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Submitted to the University of Gezira in Fulfillment of the Requirements for the Award of the Degree of Doctor of Philosophy in Epidemiology (Public Health)

Faculty of Health and Environmental Sciences

March, 2016

Murtada Ali Abdalla Ali

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Date: March, 2016
Prevalence of
Health – Related Risk Behaviors
Among Male Adolescents in Gezira State, Sudan
(2011-2015)

Murtada Ali Abdalla Ali

Examination Committee:

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Date of Examination: 17 / 3 / 2016
DECLARATION

I hereby declare that this thesis is my own work and effort and that it has not been submitted anywhere for any award. Where other sources of information have been used, they have been acknowledged.

The work was done under the guidance of Professor Abdelelah Mohammed Elhassan, at the University of Gezira, Sudan.

Signature: ........................................

Date: ..................17/3/2016.............
سورة طه

فَعَلَّلَ اللَّهِ عَلَيْهِ الْمَلِكَ الْحَقَّ وَلَاتَنْعِجِلْ بِالْقَرْآنِ مِنْ قَبْلِ أَن يُقْضَى إِلَىَّ الْكَيْدَ وَجَهَّةَ وَقُلْ رَبِّ رَبِّي زَدْنِي عَلَى مَا كَانَ مِنْ فَوْقِي

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DEDICATION

To my lovely family,

who

keep supporting me all through my way

with their love and kind care..

Great thanks

and

best wishes..
ACKNOWLEDGEMENTS

First and before all, my great thanks and prayers to ALLAH for giving me the ability to do and complete this work.

Wondering around looking for proper words to thank the main supervisor of this research, Professor Abdelelah Mohammed Elhassan, who paved the way not only for me but also for many students in this university to complete their post graduate studies in a proper way; and who made me understand the proverb "all things are difficult before they are easy”. I will never forget his beneficial advices and sincere cooperation.

Words are powerless to express my endless gratitude and appreciation for the great support and kind advices given by the late professor, Ali Ahmed Idris Baanaib (God Have Mercy), who was guided me in the early processes of this research, especially the proposal, and this research is a result of his friendly and valuable advices.

My sincere thanks and deep appreciation also goes to the co-supervisor of this research, Dr. Eisa Mohammed Yousif for his close supervision and his valuable advices to guarantee quality results of this study. It is hard to find suitable words to express my gratitude to him.

Special thanks are also extended to the study population of adolescent students who participated in the study and to all staff members of secondary schools in the study area, and also to Ministry of Education in Gezira State. Thank you all so much for your help, kindness, and sincere cooperation. It is truly appreciated.

Finally, it's no need to say that this work could not have been possible without the continuous and generous support and encouragement of my lovely family, and their nice patience and cooperation.

Thank you all so much ..

Murtada Ali Abdalla Ali

ABSTRACT

During adolescence, teenagers are at a crossroads with their health. Taking risks in adolescence is a part of identity formation. Health-related risk behaviors is a major public health problem worldwide. Almost 75% of adolescent morbidity and mortality is related to their risky behaviors (CDC, 2011). About 25% of Sudan population are adolescents (Sudan Bureau of Statistics, 2008). Data on prevalence of health risk behaviors among Sudanese adolescents are lacking. A cross-sectional study was conducted to assess the prevalence of health risk behaviors (HRBs) among male adolescents in Gezira State in the Sudan. Many world studies showed that male adolescents engage in more risky behaviors than do females (Grunbaum, 2003). The study focused on selected risk behaviors which have global spread, and the majority can lead to guilt, violation, and addictive. A sample of 760 students aged (15-19) was randomly selected from secondary schools using a multi-stage stratified sampling technique. Data were collected by structured questionnaire and statistically analyzed using the SPSS software. The results of the study revealed that almost 99.3% of the study population was engaged in one or more risky behavior that can weaken or harm their health. This high prevalence of health risk behaviors among Sudanese teenagers is a major public health concern. The prevalence of tobacco use was (32.5%), alcohol drinking (2.1%), drugs abuse (1.9%), sexual practices (2.6%), physical inactivity (40.5%), too much screen time and sedentary lifestyle (66.5%), violence and physical fight (31.4%), bullying and verbal abuse (40.5%), carrying a weapon (19.2%), never or rarely taken breakfast (38.2%), inadequate fruits intake (95.7), inadequate green salad intake (66.9), inadequate milk intake (85.9%), inadequate meat intake (89.5%), lack of personal hygiene (91.8%), lack of personal safety (99.3%), depression and feeling sad (24.9%), and thought seriously about suicide (0.4%). The study recommended that there is an urgent need for national strategy in order to protect Sudanese adolescents and help them protect themselves. A nation-wide behavior modification intervention with involvement of schools and mass media could be implemented to decrease the prevalence of risky behaviors. In addition, further in-depth researches are needed.
وبائيات السلوك الصحي المحفوف بالمخاطر وسط المراهقين الذكور بولاية الجزيرة بالسودان (2011–2015 م)
مرتدي علي عبد الله علي

ملخص الدراسة

تمثل السلوكات الصحية المحفوفة بالمخاطر مشكلة صحية رئيسية على مستوى العالم خصوصاً وسط شريحة المراهقين وتتسبب في حوالي 57% من الأمراض والوفيات وسط هذه الفئة العمرية الهامة وتشكل عبئاً اقتصادياً وصحياً كبيراً على المجتمعات، وتعتبر ممارسة هذه السلوكات الخطرة خلال مرحلة المراهقة جزءاً من تشكيل الهوية للمراهق (CDC, 2011). يشكل المراهقون حالياً حوالي 25% من سكان السودان. لا توجد بيانات كافية عن وبائيات أو مدى انتشار هذه السلوكات وسط مجتمع المراهقين في السودان.

أجريت هذه الدراسة المجتمعية المقطعية بهدف تقييم مدى انتشار السلوكات الصحية المحفوفة بالمخاطر وسط مجتمع المراهقين الذكور بولاية الجزيرة بوسط السودان. أظهرت العديد من الدراسات العالمية أن المراهقين الذكور ينخرطون عادةً في سلوكات خطرة أكثر مما تفعل الإناث (Grunbaum, 2003).

شددت الدراسة على بعض السلوكيات الخطرة ذات الانتشار العالمي والتي غالباً ما تؤدي إلى الخطيئة والشعور بالذنب والإدمان. تم اختيار عينة عشوائية من المراهقين حجمها 567 طالباً من المدارس الثانوية تراوح أعمارهم بين (15-19) عاماً من طرق العينة العشوائية الطبقية متعددة المراحل. تم جمع البيانات عن طريق الاستبيان الفردي وتم تحليلها إحصائياً باستخدام برنامج الحزم الإحصائية (SPSS). أظهرت نتائج الدراسة أن (99.3%) من المراهقين يمارسون ممارسة السلوكات المحفوفة بالمخاطر وسط مجتمعهم ويفضلون في عادات غير صحية تؤثر سلبًا على صحتهم وصحة مجتمعاتهم.

بينت الدراسة أن هذا الارتفاع الكبير في معدل انتشار هذه السلوكات وسط مجتمع المراهقين بالسودان يشكل قيمة منهجية ومصدر قلق وتهديد كبير للصحة العامة بالبلاد. بلغت نسبة انتشار عاطفي النمط وسط عينة الدراسة (32.5%). شرب الكحول (21.2%). تناول المخدرات (9.1%). الممارسة الجنسية (2.6%). قلة أو عدم ممارسة الرياضة (40.5%), الخمور والخضوع لفترات طويلة أمام شاشات للكمبيوتر وغيرها (66.5%). النوم والعنف الجسدي (31.4%). السمنة (40.5%). حمل الأسلحة والأدوات الخطرة (19.2%). عدم تناول وجبة الإفطار (38.2%). عدم تناول الكمية الكافية من الخضروات (59.5%). عدم تناول الكمية الكافية من اللحوم (66.9%). عدم تناول الكمية الكافية من الحليب ومنتجات الحليب (85.9%). عدم تناول الكمية الكافية من الأغذية الصحيحة (89.5%). عدم الأشعة السينية (91.8%). عدم الالتزام بوسائل السلامة الشخصية (99.3%). الاستخدام والسجود بالحزم والاستياء العام (24.9%). وتشخيص بعض حالات مرضية عدم تطبيق استراتيجية وطنية متكاملة من أجل تعزيز صحة المراهقين ومساعدتهم على حماية أنفسهم. بهدف تحسين نوعية الحياة وسط هذه الشريحة الهامة من المجتمع وإعدادها كأولوية من الأولويات الصحية بالبلد وتعمل معها بجهد وشفافية. كذلك أوصت الدراسة بضرورة إجراء تدخلات وقائية إيجابية على المستوى القومي والوطني لتعديل السلوكات الخطرة وتعزيز السلوك الصحي الإيجابي وسط المراهقين مع ضروة إشراك الآباء والمدارس ووسائل الإعلام.

أوصت الدراسة بضرورة إجراء المزيد من البحوث والدراسات المعمقة في هذا الجانب الهام.
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<td>AIDS</td>
<td>Acquired Immune Deficiency Syndrome</td>
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<td>CBS</td>
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<td>CDC</td>
<td>Centres for Disease Control and Prevention</td>
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<td>CRC</td>
<td>Convention on the Rights of the Child</td>
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<td>DHS</td>
<td>Demographic and Health Survey</td>
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<td>FMH</td>
<td>Federal Ministry of Health</td>
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<td>HRBs</td>
<td>Health Risk Behaviors</td>
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<tr>
<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
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<td>ICPD</td>
<td>International Conference on Population and Development</td>
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<td>IEC</td>
<td>Information, Education and Communication</td>
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<td>MDG</td>
<td>Millennium Development Goals</td>
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<td>MOH</td>
<td>Ministry of Health</td>
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<td>NGOs</td>
<td>Non-Governmental Organizations</td>
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<td>PHC</td>
<td>Primary Health Care</td>
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<td>RH</td>
<td>Reproductive Health</td>
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<td>SDHS</td>
<td>Sudan Demographic and Health Survey</td>
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<td>SHHS</td>
<td>Sudan Household Health Survey</td>
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<td>SNAP</td>
<td>Sudan National AIDS Control Programme</td>
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<td>SPSS</td>
<td>Statistical Package for Social Sciences</td>
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<td>STDs</td>
<td>Sexually Transmitted Diseases</td>
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<td>Sexually Transmitted Infections</td>
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<td>UN</td>
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<td>United States Agency for International Development</td>
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<td>World Food Programme</td>
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CHAPTER ONE

INTRODUCTION
CHAPTER ONE
INTRODUCTION

1.1. BACKGROUND

The World Health Organization (WHO) defines adolescence as the second decade of life, the period between the ages of 10 and 19. Adolescence represents a unique period in the life cycle, no longer children and not yet adults, and this period of change is full of paradox. Adolescents complete their physical, emotional and psychological journey to adulthood in a changing world that contains both opportunities and dangers (WHO, 2002). Adolescents are a unique population that need more attention in the health care field. They are least likely to have access to health care, more likely to be uninsured than younger children, and are often overlooked in health care policy debates (Hensley, 2008).

During adolescence, teenagers are at a crossroads with their health. Taking risks in adolescence is a part of identity formation. Health risk behaviors are any actions that can potentially produce negative consequences on an individual’s health (Aklin, 2003). The study focuses on selected risk behaviors which have global spread, and the majority can lead to guilt, violation, and addictive. The number of such factors is countless and the research does not attempt to be comprehensive. Across many world studies, male adolescents engage in more risky behaviors than do females (Grunbaum et al., 2003).

Health-related risk behaviors is a major public health problem worldwide. It contributes markedly to today’s major killers. Almost 75% of adolescent morbidity and mortality worldwide is related to their risky behaviors (CDC, 2011). About 25% of Sudan population are adolescents (Sudan Central Bureau of Statistics, 2008). Data on prevalence of health risk behaviors among Sudanese adolescents are lacking.

Adolescents’ health presents a multi-value for themselves, their families and communities and a basis for sustainable development of every society (http://www.amchp.org/AdolescentHealth).

Some teens, however, move beyond behaviors that might be considered developmentally-appropriate experimentation, putting themselves in situations that carry the potential for serious health problems. Understanding the role of these risk
factors is important for developing clear and effective strategies for improving global health (CDC, 2004).

Today, adolescents and youth represent the biggest generation in human history. By the end of the year 2012, there are about 1.25 billion adolescents worldwide, a fifth (20%) of the world’s population (6.8 billion), and their numbers are increasing. Four out of five (80%) live in developing countries and one third to almost one half of the population in developing countries is under 20 years old. Their transition to adulthood needs to be understood in the larger developmental context. Increased poverty, social inequalities, low quality education, gender discrimination, widespread unemployment, weakened health systems, and rapid globalization are the realities within which young people grow. Worth special mention is the HIV/AIDS pandemic, which has virtually made today’s adolescents the first generation growing up with the disease (http://www.unfpa.org/adolescents/overview.htm).

This largest-ever generation of adolescents and young people is approaching adulthood in a world their elders could not have imagined. Globalization, the AIDS pandemic, global warming, electronic communications and a changing climate have irrevocably altered the landscape. The scenario is mixed. More than half of young people live in poverty, on less than $2 per day. Often they lack access to the technology and information. Many also face social inequality, poor schools, gender discrimination, unemployment and inadequate health systems. They deserve better, and investing in them is an investment in the future leaders of families, communities and nations (UNFPA, 2008).

In the Sudan, the 5th Population and Housing Census in 2008 shows that there are about 9.3 million adolescents aged 10 through 19 years (4.9 million are males and 4.4 million are females). That means almost 25% of the Sudan population of 39.2 million are adolescents (Sudan Central Bureau of Statistics, 2008).

Unfortunately till now there is no adequate and obvious data in Sudan about the prevalence and level of health-related behaviors practiced by adolescents and young people that put their health at risk. Researches on adolescent health risk behaviors have helped create a road map for improving health of adolescents and then the whole community. This research may serves as a starting point for new and enhanced action.
Many adolescents still lack the support they need for their development, including access to information, skills and health services. New threats and rapidly changing socio-economic circumstances pose considerable challenges for adolescents to make a safe transition into adulthood by adopting healthy behaviors and resisting risk factors (UNFBA, 2011). A regional consultation carried out by the Pan American Health Organization suggested that a core package for improving adolescent health and development should: firstly, identify and assess problems and risk behaviors and managing these where possible. Secondly, monitor growth and development. Thirdly, offer information and counseling on developmental changes, personal care and ways of seeking help. Investment in adolescents is a vital economic and social building block in most societies. Investing in health service improvements to make health services friendly for adolescents can pave the way for changes for the whole population (WHO and UNICEF, 2003).

1.2. PROBLEM STATEMENT

Today, the health of adolescents and young people—and the adults they will become—is critically linked to the health-related behaviors they choose to adopt. A limited number of behaviors contribute markedly to today’s major killers and leading causes of morbidity among youth and adults worldwide. These risk behaviors, often established during adolescence period and are interrelated and preventable. These behaviors have global spread, and the majority can lead to guilt, violation, and addictive. It includes:

1. Tobacco Use
2. Alcohol Drinking
3. Drugs Abuse
4. Violence and Injuries
5. Poor Nutrition & Unhealthy dietary behaviors
6. Physical Inactivity & Sedentary Lifestyle
7. Personal Hygiene Behaviors
8. Personal Safety Behaviors
9. Sexual Behaviors
10. Mental Health Problems.
In fact, nearly 75% of adolescent death and illness worldwide are caused by these categories of risk behavior. Chronic diseases—such as heart disease and diabetes—are the nation’s leading killers. Practicing healthy behaviors—such as eating low fat, high fruits and vegetables diets, getting regular physical activity, and refraining from tobacco use—would prevent many premature deaths (CDC, 2011).

Worldwide, adolescents always are at risk of early and unwanted pregnancy, of sexually transmitted diseases (STDs) including HIV/AIDS, and vulnerable to the dangers of tobacco use, alcohol and other drugs. Many are exposed to violence and fear on a daily basis. Malnutrition in adolescence can cause lifelong health problems. Millions of adolescents are denied the essential support they need to become knowledgeable, confident and skilled adults (Save the Children & UNFPA, 2009).

