol. It is possible that these interventions, if widely disseminated in a variety of clinical and community

settings, would have an impact on the aggregate levels of problems in a given society as well, but this remains an open question for future research.

5.2.4 Engaging in unsafe sexual intercourse

Worldwide, adolescents are at a vulnerable age for compromising their health by engaging in behaviours that predispose them to a range of health problems, including HIV infection and other sexually transmitted infections (STIs). According to Malaba (2005), sexually transmitted infections including HIV infections, are highly prevalent in Tanzania. The author further stated that currently there is no district left unaffected in the country. It is thus of great concern that 93% of the participants in the current study reported being sexually active and only 53.5% reported to be using condoms. In comparison to other studies done in Africa by Meekers & Wekwete (1997), O'Donoghue (1996), Campbell & Mbizvo (1994), Mbizvo *et al* (1995), Rusakaniko *et al* (1997) and Wilson *et al* (1989), this study has indicated a significant proportion of adolescent males and females that are sexually active. This makes them vulnerable to the risk of HIV infection particularly if they do not engage in protected sex. These studies also show that adolescents become sexually active at an early age (10 years), often have multiple sex partners, and engage in unprotected sexual intercourse.

According to the Tanzania commission for HIV/AIDS (2005), cases among adolescents are still low although the magnitude of the epidemic is growing. HIV/AIDS now affects large numbers of people in all segments of the Tanzanian population, including groups not usually considered to be at high risk. According to a new household survey, an estimated 7 % of the mainland adult population is living with HIV in the United Republic of Tanzania. In

cities and towns, HIV prevalence averaged 11%, twice the levels found in rural areas (Tanzania Commission for AIDS, 2005). UNAIDS/WHO AIDS, 2005 also reported that, an estimated 3.2 million (2.8 million – 3.9 million) people in the region (Sub-Saharan Africa countries, including Tanzania) became newly infected, while 2.4 million (2.1 million – 2.7 million) adults and children died of AIDS. Among young people aged 15–24 years, an estimated 4.6% (4.2–5.5%) of women and 1.7% (1.3–2.2%) of men were living with HIV in 2005.

It is not clear what level of discussion (content) takes place in the studied high schools of Mtwara region Tanzania. Moderately large proportion of students responded not to be taught about harmful effects of HIV/AIDS in schools 37.5% (n=75) as well as their homes, 31.0% (n=62) Thus, given this lack of awareness, attention to the quality of HIV/AIDS education in Mtwara region secondary schools is needed. It is believed that the best means of preventing the rapid spread of transmission of HIV/AIDS is through the rapid spread of information particularly to young people (AMREF Tanzania, 2004).

5.2.5 Use of drugs

In the current study, the issue of participants using drugs such as bang (tobacco cannabis) and cocaine was established. One positive aspect is the study found the majority were not using drugs or cocaine. Probably, it was because of the nature of it's availability in the region itself. Among the respondents, two participants (1%) were found to use drugs more than ten times a day; three participants (1.5%) were found to use drugs for 3 to 9 times a day and only 14 of them (7%) responded to be involved in using drugs for one to two times a day. Apart from the traditional type of substances such as, locally manufactured beer, illicit beer (gongo) and cigarettes, other substances used and abused by young people include heroin, cocaine, valium, and tobacco cannabis (bhangi).

Globally, young people start using substance as early as age 9 years, with highest concentration of substance abuse at age 15-20. According to AMREF reports (2004), in Tanzania, out-of school youths are at greater risk than in-school youths for involvement in substance abuse. Common psychoactive substances involved are tobacco, glue, gas and petrol. Use starts between 9 and 12 years for boys and 13 years for girls.

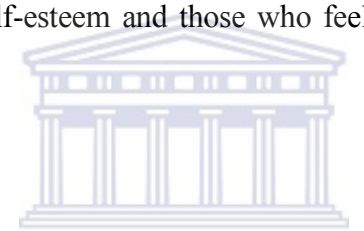
5.3 FACTORS INFLUENCING HEALTH RISK BEHAVIOURS

Adolescence is one of the most fascinating and complex transitions in the life span. It is the age identified by a set of developmental challenges, opportunities and risk (Kohl et. al.1999). Various studies indicate that there may be covariation among adolescent health that suggests potentially predictive patterns (Potthoff et al, 1998). Factors leading to health risk behaviours include experimenting (Engels and Knibbe, 2000), problems in human relations, family problems, and alcoholic parent (Gabel *et al.*, 1998), and also belonging to a low socio-economic group (Villalbí *et al*., 1991; Lamminpaa, 1995).

5.3.1 Friends

Students who are socially integrated and spend a great deal of time with their friends in the evenings are likely to engage in health-risk behaviours, such as smoking, alcohol and drug use. Smoking in particular is almost exclusively done with other smokers in settings that reinforce its social and health-related irresponsibility. Youth who smoke and adopt other risk behaviour, at least in part, appear to be seeking peer-group approval and acceptance not available to them from other sources (Public Health Agency of Canada, 2002). It also reported that, the mental health of young people and the degree to which they engage in health-risk behaviours are strongly associated with the relationships

they have with their peers. Friendship behaviour was also the habit that was reported to be used as a factor of influence in involving in health risk behaviours among the studied population in Mtwara region Tanzania. Quite a number of participants engaged in smoking had friends who also smoked cigarettes 58.5% (n=117) and drinking alcohol 31.5% (n=63). Public Health Agency of Canada 2002, reported that, youth who are well integrated socially are far less likely to experience emotional problems than youth who have few friends and feel isolated. It continued reporting that, having difficulty relating to peers is strongly associated with feeling helpless and suffering periods of depression and sleeplessness. Young people who feel included and accepted develop positive self-esteem and those who feel rejected and ridiculed rarely do.



5.3.2 The Family

Studies by Perula de Torres *et al.*, 1998; Vives *et al.*, 2000; Paniagua *et al.*, 2001 done in Spain reported the evidence of parents being the factor related to several factors influencing youth to engage in health risk behaviours like alcohol consumption, cigarettes smoking, practicing unsafe sexual intercourse, iliciting drugs and living a sedentary lifestyle. Likewise, the researcher found similar findings in his current study that 31.5% (n=63) of the participants' parents consumed alcohol with their children. It seems clear that active parents play an important socializing role in imparting positive health behaviors in their children.

The Centre for Disease Control and Prevention (1995) emphasized that parents are believed to help their children maintain a physical active lifestyle by providing encouragement and opportunities for physical activity. A study made by Bray and Born (2004) found that students who stayed with parents showed more

motivation on physical activity participation than others living in the university residences. Many parents are concerned about the safety of their neighbourhoods and prohibit children from going outside to play. Unfortunately, the more parental rules that limit children play, the less physically active young are and, the more places the child can play that are within walking distance from home, the more active the child is (Sallis et al., 1999).

5.3.3 The School

The Public Health Agency of Canada (2002), reported, students who are unhappy at school because of lower-than-expected achievement, adjustment problems and poor relationship with teachers and other students tend to disengage from school. They often become friends with other young people who have had similar experiences and share negative views of school such as; skipping classes, smoking and drug use. It is difficult for teachers to make all their students feel accepted and respected for their individuality when they must differentiate those students by using academic performance. However, if students do not feel that they belong at school and that school is not meeting their needs, the cost to both the students and society can be substantial. Students who used marijuana were more likely to smoke, drink, engage in sexual risk taking, and report poor relationships with parents and negative feelings about school (Public Health Agency of Canada, 2004a). According to Allison et al. (1999), the school plays a significant role in increasing the adolescents' physical activity levels and habit. When comparing this situation with the high schools of Mtwara region Tanzania, the researcher found that, schools participation in educating their students about the benefits of physical

activity and the harmful effects of health risk behaviours was low. 72% (n=144) of the participants reported not to have been taught any benefits of physical activity, 62.5% (n=125) participants were not taught in any of their classes about the dangers of smoking cigarettes and consuming alcohol. Moreover, the researcher also found a large proportion of students responded not to be taught about harmful effects of HIV/AIDS in schools 37.5% (n=75). Therefore, alternative preventive strategies may be required to improve the implementation of physical education lesson in high schools of Mtwara region Tanzania.

5.4 IMPACT OF PHYSICAL ACTIVITY ON HEALTH RISK BEHAVIOURS

The results of the current study show important associations between reported health risk behaviours and physical activity. The study highlighted the fact that factors such as age, gender, learning environment and parents as role models had an impact on health risk behaviours participation. It is reasonable that good role modelling by parents can inspire their children to be physically active. However, this is not often the case, as indicated by Sallis (1993). Other factors such as peers and neighbourhood safety may seem to be more powerful practical barriers and if these are not removed, having an active parent cannot convince the child to become active. Kohl and Hobbs (1999) indicated that the environment, social and demographic factors played a major role in determining physical activity participation.

On assessing the health risk behaviours of participants (smoking and drinking), it was found that 26% of those who reported that they smoked and 60.5% of those consumed alcohol did not meet the requirements to be classified as being

physically active. The current study indicated that a large percentage of the students, who were classified as being inactive, smoked and drank. It can be surmised, therefore, that smoking and drinking has great impact on physical activities.

However, smoking was only weakly correlated to participation in moderate to vigorous physical activity. Pate et al., (1994) found similar results and concluded that although smoking may not be positively related to physical activity participation, smokers were more likely to drop out of fitness programmes than non-smokers.

The lack of physical activity which could be re-enforced by an increase in health risk behaviour practices may predispose chronic diseases in later life. These leading diseases share key risk factors such as tobacco use, unhealthy diets, lack of physical activity, and alcohol use (WHR 2002). The outcome of this study thus suggests that the problem of physical inactivity in the Mtwara community should be of great concern as it places the students at a higher risk of developing chronic diseases of lifestyle, as they grow older. The personal, social and economic costs of the chronic diseases of lifestyle with accompanying disability, as well as possible loss in the quality of life, may be high. If the numbers from this study are extrapolated for the region as well as the nation, it could become a large concern for the government and society. The complex disease pattern places high demands on the health services currently undergoing transformation in the face of magnitude of the burden of chronic diseases of lifestyle and their risk factors. Yach et al (1992) stated that the increased burden of chronic diseases, in countries that also have a high infectious disease burden, is straining their health services. The need thus arises for an appropriate intervention programme to be put in place before the future impact of the current picture becomes a major public health concern.

