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Knowledge, Perceptions, and intentions of male student smokers in
secondary schools toward quitting cigarettes smoking in Khartoum locality
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**A thesis submitted in partial fulfillment for the requirements of the degree of
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Table of contents:

<i>The subject</i>	<i>Page No</i>
<i>Table of contents</i>	i-iii
<i>Acknowledgement</i>	iv
<i>Abstract in English language</i>	v-vi
<i>Abstract in Arabic language</i>	vii
<i>List of Figures</i>	viii
<i>List of Tables</i>	ix-x
Chapter One	
<i>1-1 Introduction</i>	1-2
<i>1-2 Rationale</i>	2
<i>1-3 Objectives</i>	3
<i>1-3 Literature review</i>	4-22
<i>1-3-1 History</i>	4
<i>1-3-2 Cigar culture</i>	4-5
<i>1-3-3 Tobacco manufacture</i>	5-6

<i>1-3-4 The chemical composition of tobacco</i>	6
<i>1-3-5 Types of cigarettes</i>	7
<i>1-3-6 Reasons for smoking</i>	7-9
<i>1-3-7 Health Effects of Smoking</i>	9-14
<i>1-3-8 Negative (Passive) Smoking</i>	14-15
<i>1-3-9 Other effects of smoking</i>	15
<i>1-3-10 Adolescents and initiation of smoking</i>	16-17
<i>1-3-11 Smoking and addiction</i>	17
<i>1-3-12 Smoking cessation</i>	17-18
<i>1-3-13 Stages of Change Model</i>	18-21
<i>1-3-14 smoking Prevention</i>	21
<i>1-3-15 Health education in schools</i>	21-22
<i>1-3-16 Researches conducted in smoking behavior in the Sudan</i>	22

Chapter Two	
<i>2- Material & Method</i>	23-25
Chapter Three	
<i>3- Results</i>	26-47
Chapter Four	
<i>4-1 Discussion</i>	48-49
<i>4-2 Conclusion</i>	50
<i>4-3 Recommendations</i>	51
<i>4-4 References</i>	52-55
<i>4-5 Appendix</i>	56-59

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Abstract

In the Sudan the overall prevalence of smoking among adolescents was 4.9%, and more males compared to females reported to smoke.

Study design:

This study was a descriptive cross-sectional design conducted among secondary schools male students in Khartoum locality. The study aimed at identifying the male smoker student's knowledge, perceptions, and their intentions about quitting cigarettes smoking in the foreseeable future.

Study population:

Consist of the male students of secondary schools in Khartoum locality. The total numbers of secondary school students in the locality were (15084), (8210) of them male students.

Determination of sample size:

The sample size was determined using the following formula:

$$n = \frac{z^2 \cdot p \cdot q}{d^2}$$

Accordingly a sample size of 245 was obtained out of total (8210) male student in Khartoum locality. Of the total 245 students 186 smoker students were selected using two-stage sampling technique. 11 schools were selected out of 23 secondary schools using the simple random sample. The sample was distributed to schools using the proportional allocation.

Data collection, analysis, and depiction methods:

The data were collected through the distribution of questionnaires among the male smokers of secondary school students, and were analyzed using statistical package for social science (SPSS) and the relationship between different variables was determined using Chi-square test. Data were depicted in tables and histograms.

The main outcomes of the study reached:

More than half of students under study (52%) believed that the effects of second hand smoke were limited in pneumonia, irritability, and cough. Half of students (50%) confirmed that they will smoke in the next twelve months. Half of students (50%) had intended to quit smoking in the

foreseeable future. The majority of students (72.6%) had at some time tried to stop smoking.

The main recommendations of the study reached:

Providing of school activities such as establishment of association of school health, the role of social workers and teachers in schools to identify and counseling of smoker students to motivate them for quitting, and activating the role of the laws in schools to stop smoking absolutely.

ملخص الدراسة

في السودان معدل انتشار التدخين بين المراهقين (4.9%) الذكور أكثر مقارنة بالإناث في التدخين.

تصميم الدراسة:

هذه الدراسة عبارة عن دراسة وصفية مقطعية أجريت بين الطلاب الذكور في المدارس الثانوية بمحلية الخرطوم. هدفت الدراسة إلى التعرف على معرفة وتصورات الطلاب الذكور عن تدخين السجائر ونواياهم للإقلاع عن هذا السلوك في المستقبل المنظور.

مجتمع الدراسة:

يتكون من الطلاب الذكور في المدارس الثانوية بمحلية الخرطوم. حيث أن مجموع طلاب المدارس الثانوية الذكور في المحلية يبلغ (8210) طالب.

تحديد حجم العينة:

تم تحديد حجم العينة باستخدام المعادلة التالية:

وفقا

$$n = \frac{z^2 \cdot p \cdot q}{d^2}$$

لحجم عينة من 245

طالباً تم الحصول عليها من أصل ما مجموعه (8210) طالب بولاية الخرطوم. من مجموع 245 تم اختيار 186 طالب مدخن وذلك باستخدام تقنية العينة ثنائية المرحلة. من مجموع 23 مدرسة ثانوية تم اختيار 11 باستخدام العينة العشوائية البسيطة. تم توزيع العينة على المدارس باستخدام التوزيع النسبي.