An estimated 1.7 million adolescents die each year — mainly from accidents, violence, pregnancy related problems or illnesses that are either preventable or treatable. Many more develop chronic illnesses that damage their chances of personal fulfillment. Most smokers begin during adolescence — when they have incomplete information about the risks of tobacco and its addictive nature. Mental health problems may first become apparent during adolescence (UNICEF, 2012).

1.3. PROBLEM DEFINITION

Health risk behaviors are any actions that can potentially produce negative consequences on an individual’s health (Aklin, 2003). Health risk behavior is defined also as “a factor that raises the probability of adverse health outcomes” (Donna R. Perry, 2004). Health risk behaviors are any actions that can potentially produce negative consequences on an individual’s health (Aklin, 2003). Adolescence is a period of accelerated growth and change, bridging the complex transition from childhood to adulthood. (WHO, 2011). Adolescents experience difficult biological, emotional, intellectual, and social changes. The onset of multiple risk behaviors cluster in adolescence and are associated with increased risk of poor educational attainment, future morbidity and premature mortality. These behaviors shape adult behavior and the consequences are costly to society and young people. Further, people who engage in any one risk behavior are likely to engage in others. (http://jpubhealth.oxfordjournals.org - 2014).
1.4. JUSTIFICATION

Health-related risk behaviors (HRBs) among adolescents is a major public health problem worldwide, and it contributes to about 75% of adolescent morbidity and mortality. During adolescence, teenagers are at a crossroads with their health. Taking risks in adolescence is a part of identity formation (CDC, 2011). School constitutes a large part of an adolescent’s existence. Many world studies showed that male adolescents engage in more risky behaviors than do females (Aklin, 2003). The study focused on selected risk behaviors which have global spread, and the majority can lead to guilt, violation, and addictive. In Sudan, almost 25% of population are adolescents (SCBS, 2008). Data on prevalence of health related risk behaviors among Sudanese teenagers are lacking. So, it is necessary to collect a baseline data about the magnitude of the problem and accordingly, intervention programs can be adjusted and targeted to those adolescents to raise their awareness about the risky behaviors that will harm their health and life.

Adolescents are a unique population that need more attention in the health care field. They are least likely to have access to health care, more likely to be uninsured than younger children, and are often overlooked in health care policy debates (Hensley, 2008).
1.5. OBJECTIVES OF THE STUDY

1.5.1. General Objective

To assess the prevalence of health-related risk behaviors (HRBs) among the community of male adolescents in Gezira State in the Sudan.

1.5.2. Specific Objectives

1. To explore and identify priority health risk behaviors that contribute markedly to the health problems among adolescents in the study area.

2. To estimate the magnitude of the problem of health risk behaviors among the study population.

3. To provide local baseline data that can be used by policymakers to improve the health and life of this generally overlooked population group (Adolescents).
1.6. ORGANIZATION OF THE THESIS

This thesis has been organized into five chapters. Chapter one (Introduction) is giving background, problem statement, problem definition, justification, objectives of the study, research limitations, and organization of the thesis. Chapter two reviews the literature and states the arts. Chapter three shows the research methodology. Chapter four displays the results of the study and discussion. Conclusion, policy recommendations, and references are shown in the last chapter (chapter five). The annexes contain the questionnaire in English and Arabic.

1.7. LIMITATIONS OF THE STUDY

The findings in this study were subjected to some limitations:

- The study recruited only the school going adolescents; therefore, the findings may be not representative of all adolescents in the study area.

- Research sensitive nature of the questions included in the questionnaire in matters that believed to be secret and personal issues, will bring modesty and will create gaps in answering some questions.

- As with many other studies of this type (cross-sectional study), data were collected by a retrospective self-reported method. That means respondents might have answered questions according to what they perceive as being the correct answer rather than what they actually practice (i.e., under or over-reported), so there may have been recall bias that reduced the accuracy of the findings.

- The study deals with a new subject, health-risk behaviors, which lack the information and literature related to the Sudan. This scarcity of similar literature could be attributed to the lack of studies conducted on this subject locally.
CHAPTER TWO

LITERATURE REVIEW
CHAPTER TWO
LITERATURE REVIEW

2.1. INTRODUCTION

The energy, ideas and aspirations of adolescents and young people are boundless and ceaseless. Adolescents are our important assets and resources; they are our future and hope. They represent a positive force in society, now and for the future. About one fifth of the world’s population are adolescents, aged 10-19 years. They face many challenges that put them on the path of ill-health. Today, the health of young people—and the adults they will become—is critically linked to the health-related behaviors they choose to adopt (WHO, 2002).

It is estimated that nearly 1.7 million adolescents lose their lives annually, through preventable or treatable events or illnesses. Many are at risk from violence, unprotected sex, dangers of alcohol, tobacco and other substances. Over 150 million adolescents use tobacco; half of them (75 million) will die of tobacco-related diseases in later life. Risky behaviors, including unprotected sexual contact, can lead to adolescent pregnancy and STIs including HIV/AIDS. Adolescents with HIV represent 50% of all new cases. Life circumstances and lack of a supportive environment leads many adolescents into depression and other mental health problems, including suicide. More than 90,000 adolescents die from suicide attempts each year. In developing countries under-nutrition and stunting are prevalent in adolescent boys and girls, while obesity is an increasing problem in all societies. It is estimated that many premature deaths among adults are largely due to behavior initiated during childhood and adolescence. Paying attention to the health and development of adolescents, particularly those most vulnerable, will reduce death and disease, including chronic disease in later life, which will promote more productive and healthy future communities and societies (WHO, 2003).

Adolescence is a period of many critical transitions: physical, psychological, biological, cognitive, emotional, economic, and social. Childhood is left behind, and pressures to become responsible adults are strong. Most important is the need to shape an identity and develop a personality. Adolescence is a period of curiosity, when young people are receptive to information about themselves and their bodies, and when they begin to take an active part in
decision making. Adolescence is a unique period in the life cycle that presents special challenges and opportunities. No longer children and not yet adults, young adolescents make significant choices about their health and develop attitudes and health practices that continue into adulthood. Risky behavior in substance use, sexuality, physical exercise, and diet contribute to the leading causes of adult morbidity and mortality. Thus, fostering healthy adolescent development and behavioral choices has the potential to improve the health of adults as well as adolescents (UNFPA, 2008).

By the end of 2009, there are about 1.25 billion adolescents worldwide, a fifth of the world’s population, and their numbers are increasing. Four out of five live in developing countries; half of them are poor; one in four lives in extreme poverty, on less than $1 per day. As we move into the next millennium, approximately 20% of the estimated world population of 6.8 billion in the year 2009 will be aged 10 through 19. That means about one in five people worldwide are adolescents (http://www.unfpa.org/adolescents/overview.htm).

In Sudan, the 5th Population and Housing Census in 2008 shows that there are about 9.3 million adolescents aged 10 through 19 years (4.9 million are male and 4.4 million are female). That means almost 24% of the Sudan population of 39.2 million in the year 2008 will be aged 10 through 19. That means about one in four people in Sudan are adolescents (Sudan Central Bureau of Statistics, 2008). Unfortunately, till now there is no adequate and obvious data in Sudan about the prevalence and level of health-related behaviors practiced by adolescents and young people that put their health at risk.

Adolescence is often seen as the healthiest time of life. However, it is also a time of engaging in behaviors that may be associated with health risks. Poor nutrition, lack of physical activity, and tobacco use contribute to the vast majority of diseases worldwide. In fact, seventy-five percent of the leading causes of death and ill health among 10-24 year olds in many countries are related to behaviors that are preventable. Choosing good health is easier for adolescents when they are provided with the knowledge needed to make good choices and the skills required to put those choices into action. Adolescents connected with trusted adults, communities, and schools serve as a preventive measure against many health risk behaviors.
Adolescents are less likely than any other population to receive routine primary and behaviors health services. Barriers to receiving medical care for adolescents include lack of knowledge about health and healthy lifestyles, location of health care offices, hours of operation, lack of health insurance and concerns about confidentiality (UNFPA, 2003).

Healthy risk-taking is a normal part of adolescence. Young people who participate in multiple risk-taking increase the chance of damaging their health. Risk behavior has been defined as “behaviors that increase the likelihood of adverse physical, social, or psychological consequences”. High risk behaviors of teenagers are responsible for the leading causes of mortality and morbidity during the adolescent years. They often are the starting points for adult morbidity and mortality. If we want to prevent the short and long term morbidity and mortality, we have to identify the risk behaviors and have the resources and skills to intervene with best practices or evidence based treatment (Donna R. Perry, 2004).

Today, the health of adolescents and young people—and the adults they will become—is critically linked to the health-related behaviors they choose to adopt. A limited number of behaviors contribute markedly to today’s major killers. These behaviors, often established during adolescence period, Include:

- Tobacco abuse.
- Alcohol and drugs abuse.
- Unhealthy dietary behaviors.
- Inadequate physical activity.
- Behaviors that contribute to violence and unintentional injuries.
- Sexual behaviors that may result in STDs, including HIV/AIDS, and unintended pregnancies. (CDC, 2011).

In fact, 75% of adolescent death and illness worldwide are caused by these six categories of risk behavior. Health-risk behaviors contribute to the leading causes of morbidity, mortality, and social problems among adolescents. Many studies confirm that most health risk behaviors among adolescents are interrelated. Likewise, many protective factors—things that reduce health risks—are interrelated. It is important to understand how to promote healthy behaviors among youth, understand the
underlying causes and motivations, and what circumstances make unhealthy behavior seem attractive. Adolescent who engage in one unhealthy behavior—who for example smoke or drink—are more likely to develop a cluster of unhealthy behaviors and habits. Intervention and prevention strategies targeting risk behaviors during adolescence may promote a healthier transition from childhood to adulthood. Today’s adolescents are the future adults, parents, leaders, and work force of the Nation (CDC, 2004).

Today adolescents and youth represent the biggest generation in human history. One-third to almost one half of the population in developing countries is under 20 years old. Their transition to adulthood needs to be understood in the larger developmental context. Increased poverty, social inequalities, low quality education, gender discrimination, widespread unemployment, weakened health systems, and rapid globalization are the realities within which young people grow. Worth special mention is the HIV and AIDS pandemic, which has virtually made today’s adolescents the first generation growing up with the disease. The scenario is a mixed one. Exposure to mass media and fast inroads into technology have meant that young people are rapidly connecting throughout the world. They are sharing more ideas, values, and symbols, and are no longer passive. Many are organizing and networking themselves in both formal and informal ways. A global youth culture has emerged, and youth are contributing to the construction of global and local cultures (UNFPA, 2008).

Adolescence is a time of great change, when young people take on new roles and responsibilities, renegotiate relationships with adults, peers, and the community, and experiment with things symbolic of adult life. These developmental tasks are often accompanied by the adoption of risk-taking behaviors that compromise health. In commerce, this generation is seen as an important target. Mobile phones, contemporary popular music, movies, television programs, websites, sports, video games and clothes are heavily marketed and often popular amongst adolescents. Adolescents have also been an important factor in many movements for positive social change around the world (Mertens S. B., 2006).

The majority of adolescents are healthy when assessed by traditional measures of morbidity and mortality. Adolescents have lower rates of health care utilization than
younger and older persons, despite the health problems that affect the adolescent population, such as STIs, emotional and behavioral health problems, drug and alcohol abuse, injuries, and violence. Mental health problems may first become apparent during adolescence. A young person experiencing depression or another mental health problem has no frame of reference for his or her condition and may not recognize this as an illness or seek treatment (Annie E. Casey Foundation, 2005).

Investments in adolescents is a vital economic and social building block in most societies, are crucial in the developing world, where a rising proportion of the population is under the age of 24. Investing in health service improvements to make health services friendly for adolescents can pave the way for changes for the whole population. Over the past decade, considerable progress has been made in understanding the factors that affect adolescent health and in introducing interventions to address their health needs. Nevertheless, many adolescents still lack the support they need for their development, including access to information, life skills and health services. New threats such as the HIV pandemic and rapidly changing socio-economic circumstances pose considerable challenges for young people to make a safe transition into adulthood (Donna R. Perry, 2004).

Schools and Academic settings have tremendous potential to reach adolescents and young people. In addition to providing academic knowledge and skills, schools are largely responsible for providing physical shelter, helping to establish social values, developing social skills, and, ultimately, preparing children and young people to become productive, contributing members of society. Beyond their institutional functions, schools provide adult role models and are a source of peer influences, which have powerful effects on adolescent health, development, and well-being. Education is a critical component of a healthy transition to adulthood. Research indicates that school connectedness, or the establishment and maintenance of supportive relationships with teachers and peers, protects against a variety of health risk behaviors. Teachers are often a source of guidance and support and serve as role models for their students. Likewise, peer groups affect adolescents’ perceptions of self and relations to others. Academic institutions can provide opportune settings for comprehensive health education and life-skills development by employing such creative strategies as peer education, school-wide campaigns, and role plays (WHO, 2008).
2.2. DEFINITION OF ADOLESCENTS & ADOLESCENCE

The World Health Organization (WHO) defines adolescents as people between the ages of 10 to 19 years, and defines adolescence as the second decade of life, the period between the ages of 10 and 19. However, it must be stressed that adolescence is a phase, rather than a fixed time period in an individual's life. A phase during which enormous physical and psychological changes occur, as do changes in social perceptions and expectations. A phase when an individual is no longer a child, but not yet an adult (WHO, 2004).

Early adolescence (10-13) is characterized by a spurt of growth, and the beginnings of sexual maturation. Young people start to think abstractly. In mid-adolescence (14-15) the main physical changes are completed, while the individual develops a stronger sense of identity, and relates more strongly to his or her peer group, although families usually remain important. Thinking becomes more reflective. In later adolescence (16-19) the body fills out and takes its adult form, while the individual now has a distinct identity and more settled ideas and opinions (UNICEF, 2002).

Definitions of adolescence, and the years encompassed, vary. Adolescence is widely defined as the time in life when the developing individual attains the skills and attributes necessary to become a productive and reproductive adult. Adolescence is generally regarded as the period of life from puberty to maturity. Webster’s Dictionary defines adolescence simply as “the state or process of growing up. “Adolescence is a period of accelerated growth and change, bridging the complex transition from childhood to adulthood (WHO, 2007).

Adolescents and young people experience profound biological, emotional, intellectual, and social changes, and the patterns of behavior they adopt may have long-term consequences for their health and quality of life. This second decade of life is often a turbulent period, in which adolescents experience hormonal changes, physical maturation, and frequently, opportunities to engage in risk behaviors. This period offers adolescents an opportunity to begin planning for their futures, to adopt healthy attitudes about risk behaviors, and to develop meaningful roles in their communities. Adolescents complete their physical, emotional and psychological journey to adulthood in a changing world that contains both opportunities and
dangers. Taking risks in adolescence is a part of identity formation. As experimentation, risk behaviors may enhance self-confidence and help build relationships with peers and connections with others. Some teens, however, move beyond behaviors that might be considered developmentally-appropriate experimentation, putting themselves in situations that carry the potential for serious health problems (American Medical Association, 2010).

2.3. WHY PAY ATTENTION TO THE HEALTH OF ADOLESCENTS?

There are many interrelated reasons why we need to pay attention to the health of adolescents: for this age group, for later life, and for the next generation:

- A huge proportion of the world’s population - more than 1.25 billion, a fifth of the world’s population - is adolescents, aged between 10 and 19 years; and their numbers are increasing (UNICEF, 2012).

- Adolescence is one of the most dynamic stages of human growth and development. It is a period of unique challenges and a period in which many life-long patterns of behavior are established (UNFPA, 2008).

- Adolescents have specific health and development needs, and many face challenges that hinder their well-being, including poverty, a lack of access to health information and services, and unsafe environments. Interventions that address their needs can save lives and foster a new generation of productive adults who can help their communities’ progress (UNFPA, 2004).

- Adolescent health provides the foundation for adult health status. Life-long patterns of healthy behaviors are established at this time.

- Adolescents are generally believed to be healthy because death rates for this age group are lower than for children or for elderly people. However, death rates are an extreme measure of health status and tell only part of the story.