5.5 LIMITATIONS OF THE STUDY

The study had the following limitations:

1) The questionnaire consisted of close-ended questions. This restricted the study to gain much in-depth information from the participants.

2) The study did not include younger respondents as some findings were found to start earlier (Like smoking cigarette was started at the age of 10 years).

3) Participants consisted of school attendees only. Therefore, Tanzanian youth other than those in the age range studied, whether or not they attend school, and youth not present on the day of survey administration may be different from these participants.

4) Direct and parallel comparison of the results of this study with those conducted in other areas of the country or other parts of the world should be done with caution due to environmental, sampling and methodological variations between the different studies. Most studies on risk behaviours are epidemiological and multi-site studies. The present study investigated risk behaviours within one circumscribed community setting, namely the Mtwara region, Tanzania. Therefore caution must be exercised in extrapolating from these findings to other dissimilar community contexts.

5) Although the participation rate was perfect/excellent (100 %) reasons for nonresponse/ missing data were not specified.

5.6 STRENGTHS OF THE STUDY

The following were the strengths of the study:

1) The study used questionnaire which was adapted from a reliable and validated one used by the World Health Organization to assess the level of physical activity and health risk behaviours in Tanzania in 2004 (titled; 2004 Global School-based students Health Survey [GSHS]) and was modified to suit the current study.

2) The participants were randomly drawn from purposively selected schools and the classes and the response rate was excellent/perfect (100%).

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1 INTRODUCTION

In this chapter a summary of the study is given followed by the conclusion in which the most important findings of the study are underlined. Finally, the researcher outlines recommendations based on the findings.

6.2 SUMMARY

One private and two government high schools available in Mtwara region in the republic of Tanzania were used as the research setting in this study. A total of two hundreds (200) participants from all the three high schools were randomly selected from form five and six classes and used to gather data that has been used to advance arguments in this study.

A descriptive quantitative study was conducted whereby both males and females students registered for the 2005/2006 academic year, who voluntarily agreed to participate in the study were recruited.

Self-administered close-ended questionnaires were used to collect the data. Descriptive and inferential statistical data analyses were done using SPSS version 13 and SAS.

A response rate of 100% was obtained. The participants' average age was 20.47years with a standard deviation of 1.493 and the males constituted 52.0% (n=104) of the sample while females were only represented 48.0% (n=96) of the sample.

The current main aim of the study was to investigate the relationship between participation in physical activity and health risk behaviours among youth schooling in high schools that are in Mtwara region, Tanzania. The study specifically identified the levels and types of physical activity among high school students, the health risk behaviours and the factors that influenced youth to engage in health risk behaviours. Finally, the study identified some relationships between participation in physical activity and health risk behaviours among youth in Mtwara region Tanzania.

6.3 CONCLUSION

Owing to the research question which focused mainly on the relationship between participation in physical activity and health risk behaviours among youth in high schools in Mtwara region, Tanzania, the results suggests that health risk behaviours has great influence over physical activity. That is to say that, those youth found to indulge themselves in health risk behaviours were less active. Thus, they engage themselves in health compromising behaviours at a level that justifies the development and implementation of responsive prevention and intervention strategies.

The researcher reports that the majority of youth schooling in high schools in Mtwara region lives in sedentary life as they spend most of their spare and studying time mostly in sitting and doing light activities. This kind of behaviours predisposes them to Chronic Disease of Lifestyle (CDL) life like cardiovascular diseases, type 2 diabetes mellitus, osteoporosis and osteoarthritis. The impact of increased CDL might result in a future health challenges to Tanzanian youth and also to the country which is still struggling with many problems including poverty, non-communicable diseases and

HIV/AIDS as many other developing countries do. The health risk behaviours reported to be participated by the respondents were smoking cigarettes, drinking alcohols, practicing unprotected sexual intercourse and in small percentage using drugs. The study also revealed that parental habit had a great influence on the participant's behaviours like what happened in smoking cigarettes and consumption of alcoholic drinks.

The prevalence of those situations in school site deserves attention in future research and intervention efforts. Additional formative research (e.g., focus groups and in-depth interviews) with students, teachers, and local community representatives to identify the extent of physical inactivity and health risk behaviours, as well as their associated or causative risk factors, is needed. Furthermore, culturally relevant strategies to reduce risk behaviours need to be identified through these and other possible means. Practicing such behaviours will automatically predispose the youth into irreversible conditions like non-communicable diseases and HIV/AIDS. Therefore, this reminds us that there is a great need of planning a successful intervention programmes that are aimed at promoting physical activity in order to combat ill health problems that may arise in the future.

6.4 DISTRIBUTION OF THE STUDY FINDINGS

The results of the study and recommendations on student's physical activity will be presented to the ministry concerned and to the involved three high schools in Mtwara region Tanzania and will also be submitted for publication in an education journal.

6.5 RECOMMENDATIONS

On considering the findings obtained in the study, the researcher made the following recommendations:

1) It is recommended that health promotion and education programmes should be implemented in schools from primary level to ensure that teachers and students gain knowledge, attitudes, behaviour, motor skill and confidence about physical activity and its benefits so as to adapt and maintain healthy lifestyles throughout their adulthood.
2) Physical activity programmes that meet the needs and interests of all students should be in schools. It is better to motivate individuals according to their interests or what they consider to be important for them.
3) The Nation/Parliament should establish a policy within the Ministry of Education that will promote physical activity participation and implement physical education classes into the schools' curriculum. In addition, the government needs to increase the availability and accessibility of physical activity and fitness facilities in schools.
4) Involvements of parents/guardians and the communities in facilitating children's physical activity should be given more attention in research and public health promotion.
5) Educational leaflets and videos should be provided in public places such as schools, hospitals, churches and markets, in order to increase the benefits of physical activity.
6) Headmasters in schools should act as role models and support the students by being involved in the design and implementation of physical activity programme.

7) The Ministries of Education and Health in corroboration with Ministry of Youth, Culture and Sports need to work together to create effective interventions of supporting physical activity programmes for Tanzanian youth and young adults in general. Prominently, these ministries need to increase the awareness of risks of physical inactivity and motivate the youth with the most important benefits of physical activity such as physiological and psychological.
8) More studies that research on the same aim should be conducted in this area but on different populations.
9) Given the early age of initiation of health risk behaviours, it may be important to include students younger than those studied here in intervention programs and future research.
10) More research is needed to understand the factors that influence overall sexual risk behaviours, among high school adolescents in the regions. A focused surveillance of these health behaviours can assist a community in planning and implementing responsive health promotion and disease prevention programs for adolescence and youth in general within the whole country.
11) Tanzania Government should work hand in hand with the available individuals, organizations and different nations to establish projects which will be responsible for giving parenthood education for youth and other activities including training of youths and youth counsellors, publication and dissemination of education and research information on youths and collaboration with the government and other agencies in matters related to youth problems and their development.
12) When considering the respondents' sedentary lifestyle and the serious health problems that can occur from inactivity, different ways for

increasing physical activity should be explored and interventions based on their awareness of the consequences of most important sedentary lifestyle should begin as soon as possible.

13) National commissions should be established to construct projects and policies for the improvement of conditions for the physically active children's life and develop national campaigns directed at children and youth. Such commissions should involve parents, politicians, teachers, physicians, architects, city planners, sport organizers, social workers, religious organizations as well as youths themselves.

14) The impact of drug abuse in Tanzania is similar to that in other countries when compared with rates of other sub-Saharan countries like those reported by Gwede et al 1992, in a Zimbabwean-based studies. These behaviours were previously undocumented in this context (school site) in Mtwara region Tanzania. Therefore, with such an alarm, school officials need to learn more about these contextual behaviours as part of an overall risk reduction strategy. Moreover, more studies need to be done to know the factors linked to substance use among youth within all regions in the united republic of Tanzania.

REFERENCES

Abadian, I., Van der Merwe R., Wilkins, N and Jha, P. (Eds) 1998. The Economics of Tobacco control. *Applied Fiscal Research Centre,* University of Cape Town, South Africa.

Alexander C., Piazza M., Melcos, D. and Valente, T. (2001). Peers, schools and adolescent cigarette smoking. *Journal of Adolescent Health* 29: 22-30.

Allensworth, D., Lawson, E., Nicholson, L. and Wyche, J. (Eds). (1997). *Schools and health: our nation's investment*. Washington, DC: National Academy Press.

Allison, K.R., Dwyer, J.J.M. and Makin, S. (1999). Self-efficacy and participation in vigorous physical activity by high school students. *Health Education and Behaviour 26*:12-27.

American Academy of Pediatrics. (2000). Physical fitness and activity in schools. *Pediatrics, 105* [5]:1156-1157.

African Medical and Research Foundation [AMREF] Tanzania. (2004). Important Risk Factors for Youth to Engage in Substance Abuse, *Kinondoni Municipality, Tanzania*. Retrieved June 20, 2006, At: http://www.who.int/substance_abuse/activities/global_initiative/en/Tanzania.pdf

Aronow, W. (2000). *Coronary heart diseases in elderly*. The Gerontologist, Oct.15:75.

Australian Physiotherapy Association. (2002). *Physiotherapy and exercise prescription.* Retrieved October 28, 2005, from http://www.Physiotherapyandexerciseprescription.htm1.