- Good health (physical, emotional, social and spiritual) enables young people to make the most of their teenage years.
Adolescents have different health risks and special needs according to their age, sex and living circumstances. They may not appreciate the importance of seeking treatment when they are unwell, and often underestimate the severity of their condition (UNFPA, 2008).

To reduce death and disease in adolescents now, and to reduce the burden of disease in later life. An estimated 1.7 million young people aged from 10 to 19 die each year — mainly from accidents, violence, or illnesses that are either preventable or treatable. Many more develop chronic illnesses that damage their chances of personal fulfillment. Many diseases of late middle age, such as lung cancer and heart disease, are strongly associated with a habit that begins in adolescence (UNICEF, 2012).

To invest in health, today and tomorrow. Healthy and unhealthy practices adopted today may last a lifetime. Today’s adolescents are tomorrow’s parents, teachers and community leaders (UNFPA, 2003).

To protect human capital. In some societies two out of three adolescents are involved in productive work, while many young women below the age of 20 are already mothers. If they are no longer able to fulfill these roles because of injury, illness or psychological damage, the cost is primarily a human one, but there is also a cost to society (WHO, 2002-2).

Adolescents are subject to most of the same illnesses as other age groups within the population. However, they are much less likely to recognize symptoms, and much more likely to underestimate their importance. In addition, they usually do not know where to go for help. As a result adolescents are the least likely section of the population to go for early treatment. They may leave diseases untreated because they are afraid of the outcome, worried about the stigma or do not believe that they will be treated well (Annie E. Casey Foundation, 2005).

2.4. OVERVIEW OF ADOLESCENTS LIFE

Today, the largest generation of adolescents and young people in history — 1.75 billion — is preparing to enter adulthood in a rapidly changing world. Their educational and health status, their readiness to take on adult roles and responsibilities, and the support they receive from their families, communities and
governments will determine their own future and the future of their countries (http://www.unfpa.org/adolescents/overview.htm, 2012.)

Adolescents complete their physical, emotional and psychological journey to adulthood in a changing world that contains both opportunities and dangers. Most adolescents are full of optimism and represent a positive force in society, an asset now and for the future as they grow and develop into adults. When supported, they can be resilient in absorbing setbacks and overcoming problems. However, adolescents are exposed to risks and pressures on a scale that their parents did not face. Globalization has accelerated change while the structures that protected previous generations of young people are being eroded. Adolescents receive contradictory messages on how to address the daily choices which have lifelong consequences for healthy development. Millions are denied the essential support they need to become knowledgeable, confident and skilled adults. They miss out on schooling for economic reasons or because their communities are displaced or disrupted by war or conflict. And, while most young people have loving families who protect and care for them, many grow up with no adults committed to their welfare or where the ability of caring adults to support them has been damaged (UNFPA, 2005).

Most of the health problems that confront teenagers today are not typical medical issues. Instead, these problems are largely behavioral and social issues that can result in immediate consequences (death in an auto crash), lasting social and economic costs (teen pregnancy) and future chronic health problems (smoking, poor diet and lack of exercise). Successfully addressing these behavioral and social issues will require changes in service delivery, funding priorities, community resources and cultural norms. 8 Adolescents today are confronting societal and peer-related pressures to use tobacco, alcohol, or other drugs and to have sex at earlier ages. Many adolescents are engaging in risk behaviors that are harmful or dangerous to themselves and others, with consequences to their health and well-being that may be immediate or long-term. Many of the patterns of behaviors initiated during the adolescent years are associated with adult morbidity and mortality (National Adolescent Health Information Center, University of California, and CDC, 2004).
Adolescents are undergoing tremendous physical, emotional, social, and intellectual changes. During this period, adolescents go through puberty, have their first sexual experiences, and in the case of girls, may be married prematurely. For most children, early adolescence is marked by good health and stable family circumstances, but it can also be a period of vulnerability because of intense and rapid transitions to new roles and responsibilities as care-takers, workers, spouses, and parents. In many countries, the impact of HIV, poverty, and political and social conflict on families and communities has eroded traditional safety nets and increased the vulnerability of adolescents (North Carolina Metamorphosis Project, 2009).

Around the world, adolescence is a time of opportunities as well as vulnerabilities to risk-associated behaviors that can have lifelong consequences for health and well-being. Numerous World Health Organization (WHO) consultations and studies have confirmed the importance of caring and meaningful relationships, as well as pro-social connections with individuals and social institutions, reducing risks and promoting healthy and positive developmental outcomes. Many researchers, and various WHO documents, have also called for more attention to and more research on where, why and how adolescents seek help (i.e. their help-seeking behavior) and the sources and nature of help available to them in their specific contexts (i.e. social and health supports) (WHO, 2007).

Experimentation and risk-taking are normal during adolescence and are part of the process of developing decision-making skills; adolescents are both positively and negatively influenced by their peers, whom they respect and admire. Adults play an important role in this regard and can help adolescents weigh the consequences of their behaviors (particularly risky behaviors) and help them to identify options. The challenges for young people making the transition to adulthood are greater today than ever before. In the past young men and women tended to move directly from childhood to adult roles. But today the interval between childhood and the assumption of adult roles is lengthening (U.S. Department of Health and Human Services, Atlanta, 2004).

Adolescence is a growth process. Guiding children as they grow to adulthood is not and never has been a job for parents alone. In traditional rural communities, the extended family and established systems of hierarchy and respect govern the
transition. In the rapidly changing urban environment, young people derive most of their information about the world, what to expect and how to behave, from their peers, and increasingly from mass media. The tension between parents, who tend to see them as children in need of protection, and the outside world, which makes demands on them as adults, reflects the central dilemma of modern adolescents (UNFPA, 2008-2).

Education is a critical component of a healthy transition to adulthood. During childhood and adolescence, learning occurs more intensely than during other phases of life. During adolescence, young people develop physical and cognitive skills and acquire the knowledge and information necessary to becoming healthy and productive adults. Providing quality education in a safe environment and keeping children in school is a cross-cutting strategy that links different development priorities. For example, being in school has been associated with delays in the age at first sex, marriage, and childbearing. Appropriate, targeted policies and programs that help to keep young people enrolled throughout adolescence and connected to the social network that schools provide can have important impacts on their personal development and can minimize their vulnerabilities to the challenges that exist outside of the school environment (WHO, 2008).

Within the framework of human rights established and accepted by the global community, certain rights are particularly relevant to adolescents and the opportunities and risks they face. These include gender equality and the rights to education and health, including reproductive and sexual health information and services appropriate to their age, capacities and circumstances. Actions to ensure these rights can have tremendous practical benefits. The case for investing in young people now is more than clear. Investing in adolescents and young people will yield large returns for generations to come. Failing to act, on the other hand, will incur tremendous costs to individuals, societies and the world at large (U.S. Department of Health and Human Services (DHHS), and CDC, 2010).

In every country, there is a need for positive dialogue and greater understanding among parents, families, communities and governments about the complex and sensitive situations facing adolescents and young people. Just as they need guidance, adolescents need supportive relationships and institutions that respond to their hopes
and concerns. By taking concerted and comprehensive action to address the challenges faced by adolescents, governments can meet their commitments and international development goals, and give greater hope to the world’s largest youth generation. UNFPA is working with a wide range of partners and with adolescents and young people themselves to address their needs in a way that is culturally sensitive, locally driven and in line with international human rights standards (UNFPA, 2008).

2.5. ADOLESCENT HEALTH AND HEALTHY ADOLESCENTS

Adolescent health is the state of optimal physical, emotional, cognitive, social and spiritual well-being in youth aged 10-19 years old. Healthy adolescents are characterized by an ability to realize individual potential around critical developmental tasks, including the ability to:

- Engage, in a positive way, in the life of their communities.
- Engage in behaviors that optimize wellness and contribute to a healthy lifestyle.
- Form caring, supportive relationships with family, other adults and peers.
- Demonstrate physical, cognitive, emotional, social and moral competencies.
- Demonstrate resiliency when confronted with life stressors.
- Demonstrate increasingly responsible and independent decision-making.
- Experience a sense of self-confidence, hopefulness and well-being (UNFPA, 2008).

The development of healthy adolescents is a complex and evolving process that requires supportive and caring families, peers and communities; access to high quality services (health, education, social and other community services); and opportunities to engage and succeed in the developmental tasks of adolescence. These supportive factors must be available to adolescents generally, but must also be available on an individualized basis to effectively serve adolescents, including those with disabilities and other specialized needs (American Medical Association, 2010).

There is no single solution to address the complexity of adolescent health needs and issues. The health of adolescent is shaped by parents and families, schools, peers, neighborhoods and communities, community organizations, media, health care
systems, employers, social norms, government, policies and laws. These factors impact young people’s sense of health and well-being by affecting their capacity to withstand life stressors, their ability to transition in developmentally appropriate ways, and their ability to make decisions about health behaviors. Adolescent health and youth development go hand-in-hand. Youth who, with support from their families and communities, successfully engage in the developmental tasks of adolescence are more likely to choose health-promoting behaviors and avoid activities that can lead to negative health and life outcomes (National Adolescent Health Information Center, University of California; and CDC, 2004).

2.6. 10 FACTS ON ADOLESCENT HEALTH

2.6.1. The state of adolescent health
One in every five people in the world is an adolescent, and 85% of them live in developing countries. Nearly two thirds of premature deaths and one third of the total disease burden in adults are associated with conditions or behaviors that began in adolescence, including tobacco use, a lack of physical activity, unprotected sex or exposure to violence. Promoting healthy practices during adolescence and efforts that better protect this age group from risks will ensure longer and more productive lives for many.

2.6.2. Injuries and road safety
Unintentional injuries are a leading cause of death and disability in adolescents; and road traffic injuries, drowning and burns are the most common types. Injury rates among adolescents are highest in developing countries, and within countries, they are more likely to occur among adolescents from poorer families. Community actions to promote road safety (including the passing of safety laws that are well enforced) and public education targeted to young people on how to avoid drowning, burns and falls can reduce injuries.

2.6.3. Violence
Among 15-19 year olds, suicide is the second leading cause of death, followed by violence in the community and family. Promoting nurturing relations between parents and children early in life, training in life skills, and reducing access to alcohol and lethal means such as firearms can help prevent violence. More effective and sensitive care for adolescent victims of violence is needed.
2.6.4. Tobacco use
The vast majority of tobacco users worldwide begin during adolescence. Today more than 150 million adolescents use tobacco, and this number is increasing globally. Bans on tobacco advertising, raising the prices of tobacco products, and laws that prohibit smoking in public places reduce the number of people who start using tobacco products. They furthermore lower the amount of tobacco consumed by smokers and increase the numbers of young people who quit smoking.

2.6.5. Harmful drinking of alcohol
Harmful drinking among young people is an increasing concern in many countries. It reduces self-control and increases risky behaviors. Harmful drinking is a primary cause of injuries (including those due to road traffic accidents), violence (especially domestic violence), and premature deaths. Regulating access to alcohol is an effective strategy to reduce harmful use by young people. Bans on alcohol advertising can lessen peer pressure on adolescents to drink.

2.6.6. Malnutrition
Many boys and girls in developing countries enter adolescence undernourished, making them more vulnerable to disease and early death. Conversely, overweight and obesity - another form of malnutrition with serious health consequences - is increasing among other young people in both low- and high-income countries. Adequate nutrition and healthy eating and physical exercise habits at this age are foundations for good health in adulthood.

2.6.7. HIV and young people
Young people under age 25 accounted for an estimated 50% of new HIV infections worldwide in 2011. They need to know how to protect themselves from HIV and have the means to do so. Better access to testing and counseling will inform young people about their HIV status, help them get the care they need, and avoid further spread of the virus. Also, 1 in 20 adolescents contracts an STD each year.

2.6.8. Early pregnancy and childbirth
About 16 million girls aged 15 to 19 give birth every year - roughly 11% of all births worldwide. The vast majority of births to adolescents occur in developing countries. The risk of dying from pregnancy-related causes is much higher for adolescents than for older women. Laws and community actions that support a minimum age for marriage, as well as better access to contraception, can decrease too-early pregnancies.
2.6.9. Mental health
At least 20% of young people will experience some form of mental illness - such as depression, mood disturbances, substance abuse, suicidal behaviors or eating disorders. Promoting mental health, and responding to problems if they arise requires a range of adolescent-friendly health care and counseling services in communities.

2.6.10. WHO response
Many adolescent health challenges are closely interrelated and successful interventions in one area can lead to positive outcomes in other areas. WHO is helping countries:
✓ to collect, analyze and use data on adolescent health to support and inform policy-making;
✓ to develop evidence-based policies and programmes that support adolescent health;
✓ to increase access to and use of health services for adolescents;
✓ to strengthen contributions from the education, media and other sectors to improve adolescent health.

2.7. ADOLESCENTS’ HEALTH - RELATED RISK BEHAVIORS
Health-risk behaviors contribute markedly to the leading causes of morbidity, mortality, and social problems among adolescents. Tobacco use, unwanted pregnancy, drug and alcohol abuse, and violence among adolescents continue to be found in surprisingly younger teenagers even though considerable amounts of money and effort have been expended to provide appropriate information relating to the consequences of these activities. These risk behaviors and the related outcomes cause a consequential drain on medical resources, the social welfare system, and the quality of life for society in general (CDC, 2007).

Consequently, many reasons exist for collecting data on these and other health-risk behaviors. For example, policymakers and program directors use data on the prevalence of these behaviors to monitor trends, set program goals, identify target populations, seek funding, and advocate for support. Assessment of these behaviors also is a critical component of research that examines associations between health-risk behaviors and other factors, builds theories of behavioral change, develops
policies and programs designed to prevent these behaviors, and evaluates these policies and programs. Health-risk behaviors usually are measured among adolescents by administering questionnaires that require retrospective self-reports about engaging in these behaviors. The truthfulness and accuracy of these self-reports may be compromised because some health-risk behaviors are difficult to recall and some are so sensitive that respondents may not want to report them. In addition, adolescents may purposely under-report or over-report some health-risk behaviors because they believe engaging in these behaviors is socially undesirable or desirable, respectively (Mertens, S. B., 2006).

2.7.1. Tobacco Use

Smoking, which is often initiated during the adolescent years, is the single most preventable risk factor for the leading causes of death. Many diseases of late middle age, such as lung cancer, heart disease, bronchitis, emphysema, and other respiratory diseases are strongly associated with a smoking habit that begins in adolescence. Smoking has serious long-term effects on health, including the risk of nicotine addiction, smoking related diseases, and premature death. The addictive behavior most common amongst adolescents is cigarette smoking. WHO estimates that 5 million people who are alive today will eventually die of smoking related diseases (http://www.who.int/adolescent health,2012).

Most smokers begin during adolescence — when they have incomplete information about the risks of tobacco and its addictive nature. The tobacco industry targets adolescents through promoting cigarettes as ‘cool’ and associating smoking with independence. For adolescent boys and girls, what starts as a gesture of independence quickly becomes addictive dependence. In Asia the promotion of cigarettes increasingly targets adolescent girls. In some European countries more young women now smoke than young men (U.S. Department of Health and Human Services, 2004).

The American Lung Association reports that tobacco use during childhood and adolescence produces significant health problems among young people such as an increase in the number and severity of respiratory illnesses, decreased physical fitness, and potential retardation in the rate of lung growth. Most importantly, adolescence is when an addiction forms which often persists into adulthood. Tobacco
use in adolescence is also associated with a range of other risky, health-compromising behaviors, including being involved in fights, carrying weapons, engaging in high-risk sexual behavior, and using alcohol and other drugs (U.S. Department of Health and Human Services, and CDC, 2010).

According to the Centers for Disease Control and Prevention (CDC), 5000 people under age 18 try their first cigarette each day. Over 80 percent of adults who are addicted to tobacco began smoking as adolescents. The literature shows that adolescents who started smoking early are more likely to continue to smoke as adults. As a result, worldwide mortality from smoking related diseases is expected to rise to 10 million deaths a year by 2030, more than the total of deaths from malaria, maternal and major childhood conditions and tuberculosis combined. Over 70% of these deaths will be in the developing world (CDC, 2011).