Bar-Or, O., Foreyt, J., Bouchard, C., Brownell K. D., Dietz, W. H., Ravussin, E., Salbe, A.D., Schwenger, G., ST. Jeor, S. and Torun, B. (1998). Physical activity, genetic, and nutrition considerations in childhood weight management. *Medicine and Science in Sports and Exercise, 30* (1): 2-10

Beck, J. and Davis, D. (1987). Teen contraception: A review of perspectives on compliance. *Archives of Sexual Behavior* 16: 337-368.

Biddle, S.J.H. and Mutrie, N. (2001). *Psychology of physical activity:* Routledge, London.

Bonomo, Y. (2003). Adolescent alcohol and other substance use: Sharing the Australian experience. *Annual Academia of Medicine Singapore* 32: 29-35.

Booth, M. (2000). Assessment of physical activity: An international perspective. *Research Quarterly for Exercise and Sport, 71*:114-120.

Bovet, P. (2002). Editorial: The cardiovascular disease epidemic: global, regional, local. *Tropical Medicine and Internal Health, 7*: 717-721.

Bray, R.S. and Born, A.H. (2004). Transition to University and Vigorous Physical Activity: Implication for Health and Psychological Well-Being. *Journal of American College Health, 52*:181-187.

Call, K., Riedel, A., Hein, K., Mcloyd, V., Petersen, A. and Kipke, M. (2002). Adolescent Health and Well-Being in the Twenty-first Century: A Global perspective. *Journal of Research on Adolescence* 12: 69-98.

Campbell, B. and Mbizvo, M.T. (1994). Sexual behaviour and HIV knowledge among adolescent boys in Zimbabwe. *Central African Journal of Medicine 40*:245-250.

Carter, N. and O'Driscoll, M.C. (2000). Life begins at forty. *Physiotherapy, 86*:85-93.

Carr-Gregg, M.R.C., Enderby K.C. and Grver, S.R. (2003). Risk-taking behaviour of young women in Australia: screening for health-risk behaviours. *Medial Journal of Australia* 178: 601-604.

Centre for Disease Control and Prevention. (2000). Health risk behaviours among young people. Retrieved on, May 5.2006
At: http://www.cdc.gov/nccdphp/dash/yrbs/yrbsaag.htm.

Centre for Disease Control and Prevention. (1995). Prevalence of recommended levels of Physical Activity among Women. *Journal of American Medical Association, 273*:986-991.

Centers for Disease Control and Prevention. (1997). Guidelines for schools and community programs to promote lifelong physical activity among young people. *Morbidity And Mortality Weekly Report (No. Rr-6)* 46: 1-36.

Centre for Education Policy Development, Evaluation and Management (CEPD) and the Education Policy. (1999). *An investigation into the organization and placement of school sport repor*t: Volume 1

Coakley, J. and White, A. (1992). Making decisions: gender and sport participation among British adolescents. *Sociology of Sport Journal, 9*:20-35.

Colditz, G. (1999). Economic costs of obesity and inactivity. *Medicine and Science in Sports and Exercise* 31: S663-667.

Cooper, R., Cuter, J., Desvigne-Nickens, P., Fortmann, S., Freidman, L., Havlik, R., Hogelin, G., Marler, J., McGovern, P., Morosco, G., Mosca, L., Pearson, T., Stamler, J., Department of Kinesiology and Health. (2002). Physical Activity Main Page, Georgia State University.
Retrieved on June 05, 2005.
At: http://www2.gsu.edu./~wwwfit/physicalactivity.htm1

Copeland, K. (1999). Women's Health and the physiotherapist. In, Saps ford, R., Bullock-Saxton J.and Markwell, S. (Eds.). *Women's Health: A textbook for physiotherapists.* 1-5. London: Harcourt Brace.

Corbin, C.B. and Pangrazi, R.P. (1994). *Towards an Understanding of Appropriate Physical Activity Levels for Youth*.
At: http://www.fitness.gov/activity/activity6/toward/toward.html

Coulson, N., Goldstein, S. and Ntuli, A. (2002). Promoting health in South Africa: An action manual. Heinemann Higher and Further Education (pty) Ltd, Cape Town, South Africa.

Crocker, P., Kowalski, N., Kowalski, K., Chad, K., Humbert, L. and Forrester, S. (2001). Smoking behaviour and dietary restraint in young adolescent women: The role of physical self-perceptions. *Canadian Journal of Public Health* 92: 428-432.

Crump, R., Lillie-Blanton, M. and Anthony, J. (1997). The influence of self-esteem on smoking among African-American school children. *Journal of Drug Education* 27: 277-291.

De Vos, A.S. (2002). *Research at grass roots: For social sciences and human service professionals.* Pretoria, South Africa: Van Schaick Publishers, Pretoria-South Africa.

De Wit, D., Hance, J., Offord, D. and Ogborne, A. (2000). The influence of early and frequent use of marijuana on the risk of desistance and of progression to marijuana-related harm. *Preventive Medicine* 31: 455-464.

Dietz, W. H. (1996). The role of lifestyle in Health: The epidemiology and Consequences of inactivity. *Proceedings of the Nutrition Society, 55*: 829-840.

Dunn, A., Marcus, B., Kampert, J., Garcia, M., Kohl, H. and Blair, S. (1997). Reduction in cardiovascular disease risk factors: 6 Months Results From Project Active. *Preventive Medicine* 26: 883-892**.**

Eaton, D., Forthofer, M., Zapata, L., Mccormack, B.K., Bryant, C., Mcdermott, R. and Reynolds, S. (2004). Factors related to alcohol use among 6th through 10th graders: The Sarasota County Demonstration Project. *Journal of School Health* 74 (3): 95-104.

Engels, R. C. and Knibbe, R. A. (2000) Young people's alcohol consumption from an European perspective: risks and benefits. *European Journal of Clinical Nutrition* 54 (Suppl. 1):S52–S55.

Elder, C., Leaver-Dunn, D., Wang, M. Q., Nagy, S. and Green, L. (2000). Organized group activity as a protective factor against adolescent substance use. *American Journal of Health Behavior,* 24, 108-113.

Ellickson, P., Tucker, J., Klein, D. and Saner, H. (2004). Antecedents and outcomes of marijuana use initiation during adolescence. *Preventive Medicine* 39: 976-984.

Ellickson, P., Tucker, J., Klein, D. and Mcguigan, K. (2001). Prospective risk factors for alcohol misuse in late adolescence. *Journal of Studies on Alcohol* 62: 773-782.

Epstein, J., Griffen, K. and Botvin, G. (2004). Efficacy, self-derogation, and alcohol use among inner-city adolescents: Gender matters. *Journal of Youth and Adolescence* 33: 159-166.

Frantz, J.M. (2005). Physiotherapy in the Management of Non-Communicable Diseases: Facing the Challenge. *SA Journal of Physiotherapy, vol.61* no.2 p.1-3

Flisher, A., Parry, C., Evans, J., Lombard, C. and Mueller, M. (1998). Prevalence rates of alcohol, tobacco and other drug (aTOD) use among Cape Town students in grades 8 and 11. Paper Presented At 4th Annual Congress Of The Psychological Society of South Africa, Cape Town, 11 September 1998.

French, S., Perry, C., Leon, G. and Fulkerson, J. (1994). Weight concerns, dieting behaviour, and smoking initiation among adolescents: A Prospective study. *American Journal of Public Health* 84: 1818-1820.

Fourie, J. (2001). Definition of chronic diseases of lifestyle.
At: http://www.mrc Ac.za/cdl/context.htm

Foster, S., Vaughan, R., Foster, W. and Califano, J. (2003). Alcohol consumption and expenditures for underage drinking and adult excessive drinking. *Journal of the American Medical Association* 289: 989-995.

Gabel, S., Stallings, M. C., Young, S. E., Schmitz, S., Crowley, T. J. and Fulkner, D. W. (1998). Family variables in substance-misusing male adolescents: the importance of maternal disorder. *American Journal of Drug and Alcohol Abuse* 24: 61–84

Gil, A., Wagner, E. and Tubman, J. (2004). Associations between early-adolescent substance use and subsequent young-adult substance use disorders

and psychiatric disorders among a multiethnic male sample in south Florida. *American Journal of Public Health* 94: 1603-1609.

Global Youth Tobacco Survey Collaborating Group. (2003). Differences in Worldwide Tobacco Use by Gender: Findings from the global youth tobacco survey. *Journal of School Health* 73: 207-215.

Gouwin, J. S. (1997). *Sport management: Theory and practice. Knowledge resources*. Randburg, South Africa.

Grant, B. and Dawson, D. (1998). Age of onset of drug use and its association with dsm-iv drug abuse and dependence: Results from the national longitudinal alcohol epidemiology survey. *Journal of Substance Abuse* 10: 163-173.

Grunbaum, J.A., Lowry, R. and Kann, L. (2001). Prevalence of Health-Related Behaviors Among Alternative High School Students as Compared With Students Attending Regular High School. *Journal of Adolescent Health, 29*:337-343.

Gwede, C. and McDermott, R.J. (1992). AIDS in sub-Saharan Africa: Implications for health education. *AIDS Educ Prev, 4*:250-261.

Health, G.w. and Smith, J.D. (1994). Physical activity patterns among adults in georgia: Results from the 1990 Behavioural Risk Factor Surveillance System. *South Medical Journal*, 87: 435-439.

Hingson, R., Heeren, T., Jamarka, A. and Howland, J. (2000). Age of drinking onset and unintentional injury involvement after drinking. *Journal of American Medical Association* 284: 1527-1533.

Hornby, A. S. (2000). *Oxford Advanced Learners Dictionary*. 6Th. Edition, Oxford university press, UK.

Hopkins, K. D. and Glass, G.V. (1978). Basic statistics for behavioural sciences. Englewood cliffs, New Jersay,: Printice-Hall.

Huddleston, S., Mertesdorf, J. and Araki, K. (2002). Physical activity behaviour and attitudes towards involvement among physical education, health and leisure services pre-professionals. *College Student Journal, 36*:555-573.