2.7.2. Alcohol and drug abuse

Heavy and chronic use of alcohol and illicit drugs increase the risk of disease and injuries. Alcohol is the most commonly used psychoactive substance during adolescence. Its use is associated with many negative consequences for teenagers such as motor vehicle crashes, injuries, fighting, crime, deaths, problems in school and the workplace, and other serious consequences. Heavy and episodic drinking by adolescents has been linked to physical fights, destruction of property, high-risk sexual behavior, other criminal activity, as well as poor academic and employment outcomes. Drug abuse by adolescents can have immediate as well as long-term health and social consequences. It is related to increased injuries, early-unintended pregnancies, academic problems, delinquency, and the spread of STDs. Studies also indicate that regular marijuana users may have many of the same respiratory problems as cigarette smokers (Croatia Medical Journal, 2005).

The YRBSS in the USA in 2011 have shown that, four out of five students (80%) reported having consumed alcohol by the end of high school and about half of the students had done so by 8th grade. 62% percent of 12th grade students and 25% of 8th grade students reported that they had been drunk at least once in their life.7 Substance use is more related to peer influence, relationship with parents, and way of spending leisure time. Addictive behavior is a major medical, psychological, and social problem, especially if we take into consideration the increasing consumption
and availability of drugs. The causation of substance use disorder is probably multifactorial but there has been increasing evidence suggesting that it has a neurological basis (CDC, 2011).

A number of factors have been consistently related to alcohol abuse among adolescents. They include gender, age, school grade, religion, socioeconomic status, and involvement in extracurricular activities. Recent research has also addressed the connection between the likelihood of psychoactive substances abuse and certain psychological characteristics, psychopathological dimensions, motivation for illicit drug abuse and personal hierarchy of value. In addition to laws that limit the availability of illicit substances, tobacco and alcohol, interventions to reduce demand for these substances improve the conditions for healthy development. Increasing their awareness of the dangers of substance use, building their competence to resist peer pressure and to manage stress in a healthy manner is effective in reducing adolescents' motivation for substance use (Croatia Medical Journal, 2005).

2.7.3. Unhealthy Dietary Behaviors

Childhood and adolescence are important times for establishing healthy dietary behaviors. Maintaining healthy eating patterns remains important as children grow into adolescents. When young people are hungry or undernourished, they have difficulty resisting infection and therefore are more likely to become sick, miss school and fall behind in class. They are irritable and have difficulty concentrating, which can interfere with learning, and they have low energy, which can limit their physical activity. In countries where food is not always plentiful, dietary habits are shaped by the availability of food, rather than choice of food with nutritious value. This drive to consume whatever food is available can lead to indiscriminate choices (UNICEF, 2012).

In a growing number of developing countries, obesity and eating disorders exist alongside malnutrition. From an early age adolescents are under pressure from mass media to conform to ultra-thin body shapes and have a poor self-image as a result. Obesity itself is a major problem in some societies. A failure to deal with this at a young age, can lead to a lifetime of poor health and unhappiness and an early death. Malnutrition in adolescence can cause lifelong health problems, while failure to care for the health needs of young pregnant women can damage their own health and that
of their babies. People who are overweight as teenagers are likely to be overweight as adults. Overweight places people at an increased risk for hypertension, heart disease, diabetes, some cancers, and other physical problems later in life. The prevalence of adolescents who are overweight has been increasing during the past several years. Today, data has shown that worldwide 1 out of every 10 adolescents is considered overweight (CDC, 2011).

According to the U.S Youth Risk Behavior Survey, more than half of high school students eat a meal with their families every day, and 71% prefer a home cooked meal to take out or fast food. Researches show that frequent family meals decrease adolescent risk of substance abuse, sexual activity, depression and suicide, violence, school problems, and obesity. Young people who have frequent family dinners have higher commitment of learning, self-esteem, and a sense of support from their community. So, take the time to sit down to a healthy meal together (CDC, 2011).

Chronic malnutrition in earlier years is responsible for widespread stunting and to adverse health and social consequences throughout the life span. This is best prevented in childhood but actions to improve access to food could benefit adolescents as well. Anemia is one of the key nutritional problems in adolescent girls. Preventing too-early pregnancy and improving the nutritional status of girls before they enter pregnancy could reduce maternal and infant mortality, and contribute to breaking the cycle of intergenerational malnutrition. This will involve improving access to nutritious food, to micronutrient supplementation and in many places to preventing infections as well. Adolescence is a timely period to shape healthy eating and exercise habits which can contribute to physical and psychological benefits during the adolescent period and to reducing the likelihood of nutrition-related chronic diseases in adulthood. Promoting healthy lifestyles is also crucial to halting the rapidly progressing obesity epidemic (National Center for Health Statistics, 2003).

2.7.4. Inadequate Physical Activity

Physical activity provides important health and emotional benefits for adolescents. It lowers blood pressure, aids in weight management, and improves cardiorespiratory function. A physically active lifestyle may continue into adulthood, while less active adolescents are more likely to remain less active as adults. Among adolescents, low
physical activity has been associated with other negative health behaviors. Regular physical activity and a healthy diet are both important for maintaining a healthy weight (CDC, 2011).

2.7.5. Behaviors that contribute to Violence and Unintentional Injuries

Adolescents are the victims of violent acts in their homes, schools, and communities. Several factors contribute to the cause of death for this age group. These factors include unintentional injury (i.e. motor vehicle crashes), which is the leading cause of death, followed by homicide and suicide. Injuries caused by motor vehicle crashes account for a major portion of adolescent and young adult mortality. Carrying a weapon and physical fighting can be an indicator of violent-related behavior (CDC, 2011).

Life skills and social development programmes for children and adolescents are important for reducing violent behaviors. Supporting teachers and parents to build skills in problem solving and non-violent disciplining is also effective in reducing violence. If and when violence does occur, actions to make health systems more responsive, and to build the empathy and competence of health workers, can help ensure that adolescents who experience violence, including sexual violence, get effective and sensitive care and treatment. Ongoing psychological and social support can help adolescents deal with the long term psychological effects of violence, and to reduce the likelihood of their becoming perpetrators of violence in the future (UNICEF, 2012).

Approaches for reducing road traffic crashes, and the occurrence of serious injuries if and when crashes occur, are important for safeguarding adolescent health. These include: enforcing speed limits; combining education with laws to promote seat belt (and helmet) use and to prevent driving under the influence of alcohol or other psychoactive substances; and providing alternatives to driving by increasing the availability of safe and inexpensive public transport. Actions to make the environment safer and to educate adolescents on how to avoid drowning, burns and falls can help reduce the likelihood of their occurrence. When someone is injured, prompt access to effective trauma care can be lifesaving (CDC, 2004).
2.7.6. Sexual Behaviors that may result in STIs/HIV/AIDS and Unintended Pregnancies

Adolescence is the age when sexual habits and decisions about risk and protection are formed. Adolescent sexuality refers to sexual feelings, behavior and development in adolescents and is a stage of human sexuality. Sexuality and sexual desire usually begins to intensify along with the onset of puberty. The expression of sexual desire among adolescents might be influenced by family values and the culture and religion they have grown up in (or as a backlash to such) and social mores (Loyd, Cynthia B. 2006).

Adolescents live in increasingly sexualized societies, exposed to mass media that challenge cultural values. The rapid growth of cities and the breakdown of traditional family structures erode a protective cultural layer. Conflict and forced migration put many young people at risk, sometimes from the very people who are supposed to protect them. In war or extreme economic hardship, girls, and sometimes boys, may be pressured into desperate situations, where they are coerced into sex for survival (Loyd, Cynthia B. 2006).

Across the world, a huge number of children and adolescents are abused sexually. Adolescents are disproportionately affected by the risks associated with early and unprotected sex. Many young people become sexually active without planning the sexual relationship or thinking about the consequences. In many cases early sexual experience is unwanted but is the result of coercion or pressure. Sexually transmitted infections (STIs) are the most commonly reported infectious diseases among sexually active adolescents. Compared with adults, adolescents are at a higher risk for acquiring STIs; they are more likely to have multiple sexual partners and short-term relationships, to engage in unprotected intercourse, and to have partners who are themselves at high risk for STIs. Sexually active adolescents have an increased risk of HIV infection, other STIs, and unintended pregnancy. Teenagers who begin having sex at younger ages are exposed to these risks over a longer period of time. STIs are enormously costly to society in terms both of human pain and suffering and of health care expenditures (WHO, 2008).

The HIV/AIDS pandemic alone is sufficient reason to look a new at how health services address the needs of adolescents. The global HIV/AIDS situation for
adolescents is deadly serious, and the need for a stronger, focused response is urgent. Young people are particularly vulnerable to HIV infection because of risky sexual behavior and substance use, because they lack access to accurate and personalized HIV information and prevention services, and for a host of other social and economic reasons. Worldwide, about half of the new cases of HIV/AIDS infections each year occur among adolescents and young people. Whatever their circumstances, in order to protect themselves against HIV, young people need information, skills, youth-friendly health services, and a safe and supportive environment (UNFPA, 2004).

At the ICPD, the International Conference on Population and Development held in Cairo 1994, countries agreed that “… information and services should be made available to adolescents to help them understand their sexuality and protect them from unwanted pregnancies, STDs and subsequent risk of infertility. This should be combined with the education of young men to respect women’s self-determination and to share responsibility with women in matters of sexuality and reproduction” (UNFPA, 2004).

2.8. PREVIOUS STUDIES

In the United States, the national Youth Risk Behavior Survey (YRBS) monitors priority health risk behaviors that contribute to the leading causes of death, disability, and social problems among youth and adults. YRBSS includes a national school-based survey conducted by CDC and state and local school-based surveys conducted by state and local education and health agencies. This report summarizes results from the national survey, 39 state surveys, and 22 local surveys conducted among students in grades 9–12 during 2011. Results from this survey indicated that 72% of all deaths among persons aged 10–24 years result from four causes: motor-vehicle crashes, other unintentional injuries, homicide, and suicide. Many high school students engaged in behaviors that increased their likelihood of death from these four causes. Among high school students nationwide, 11.1% had never or rarely worn a seat belt when riding in a car driven by someone else. During the 30 days before the survey, 29.1% of high school students had ridden in a car or other vehicle driven by someone who had been drinking alcohol, 18.0% had carried a weapon, and 5.5% had not gone to school because they felt they would be unsafe at school or on their way to or from school. During the 12 months before the survey, 6.9% of high school
students had attempted suicide. In addition, 75.0% of high school students had ever drunk alcohol, and 4.4% had ever used methamphetamines. Substantial morbidity and social problems among youth also result from unintended pregnancies and STDs, including HIV infection. Results from the survey indicated that 47.8% of students had ever had sexual intercourse, 35.0% of high school students were currently sexually active, and 38.5% of currently sexually active high school students had not used a condom during last sexual intercourse. Among U.S. adults aged >25 years, 59% of all deaths result from two causes: cardiovascular disease and cancer. Results from the 2007 national YRBS indicated that risk behaviors associated with these two causes of death were present during adolescence. Among high school students nationwide, 20.0% had smoked cigarettes during the 30 days before the survey, 35.4% had watched television 3 or more hours per day on an average school day, and 13.0% were obese. During the 7 days before the survey, 78.6% of high school students had not eaten fruits and vegetables five or more times per day, 33.8% had drunk soda or pop at least one time per day, and 65.3% had not met recommended levels of physical activity (CDC, 2011).

The 2005 Cleveland Municipal School District YRBS was conducted among 7th and 8th grade students from Cleveland Municipal School District public middle schools. This summary provides highlights describing rates of obesity and physical activity; nutrition; personal safety; violence and weapons; protective factors; alcohol, tobacco and other drug use; and sexual behavior that results in STDs and unintended pregnancies. More than 2/3 of students knew they should eat the fewest servings per day from the “fats, oils, and sweets” food group. While, only 30% knew they should be eating the most breads and grains per day, those that did answer incorrectly often believed the food group they should have the most servings from was fruits or vegetables. Current popular culture and mass media focus on ‘low-carb’ diets likely influenced this response. Over 45% of students either walked or rode their bikes to school on a regular basis. These types of transportation were the most common form listed among middle school children. There were no significant differences by grade level for tobacco use of any kind. The likelihood of tobacco use typically increases with age. The fact that 8th graders are no more likely to smoke than 7th graders may indicate that anti-smoking campaigns are working. A high proportion (almost 90%) of middle school students reported having at least one adult they could turn to for a
serious issue or question. Adolescents with adult support are less likely to smoke, drink alcohol, and engage in substance use. They may also have more confidence and better relationships with their parents. Middle school reported high rates of condom use the last time they had sexual intercourse. More than 85% of middle school students reported using a condom the last time they had sex. This is significantly better than high school students did in 2004. This may be an indication that safe sex curricula are working (http://www.cdc.gov/ncipc/factsheets/childpas.htm, 2011).

In Egypt, a descriptive cross-sectional study was conducted to assess current awareness and practice of health risk behaviors among Egyptian university students. Only 121 students (18%) were practicing risky behavior. Tobacco use, alcohol and drugs use and risky sexual behavior were positively correlated. Multiple regression analysis revealed that the main determinants of risky behavior were being a male, of older age, having a high allowance and having no attention to danger. About 30% of students lacked adequate knowledge on AIDS. Most of those who had sexual relationships did not use contraceptives or any method of protection from sexually transmitted infection. Main sources of knowledge were the media (38%) then peers (30%). Less than one fifth of the students in this study practice risky behavior, mainly as tobacco use. They paid moderate attention to risky behavior, and got their information from the media and peers. The study revealed certain types of risky health behavior that are not usually stressed in health communication programmes, such as smoking of water pipes, sniffing of petroleum products and lack of information on AIDS. Based on the results of this study, it is recommended that a health communication programme be designed targeting Egyptian youth and adolescents that address all the types of risky behavior identified. Counter-marketing campaigns should highlight a tobacco-free lifestyle as the majority lifestyle of diverse and interesting individuals (Amani Refaat, 2003).

In Syria, a study done reported the prevalence of current smoking among high school adolescents to be 16% for boys and 7% for girls. Smoking was strongly associated with parental and sibling smoking; high school students from families with parents and/or siblings who smoked were 4.4 times more likely to be current smokers than those from non-smoking families (UNFPA, 2008).
In a Turkish study there was evidence for the effects of school type, a smoking-related attitude, presence of a stepmother, father’s use of alcohol, sister and brother who smoke, student’s alcohol use, and participation in art activities as determinants of smoking among middle and high school students in Ankara (UNFPA, 2008).

In the Russian Federation, a situation analysis of the post-Soviet era showed adolescents to be the most vulnerable and neglected social group. Many girls and boys face problems such as drug and sexual abuse, high-risk behaviors, sexually transmitted infections, especially HIV/AIDS, and early and out-of-wedlock pregnancies (http://www.who.int/adolescent health, 2011).

In Senegal, surveys show that nearly 60 per cent of the population is younger than 20 years old. Adolescents, chiefly girls, are threatened by social and economic problems such as sexually transmitted infections including HIV/AIDS, drug and tobacco abuse, poverty, violence, unemployment and illiteracy. The Survey shows that about one fifth of girls have had premarital sex, often unprotected, before they turn 15. About the same proportion marry before the age of 15. A quarter of young women have children between the ages of 15 and 20 (http://www.who.int/adolescent health, 2011).

In Sudan, according to recent assessment, 25% of Sudanese men, 2% of women and 20% of the school students are currently using different types of tobacco products. Tobacco use in Sudan stands as a social, political, religious, environmental and economic problem (WHO, 2007).
CHAPTER THREE
RESEARCH METHODOLOGY

3.1. STUDY TYPE AND DESIGN
A cross-sectional descriptive community based study conducted in secondary schools in Gezira State through an individual questionnaire filled through structured interviews with the study population, using a multi-stage stratified random sampling technique. It reflects the picture at the time of the study.

3.2. STUDY POPULATION
The study population includes a representative sample of male adolescents in the age group (15 – 19) years in Gezira State selected from boys’ secondary schools. Education system provides an important channel for reaching the majority of adolescents. A cross many world studies, males engage in more risky behaviors than do females.