Idris, A. M., Ibrahim, Y. E. and Warnakulasuriya, K. A. (1998). Toombak use and cigarette smoking in the Sudan: Estimates of prevalence in the Nile state. *Preventive Medicine;* 27:597–603.

International Clinical Epidemiology Network (2002). Adolescent health. Accessed May 14, 2006.At: HTTP://WWW.INCLEN.ORG/RESEARCH/AH.HTML.

Jagoe, K., Edwards, R., Mugusi, F., Whiting, D. and Unwin, N. (2002). Tobacco smoking in Tanzania, East Africa: Population based smoking prevalence using expired alveolar carbon monoxide as a validation tool. *Control*; 11:210–214

Jewkes, R., Vundule, C., Maforah, F. and Jordaan, E. (2001). Relationship dynamics and teenage pregnancy in South Africa. *Social Science and Medicine* 52: 733-744.

Jessor, R. (1991). Risk Behavior in Adolescence: A Psychological Framework for Understanding and Action. *Journal of Adolescent Health* 12: 597-605.

Jha, P. and Chaloupka, F. (1999). Curbing the epidemic: government and the economics of tobacco control; The World Bank: Washington D.C.

Johnston, L., O'malley, P. and Bachman, J. (2002a). Teen smoking declines sharply in 2002, more than offsetting large increases in the early 1990's. Ann Arbor, Mi: University of Michigan News and Information Services.

Johnston, L., O'malley, P. and Bachman, J. (2002b). Monitoring the future national results on adolescent drug use: Overview of key findings, 2001 (Nih Publication No. 02-5105). Bethesda, Md: National Institute on drug abuse.

Kann, L. (2000). *Health education in schools*. Retrieved june13, 2006. At: http://csupomona.edu/~jvgrizzell/best _practices/hp2010_obj85.htm

Kann, L., Kinchen, S.A., Williams, B.I., Ross, J.G., Lowry., Grunbaum, J.A. and Kolbe, L.J. (2000). Youth risk behavior surveillance. *Journal of School Health, 70:*271. Retrieved June 8, 2006.

At: hppt://www.infotrac.london.galegroup.com

Kennon, F. (1996). Physical activity in the prevention of cardiovascular diseases. *Physical Therapy, 76*: 456-568.

Killen, J., Robinson, T. and Haydel, K. (1997). Prospective study of risk factors for the initiation of cigarette smoking. *Journal of Consultative Clinical Psychology* 65: 1011-1016.

Kitange, H.M., Swai, A.B., Masuki, G., Kilima, P.M., Alberti, K.G. and McLarty, D.G. (1993). Coronary heart disease risk factor in Sub-Saharan Africa Adolescent. *Journal of Epid. Community health 47*(4):303-307.

Kohl, H. and Hobbs, K. E. (1999).Development of physical activity behaviours among children. *Peadiatrics 101*: 549-559.

Lamminpaa, A. (1995). Alcohol intoxication in childhood and adolescence. *Alcohol and Alcoholism* 30: 5–12.

Lowry, R., Howell, W., Galuska, D. A., Fulton, J. E. and Laura, K. (2002). Television Viewing and its Association with Overweight, Sedentary Lifestyle, and Insufficient Consumption of Fruits and Vegetables Among US High School Students: Differences by Race, Ethnicity, and Gender. *Journal of school health,* Vol.72 Issue 10, p413, 9p

Macdonald, M. and Wright, N. (2002). Cigarette Smoking and the disenfranchisement of adolescent girls: A discourse of resistance? *Health Care for Women International* 23: 281-305.

Malaba, M.L. (2005). *KAP Factors Influencing Prevalence of Sexually Transmitted Infections among the Youth of Kilombero District, Morogoro Region, United Republic of Tanzania*.

Masau, F.B. and Makene, V.W. (2004). *Incidence of cardiovascular diseases at Tanzania Health Institute Hospital in Dar es salaam, Tanzania*.

Marcus, B., King, T., Clark, M., Pinto, B. and Bock, B. (1996). Theories and techniques for promoting physical activity behaviours. *Sports Medicine* 22: 321-331.

Martinson, B., O'connor, P. and Pronk, N. (2001). Physical inactivity and short-term all-cause mortality in adults with chronic disease. *Archives of Internal Medicine* 16: 1173-1180.

Mashego, H.T. (2003). *Assessment of Recreational Physical Activity amongst Female Leaners attending Kagiso High School, South Africa*.

Mbizvo, M.T., Kasule, J., Gupta, V., Rusakaniko, S., Gumbo, J., Kinoti, S.N., Mpanju-Shumbusho,W., Sebina-Zziwa, J., Mwatemba, R. and Padayachy, J. (1995). Reproductive biology knowledge, and behaviour of teenagers in East, Central and Southern Africa: The Zimbabwe case study. *Central African Journal of Medicine. 41*:346-354.

Meekers, D. and Wekwete, N. (1997). *The Socioeconomic and Demographic Situation of Adolescents and Young Adults in Zimbabwe*. Calverton, MD, Macro International.

Moore, M. and Werch, C. (2005). Sport and physical activity participation and substance use among adolescents. *Journal of Adolescent Health* 36: 486-493.

Mouton, J. (2001). How to Succeed In Your Master's And Doctoral Studies: A South African guide and resource book. Pretoria: Van Schaik.

Muscari, M. (1999). Prevention: Are we really reaching today's teens? *The American Journal of Maternal/Child Nursing* 24: 87-91.

Nahom, D., Wells. E., Gillmore, M., Hoppe, M., Morrison, D., Archibald, M., Murowchick, E., Wildson, A. and Graham, L. (2001). Differences by gender and sexual experience in adolescent sexual behavior: Implications for Education and HIV Prevention. *Journal of School Health* 71: 153-158.

New York State Office for Aging. (2004). *Physical Activity Fundamental to Preventing Disease*.
At: http://www.agingwell.state.ny.us/prevention/physical1.htm

O'louglin, J., Paradis, G., Kishchuk, N., Barnett, T. and Renaud, L. (1999). prevalence and correlates of physical activity behaviors among elementary

schoolchildren in multiethnic, low income, inner-city neighborhoods in Montreal, Canada. *Annual Epidemiology* 9: 397-407.

O'Donnell, L., Myint, U., O'donnell, C. and Stueve, A. (2003). long-term influence of sexual norms and attitudes on timing of sexual initiation among young urban minority youth. *Journal of School Health* 73: 68-75.

O'Donoghue, J. (1996). Zimbabwe's AIDS action programme for schools: A case study. *Promotion Education 3*:7-12.

Ouellette, J., Gerrard, M., Gibbons, F. and Reis-Bergan, M. (1999). Parents, peers and prototypes: antecedents of adolescent alcohol expectancies, alcohol consumption, and alcohol-related life problems in rural youth. *Psychology of Addictive Behaviors* 13: 187-197.

Özcan, Y. and Özcan, K. (2002). Determinants of youth smoking – evidence from Turkey. *Substance Use and Misuse* 37: 313-336.

Page, R.M., Hammermeister, J., Scanlan, A., and Gilbert, L. (1998). Is school participation a protective factor against adolescent health risk behaviors? *Journal of Health Education,* 29(3), 186-192.

Paniagua, H., García, S., Castellano, G., Sarrallé, R. and Redondo, C. (2001). Tobacco, Alcohol and illegal drug consumption among adolescents, relationship with lifestyle and environment. *Anales Españoles De Pediatría* 55: 121–128 (In Spanish).

Pate, R., Long, B. and Heath, G. (1994). Descriptive epidemiology of physical activity in adolescents. *Paediatric Exercise Science* 6: 434-447.

Parry, C. (2000). Alcohol and Other Drug Abuse. Chapter 23 in South African Health Review 2000. Accessed March 7, 2006.

At: HTTP://WWW.HST.ORG.ZA/SAHR/2000/CHAPTER23.HTM.

Peltzer, K. and Phaswana, N. (2001). Substance use among South African university students: A quantitative and qualitative study. *Urban Health and Development Bulletin, 1998*. Medical Research Council South Africa. Retrieved March 7, 2006. At: HTTP://WWW.MRC.AC.ZA/UHDBULLETIN/MAR99/SUBSTANCE.HTM

Perula de Torres, L. A., Ruiz-Moral, R., Fernández-Gacría, J. A., Herrera-Morcillo, E., de Miguel-Vázquez, M. D. and Bueno-Cobo, J. M. (1998). Alcohol consumption among students in a basic health area in Cordoba. *Revista Española de Salud Pública* 72: 331–341 (in Spanish).

Phillips, J. (2001). Recreational activities of high school learners in the strand. Unpublished Masters Thesis. University of the Western Cape.

Pollock, M.L., Gaesser, G.A., Butcher, J.D., Despres, J.P., Dishman, R.D., Franklin, B.A. and Garber, C.E. (1998).The recommended quantity and quality of exercise for developing cardio respiratory and muscular fitness, and flexibility in Healthy Adults. *Medicine and Science in Sports and Exercise, 30*: 975-991.

Potthoff, S.J. (1998). Dimension of Risk Behaviours among American Indian. *Youth Archieves of Pediatrics and Adolescent Medicine, 152*:157-163.

Potvin, L., Gauvin, L. and Nguyen, N. (1997). Prevalence of stages of change for physical activity in rural suburban and inner-city communities. *Journal of Community Health* 22: 1-13.

Pratt, M., Macera, C. and Wang, G. (2000). Higher direct medical costs associated with physical inactivity. *The Physician and Sportsmedicine* 28. . Retrieved October 5, 2006. At: HTTP://WWW.PHYSSPORTSMED.COM/COVER.HTM

Public Health Agency of Canada. (2002). Implications. Division of Child and Adolescents: Retrieved June 8, 2005. At: http://www.phac-aspc.gc.ca/dca dea/publications/hbsc_11_e.html

Public Health Agency of Canada. (2004a). *Healthy Living and Risk Taking Behaviours*. Retrieved June 8, 2005. At: http://www.phac-aspc.gc.ca./media/nr-rp/2004/2004_53bk2_e.html

Public Health Agency of Canada. (2004b). *Health Determinants-Study Results*. Retrieved June 8, 2005. At: http://www.phac-aspc.gc.ca/media/nr-rp/2004/2004_53bk3_e.html

Reddy, P., Panday, S., Swart, D., Jinabhau, C., Amosun, S., James, S., Monyeki, K., Stevens, G., Morejele, N., Kambaran, N., Omardien, R. and Van Den Borne, H. (2003). Umthenthe Uhlaba Usamila – The South African Youth Risk Behaviour Survey 2002. Cape Town: South African Medical Research Council.

Rehm, J., Gutjahr, E. and Gmel, G. (2001). Alcohol and all-cause mortality: A pooled analysis. *Contemporary Drug Problems* 28: 337-361.

Rich, M. (1999). It is your shot! Immunization by basketball. *Annual Epidemiology 9*:394-396.

Rusakaniko, S., Mbizvo, M.T., Kasule, J., Gupta, V., Kinoti, S.N., Mpanju-Shumbushu, W., Sebina-Zziwa, J., Mwatemba, R. and Padayachy, J. (1997). Trends in reproductive health knowledge following a health education intervention among adolescents in Zimbabwe. *Cent Afr J Med 43*:1-6.

Sallis, J. F. (1993). Epidemiology of physical activity and fitness in children and adolescents. Critical Reviews in Food Science and Nutrion, 33: 403-408.

Sallis, J. F., Calfas, K.J., Nichols J. F., Sarkin, A. J., Caparosa, S., Thompson, S. and Alcaraz, E.J. (1999). Evaluation of a University Course to Promote Physical Activity: Project GRAD. *Research Quarterly for Exercise and Sport, 70*:1-10.

Santelli, J., Kaiser, J., Hirsch, L., Radosh, A., Simkin, L. and Middlestadt , S. (2004). Initiation of sexual intercourse among middle school adolescents: The influence of psychosocial factors. *Journal of Adolescent Health* 34: 200-208.

Sarigiani, P., Ryan, L. and Petersen, A. (1999). Prevention of High-risk behaviors in adolescent women. *Journal of Adolescent Health* 25: 109-119.

Shepherd, R. and Shek, P. (1998). Associations between physical activity and susceptibility to cancer: Possible Mechanisms. *Sports Medicine* 26: 293-315.

Shirima, R. (2003). WHO global strategy on diet, physical activity and health: African regional consultation meeting report. Harare, Zimbabwe, 18-20 March.

Snow, P. and Bruce, D. (2003). Cigarette Smoking In Teenage Girls: Exploring the role of peer reputations, self-concept and coping. *Health Education Research, Theory and Practice* 18: 439-452.

Stevens, J. (1996). Childbearing among unwed African American adolescents: A critique of theory. *Affiliate* 11: 278-302.

Steyn, K., Fourie, J. and Bradshaw, D. (1992). The impact of chronic diseases of lifestyle and their major risk factors on mortality in South Africa. *South African Medical Journal* 82: 227-231.

South African Health Review. (2000). Chapter 4: Health Status and Determinants. Available At: HTTP://WWW.HST.ORG.ZA/SAHR/2000/CHAPTER4.HTM. Accessed April 20, 2006.

Swart, D., Reddy, P., Pitt, B. and Panday, S. (2001). The prevalence and determinants of tobacco-use among grade 8-10 learners in South Africa. Medical Research Council, Cape Town.

Swart , D., Reddy, P. and Steyn, K. (1998). Strengthening comprehensive tobacco control policy development in South Africa using political mapping. Mrc Policy Brief No 6.

Swai, A.B., Mclart, D.G., Kitange, H.M., Kilima, P.M., Tatalla, S., Keen N., Chuwa, L.M. and Albert, K.G. (1993). Low prevalence of risk factors for coronary heart disease in rural Tanzanian. *Intemational Journal of Epidemiology 22*: 651-649.

Takara, M. and Wake, N. (2003). Association of age of onset of cigarette and alcohol use with subsequent smoking and drinking patterns among Japanese high school students. *Journal of School Health* 73: 226-231.

Tanzania Commission for AIDS (2005). HIV/AIDS projects: Dar es Salaam, Tanzania.

Tanzania Government. (2002). Population and Housing Census: Sensus database Tanzania.
Availabel at: http://www.tanzania.g0.tz/census/2002

Taylor, M., Dlamini, S., Kagoro, H., Jinabhai, C. and De Vries, H. (2003). Understanding the high-school students' risk behaviors to help reduce the HIV/AIDS Epidemic in Kwazulu-Natal, South Africa. *Journal of School Health* 73: 97-100.

Teall A and Graham M (2001). Youth access to tobacco in two communities. *Journal of Nursing Scholarship* 33: 175-178.

Tengia-Kessy, A., Msamanga, G.L and Moshiro, C.S. (1998). Assessment of behavioural risk factors associated with HIV infection among youth in Moshi rural district, Tanzania. *East African Medical Journal.75 (9)*:528-32.

Tschann, J., Adler, N., Irwin, C., Millstein, S., Turner, R. and Kegeles, S. M. (1994). Initiation of substance use in early adolescence: The roles of pubertal timing and emotional distress. *Health Psychology* 13: 326-333.

THOMAS, V.S., AND ROCKWOOD, K.J. (2001). ALCOHOL ABUSE, COGNITIVE IMPAIRMENT AND MORTALITY AMONG OLDER ADULTS. *JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 286*; 21-26.

Travill, A. (1997). The role of PE in public health: The South African challenge. *African Journal of Physical Health Education, Recreation and Dance, 3* [2]: 169-176.

Twisk, J.W.R., Mechelen, W.V., Kemper, H.C.G. and Post, G.B. (1997). The Relation Between Long-term Exposure to Lifestyle During Youth and young Adulthood and Risk Factors for Cardiovascular Disease at Adult Age. *Journal of Adolescent Health; 20*:309-319.

UNAIDS/WHO AIDS. (2005). AIDS Epidemic in Sub-Saharan Africa. Retrieved on June, 2006. At:http://www.unaids.org/epi/2005/doc/EPIupdate2005_html_en/epi05_05_en.htm

United Nations Children's Foundation. (2003). Convention on the Rights of the Child.

Unger, J. and Rhorbach, L. (2002). why do adolescents overestimate their peers' smoking prevalence? Correlates of prevalence estimates among California 8th-grade students. *Journal of Adolescent Health* 31: 147-153.

University of Kwa Zulu-Natal. (2005). Definition of Physiotherapy. Durban. South Africa.

Unwin, N. (2001) .Taking Poverty to Heart: Non- communicable diseases and the poor. Retrieved March 28, 2006. At: http://www.id21.org/insights/insights-ho1/insights-issh01-art00.html.

Upadhyaya, H., Drobes, D. and Thomas, S. (2004). Reactivity to smoking cues in adolescent cigarette smokers. *Addictive Behaviors* 29: 849-856.

U.S. Department of Health and Human Services. (1996). Physical activity and health: A report of the Surgeon General.

U.S Department of Health and Human Services (1994). Preventing tobacco use among young people: A report of the surgeon general. atlanta, Ga: Centres for disease control and prevention, office on smoking and health.

Van Mechelen, W. (1997). A physically active lifestyle – public health's best buy. *British Journal of Sports Medicine* 31: 264-265.

Villalbí, J. R., Comín, E., Nebot, M. and Murillo, C. (1991). Prevalence and determinants of alcohol consumption among schoolchildren in Barcelona, Spain. *Journal of School Health* 61:123–126.

Vilhjalmsson, R. and Thorlindsson, T. (1998). Factors related to Physical Activity: A study of Adolescents. *Social Science Medicine, 47*: 665-675.

Vives, R., Nebot, M., Ballestín, M., Díez, E. and Villalbí, J. R. (2000). Changes in the alcohol consumption pattern among schoolchildren in Barcelona. *European Journal of Epidemiology* 16: 27–32.

Windle, M., Shope, J. and Burkstein, O. (1996). Alcohol use. In: Diclemente Rj, Hansen Wb, Ponton Le, Eds. Handbook of adolescent health risk behavior. New York, Ny: Plenum Press.

Wilson, D., Greenspan, R, and Wilson, C. (1989). Knowledge about AIDS and self-reported behavior among Zimbabwe secondary school pupils. *Social Science Medicine 28*:957-961.

Wilson, M. (2002).Obesity and Diabetes: The new epidemics. *Physical Therapy, 82*:S10-11.

White, V., Hill, D. and Letcher, T. (2000). Alcohol use among secondary school students in 1996. *Drug Alcohol Review* 19: 371-380.

World Bank, 1999. Curbing the Epidemic: Governments and the Economics of Tobacco control, Washington, D.C.

World Health Organization. (2002). Reducing risks, promoting health life. Geneva: World Health Organization.

World Health Organization. (2002a). Global Strategy on Diet, Physical Activity and Health. Available at: hppt://www. Who.int.dietphysicalctivity/pupblications/facts/chronic/en/

World Health Organization. (2002b). Physical Activity and Youth. "Move for Health" World Health day 2002. Retrieved April 30, 2006, from http://www.who.int/archieves/world-health-day/fact _sheets2.en.shtml

World Health Organization. (2003). WHO Framework Convention on Tobacco Control. Fifty-Sixth World Health Assembly.

World Health Organization. (2003a). Towards Multisectoral Policy in Support of Physical activity: Non-communicable disease prevention and health promotion. At: http://www.who.int/hpr/physactiv/women.shtml
.

World Health Organization. (2003b). Economic Benefits of Physical Activity. On-communicable disease prevention and health promotion.
At: http://www.who.int/hpr/physactiv/economic.benefits.shtml

World Health Organization. (2003c). *How much physical activity is needed to improve and maintain health: Non communicable disease prevention and health promotion*. Retrieved April 30, 2006,
At: http// www.who.int/hpr/physactiv/pa.how.much.shtml.