3.3. STUDY AREA
Sudan is an Arab-African country lies in the Middle East and Northeast Africa, and in the middle part of the Nile River Basin. It has a strategic geographical location, that links the Arab world to the middle and east of Africa, and it shares its borders with seven countries. The total area of the Sudan is about 1.882 million square kilometers which makes it the third largest Arab country and the second African's, and it comes sixteenth among the largest countries of the world. The Blue and White Nile rivers meet in Khartoum, the capital of Sudan, to form the River Nile, the world's longest river. Population of Sudan, according to the last census in 2008 and 2012 projection was about 34 million persons at a growth rate of 2.4% annually. Adolescents and young people are constitutes about 25 % of the total population in Sudan. Administratively, the country is divided into 18 states each governed by a governor and council of ministers. Sudan is classified as a low-income country by World Bank standards. The life expectancy at birth, was estimated around 60 years for men and 64 years for women. urition situation in Sudan is poor, characterized by high levels of underweight and chronic malnutrition. According to World Bank in 2012, literacy rate is about 62% (http://www.sd.undp.org/sudan%20overview.htm).
**Gezira State** (the study area) represents the heart of the Sudan, and it is one of the most productive states in the country. It lies in strategic location between the Blue Nile and the White Nile in the central area of the country. The total area of Gezira state is about 25,500 square kilometers, and the total population according to the 2012 projection is about 4.1 million persons with an annual growth rate of 3% and total fertility rate of 5.9 which make it the second well populated state in the country after Khartoum State with a high population density rate (159 persons per square kilometer). About 44% of the populations are below 15 years of age. Rural population constitutes about 80% of the total population in Gezira, scattered over more than 3000 villages; however there is an ongoing process of urbanization. The state divided into Seven localities and 37 administrative units. These localities are: Medani, Managil, Hasahisa, Kamlin, South Gezira, East Gezira, and Um-Elgura. Wad Medani city is the capital of the state, it lies on the west bank of the Blue Nile River, nearly 186 km southeast of Khartoum, the capital of the Sudan.

Gezira state depends mainly economically on agriculture. It is the main area for irrigated crop-producing agricultural scheme in Sudan (Gezira Scheme), a program to foster cotton farming begun in 1925 and represents a 50% of all irrigated areas in the Sudan. Education facilities are distributed throughout the state. There are 1850 primary schools (1826 governmental and 24 private) with 633,028 students, 499 secondary schools (435 governmental and 65 private) with 110,134 students, and two governmental universities beside some private faculties. Health facilities in the state are contain 59 hospitals, 256 health centers, and 259 dispensaries. The main causes of morbidity and mortality are infectious and parasitic diseases and malnutrition. Non-communicable diseases are also emerging as a public health problem due to the change in socioeconomic and lifestyle conditions.

(http://gazirastate.gov.sd/about.php,2012)
Figure (3.3.2): Locator map of Gezira State in the Sudan

Figure (3.3.3): Gezira State political map
3.4. SAMPLING

3.4.1. SAMPLING TECHNIQUE AND DESIGN

A multi-stage stratified random sampling technique with probability proportional to size (PPS) was used in this study to select 760 students from all Seven localities in the State. For sampling purpose, each locality is designated as a stratum to achieve a representative sample for the whole State. The sampling frame consisted of boys’ secondary schools in each locality in the State.

Schools were selected randomly from each locality with probability proportional to size based on a list of schools obtained from Ministry of Education. 17 schools were chosen. In each selected school, all classes from grades 1 through 3 were included in the sampling frame and selected randomly.

In each selected class, students were selected systematically using a random start with probability proportional to size. Then, 760 students were sampled, and final adjusted weights were scaled to ensure that the weighted count of students was equal to the required total sample size. Eligibility for the interview was limited to the adolescents between the ages 15 and 19 years who were attendant in the selected schools during the time frame of the survey.

3.4.2. THE SAMPLE SIZE

The standard formula for sample size determination has been applied in this study. So, the simple random sample equation is given by:

\[ n^* = \frac{Z^2 pq}{d^2} \]

\[ n = \frac{n^*}{1 + (\frac{n^*}{N})} \sqrt{\frac{N - n^*}{N - 1}} \]
Where:

\( n \): the adjusted sample size.

\( n^* \): the provisional sample size.

\( N \): the total study population.

\( z \): the standard normal deviate, usually set as 1.96 which corresponds to the 95% confidence level.

\( p \): the anticipated prevalence of variable under study in the target population, taken usually as 0.5 or 50%.

\( q \): the complement of \( p \) (\( =1 - p \)).

\( d \): the acceptable margin of error, taken usually as 0.05 or 5%.

The provisional sample size \( (n^*) \) was based on a simple random sampling. Since it is not possible to estimate or make any assumption regarding the anticipated population proportion \( (p) \) of adolescents who adopt behaviors that put their health at risk, a rough estimate of \( (p) \) will usually sufficient. A figure of 0.5 should be used; this is the “safest” choice to gives a maximum sample size.

Thus the sample size is:

\[
 n^* = \frac{(1.96)^2 (50)(50)}{25} = 384
\]

To arrive at the final sample size \( (n) \), \( n^* \) was adjusted by the total population of adolescent students in the study area (which is known as \( N = 56833 \)) to give:

\[
 n = \frac{n^*}{1 + (n^*/N)} \sqrt{\frac{N - n^*}{N - 1}}
\]

\[
 n = \frac{384}{1 + (384/56833)} \sqrt{\frac{56833 - 384}{56833 - 1}}
\]

\[
 n = 381 \times 0.997 = 380
\]
However simple random sampling is unlikely to be the sampling method to apply in an actual field survey, a larger sample size needed because of the design effect (DE). Since stratified random sampling was used, a design effect was estimated at 2. This would mean that, to obtain the same precision twice as many individuals would have to be studied as with the simple random sampling strategy (Al-Noury A. H, 2000).

This would give a sample size as:

\[ n = 380 \times 2 = 760 \]

Since we have seven strata (localities), a probability sample proportional to size was used to select sampled adolescent student from each stratum. All the sampling distribution is shown in table (3.4.2.1).

**Table (3.4.2.1): Sample Size Distribution Per-Locality:**

<table>
<thead>
<tr>
<th>No.</th>
<th>Locality</th>
<th>Male Students</th>
<th>Boy’s Secondary Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total No.</td>
<td>Sample size</td>
</tr>
<tr>
<td>1</td>
<td>Medani Elkubra</td>
<td>6916</td>
<td>92</td>
</tr>
<tr>
<td>2</td>
<td>South Gezira</td>
<td>10156</td>
<td>136</td>
</tr>
<tr>
<td>3</td>
<td>East Gezira</td>
<td>7714</td>
<td>103</td>
</tr>
<tr>
<td>4</td>
<td>El-Hasahisa</td>
<td>9318</td>
<td>125</td>
</tr>
<tr>
<td>5</td>
<td>El-Kamlin</td>
<td>5910</td>
<td>79</td>
</tr>
<tr>
<td>6</td>
<td>El-Managil</td>
<td>13756</td>
<td>184</td>
</tr>
<tr>
<td>7</td>
<td>Um Alghora</td>
<td>3063</td>
<td>41</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>56,833</strong></td>
<td><strong>760</strong></td>
</tr>
</tbody>
</table>

Figure (3.4.2.1): Gezira State Localities
3.5. DATA COLLECTION

Data were collected by a self-reported and pre-tested 52-item questionnaire filled through structured interviews with the study population with a help of teachers in the selected schools. The pre-test was done in two schools from rural and urban areas in the study area. Difficult to understand questions were changed and pretested once again. The questionnaire took about 30 minutes to complete within one normal school session.

The questionnaire covered the following topics in matters of health related risk behaviors:

Section 1: Demographic and socioeconomics characteristics of respondents.
Section 2: Nutritional behaviors.
Section 3: Body weight.
Section 4: Physical activity.
Section 5: Personal hygiene behaviors.
Section 6: Tobacco use.
Section 7: Drinking alcohol and drugs abuse.
Section 8: Violence-related behaviors.
Section 9: Sexual behaviors.
Section 10: Mental health (depression, sad feelings, and attempted suicide).
Section 11: Personal safety behaviors.
3.6. DATA ANALYSIS

Data were analyzed by the computer using the SPSS software version 16 and Microsoft Excel 2010. To ensure data quality, the researcher screened all received questionnaires before starting data entry and analysis. Data were entered and processed by experienced statistician. Descriptive analysis was used such as frequency, percentage, mean, tables and figures.

3.7. ETHICAL CONSIDERATIONS

Participation in the survey is voluntary and confidential. To protect participants’ privacy, the questionnaire is unnamed. Objectives and expected outcome of the research were explained to the participants, and their right not to participate in the study was explained. Respect and confidentiality of information obtained were ensured. Informed consent was obtained from all respondents. Formal permission was obtained from Ministry of Education in the State and schools managers.
CHAPTER FOUR

RESULTS & DISCUSSION
CHAPTER FOUR
RESULTS AND DISCUSSION

4.1. RESULTS

4.1.1. SUMMARY TABLE OF FINDINGS

In this survey, the study population includes a representative sample of male adolescents in the age group of (15 – 19) years selected from male secondary schools in the study area, 17 schools were selected. The number of questionnaires distributed were 760; 750 were received, the response rate was 98.7%. In general, the results of the study revealed that almost 99.3% of the study population were engaged in one or more risky behavior that can weaken or harm their health. This high prevalence of health risk behaviors among Sudanese teenagers is a major public health concern.

A considerable proportion of the study population were at risk of tobacco use, unhealthy dietary habits, improper personal hygiene, lack of personal safety practices like riding in a car while not fasten the seat belt, physical fighting, and physical inactivity. A small proportion of the study population were at risk of alcohol drinking, drugs abuse, carrying a weapon, sexual practices, suicide and mental problems. Table (4.1.1) shows the summary findings of this study.

Table (4.1.1): Summary findings of the study, Gezira State, Sudan, 2012 (n=750)

<table>
<thead>
<tr>
<th>No</th>
<th>INDICATORS</th>
<th>RISK BEHAVIORS/ OR CHARACTERISTICS</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GENERAL HEALTH STATUS</td>
<td>Poor physical health (respondent self-described)</td>
<td>13.4</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Poor mental health/respondent self-described</td>
<td>11.3</td>
</tr>
<tr>
<td>3</td>
<td>NUTRITIONAL BEHAVIORS</td>
<td>Not eating breakfast all days, past 7 days</td>
<td>38.2</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>Eating breakfast all days, past 7 days</td>
<td>61.8</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>Never drink milk or eat milk products, past 7 days</td>
<td>17.3</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>Drink milk or eat milk product on less than 3 days, past 7 days</td>
<td>35.8</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>Drink milk or eat milk product on all days, past 7 days</td>
<td>14.1</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>Never eating meat, past 7 days</td>
<td>32.6</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>Eating meat on less than 3 days, past 7 days</td>
<td>56.9</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>Eating meat on all days, past 7 days</td>
<td>0</td>
</tr>
<tr>
<td>11</td>
<td></td>
<td>Never eating fruits or drinking fruit juice, past 7 days</td>
<td>49.9</td>
</tr>
<tr>
<td>12</td>
<td></td>
<td>Eating fruits or drinking fruit juice on less than 3 days, past 7 days</td>
<td>45.8</td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td>Percentage</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---------------------------------------------------------------------------------------------------</td>
<td>-------------</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Eating fruits or drinking fruit juice on all days, past 7 days</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Never eating green salad, past 7 days</td>
<td>15.3</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Eating green salad on less than 3 days, past 7 days</td>
<td>51.6</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Eating green salad on all days, past 7 days</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Drinking soft drinks on more than 3 days, past 7 days</td>
<td>32.7</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Underweight (self-described)</td>
<td>57.1</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Overweight or obese (self-described)</td>
<td>2.8</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Not trying to lose or gain weight to reach the right weight (weight control)</td>
<td>53.4</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Not participate in any physical activity, past 7 days.</td>
<td>1.4</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Participate in physical activity on only less than 3 days.</td>
<td>39.1</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Sitting and Watching TV more than 6 hours on a usual day.</td>
<td>21.7</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Hand washing before eating, never</td>
<td>4.1</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Hand washing before eating, always</td>
<td>15.2</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Hand washing after using the toilet, never</td>
<td>14.4</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Hand washing after using the toilet, always</td>
<td>8.2</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Using soap when washing hands, never</td>
<td>46.1</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Using soap when washing hands, always</td>
<td>2.3</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>Tobacco use (cigarette or snuff) - ever</td>
<td>41.1</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>Tobacco use – current, past 30 days</td>
<td>32.5</td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>Tobacco use - first use before age 15</td>
<td>12.8</td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>Tobacco use - tried to quit, ever</td>
<td>8.6</td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>Alcohol - ever drank</td>
<td>4.6</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>Alcohol - current drinker, past 30 days</td>
<td>2.1</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>Illegal drugs - ever used</td>
<td>1.9</td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>In a physical fight, past 30 days</td>
<td>31.4</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>Carry Weapon (such as knife, stick, or gun), past 30 days</td>
<td>19.2</td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>Threatened or injured with a weapon , past 30 days</td>
<td>20.4</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>Bullied or verbally abused by others, past 30 days</td>
<td>40.1</td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>Physically forced to do sexual things against your will, ever</td>
<td>0.4</td>
<td></td>
</tr>
<tr>
<td>42</td>
<td>Sexual intercourse - ever</td>
<td>2.6</td>
<td></td>
</tr>
<tr>
<td>43</td>
<td>Sexual intercourse –current, past 3 months</td>
<td>2.1</td>
<td></td>
</tr>
<tr>
<td>44</td>
<td>Sexual intercourse –used condom during last sex</td>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>Sexual intercourse –alcohol/drug used before last sex</td>
<td>0.3</td>
<td></td>
</tr>
<tr>
<td>46</td>
<td>Depression (felt so sad or hopeless for one week or more)</td>
<td>24.9</td>
<td></td>
</tr>
<tr>
<td>47</td>
<td>Suicidal thinking, past 12 months</td>
<td>0.4</td>
<td></td>
</tr>
<tr>
<td>48</td>
<td>Seat belt never or rarely worn in car, often</td>
<td>91.4</td>
<td></td>
</tr>
<tr>
<td>49</td>
<td>Helmet never or rarely worn on bicycle, often</td>
<td>99.3</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>Driving after drinking or ridden in a car driven by someone who had been drinking alcohol, ever</td>
<td>1.3</td>
<td></td>
</tr>
</tbody>
</table>
4.1. 2. DEMOGRAPHIC AND SOCIOECONOMICS CHARACTERISTICS

Information on the background characteristics of any study population is essential for interpretation of the survey results and examination of any cause-effect relationship among the study variables. Besides, it helps in comparing the findings with similar characteristics in other independent survey findings. Also, analysis of the reported characteristics of the respondents can indicate the quality of the information collected and whether or not it is representative of the population. (http://www.demographicreports.com/methodology.html)

In this study, the summary of the general background characteristics of the respondents was presented in table (4.1.2.1). These include demographic and socioeconomic characteristics such as age, school grade, parents' education, and family economic status; and include also the general health status indicators such as general physical and mental health status of the participants.
Table (4.1.2.1): Demographic and socioeconomic characteristics of respondents, Gezira State, Sudan, 2012 (n=750)

<table>
<thead>
<tr>
<th>Characteristics / Variables</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
</tr>
<tr>
<td>15 years old or less</td>
<td>13.2</td>
</tr>
<tr>
<td>16 years old</td>
<td>14.5</td>
</tr>
<tr>
<td>17 years old</td>
<td>52.2</td>
</tr>
<tr>
<td>18 years old or more</td>
<td>21.1</td>
</tr>
<tr>
<td><strong>School Grade</strong></td>
<td></td>
</tr>
<tr>
<td>Grade 1</td>
<td>10</td>
</tr>
<tr>
<td>Grade 2</td>
<td>30</td>
</tr>
<tr>
<td>Grade 3</td>
<td>60</td>
</tr>
<tr>
<td><strong>Mother’s Education</strong></td>
<td></td>
</tr>
<tr>
<td>Not educated</td>
<td>33.9</td>
</tr>
<tr>
<td>Primary or intermediate education</td>
<td>42.3</td>
</tr>
<tr>
<td>Secondary or university education</td>
<td>23.8</td>
</tr>
<tr>
<td><strong>Father’s Education</strong></td>
<td></td>
</tr>
<tr>
<td>Not educated</td>
<td>26.1</td>
</tr>
<tr>
<td>Primary or intermediate education</td>
<td>54.2</td>
</tr>
<tr>
<td>Secondary or university education</td>
<td>19.7</td>
</tr>
<tr>
<td><strong>Family’s Economic Status</strong></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>2.7</td>
</tr>
<tr>
<td>Medium</td>
<td>62.8</td>
</tr>
<tr>
<td>Low</td>
<td>34.5</td>
</tr>
<tr>
<td><strong>General Physical Health (self-described)</strong></td>
<td></td>
</tr>
<tr>
<td>Excellent</td>
<td>4.1</td>
</tr>
<tr>
<td>Very good</td>
<td>10.2</td>
</tr>
<tr>
<td>Good</td>
<td>40.1</td>
</tr>
<tr>
<td>Fair</td>
<td>32.2</td>
</tr>
<tr>
<td>Poor</td>
<td>13.4</td>
</tr>
<tr>
<td><strong>General Mental Health (self-described)</strong></td>
<td></td>
</tr>
<tr>
<td>Excellent</td>
<td>18.2</td>
</tr>
<tr>
<td>Very good</td>
<td>20.2</td>
</tr>
<tr>
<td>Good</td>
<td>29.1</td>
</tr>
<tr>
<td>Fair</td>
<td>21.2</td>
</tr>
<tr>
<td>Poor</td>
<td>11.3</td>
</tr>
</tbody>
</table>
Figure (4.1.2.2) shows that more than half (52.2%) of the respondents are of age 17 years, which constitute the largest proportion of the study population. More than one-fifths (21.1%) of the respondents are 18 years old or more, while only 13.2% are of age 15 years or less, and 14.5% are 16 years old. The vast majority (60%) of the interviewed students were from the 3rd grade because they are older and active adolescents and they are more likely to be engaged in risky behaviors, 30% were from the 2nd grade, and only 10% were from the 1st grade.

**Figure (4.1.2.2): Age distribution of respondents, Gezira State, Sudan, 2012 (n=750)**
Regarding to the parents' education, the results of the study indicated that the illiteracy in general is widely spread among the parents in the study area but the fathers were better educated than the mothers. More than one-third (33.9%) of the respondents’ mothers were having no any formal education in comparison with about more than one-quarter (26.1%) of respondents’ fathers. Slightly less than one-quarter (23.8%) of respondents’ mothers were completed secondary education or university compared with only 19.7% of respondents’ fathers. (Figure 4.1.2.3).

Figure (4.1.2.3): Education level of respondents’ mothers, Gezira State, Sudan, 2012 (n=750)
Also the results of the survey revealed that the almost one-third (34.5%) of the study population described their family’s economic status as low, whereas only 2.7% described it as high. 62.8% of the participants perceived their family’s economic status as medium (Figure 4.1.2.4). Worldwide, there is consistent evidence in many countries that people at a lower socioeconomic status have poorer health than their better-off counterparts. (http://www.nphp.gov.au/catitrg/democharacterbgpaper.pdf)

![Pie chart showing economic status of respondents’ families, Gezira State, Sudan, 2012 (n=750)](image)

Figure (4.1.2.4): Economic status of respondents’ families, Gezira State, Sudan, 2012 (n=750)
Physical health of the participants (general status) presented in figure (4.1.2.5). As can be seen, 13.5% of the study population described their physical health status as poor, whereas about one-third (32.2%) of the participants perceived their physical health status as fair. Only 4.1% of the respondents described their physical health status as excellent, 10.2% as very good, and 40.1% as good. Regarding the mental health status of the study population, 11.3% of them described their mental health as poor, whereas 21.2% perceived their mental health as fair. Only 18.2% of the participants described their mental health as excellent, 20.2% as very good, and 29.1% as good.

![Pie chart showing physical health status of respondents.]

Figure (4.1.2.5): General physical health status of respondents, Gezira State, Sudan, 2012 (n=750)
4.1.3. NUTRITIONAL BEHAVIORS

The study indicated that there were many nutritional and dietary risk behaviors among the study population.

As shown in figure (4.1.3.1), there were 1.5% of the respondents had not eaten breakfast on all days during the 7 days before the survey, while about six out of ten (61.8%) of them had eaten breakfast on all days during the 7 days before the survey. Almost one-fourth (25.3%) of the respondents had eaten breakfast on more than 3 days during the 7 days before the survey, and 11.4% of them had eaten it on 3 or less days during the 7 days preceding the survey.

Figure (4.1.3.1): Eating breakfast during the 7 days preceding the survey, Gezira State, Sudan, 2012 (n=750)
Figure (4.1.3.2) showed that 17.3% of the respondents had not drunk milk or eaten milk products during the 7 days before the survey, while only 14.1% of them had drunk milk or eaten milk products at least one time per day on all days during the 7 days before the survey. About one-third (32.8%) of the respondents had drunk milk or eaten milk products at least one time per day on more than 3 days during the 7 days before the survey, and the majority (35.8%) of the respondents had drunk milk or eaten milk products at least one time per day on 3 or less days during the 7 days before the survey.

**Figure (4.1.3.2):** Drinking milk or eating milk products during the 7 days preceding the survey, Gezira State, Sudan, 2012 (n=750)
Figure (4.1.3.3) revealed that almost one-third (32.6%) of the respondents had not eaten meat at least one time per day on all days during the 7 days before the survey, while no body (0%) of the respondents had eaten meat on all days during the 7 days before the survey. The majority and more than half (56.9%) of the respondents had eaten meat at least one time per day on 3 or less days during the 7 days before the survey, and only 10.5% had eaten meat at least one time per day on more than 3 days during the 7 days before the survey.

Figure (4.1.3.3): Eating meat during the 7 days preceding the survey, Gezira State, Sudan, 2012 (n=750)
As shown in figure (4.1.3.4), 15.3% of the respondents had not eaten green salad (A salad consisting mostly of fresh vegetables and the base for it are greens, the possible ingredients include: cucumber, arugula, lettuce, celery, carrot, tomato, onion, and green chili) on all days during the 7 days before the survey, while no body (0%) of the respondents had eaten green salad on all days during the 7 days before the survey. The majority and more than half of the respondents (51.6%) had eaten green salad at least one time per day on 3 or less days during the 7 days before the survey, and about one-third (33.1%) had eaten green salad at least one time per day on more than 3 days during the 7 days before the survey.

Figure (4.1.3.4): Eating green salad during the 7 days preceding the survey, Gezira State, Sudan, 2012 (n=750)
Figure (4.1.3.5) shows that almost half of the respondents (49.9%) had not eaten fruits or drunken fruit juices on all days during the 7 days before the survey, while no body of the respondents (0%) had eaten fruits or drunken fruit juices on all days during the 7 days before the survey. The majority of the respondents (45.8%) had eaten fruits or drunken fruit juices at least one time per day on 3 or less days during the 7 days before the survey, and only 4.3% of the respondents had eaten fruits or drunken fruit juices at least one time per day on more than 3 days during the 7 days before the survey.

Figure (4.1.3.5): Eating fruits or drinking fruit juices during the 7 days preceding the survey, Gezira State, Sudan, 2012 (n=750)
Figure (4.1.3.6) revealed that about one-third (32.7%) of the respondents had drunk a can or bottle of carbonated soft drinks at least one time per day on more than 3 days during the 7 days before the survey, and the majority (39.2%) of the respondents had drunk a can or bottle of soft drinks at least one time per day on 3 or less days during the 7 days before the survey. 28.1% of respondents had not drunk a can or bottle of soft drinks on all days during the 7 days before the survey, while no body of the respondents (0%) had drunk a can or bottle of soft drinks on all days during the 7 days before the survey.

Figure (4.1.3.6): Drinking a can or bottle of carbonated soft drink during the 7 days preceding the survey, Gezira State, Sudan, 2012 (n=750)
4.1.4. BODYWEIGHT

Figure 4.1.4.1 showed that the majority and about six out of ten of the respondents (57.1%) described themselves as underweight, and only 2.8% of them described themselves as overweight, while four out of ten (40.1%) of them described themselves as about the right weight.

Figure (4.1.4.1): Body weight of the respondents, Gezira State, Sudan, 2012 (n=750)
Approximately one-fifth of the respondents (20.3%) were trying to gain weight during the 30 days before the survey, while only 1.2% of the respondents were trying to lose weight or to keep from gaining weight by eating less food, fewer calories, or low-fat foods, or by doing regular physical exercises. About one-fourth of the respondents (25.1%) were trying to stay the same weight, while more than half of the respondents (53.4%) were not trying to do anything regarding their weight (Figure 4.1.4.2).

Figure (4.1.4.2): Trying to gain or lose weight during the 30 days preceding the survey, Gezira State, Sudan, 2012 (n=750)
4.1.5. PHYSICAL ACTIVITY

Regular physical activities such as walking, running, playing football, or even farming are essential for good health and better life. (Mokdad, A., et al. 2003)

Figure (4.1.5.1) revealed that approximately six out of ten of the respondents (59.5%) were physically active (doing any kind of physical activity or exercise that increased their heart rate and made them breathe hard some of the time) for a total of least 60 minutes per day on 3 or more days during the 7 days before the survey in order to stay healthy. About four out of ten of the participants (39.1%) were physically active for at least 60 minutes per day on less than 3 days during the 7 days before the survey, while only 1.4% of the respondents had not participated in at least 60 minutes of any kind of physical activity on at least 1 day during the 7 days before the survey (i.e., did not physically active on any day during the 7 days).

Figure (4.1.5.1): Physical activity for at least 60 minutes during the 7 days preceding the survey, Gezira State, Sudan, 2012 (n=750)
Also the study showed that 85.3% of the respondents had played regularly on at least one sports team (run by their school or community groups) during the 12 months before the survey, while 14.7% of the respondents had not played regularly on any sports team during the 12 months before the survey.

Regarding sedentary behaviors and screen time (watching TV, playing video games, using computer and internet, using mobile phone, chatting, playing cards, etc.), the results of the survey showed that almost two-thirds of the respondents (66.5%) were mentioned that they were spend 3 to 6 hours per day sitting or lying down for watching television, playing video games, using computer, browsing the internet, using mobile phone, chatting, or doing other sitting activities such as playing cards, reading stories and newspapers, and listening to music. More than one-fifth of the respondents (21.7%) were mentioned that they were spend more than 6 hours per day sitting or lying down, while only 11.8% were mentioned that they were spend less than 3 hours per day sitting or lying down for watching television or doing other sitting activities (Figure 4.1.5.2).

![Figure 4.1.5.2: Screen time and sedentary behaviors during a usual day, Gezira State, Sudan, 2012 (n=750)](image-url)
4.1.6. HANDS WASHING BEHAVIORS

The results of the study showed that only 15.2% of the respondents were mentioned that they were washing their hands before eating always during the 7 days before the survey. The majority of the respondents (53.7%) were mentioned that they were washing their hands before eating on sometimes, and less than one-third of the respondents (27%) were mentioned that they were washing their hands before eating on most of the time. 4.1% of the respondents was mentioned that they were never washing their hands before eating during the 7 days preceding the survey (Figure 4.1.6.1).

Figure (4.1.6.1): Hand washing before eating during the 7 days preceding the survey, Gezira State, Sudan, 2012 (n=750)
Figure (4.1.6.2) revealed that only 8.2% of the respondents were mentioned that they were washing their hands after using the toilet always during the 7 days before the survey, and 14.4% were mentioned that they were never washing their hands after using the toilet. Almost half of the respondents (50.7%) were mentioned that they were washing their hands after using the toilet on sometimes, and 27.1% of the respondents were mentioned that they were washing their hands after using the toilet on most of the time during the 7 days before the survey.

Figure (4.1.6.2): Hand washing after using the toilet during the 7 days preceding the survey, Gezira State, Sudan, 2012 (n=750)
Figure (4.1.6.3) showed that the majority of the respondents (46.1%) were mentioned that they were never using soap when washing their hands after using the toilet and before eating during the 7 days before the survey, while only 2.3% of the respondents were mentioned that they were using soap always when washing their hands. Approximately one-third of the respondents (33.4%) were mentioned that they were using soap sometimes when washing their hands, and 18.2% of the respondents were mentioned that they were using soap most of the time when washing their hands during the 7 days before the survey.

**Figure (4.1.6.3): Using soap when washing hands (after using the toilet or before eating), Gezira State, Sudan, 2012 (n=750)**
4.1.7. TOBACCO ABUSE

The results of the survey indicated that the prevalence of having ever smoked cigarettes or having ever used snuff is very high. More than four out of ten (41.1%) of the respondents had ever tried cigarette smoking (even one or two puffs), or used smokeless tobacco (snuff). About six out of ten (58.9%) of the respondents have never smoked or used any form of tobacco (Figure 4.1.7.1).

Figure (4.1.7.1): Ever tried cigarette smoking or snuffing, Gezira State, Sudan, 2012 (n=750)
Regarding the current tobacco use, almost one-third (32.5%) of the respondents had smoked cigarettes or used snuff on at least 1 day during the 30 days before the survey (i.e., the prevalence of current tobacco use). Only 1.8% of the respondents had ever smoked at least one cigarette or used snuff every day during the all 30 days before the survey (i.e., the prevalence of current daily tobacco use), while 25.4% of the respondents had used tobacco (cigarettes or snuff) on 10 or more days during the 30 days before the survey (i.e., the prevalence of current frequent tobacco use) (Figure 4.1.7.2).

Figure (4.1.7.2): Tobacco use days during the past 30 days (current), Gezira State, Sudan, 2012 (n=750)
Concerning to the reasons for smoking and snuffing, the majority (12.7%) of ever tobacco users mentioned that their friends were used tobacco, 11.5% mentioned that their fathers were used tobacco, 9.4% mentioned that to appear more adult, 4.3% mentioned that to look like a film star, 2.1% of the respondents mentioned that tobacco is pleasant and helps me to concentrate and relax and gives me a confidence boost, and only 1.1% mentioned that it is just a habit and there are no specific reasons. 58.9% of the respondents have never smoked or used any form of tobacco (Figure 4.1.7.3).

Figure (4.1.7.3): Reasons for ever tobacco use, Gezira State, Sudan, 2012 (n=750)
With respect to the age of initiation of this risk behavior, the survey showed that 12.8% of the respondents had used tobacco for the first time in the age of 15 years old or less while the rest (28.3%) had used tobacco for the first time after the age of 15 years (Figure 4.1.7.4).

Figure (4.1.7.4): Age when the respondents have used tobacco for the first time, Gezira State, Sudan, 2012 (n=750)
Among the 41.1% of the respondents who ever tried smoked cigarettes or used snuff, only 8.6% had ever tried to stop smoking cigarettes or snuff, while the rest and the current smokers (32.5%) had not ever tried to stop smoking or snuffing. 58.9% have never used any form of tobacco (Figure 4.1.7.5).

Figure (4.1.7.5): Respondents who had ever try to stop tobacco use, Gezira State, Sudan, 2012 (n=750)
4.1.8. DRINKING ALCOHOL AND DRUGS ABUSE

The survey showed that 4.6% of the respondents had had at least one drink or few sips of alcohol on at least 1 day during their life (i.e., the prevalence of ever drank alcohol), while only 2.1% of the respondents had had at least one drink of alcohol on at least 1 day during the 30 days before the survey (i.e., the prevalence of current alcohol drinkers) (Figure 4.1.8). The study also showed that 1.9% of the respondents had used any form of illegal drugs such as Bango, amphetamines, glue, or injections to get high one or more times on at least 1 day during their life (i.e., the prevalence of have ever used drugs).

Figure (4.1. 8): Respondents who had at least one drink or few sips of alcohol during their life (ever tried alcohol drinking), Gezira State, Sudan, 2012 (n=750)
4.1.9. VIOLENCE-RELATED BEHAVIORS

As can shows in figure (4.1.9.1), around one-third (31.4%) of the respondents had been in a physical fight one or more times during the 30 days before the survey, and about two-fifths (40.1%) of the respondents had been bullied or verbally abused one or more times during the 30 days before the survey (Figure 4.1.9.2).