World Health Report. (2002). Reducing Risks: Promoting Healthy Life. World Health Organisation. Geneva.

World Health Organization. (WHO) (1998). The world health report 1998: Life in the 21st century, Geneva, Switzerland.

Yach, D., McIntyre, D. and Saloojee, Y. (1992). Smoking in South Africa: the health and economic impact. *Tobacco Control* 1: 272-280.

APPENDICES

Appendix A

University of the Western Cape

Private Bag X17 Bellville 7535 South Africa
Telephone: (021) 959 2163 Fax: (021) 959 2755

FACULTY OF COMMUNITY AND HEALTH SCIENCES

HIGHER DEGREES COMMITTEE

25 November 2005

TO WHOM IT MAY CONCERN

Dear Sir/Madam

Research Project of Mr Edgar Nannyambe (Student Number: 2562465)

This letter confirms that **Mr. Nannyambe** is a registered student in the Faculty of Community and Health Sciences at the University of the Western Cape. His research proposal entitled **"The relationship between participation in physical activity and health risk behaviours among students in High Schools in Mtwara Region, Tanzania"** submitted in fulfillment of the requirements for **M Sc Physiotherapy** has been examined by the Higher Degrees Committee and found to be of high scientific value, methodologically sound and ethical. We fully support the research and kindly request that you allow him access to your health institutions.

Sincerely

DR GAVIN REAGON
Chairperson: Higher Degrees Committee

Appendix B

University of the Western Cape

Private Bag X17 Bellville 7535 South Africa
Telephone: (021) 959 2542 Fax: (021) 959 1217

DEPARTMENT OF PHYSIOTHERAPY

The Permanent Secretary
Ministry of Education
P.O.Box
United Republic of Tanzania

18.11.2005

Dear Sir or Madam:

REH: PERMISSION TO CONDUCT A RESEARCH STUDY

My name is Edgar B. Nannyambe. I'm a Tanzanian post-graduate student, currently pursuing a Master's Degree in Physiotherapy at the University of the Western Cape (U.W.C), South Africa.
As part of my programme, I'm expected to conduct a research project. I have chosen to look on the "***Relationship between participation in physical activity and health risk behaviours among youth in high schools in Mtwara region, Tanzania".***

- Physical activity means: Any body movement produced by skeletal muscles that result in energy expenditure and is positively correlated with physical fitness.
- Health risk behaviour: Has been defined as behaviours that increase the likelihood of adverse physical, social, or psychological consequences.

I hereby request permission to carry out the above mentioned study at in Mtwara Region. It is hoped that the results of this study, will be helpful in planning effective health promotion programmes for our students in high schools as well as other young Tanzanian adults. These health promotion programmes will be in line with the recommendations of World Health Organization (WHO) and all its member states, as a global strategy, which states that physical activity should be used to address the growing burden of chronic diseases.

Participation in this study will be anonymous and voluntary and the information gathered will be treated with great respect and confidentiality. It would be very grateful if you would allow me to carry out the study during January and February 2006.

Looking forward to your positive response

Sincerely,

Student: Edgar B. Nannyambe

SUPERVISOR: Mr. HAMILTON PHARAOH

Appendix C

University of the Western Cape

Private Bag X17 Bellville 7535 South Africa

Appendix D

UNITED REPUBLIC OF TANZANIA
MINISTRY OF EDUCATION AND CULTURE

Cable: "ELIMU"
DAR ES SALAAM
Telex: 42741 Elimu Tz.
Telephone: 110146/9, 110150/2
Fax: 113271

POST OFFICE BOX 9121
DAR ES SALAAM

In reply please quote:

Ref. No. AC.294/374/01/116

Date: 6th December, 2005

Edgar B. Nannyambe
University of the Western Cape
Private Bag X17 Bellville 7535
South Africa

RE: PERMISSION TO CONDUCT A RESEARCH STUDY IN MTWARA REGION

Your letter dated **18/11/2005** about the above heading refers.

We would like to inform you that the permission to conduct a research Study on **"Relationship between participation in physical activity and health risk behaviours among youth in high schools in Mtwara region Secondary Schools** has been granted. The study period will be January and February 2006.

We wish you all the best.

O.L. Mushi
For: PERMANENT SECRETARY

Copy: Headmaster/Mistresses,
Mtwara Region Secondary Schools. - **(Please provide necessary cooperation)**

/eam*

Appendix E

University of the Western Cape

Private Bag X17 Bellville 7535 South Africa
Telephone: (021) 959 2542 Fax: (021) 959 1217

DEPARTMENT OF PHYSIOTHERAPY **18.11.2005**

THE HEAD MASTER,
----------SECONDRY SCHOOL,
P.O.BOX -----, MTWARA,
TANZANIA.

Dear Sir or Madam:

REH: PERMISSION TO CONDUCT A RESEARCH STUDY

My name is Edgar B. Nannyambe. I'm a Tanzanian post-graduate student, currently pursuing a Master's Degree in Physiotherapy at the University of the Western Cape (U.W.C), South Africa.
As part of my programme, I'm expected to conduct a research project. I have chosen to look on the "***Relationship between participation in physical activity and health risk behaviours among youth in high schools in Mtwara region, Tanzania".***

- Physical activity means: Any body movement produced by skeletal muscles that result in energy expenditure and is positively correlated with physical fitness.
- Health risk behaviour: Has been defined as behaviours that increase the likelihood of adverse physical, social, or psychological consequences.

I hereby request permission to carry out the above mentioned study at your institution. It is hoped that the results of this study, will be helpful in planning effective health promotion programmes for our students in high schools as well as other young Tanzanian adults. These health promotion programmes will be in line with the recommendations of World Health Organization (WHO) and all its member states, as a global strategy, which states that physical activity should be used to address the growing burden of chronic diseases.
Participation in this study will be anonymous and voluntary and the information gathered will be treated with great respect and confidentiality. It would be very grateful if you would allow me to carry out the study during January and February 2006.

Looking forward to your positive response

Sincerely,

---------- ----------
Student: Edgar B.B. Nannyambe SUPERVISOR: Mr. HAMILTON P

Appendix F

University of the Western Cape

Private Bag X17 Bellville 7535 South Africa
Telephone: (021) 959 2542 Fax: (021) 959 1217

DEPARTMENT OF PHYSIOTHERAPY

Dear Parent/Guardian

RE: CONSENT FORM TO THE STUDENTS' PARENT/GUARDIAN

Mr. Edgar Nannyambe is a Master student in the Department of Physiotherapy, University of the Western Cape, is conducting a study on the "Relationship between participation in physical activity and health risk behaviours among youth in high schools in Mtwara region, Tanzania." Your school has been chosen to participate.

We request your permission to include your child in the study. There are no risks involved and we hope to gather data on the pattern/level of physical activity and health risk behaviours among youth in high schools. Strict confidentiality will be observed regarding all information from your child. The participants will also be treated with the utmost respect at all times. You as a parent/guardian have the voluntary right to consent or withdraw your child from the study at any time.
We look forward to your cooperation.

Yours faithfully

---------- ----------

Student: Edgar B.B. Nannyambe **Supervisor**: Mr. Hamilton Pharaoh.

I, ---------- hereby agree/withdraw for my child to be included in the research (tick/cross---): ---------- date ----------

Appendix G

University of the Western Cape

Private Bag X17 Bellville 7535 South Africa
Telephone: (021) 959 2542 Fax: (021) 959 1217

DEPARTMENT OF PHYSIOTHERAPY **18.11 2005**

Dear Student,

Hi,
My name is Edgar B. Nannyambe. I'm a Tanzanian post-graduate student, currently pursuing a Master's Degree in Physiotherapy at the University of the Western Cape (U.W.C), South Africa.

As part of my programme, I'm expected to conduct a research project. I have chosen to look on the "***relationship between participation in physical activity and health risk behaviours among youth in high schools in Mtwara region, Tanzania".***

- Physical activity means: Any body movement produced by skeletal muscles that result in energy expenditure and is positively correlated with physical fitness.
- Health risk behaviour: Has been defined as behaviours that increase the likelihood of adverse physical, social, or psychological consequences.

Your participation in the study is vital and thus I ask that you complete the following questionnaires as truthfully as possible. As you are NOT required to provide your name, none of the information provided in the questionnaire can be traced back to a specific student. It is hoped that the information you will give, will be helpful in planning effective health promotion programmes for our students in high schools Tanzania.
There are no "right" or "wrong" answers. You have the option to withdraw from the study at any point. I am available to assist with you any queries you have while completing the questionnaire.
FOLLOW THE INSTRUCTIONS AND COMPLETE ALL QUESTIONS THAT ARE APPLICABLE TO YOU. DO NOT WRITE YOUR NAME ON THE QUESTIONNAIRE. PLEASE TICK THE NUMBER OF YOUR RESPONSE OR PRINT YOUR RESPONSE NEATLY IN THE BLOCK PROVIDED.

Thanking you very much for your time and participation.

Yours truly,

--- ---

University Student: Edgar B.B. Nannyambe

QUESTIONNAIRE

SECTION A: DEMOGRAPHICS

1. How old are you?

Age in years	

2. What is your gender?

1	Male	
2	Female	

3. In what standard /class are you?

1	Form five	
2	Form six	

SECTION B: PHYSICAL ACTIVITY

The next 6 questions ask about physical activity. Physical activity is any activity that increases your heart rate and makes you get out of breath some of the time. Physical activity can be done in sports or playing with friends. Some examples of physical activity are running, fast walking, biking, dancing, football, playing netball, rope jumping, and swimming.

ADD UP ALL THE TIME YOU SPEND IN PHYSICALACTIVITY EACH DAY. DO **NOT** INCLUDE YOUR PHYSICAL EDUCATION OR GYM CLASS.