Figure (4.1.9.1): Respondents who had been in a physical fight one or more times during the past 30 days, Gezira State, Sudan, 2012 (n=750)

Figure (4.1.9.2): Respondents who had been bullied or verbally abused one or more times during the past 30 days, Gezira State, Sudan, 2012 (n=750)
The study also showed that 19.2% of the respondents had carried a weapon (e.g., a knife, stick, or gun) on at least 1 day during the 30 days before the survey. 20.4% of the respondents had been injured or threatened one or more times during the 30 days before the survey (Figure 4.1.9.3).

![Figure (4.1.9.3): Respondents who had been injured or threatened with a weapon (e.g., a knife, stick, or gun) one or more times during the past 30 days, Gezira State, Sudan, 2012 (n=750)](image)

In regards to sexual violence, only 0.4% of the respondent mentioned that they had ever been physically forced to do sexual things when they did not want to (against their will).
4.1.10. SEXUAL BEHAVIORS

The results of the study indicated that 2.6% of the respondents had ever had sexual intercourse with at least one person during their life (i.e., ever sexually active), and 2.1% of the respondents had had sexual intercourse with at least one person during the 3 months before the survey (i.e., currently sexually active) (Figure 4.1.10.1).

Figure(4.1.10.1): Respondents who had ever had sexual practice with at least one person during their life, Gezira State, Sudan, 2012 (n=750)
Among the 2.1% of currently sexually active respondents, only less than half (46.2%) (or 1.2% of the total respondents) reported that they had used a condom during last sexual intercourse in order to prevent themselves and their partners from sexually transmitted infections (STIs) including HIV/AIDS and also from unintended pregnancy (Figure 4.1.10.2). Also, among those 2.1% of currently sexually active respondents, 14.3% (or 0.3% of the total respondents) had drunk alcohol or used drugs before last sexual intercourse.

Figure (4.1.10.2): Respondents who had used a condom during their last sexual practice, Gezira State, Sudan, 2012 (n=750)
4.1.11. DEPRESSION, SAD FEELINGS, AND ATTEMPTED SUICIDE (MENTAL DISORDERS)

Regarding mental health of the respondents, during the 12 months before the survey, approximately one-quarter (24.9%) of the respondents had felt so sad or hopeless almost every day for one week or more that they stopped doing some usual activities (Figure 4.1.11). Only 0.4% of the respondents had seriously thoughts about killing themselves (attempting suicide) during the 12 months before the survey.

Figure (4.1.11): Respondents who had felt so sad or hopeless almost every day for one week or more, Gezira State, Sudan, 2012 (n=750)
4.1.12. SAFETY BEHAVIORS

High proportion (91.4%) of the respondents had often rarely or never worn a seat belt when riding in a car driven by someone else. Also among the respondents who had driven or ridden in a bicycle during the 12 months before the survey, 99.3% had never worn a bicycle helmet (Figure 4.1.12). During the 12 months before the survey, only 1.3% of the respondents had ridden in a car driven by someone who had been drinking alcohol.

Figure (4.1.12): Respondents who had worn a seat belt when riding in a car driven by someone else, Gezira State, Sudan, 2012 (n=750)
4.2. DISCUSSION

Behaviors established during adolescence often continue into adulthood, eventually resulting in substantial morbidity and mortality (UNFPA, 2009). Adolescents face many challenges that put them on the path of ill-health. Today, the health of young people—and the adults they will become—is critically linked to the health-related behaviors they choose to adopt. Many millions of adolescents lose their lives annually, through preventable or treatable events or illnesses. (http://www.who.int/adolescent health).

Over time, the risks that populations face tend to shift from risks for infectious disease to risks for chronic and behavioral disease. This is because of past successes combating infectious diseases and their risks. A limited number of behaviors contribute markedly to today’s major killers. These behaviors, often established during adolescence period, include: tobacco use, alcohol and drugs abuse, unhealthy dietary habits, improper personal hygiene behaviors, physical inactivity, fighting and violence and behaviors that contribute to injuries, unsafe sexual behaviors, non-commitment with personal safety, and mental health problems. In fact, almost 70% of adolescent death and illness worldwide are caused by these categories of risk behaviors (CDC, 2011). Paying attention to the health and development of adolescents will reduce death and disease, including chronic disease in later life, which will promote more productive and healthy future communities and societies (WHO, 2007).

Given that, based on estimates from the 2010 Sudan Household Health Survey, adolescents aged 10-19 years account for 25% (9.5 million) of the Sudan's population, that means about one out of four people is adolescent (Sudan Federal Ministry of Health and Central Bureau of Statistics, 2011), so the risk behaviors and mental health of them should receive attention and resources from the government and many sectors in society. Programs for adolescents’ health in Sudan are tremendously absent. Recent changing in the lifestyle and socioeconomic factors in Sudan has subjected Sudanese youth to various risks that negatively influence their health. Unfortunately, till now there is no adequate and obvious data about the prevalence and level of health-related behaviors practiced by Sudanese adolescents that put their health at risk.
The study highlighted the important health-related risk behaviors among Sudanese teenagers that affect their health and life. It also described their demographic and socioeconomic circumstances. The study also provided new information on some little-explored areas, such as violence, bullying, physical fighting, sexual harassment, and suicide among Sudanese adolescents.

The results of the study showed that almost 99.3% of the study population were engaged in one or more behavior that can weaken or harm their health. The study findings indicate that a significant proportion of Sudanese adolescents were prone to unhealthy habits and risky behaviors and the prevalence of some of these risky behaviors is very high.

A considerable proportion of the study population were at risk of tobacco use, unhealthy dietary habits, improper personal hygiene, lack of personal safety practices like riding in a car while not fasten the seat belt, physical fighting, and physical inactivity. A small proportion of the study population were at risk of alcohol drinking, drugs abuse, carrying a weapon, sexual practices, suicide and mental problems. Thus, the study points out that joint action is needed from government, civil society, international agencies, and families, in order to protect adolescents and help them protect themselves.

Socioeconomic and demographic status of the adolescents is one of the most important factors affecting their life style and behaviors. In this study, socioeconomic and demographic indicators among the study population were described in many categories: age, educational level of mother, educational level of father, and family income.

Of the 750 adolescents aged 15 to 19 years who participated in this survey, more than half (52.8%) of them are of age 17 years, which constitute the largest proportion of the study population. The vast majority (60%) of the interviewed students were from the 3rd grade, and that because they are older and active adolescents and they are more likely to be engaged in risk behaviors rather than those in grades 1 and 2.

11.5% and 18.5% of the adolescents reported that their mothers and fathers, respectively, did not educated or completed primary school. Also, 34.5% reported that their family’s income is insufficient. This supported by (Logie 1998), “Poverty
is the most important pathway and driver of ill–health. Also (UNFPA, 2008) pointed that there is a strong relationship between demographic, cultural, and socioeconomic factors of the young people and the prevalent of some risk behaviors among them. In regards to how do adolescents rate their health; the survey found that 13.4% and 32.2% of them described their general physical health as poor or fair, respectively, while 11.3% and 21.2 of them described their mental health as poor or fair, respectively.

Nutritional status, both past and present, is a key factor affecting adolescents’ health, their physical and emotional well-being, and their cognitive development. Dietary habits, which affect food preferences, energy consumption and nutrient intakes, are generally developed in early childhood and particularly during adolescence. Healthy dietary habits should be developed during adolescence, but external pressures often lead young people to choose foods that do not promote healthy growth and development. The home and school environments play a major role in determining a child's attitude to, and consumption of individual foods. Adolescents generally become more independent and mobile during this stage of life; they may frequently eat meals outside the home, share food with peers, and be exposed to new eating habits (UNFPA, 2008-1). Adolescence is a period of transition between childhood and adulthood. This incorporates both physical and emotional changes. For this reason young teenagers will chose foods for many more reasons than their nutritional content and health, for example: family characteristics, peer pressure, social and cultural norms and values, media influences, available income, nutrition knowledge, and body image (UNFPA, 2008-2).

In the study area as in Sudan as general where food is not always plentiful, dietary habits are shaped by the availability of food, rather than choice of food with nutritious value. This drive to consume whatever food is available can lead to indiscriminate choices. According to this survey, around two-fifths (38.2%) of adolescents reported rarely or never eating breakfast during the 7 days before the survey, while the rest, 61.8%, reported eating breakfast most of the time or always. That means a huge number of adolescents in the study area were not eating their breakfast regularly or always, and that will put them at a risk of malnutrition and poor eating patterns which can impair their growth and development.
Breakfast is indeed the most important meal of the day; as it the first meal, it gets the body going for the rest of the day. A good breakfast fuels you up and gets you ready for the day (WHO, 2002). Studies show that breakfast plays an important role in providing needed energy and nutrients after an overnight fast and can aid in concentration and performance at school. There’s overwhelming evidence to suggest that, especially for children and adolescents, eating breakfast has been shown to improve their behavior at school, and helps provide them with the energy they need for the day, and the nutrients they need to grow and develop. Eating a good breakfast can lead to better academic performance and a higher enjoyment of school, and have a positive effect on brain performance. Kids and adolescents who eat breakfast tend to eat healthier overall and are more likely to participate in physical activities — two great ways to help maintain a healthy weight. Without breakfast, people can get irritable, restless, and tired (WHO, 2003).

Teenagers tend to skip meals and develop irregular eating habits. One of the most frequently missed meals is breakfast. Breakfast skipping is common among adolescents and adults in many countries. The reasons given for not eating breakfast are usually poor time management, lack of food, or lack of appetite. It’s also will be linked to parental influence: whether a parent does or doesn’t eat breakfast affects whether their children will. Adolescents who regularly skip breakfast are more likely to be disruptive in class or to be absent from school. Skipping breakfast may cause weight gain by making them eat excessively later in the day. It can make kids and adolescents feel tired, restless, or irritable. In the morning, their bodies need to refuel for the day ahead after going without food for 8 to 12 hours during sleep. Their mood and energy can drop by midmorning if they don't eat at least a small morning meal. Smoking, alcohol and caffeine consumption are more likely among individuals who rarely eat breakfast. A 2002 study in the “Journal of Adolescent Health” found that teens who didn't eat breakfast were more likely to be iron-deficient than teens who do (WHO, 2007).

It's important for kids to have breakfast every day, but what they eat in the morning is crucial too. Choosing breakfast foods that are rich in whole grains, fiber, and protein while low in added sugar may boost kids' attention span, concentration, and memory — which they need to learn in school. Continued education around the
significance of eating a nourishing breakfast for children, adolescents and parents is essential (WHO, 2004).

Despite the fact that milk is one of the most nutritionally complete foods available, many adolescents (17.3%) in the study area were not consumed it or its products regularly one or more times per day during the 7 days before the survey.

Milk and milk products are important in the diet of all age-groups. They provide a number of important nutrients that are essential for both the young and old. The adolescence years represent a very important time for bone growth and development as there is only a once in a life time opportunity to develop bones. Approximately 30% of all mineral deposited in our bones throughout life, occurs during adolescence and 90% of our adult skeleton is formed by the age of 18 and even earlier. Dairy products are good providers of calcium and many other nutrients important to healthy bones and teeth in children and adolescents. Consumption of a glass of milk, a piece of cheese and a pot of yogurt will go a long way to helping this age group meet their daily calcium requirement (WHO, 2002-1).

Approximately one-third (32.6%) of the study population were not consuming meat one or more times per day during the 7 days before the survey. Animal source foods can provide a variety of micronutrients that are difficult to obtain in adequate quantities from plant source foods alone. Food guides usually recommend several daily servings from animal source food groups (dairy products and meat). Meat (beef, lamb, and chicken) is a good dietary provider of iron. Consumption of sufficient iron in the diet is very important to allow correct development in children and adolescents. Iron is important for growth, brain development and the immune system, however it is commonly deficient or sub optimal in both children and adolescents (WHO, 2004).

Almost half of the study population (49.9%) and 15.3% were not consuming fruits and vegetables, respectively, one or more times per day during the 7 days before the survey; that include fruit juice and green salad. That means many of the participants in the survey were at risk regarding eating fruits and vegetables, and the consumption of it by adolescents was unsatisfactory. This would reflect the low availability of fruits and vegetables or food in general due to economic factors, or could be also explained by the lack of health education about the nutritive values of fruits and 

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vegetables and of different food stuffs; also the rapid rhythm of life and the long time spent outdoors make ideal food unlikely. That means the possibilities for obtaining a balanced diet are rare in the study area. Future interventions could include environmental approaches like increased availability, price reduction of fruits and vegetables and easily accessible food supplementation programs. Therefore, national, local and school-based food programs could be an effective strategy for health promotion of adolescents.

Fruits and vegetables intake varies considerably among countries: reflecting economic, cultural and agricultural environments. Fruits and vegetables consumption is one element of a healthy diet. They are good sources of complex carbohydrates, vitamins, minerals, and other substances that are important for good health. Dietary patterns with higher intakes of fruits and vegetables are associated with a variety of health benefits, including a decreased risk for some types of cancer and cardiovascular disease (WHO, 2003).

A high proportion of the students in the study area were consuming soft drinks and fast foods which contain a high amount of calories and saturated fats. 34.5% and 71.9% of the participants were consuming fast foods and soft drinks at least one time per day on more than 3 days during the week, respectively. That means the consumption of less nutritious or non-nutritious foods were relatively high among the study population. This finding was lower than that found in a study of food consumption pattern in Saudi Arabia and Iran which revealed that the contribution of saturated fatty acids to dietary energy exceeded the recommended limits. In recent years, soft drink consumption has significantly increased among children and adolescents. Consumption of soft drinks appears to be associated with an increased risk for being overweight in children (WHO, 2004).

Both under nutrition and obesity are problems among adolescents in low- and middle-income countries. In developing countries under-nutrition is highly prevalent among adolescents, while obesity is an increasing problem in all societies. The combined burden of these diet-related risks and physical inactivity in low- and middle-income countries is similar to that caused by HIV/AIDS and tuberculosis (WHO, 2007).
More than half (57.1%) of adolescents in the study area are underweight. Underweight mainly arises from inadequate diet leading to insufficient intake of calories, protein, vitamins and minerals. Such under-nutrition renders adolescents vulnerable to disease and early death and has lifelong health consequences. Adolescents in the study area need to have correct dietary knowledge so that they can adopt healthy eating habits. Only 2.8% of the respondents think they are overweight or obese. This finding was lower than that found in a study done in Al-Khobar city in Saudi Arabia among male secondary school students aged 14-19 years (15.6% were overweight and obese). High proportions of the participants (53.4%) are not trying to do anything to reach the right weight by dieting or doing something else such as exercise to lose or gain weight.

In the present study, the percent of students who reported overweight or underweight can be based on a self-reported and not objectively measured, so that it could be under or over-estimated. The problem of obesity and overweight among adolescents is alarming. Worldwide, overweight and obesity cause more deaths than underweight. The high prevalence of overweight and obesity globally is probably due to the recent trend of eating fast food, which is high in saturated fats, in restaurants, most of the days of the week, and the inadequate practice of physical activity. Rates of overweight and obesity are projected to increase in almost all countries, with 1.5 billion people overweight in 2015. (http://www.unfpa.org/adolescents/overview.htm, 2015)

The most majority of adolescents in this study were lacked the good practice of hands hygiene. 84.8% never or rarely washed their hands before eating, 91.8% never or rarely washed their hands after using the toilet, and 97.7% never or rarely used soap when washing their hands. Good personal hygiene is one of the most effective ways to protect ourselves and others from illness. Personal hygiene is very much dependent on the culture in which you live. Washing hands properly with soap and water after using the toilet and before eating food can help prevent the spread of the germs that cause many diseases and serious health problems. A number of infectious diseases can be spread from one person to another by contaminated hands, particularly gastrointestinal infections, influenza and hepatitis A. Although people usually think that germs are spread through the air, the fact is that germs are most
easily spread through hand contact. Even if your hands appear to be clean, they may carry germs. Use soap and warm running water and wash hands for at least 20 seconds. Liquid soap is best. Drying your hands properly with something clean is as important as washing them (UNICEF, 2012).

The results of the survey indicated that the prevalence of having ever smoked cigarettes or having ever used snuff is very high. High percent of the adolescents (41.1%) in the study area had used tobacco (cigarette or snuff) on one or more days during their life, and about one-third (32.5%) of the participants reported current tobacco users. Of ever tobacco users (41.1%), 12.8% tried their first tobacco use before age of 15 years, 8.6% tried to stop tobacco use, and 11.5% have a parent who uses any form of tobacco.