4. During the past **7 days**, on how many days were you physically active for a total of at least 30 minutes per day?

1	0day	
2	1day	
3	2days	
4	3days	
5	4days	
6	5days	
7	6days	
8	7days	

5. What kind of activity are you involved in?

6. During this school year, were you taught in any of your classes the benefits of physical activity?

1	No	
2	Yes	
3	I don't know	

7. How much time do you spend during a **typical or usual** day sitting and:

		1	2	3	4	5
	Activity	**0 hr**	**< 1hr/day**	**1-2hrs/day**	**3-4hrs/day**	**> 4hrs**
a	watching television					
b	playing computer games					
c	talking with friends					
d	plaiting hair					
e	embroidery					
f	playing cards					

8. In an average week when you are in school, on how many days do you go to physical Education (PE) classes?

Days in number	

9.During an average physical education (PE) class, how many minutes do you spend actually exercising or playing sports?

Minutes in number	

SECTON C: HEALTH RISK BEHAVIOURS

The next 7 questions ask about cigarette and other tobacco use.

10. Have you ever smoked cigarettes?

1	No	
2	Yes	

11. How old were you when you first tried a cigarette?

Year starting smoking	

12. During the past 30 days, on how many days did you smoke cigarettes?

Days in number	

13. How many cigarettes do you smoke a day?

Number of cigarettes smoked	

14. Which of your parents or guardians use any form of tobacco?

1	Neither	
2	My father or male guardian	
3	My mother or female guardian	
4	Both	
5	I do not know	

15. Do any of your closest friends smoke cigarettes?

1	None of them	
2	Some of them	
3	Most of them	
4	All of them	

16. Has anyone in your family discussed the harmful effects of smoking with you?

1	No	
2	Yes	

17. During this school year, were you taught in any of your classes about the dangers of smoking?

1	No	
2	Yes	

The next 8 questions ask about drinking alcohol. This includes drinking local brews e.g. mbege, mnazi, chibuku, gongo or beers e.g. Safari, Kilimanjaro etc. Drinking alcohol does not include drinking a few sips of wine for religious purposes.

18. During the past 30 days, on how many days did you have at least one drink containing alcohol?

Days in number	

19. During the past 30 days, on the days you drank alcohol, how many drinks did you **usually** drink per day?

Drinks in number	

20. With whom do you **usually** drink alcohol?

1	I do not drink alcohol	
2	With my friends	
3	With my family	
4	With persons I have just met	
5	I usually drink alone	

21. During your life, how many times did you drink so much alcohol that you were really drunk?

1	0 time	
2	1 or 2 times	
3	3 to 9 times	
4	10 or more times	

22. During your life, how many times have you ever had a hang-over, felt sick, got into trouble with your family or friends, missed school, or got into fights, as a result of drinking alcohol?

1	0 time	
2	1 or 2 times	
3	3 to 9 times	
4	10 or more times	

23. Which of your parents or guardians drink alcohol?

1	Neither	

2	My father or male guardian	
3	My mother or female guardian	
4	Both	
5	I do not know	

24. Has anyone in your family discussed with you the harmful effect of drinking alcohol?

1	No	
2	Yes	

25. During this school year, were you taught in any of your classes the dangers of alcohol use?

1	No	
2	Yes	

The next 2 questions ask about drugs.

26. During your life, how many times have you used drugs, such as bang or cocaine?

1	0 time	
2	1 or 2 times	
3	3 to 9 times	
4	10 or more times	

27. During this school year, were you taught in any of your classes the dangers of using drugs such as bang or cocaine?

1	No	
2	Yes	

The next 9 questions ask about sexual behaviour and HIV or AIDS.

28. Have you ever had sexual intercourse?

1	No		**NB: If no go to Question 33.**
2	Yes		

29. How old were you when you had sexual intercourse for the first time?

Year at first sexual intercourse	

30. During your life, with how many people have you had sexual intercourse?

People in number	

31. During the past 12 months, have you had sexual intercourse?

1	No	
2	Yes	

32. The **last time** you had sexual intercourse; did you or your partner use a condom?

1	No	
2	Yes	

33. Have you ever heard of HIV infection or AIDS?

1	No	
2	Yes	

34. During this school year, were you taught in any of your classes how to avoid HIV infection or AIDS?

1	No	
2	Yes	

35. Have you ever talked about HIV infection or AIDS with your parents or guardians?

1	No	
2	Yes	

36. The last time you had sexual intercourse, what one method did you or your partner use to prevent pregnancy?

1	I have never had sexual intercourse.	
2	No method was used to prevent pregnancy.	
3	Birth control pills.	
4	Condoms.	
5	Spermicidal spray or foam.	
6	Withdrawal	
7	Morning after pill.	
8	Some other method.	
9	Not sure	

THANK YOU

Appendix H

University of the Western Cape

Private Bag X17 Bellville 7535 South Africa
Telephone: (021) 959 2542 Fax: (021) 959 1217

DEPARTMENT OF PHYSIOTHERAPY **18.11 2005**

Ndugu mwanafunzi,

Mambo.

Jina langu ni Edgar B Nannyambe. Mimi ni mwanafunzi wa Kitanzania ninayesomea shahada ya uzamili, kwa hivi sasa ninasomea shahada ya uzamili ya Tiba Maungo katika chuo kikuu cha Western Cape (U.W.C), Afrika ya Kusini.
Ikiwa ni sehemu ya masomo yangu, nina tarajia kufanya utafiti.Nimechaguliwa kuangalia "**Uhusiano uliopo kati ya kushiriki katika shughuli za kimwili na tabia za hatari kiafya miongoni mwa vijana wa sekondari za juu (A-level) katika Mkoa wa Mtwara, nchini Tanzania**".

- Shughuli za kimwili maanayake ni miondoko yoyote ya kimwili inayosababishwa na na misuli ambayo hupelekea matumizi ya nguvu za mwilini na hatimaye kuwa na uhusiano wa moja kwa moja wa Afya nzuri kimwili.
- Tabia ya hatari kiafya inafasiliwa kuwa ni tabia ambayo inaweza kusababisha madhara kimwili, kijamii na kinafsia(kisaikologia).

Uhusiano wako katika utafiti huu ni muhimu sana, hivyo ninakuomba ujaze madodoso yafuatayo kwa ukweli kadiri iwezekanavyo.Kwa vile **hutakiwi** kuandika jina lako, taarifa yeyote utakayoitoa katiaka dodoso haiwezi kutumika kumsaka mwanafunzi aliyetoa taarifa hiyo.Inatarajiwa kuwa taarifa utakayoitoa itatusaidia katika kuweka mipango madhubuti ya kuboresha afya za wanafunzi wetu wa sekondari za juu nchini Tanzania.Hakuna jibu la kweli au la uwongo.Unaweza kujitoa katika utafiti huu katika hatua yeyote.Nitakuwepo muda wote wa kujaza dodoso hili ili kukusaidia unapokuwa na hoja.

FUATA MAELEKEZO NA JAZA MASWALI YOTE YANAYOKUHUSU USIANDIKE JINA LAKO KATIKA DODOSO.TAFADHALI WEKA ALAMA YA VEMA KWENYE NAMBA YA JIBU LAKO AU ANDIKA VIZURI JIBU LAKO KWENYE NAFASI ULIYOPEWA.

Ninakushukuru sana kwa muda wako na kwa ushiriki.

Wako,

Mwanafunzi wa **U.W.C:** Edgar B.B. Nannyambe.

DODOSO

SEHEMU A: TAKWIMU KUHUSU WATU

1. Una umri gani ?

Umri kw a miaka	

2. Jinsia yako ni ipi ?

1	Mwanaume	
2	Mwanamke	

3. Upo kidato cha ngapi?

1	Kidato cha tano	
2	Kidato cha sita	

SEHEMU B: SHUGHULI ZA KIMWILI

Maswali 6 yanayofuata yanauliza kuhusu shughuli za kimwili. Shughuli za kimwili ni shughuli yeyote ambayo huongeza kasi ya mapingo ya moyo na wakati mungine kukufanya usipumue vizuri.Shughuli za kimwili huweza kufanywa michezoni au unapocheza na rafiki zako.Mfano wa shughuli za kimwili ni kukimbia, kutembea kwa haraka, kuendesha baiskeli, kucheza muziki / ngoma, kucheza mpira wa miguu,mpira wa pete, kuruka kamba na kuogelea n.k

ONGEZEA MUDA UNAOTUMIA KUFANYA SHUGHULI ZA KIMWILI KWA KILA SIKU. USIHUSISHE MASUALA YA KWENYE SOMO LA ELIMU VIUNGO AU VIPINDI VYA MAZOEZI YA KIMWILI.

4. Kwa muda wa siku saba zilizopita ni siku ngapi umejishughulisha kimwili angalau kwa dakika 30 kwa siku?

1	**Siku**	**0**	
2	**Siku**	**1**	
3	**Siku**	**2**	
4	**Siku**	**3**	
5	**Siku**	**4**	
6	**Siku**	**5**	
7	**Siku**	**6**	
8	**Siku**	**7**	

5. Ulikuwa unajishughulishwa kimwili kwa kufanya nini?

6. Katika kipindi chako cha kusoma, umewahi kufundishwa katika somo lolote juu ya umuhimu wa shughuli za kimwili?

1	Hapana	
2	Ndiyo	
3	Sijui	

7.Ni muda kiasi gani unatumia ikiwa kama mfano au kukaa kwa kawaida na:

		1	2	3	4	5
	Shughuli	**Saa 0**	**< saa 1kwa siku**	**Saa1- 2 kwa siku**	**Saa 3-4 kwa siku**	**> saa 4.**
a	Kuangalia televisheni					
b	Kucheza michezo ya kwenye compyuta					
c	Kuongea na marafiki					
d	Kusuka nywele					
e	Kudarizi					
f	Kucheza karata					

8. Kwa wastani wa wiki moja unapokuwa shuleni, ni siku ngapi unakwenda kwenye kipindi cha Elimu Viungo?

Idadi ya siku	

9. Katika kipindi cha kawaida cha Elimu Viungo, ni muda gani unautumia katika mazoezi halisi ya viungo au kucheza michezo?

Idadi ya dakika	

SEHEMU C: TABIA ZENYE HATARI KIAFYA

Maswali 7 yanayofuata yanauliza kuhusu sigara na matumizi mengine ya tumbaku.

10. Umewahi kuvuta sigara?

1	Hapana	
2	Ndiyo	

11. Ulikuwa na umri gain ulipojaribu kuvuta sigara kwa mara ya kwanza ?

Mwaka ulioanza kuvuta	

12. Kwa muda wa siku 30 zilizopita, ni siku ngapi umevuta sigara?

Idadi ya siku	

13. Unavuta sigara ngapi kwa siku?

Idadi ya sigara ninazovutwa	

14. Ni mzazi au mlezi gani anatumia aina yeyote ya tumbaku?

1	Hakuna	
2	Baba yangu au mlezi wa kiume	
3	Mama yangu au mlezi wa kiume	
4	Wote wawili	
5	Sijui	

15. Kuna rafiki zako wa karibu wanaovuta sigara ?

1	Hayupo	
2	Baadhi yao	
3	Wengi wao	
4	Wote	

16. Kuna mtu yeyote katika familia yenu amewahi kujadili juu ya madhara ya uvutaji wa sigara?

1	Hapana	
2	Ndiyo	

17. Katika mwaka huu wa masomo,mmewahi kufundishwa katika kipindi chochote darasani kuhusu madhara ya uvutaji wa sigara?

1	Hapana	
2	Ndiyo	

Maswali 8 yanayofuata yanauliza kuhusu unywaji wa vileo.Hii hujumuisha unywajin wa pombe za kienyeji kama vile mbege,mnazi, chibuku, gongo au bia kama vile Safari, Kilimanjaro n.k. Kunywa vileo haihusishi unywaji wa divai kidogo katika maswala ya kidini.

18. Kwa muda wa siku 30 zilizopita,ni siku ngapi ulizokunywa angalau kinywaji kimoja chenye kileo?

Idadi ya siku	

19. Kwa muda wa siku 30 zilizopita,kwa siku ulizokunywa kileo,kwa kawaida ni vinywaji vingapi unakunywa kwa siku?

Idadi ya vinywaji	

20. Kwa kawaida ni nani unayekunywa naye vileo?

1	Sinywi vileo	
2	Na rafiki zangu	
3	Na familia yangu	
4	Na watu ninaokutana nao	
5	Kwa kawaida ninakunywa peke yangu	

21. katika maisha yako, ni mara ngapi umewahi kunywa sana vileo ukawa umelewa chakali ?

1	Hakuna	
2	Mara 1 au 2	
3	Mara 3 hadi 9	
4	Mara 10 au zaidi	

22. Katika maisha yako, ni mara ngapi umewahi kujisikia uchovu kutokana na kunywa vileo,kujisikia unaumwa,kuingia matatizoni na familia yako au rafiki zako,kukosa kwenda shule, au kupigana kutokana na kunywa vileo?

1	Hakuna	
2	Mara 1 au 2	
3	Mara 3 hadi 9	
4	Mara 10 au zaidi	

23. Ni mzazi au mlezi gani anayekunywa vileo?

1	Hakuna	
2	Baba yangu au mlezi wa kiume	
3	Mama yangu au mlezi wa kike	
4	Wote wawili	
5	Sijui	

24. Kuna mtu yeyote katika familia yako amewahi kujadili madhara ya kunywa vileo?

1	hapana	
2	Ndiyo	

25. katika mwaka huu wa masomo, mmewahi kufundishwa darasani kuhusu madhara ya matumizi ya vileo?

1	hapana	
2	Ndiyo	

Maswali 2 yanayofuatayo yanauliza kuhusu madawa ya kulevya.

26. katika maisha yako, ni mara ngapi umewahi kutumia madawa ya kulevya?

1	Hakuna	
2	Mara 1 au 2	
3	Mara 3 hadi 9	
4	Mara 10 au zaidi	

27. Katika mwaka huu wa masomo, mmewahi kufundiswa katika kipindi chochote darasani kuhusu madhara ya kutumia madawa ya kulevya kama vile bangi au kokeni ?

1	Hapana	
2	Ndiyo	

Maswali 9 yanayofuata yanauliza kuhusu tabia za kujamiana na Virusi Vya Ukimwi (V.V. U) au UKIMWI

28. Umewahi kujamiiana ?

1	Hapana		**TANBIHI: Jibu ilkiwa hapana, endelea kujibu swali la 33.**
2	Ndiyo		

29. Ulikuwa na mri gani ulipofanya tendo la ndoa kwa mara ya kwanza?

Idadi ya miaka nilipofanya tendo la ndoa kwa mara ya kwanza	

30. Katika maisha yako, umewahi kufanya tendo la ndoa na watu wangapi ?

Idadi ya watu	

31. Kwa kipindi cha miezi 12 iliyopita, umewahi kufanya tendo la ndoa ?

1	Hapana	
2	Ndiyo	

32. Kati yako au mpenzi wako, kuna aliyekuwa ametumia kondomu ulipofanya tendo la ndoa kwa mara ya mwisho?

1	Hapana	
2	Ndiyo	

33. Umewahi kusikia kuhusu maambukizi ya virusi vya ukimwi au UKIMWI?

1	Hapana	
2	Ndiyo	

34. Katika mwaka huu wa masomo, mmewahi kufundiswa katika kipindi chochote darasani jinsi ya kujiepusha na maambukizi ya virusi vya ukimwi au UKIMWI?

1	Hapana	
2	Ndiyo	

35. Umewahi kuzungumnza na wazazi au walezi wako kuhusu maambukizi ya virusi vya ukimwi au UKIMWI?

1	Hapana	
2	Ndiyo	

36. Ulipofanya tendo la ndoa kwa mara ya mwisho, ni njia gani uliyoitumia au aliyoitumia mpenzi wako ili kuzuia kupata mimba ?

1	Sijawahi kabisa kufanya tendo la ndoa	
2	Hakuna njia iliyotumika kuzuia kupata mimba	
3	Vidonge vya majira	
4	Kondomu	
5	Dawa ya kuua manii inayonyunyiziwa au kupakwa Ukeni	
6	Kumwaga manii chini	
7	Vidonge vya asubuhi yake	
8	Njia zingine	
9	Sina hakika	

ASANTE SANA.

Appendix I

University of the Western Cape

Private Bag X17 Bellville 7535 South Africa
Telephone: (021) 959 2542 Fax: (021) 959 1217

DEPARTMENT OF PHYSIOTHERAPY

RESPONDENT'S CONSENT FORM

I ----------, agree to take part in a study about ***"relationship between participation in physical activity and health risk behaviours among youth in high schools in Mtwara region, Tanzania"*** done by Edgar B.B. Nannyambe. I will complete a questionnaire. The purpose and procedures of the study have been fully explained to me. I am taking part because I want to, and I have been told that I can stop at any time I want if all things do not match with my expectations.

---------- ----------

Signature Date

Appendix L

Map of Mtwara region illustrating the areas where the study was conducted.

Map of Tanzania

Map of Mtwara region

(Adapted from http://www.tanzania.go.tz/census/regions.htm)

Appendix Ma

MINISTRY OF EDUCATION AND VOCATIONAL TRAINING

Ndanda Secondary School,
P.O. Box 10,
NDANDA.

Ref. No. NSS/U.1/142

13/12/2005

Edgar B. Nanyambe,
University of the Western Cape,
Private Bag X17 Bellville 7535,
SOUTH AFRICA

RE: PERMISSION TO CONDUCT A RESEARCH STUDY

please refer to the heading above.

We would like to inform you that the permission to conduct a research study on "Relationship between participation in physical activity and health risk behaviours among youth" in our school has been granted. The school will provide you necessary cooperation to facilitate your study.

Please inform us on specific date and time you would like to conduct your study. Also inform us on the number of A-level students do you need to participate in your study.

Wishing you the best

Hassan, G.
for HEADMASTER
Kny MKUU WA SHULE
NDANDA SHULE YA SEKONDARI

Appendix Mb

University of the Western Cape

Private Bag X17 Bellville 7535 South Africa
Telephone: (021) 959 2542 Fax: (021) 959 1217

DEPARTMENT OF PHYSIOTHERAPY

THE HEAD MASTER,
OCEAN-----SECONDRY SCHOOL,
P.O.BOX 511, MTWARA,
TANZANIA.

18.11.2005

Dear Sir or Madam:

REH: PERMISSION TO CONDUCT A RESEARCH STUDY

My name is Edgar B. Nannyambe. I'm a Tanzanian post-graduate student, currently pursuing a Master's Degree in Physiotherapy at the University of the Western Cape (U.W.C), South Africa.
As part of my programme, I'm expected to conduct a research project. I have chosen to look on the ***"Relationship between participation in physical activity and health risk behaviours among youth in high schools in Mtwara region, Tanzania".***

- Physical activity means: Any body movement produced by skeletal muscles that result in energy expenditure and is positively correlated with physical fitness.
- Health risk behaviour: Has been defined as behaviours that increase the likelihood of adverse physical, social, or psychological consequences.

I hereby request permission to carry out the above mentioned study at your institution. It is hoped that the results of this study, will be helpful in planning effective health promotion programmes for our students in high schools as well as other young Tanzanian adults. These health promotion programmes will be in line with the recommendations of World Health Organization (WHO) and all its member states, as a global strategy, which states that physical activity should be used to address the growing burden of chronic diseases.

Participation in this study will be anonymous and voluntary and the information gathered will be treated with great respect and confidentiality. It would be very grateful if you would allow me to carry out the study during January and February 2006.

Looking forward to your positive response

Sincerely,

Student: Edgar B. Nannyambe

UNIVERSITY of the
WESTERN CAPE