This prevalence of current tobacco users (32.5%) is higher than that reported in South Africa (9.1%), Pakistan (13.7%), and Kuala Lumpur (17%). Other studies in Malaysia showed about 30% of adolescent boys smoke, and one-third of Korean senior high school students were reported having smoked cigarettes. A cross sectional school based survey was conducted in primary and secondary schools in Khartoum State to estimate the prevalence of smoking and associated personal and social factors. 13.6% were found to be current cigarette smokers.

This substantial tobacco use places these adolescents at risk for long-term addiction and associated health problems. Early use of tobacco is associated with a countless or myriad problems later in life. Many studies indicate that there is an increase in the use of tobacco among young people in developing countries, where restrictions on advertising and access are often weaker than in industrial countries. Intensive and sustained efforts to counter-market tobacco among adolescents and youth are necessary to negate the friendly familiarity created by tobacco advertising and to communicate the true health and social costs of tobacco use (http://www.who.int/child-adolescent-health/New_Publications).

Only 8.6% of tobacco users in this study reported desire and try to stop smoking or snuff, while the rest (32.5%) do not wish to quit smoking or snuffing and this can be explained by the finding that 9.4% of current tobacco users considered it a behavior
of manhood and strength, and 2.1% thought that the tobacco relieves depression and stress.

Factors that commonly play role in initiation of smoking among adolescents in this study include smoking among parents, other family members and closest friends. Constant exposure to family member who smokes will expedite the process of behavior copying and this learning will influence individuals of same sex. This is illustrated in the finding that the majority of male smokers have a male sibling who smokes. School adolescents were more likely to be smokers if their closest friends were smokers. During adolescence, tobacco use by friends may create a positive image of smoking and create easy access to cigarettes, especially in the developing countries where there is no restrictive law on the sale of tobacco to minors.

Tobacco use is the single leading preventable cause of death in the world, contributing to about 5 million deaths every year. If present consumption patterns continue, the number of deaths will increase to 10 million by the year 2020. About 10 million cigarettes are sold every minute worldwide. The tobacco epidemic is still expanding, especially in less developed countries. Tobacco use associates with a wide range of diseases, including those that affect the respiratory and cardiovascular systems and multiple types of cancer. The effective way to combat the tobacco epidemic is by implementing a comprehensive, continuous, sustainable and adequately funded tobacco control strategy (http://www.who.int/tobacco.html, 2015).

It’s reasonable for health system in Sudan to concentrate on communicable conditions, but it is also important to recognize the growing epidemic of tobacco use among school adolescents. Tobacco use should become a public health priority in Sudan to educate adolescents and parents regarding its hazards. The control of tobacco regulations should prohibit the use and sale of tobacco products to adolescents and students who are below 18 years. Law enforcement needs to be upheld and tightened to prevent smoking among youth and delay their initial age of smoking. As there is no age restriction on the purchase of cigarettes in Sudan, more intensive awareness campaigns are needed.
Low percent (4.6%) of the adolescents in the study area had consumed alcohol one or more times during their life. Current alcohol intake among the study population was reported by 2.1% of the adolescents at a rate that is lower than the rate of regular drinking among USA adolescents (22.4%). Lower rate of alcohol consumption in the study area than in Western countries could be attributed to the reluctance of young people in Sudan to engage in drinking & sexual behaviors that carry serious risks, a major reason for this may be that it is forbidden in Islamic culture, and Sudanese society is still quite religious in respect to some issues as illegal sex & addiction.

As with tobacco, many people’s first exposure to alcohol is during adolescence. In almost half of the countries worldwide with available data, about one in four adolescents reported having had an alcoholic drink sometime within the past month. Alcohol contributes to more than 60 types of disease and injury, although it can also decrease the risk of coronary heart disease, stroke and diabetes. However, the overall impact of alcohol on the burden of disease is harmful. Drinking alcohol can damage the liver and heart, increase the chances of developing some cancers, contribute to depression and violence, and interfere with relationships. Alcohol use is a major contributing factor in about half of all homicides and sexual assaults, and about one-third of all motor vehicle crash fatalities (U.S. Department of Health and Human Services (DHHS), and CDC, 2010).

Little proportion (1.9%) of the study population had used illicit drugs one or more times during their life. As with alcohol, lower rate of drugs abuse among the study population could be attributed to a reason that illicit drugs are forbidden in Islamic religion as well as in Sudanese culture and traditions.

Drugs abuse is associated with poor mental health, smoking-related respiratory damage, temporary short-term memory loss, and decreased motivation. Abuse of these substances is related to suicide, school failure, delinquency, and transmission of sexually transmitted diseases (STDs) including HIV/AIDS due to injecting drug use and unprotected sex (WHO, 2008). Many people have their first experiences with tobacco, alcohol and illicit drugs during adolescence, partly out of a need to explore boundaries as they begin to develop their individuality (The Indiana State Department of Health, 2005).
These risky behaviors can have a negative impact on adolescent health and well-being and bring lifelong negative consequences. Islam forbids alcohol, illicit drugs, and addictive substances that harm health. In fact, traditional family life, Islamic beliefs and values are probably important factors that affect alcohol consumption and drugs abuse in young people in the study area as in the whole country as general.

Large proportions (40.5%) of the participants in the study area were physically inactive on 3 or more days during the 7 days before the survey. That means lacking of physical activity or irregular physical activity has been observed in 40.5% of the students surveyed in the present study. As a matter of fact Sudanese like Arab students were raised with superficial ideas about the importance of physical activity. Regular physical activities such as walking, running, playing football, or even farming are essential for good health and better life.

Approximately less than two-thirds (59.5%) of the study population were physically active (doing any kind of physical activity or exercise that increased their heart rate and made them breathe hard some of the time) for a total of least 60 minutes per day on 3 or more days during the 7 days before the survey in order to stay healthy. That means the level of sports activity among adolescents in the study was relatively high. More than half of the adolescents were physically active. They were significantly more likely to have participated in vigorous physical activity.

Almost two-thirds (66.5%) of the surveyed adolescents were spend 3 to 6 hours per day sitting or lying down for watching television, playing video games, using computer, browsing the internet, using mobile phone, chatting, or doing other sitting activities such as playing cards, reading stories and newspapers, and listening to music. More than one-fifth (21.7%) of the study population were spend more than 6 hours per day watching television or doing any other sedentary activities. Our rates were higher than rates of USA survey which revealed that 24.9% of students played video or computer games or used a computer for other purposes than studying for 3 or more hours per day (CDC, 2011). Also a study of Saudi males aged 19 years and older in Riyadh, KSA had shown that over 53% of Saudi males were totally physically inactive, and 27.5% were irregularly active (http://www.who.int/child-adolescent-health/New_Publications.).
Television viewing is the principal sedentary leisure time behavior worldwide. Using the computer for fun and playing video games have become increasingly common sedentary leisure time activities among young people as well. Numerous studies have shown that sedentary behaviors like watching TV and playing computer games are associated with increased prevalence of obesity and related to violent or aggressive behavior. Many studies mentioned that children and adolescents who watch TV or play video games more than 2 hours per day are at risk of being obese (http://www.who.int/adolescent health).

Observations and current studies indicate that today’s children and adolescents are probably less fit than those decades ago and tend to be more overweight and sedentary. A survey of the associations between physical activity and other health behaviors in a sample of United States high school children showed that low physical activity was associated with several other negative health behaviors in teenagers. These included cigarette smoking, drugs use, lower fruit and vegetable consumption, and greater television watching(http://www.cdc.gov/nccdphp/dnpa/physical/importance/index.htm).

World Health Organization (WHO) has recognized physical inactivity as a major threat to worldwide population health and a major risk factor for morbidity and premature mortality from coronary heart diseases. Regular physical activity can benefit young people; It builds and maintains healthy bones and muscles, controls weight, reduces fat, reduces feelings of depression and anxiety. It also decreases the risk of dying prematurely, dying of heart disease, and developing diabetes, colon cancer, and high blood pressure. It promotes mental health and enhances self-esteem in young people and adults (http://www.who.int/adolescent health). The U.S. Department of Health and Human Services recommends that young people ages 6–17 should participated in at least 60 minutes of physical activity every day. School physical education classes can increase adolescent participation in physical activity and help adolescents develop the knowledge, attitudes, and skills they need to engage in lifelong physical activity (National Adolescent Health Information Center, University of California, and CDC, 2004.).

Feeling safe – whether at school, in a car, or in a relationship – fosters positive adolescent development. The high percent (91.4%) of study population was who
lacked use of seat belt when driving or riding in a car driven by someone else. In the US youth risk behavior surveillance system (YRBSS) performed in 2011, only (10.2%) lacked use of seat belt when driving or riding in a car (CDC, 2011). This gap could be explained on basis of cultural differences between both countries and efficacy of application of traffic rules in US. Proper use of safety belts reduces the risk of fatal injury to front seat passengers by 45% and risk of moderate to critical injury by 50% (WHO, 2007).

Driving after drinking alcohol or riding in a car driven by someone who had been drinking alcohol was unlikely in this study (1.3%) compared to (27.4%) in the US YRBSS(CDC, 2011), and this might be due to the social, cultural, and religious differences between both societies. In 2009, alcohol use was associated with nearly 40% motor vehicle-related fatalities nationwide. Accidents are a leading cause of adolescent disability and mortality, and in many countries account for as many as half of all deaths of those between the ages of 10 and 24. Accidents often occur because of excessive risk-taking, sometimes in association with alcohol or drug use (CDC, 2011). The vast majority of the adolescents (99.3%) in the study area was never worn a bicycle helmet when driving or riding on a bicycle. Bicycle helmets are 88% effective at reducing the impact of head and brain injuries due to bicycle crashes. Despite this, less than one quarter of bicyclists wear helmets in many countries worldwide (CDC, 2011).

According to the survey, large proportions of adolescents report having experienced physical violence and bullying while sexual violence is less prevalent among the study population. 31.4% of students reported being involved in a physical fight, 20.4% reported being seriously injured, and 40.5% reported being bullied or verbally abused and only 0.4% reported being physically forced to do sexual things when they did not want to (sexual violence).

Violence and physical fighting are a marker for problem behaviors among adolescents and is associated with serious injury. In numerous countries, large percentages of adolescent students, report having been involved in physical fights or having been the victims of physical attacks or bullying within the past month. Bullying, whether physical or emotional, typically takes place at school and affects many adolescents. Both being a bully and being victimized by bullies have been
increasingly recognized as health problems for adolescents because of their association with a range of problems, including poor psychological adjustment, poor academic achievement, and violent behavior. Physical and sexual violence is associated with negative psychosocial outcomes, poor mental health outcomes, and other risk behaviors among adolescents. Many factors contribute to the likelihood that violence will mar the lives of adolescents. High rates of urban growth, for example, are linked to greater violence, as are social, political and economic inequalities (UNFPA, 2008).

In regard to sexual behaviors, few percent (2.6%) of the adolescents in the study area have had sexual intercourse with at least one person during their life, and only 2.1% reported being currently sexually active within the 3 months before the survey. As to sexual health, among the sexually active, more than half report not using condom during their last sexual intercourse, so that may increase the possibility of contracting one of the many sexually transmitted diseases (STDs) and also unintended pregnancy. Programs that teach specific skills to avoid unsafe sexual practices are needed to reduce the rates of STDs among adolescents. As many other illegal behaviors, the sexual relations among the study population may be consistently underreported because of feelings of shame and guilt, as well as legal and religious implications.

The illegal sexual relations were less common in our sample and lower than that reported in other studies in many countries like in Turkey (13%), Denmark (25%), and South Africa (50%). Experimentation with sexual behaviors and orientation often starts during adolescence. A major health hazard for adolescents is the possibility of contracting one of the many sexually transmitted diseases (STDs), including HIV/AIDS. The vulnerability of adolescents to HIV infection and other STDs has been increasingly recognized over the past few years due to increased sexual activity at a young age without protection. HIV/AIDS has become a disease of the young, fuelled by poverty, inequality and a severe lack of information and services for prevention and treatment (WHO, 2008).

In respect to mental health of the study population, about one-quarter had felt so sad or hopeless almost every day for one week or more that they stopped doing some usual activities, and only 0.4% had thought seriously about suicide compared to
10.3% in the U.S. Youth Risk Behavior Surveillance System (CDC, 2011). Life circumstances and lack of a supportive environment leads many adolescents into depression and other mental health problems, including suicide. Mental health problems in adolescence, if unaddressed, can carry over and negatively affect individuals over the long term.

Adolescence is marked by high levels of physical growth and emotional maturation that often results in stress and anxiety. Each year, an estimated 20% of adolescents experience a mental health problem worldwide, most commonly major depression or other disturbances of mood. There appears to be a rise in the number of suicides among young people in many societies. Suicide became one of leading causes of death among adolescents worldwide. It is often associated with mental health problems, although it also stems from difficulties within the family (WHO, 2007).

In general, the study provides an opportunity to break through “denial” and make community members aware of the risks that their young people face. The study can serve as the basis of a community needs assessment. It can help identify strengths and weaknesses in communities, and can inform strategies to address those weaknesses. Although most of the charts in this study examine the prevalence of risk behaviors, please do not forget about the percentage of adolescents who are not engaging in these behaviors. The survey can accentuate the positive and celebrate the fact that many students are abstaining from behaviors that endanger their health and their ability to succeed.
CHAPTER FIVE

CONCLUSION

&

RECOMMENDATIONS
CHAPTER FIVE
CONCLUSION AND RECOMMENDATIONS

5.1. CONCLUSION

- A cross-sectional school-based study was conducted in Gezira State in the Sudan among the community of male adolescents aged 15 to 19 years.
- The purpose of the study is to assess the prevalence of behavioral health risk factors considered the leading causes of morbidity and mortality among adolescents and young people in 10 key areas.
- The study focuses on the most common health risk behaviors, provides current estimates of the rates of these problems, discusses common consequences of these behaviors, delineate the benefits one can expect from changing health risk behaviors, and list suitable recommendations.
- The 10 key areas discussed in the study are: Tobacco Use, Alcohol Drinking, Drugs Abuse, Physical and Verbal Violence, Poor Nutrition and unhealthy dietary habits, Physical Inactivity and Sedentary Lifestyles, Bad Personal Hygiene behaviors, Improper Personal Safety behaviors, Sexual Practices, and Mental Disorders.
- The results of the study showed that almost 99.3% of the study population was engaged in one or more risky behavior that can weaken or harm their health.
- This high prevalence of health risk behaviors among Sudanese teenagers is a major public health concern.
- A considerable proportion of the study population were at risk of tobacco use, unhealthy dietary habits, improper personal hygiene, lack of personal safety practices like riding in a car while not fasten the seat belt, physical fighting, and physical inactivity.
- A small proportion of the study population were at risk of alcohol drinking, drugs abuse, carrying a weapon, sexual practices, suicide and mental problems.
- Remember, health risk behaviors frequently affect not only the adolescent, but his family, friends, and community.
- The study recommended that a nation-wide behavior modification intervention with involvement of schools and mass media could be implemented to decrease the prevalence of these risky behaviors among the study population.
5.2. RECOMMENDATIONS

1. **Policy Makers and Community Leaders**: More commitment and more attention are required in regard to protect adolescents and help them protect themselves.

2. **Ministry of Health**: Increasing capacity for health services and policies in this field. Add to that, a nationwide health promotion and behavior modification intervention with involvement of schools and mass media could be implemented as soon as possible.

3. **Ministry of Education**: Comprehensive school health education including life skills and peer-education activities focusing on all types of risky behaviors and their negative effects as well as the benefits of the good behaviors.

4. **Mass Media**: Community awareness-raising campaigns should be designed and implemented to enlighten the general community with the importance and value of adolescent health and how to avoid risky behaviors.

5. **Families and civil society**: Families and civil society: Create an environment that builds trust, build a good family connectedness, provide a good social and psychological support, and empower adolescents to make healthy decisions and adopt good behaviors.

6. **Universities and Research Institutions**: Further scientific researches and more in-depth studies are needed.
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