جمع البيانات، وتحليلها، وعرضها:

تم جمع البيانات من خلال توزيع الاستبيانات بين الذكور المدخنين من طلاب المدارس الثانوية. جرى تحليل البيانات باستخدام الحزمة الإحصائية للعلوم الاجتماعية (SPSS)، وتم إيجاد العلاقة بين المتغيرات المختلفة باستخدام اختبار كاي المربع. تم عرض البيانات باستخدام الجداول والدرج التكراري.

النتائج الرئيسية التي خلصت إليها الدراسة:

أكثر من نصف الطلاب قيد الدراسة (52%) يعتقدون أن آثار التدخين السلبي تنحصر بين التهاب الرئة، الحساسية، والكحة، نصف الطلاب (50%) أكدوا أنهم سيدخنون خلال الستة شهور القادمة، نصف الطلاب (50%) لديهم النية للإقلاع عن التدخين في المستقبل المنظور، ومعظم الطلاب (72.6%) حاولوا في وقت من الأوقات الإقلاع عن التدخين.

التوصيات الرئيسية التي خلصت إليها الدراسة:

توفير الأنشطة المدرسية مثل إنشاء جمعية الصحة المدرسية، ودور المرشدين الاجتماعيين والمعلمين في المدارس لتعريف وتقديم المشورة للطلاب لتحفيزهم للإقلاع عن التدخين، وتفعيل دور القوانين في المدارس للتوقف عن التدخين نهائياً.

List of Figures:

<i>No.</i>	<i>The Figure name</i>	<i>Page No.</i>
1-	Knowledge of smoker students about the effect of smoking on smokers in Khartoum locality-2009	29
2-	Type of the effects of active smokers on passive smokers in Khartoum locality-2009	31
3-	The reasons for students smoking in Khartoum locality-2009	34
4-	The reasons for stopping smoking as started by students in Khartoum locality-2009	43

List of Tables:

<i>No.</i>	<i>The table name</i>	<i>Page No.</i>
1-	Number of students family members in Khartoum locality-2009	26
2-	Educational levels of student's fathers in Khartoum locality-2009	27
3-	Student's families' income per month in Khartoum locality-2009	27
4-	Distribution of students according to smoking habits in Khartoum locality-2009	28
5-	Knowledge of smoker students about smoking harms in Khartoum locality-2009	28
6-	Knowledge about the effect of active smokers on passive smokers in Khartoum locality-2009	30
7-	Annoyance of smoker students if someone smoke in front hem in Khartoum locality-2009	32
8-	Possibility of smoker students to continue smoking in the foreseeable future in Khartoum locality-2009	32
9-	Attitude towards the difficulties facing smoker students to stop smoking in Khartoum locality-2009	33
10-	Knowledge of smoker students if sharing one cigarette may help to transmit diseases in Khartoum locality-2009	35
11-	Knowledge of smoker students about the kinds of diseases caused by sharing cigarettes in Khartoum locality-2009	36
12-	Number of cigarettes that students smoke per day in Khartoum locality-2009	37
13-	Smoker students whose may have a smoker friend or relative in Khartoum locality-2009:	37
14-	The place that students smoke in usually in Khartoum locality-2009	38
15-	Presence of restrictions that forbid smoking in the	39

	school in Khartoum locality-2009	
16-	Students whose had an advice to stop smoking in Khartoum locality-2009	39
17-	Presence of programs about quitting smoking in schools in Khartoum locality-2009	40
18-	Trying of smoker students to stop smoking in Khartoum locality-2009	40
19-	The reasons that lead smoker students to try stopping of smoking in Khartoum locality-2009	41
20-	Possibility of smoker students to stop smoking in Khartoum locality-2009	42
21-	The relationship between place of smoking and presence of restrictions in the school in Khartoum locality-2009	44
22-	The relationship between having an advice and trying to stop smoking in Khartoum locality-2009	45
23-	The relationship between smoking in future and possibility of stopping in Khartoum locality-2009	46
24-	The relationship between the effect of active smokers on passive smokers and annoyance from smoking front them in Khartoum locality-2009	47

Chapter one

*Introduction, Objectives, & Literature
Review*

1-1 Introduction:

In fact, tobacco use alone accounts for nearly three million deaths each year and has been identified as the leading cause of preventable death in the developed world. (Pan American Health Organization, 1992).

To date, tobacco is known to be the probable cause of about 25 diseases.

In 1991 the Youth Risk Assessment Survey, which includes only middle and high school students, indicated that 27.5 percent of teenagers smoke; by 1999, 34.8 percent were current smokers in USA.

In developing countries, many smokers are unaware of the risks. For example a study in China showed that most smokers thought smoking did little or no harm. (Donatelle, 2003).

Overall, it has been estimated that 40% of premature deaths in developing countries, and 70-80% in developed countries, are attributable to behaviors, many of which begin in adolescence. (WHO, 1995).

In Sudan the overall prevalence of smoking among adolescents is 4.9%, more males than females report to smoke. (Moukhyer, 2005).

The health of adolescents has traditionally been given low priority in public health programs.

Adolescence is the period during which lifestyle patterns of behavior are being formed. These behaviors set the stage for future health problems. (Mokhyer, 2005).

The major factors that influence behavior and behavior-change decisions can be divided into three general categories: predisposing, enabling, and reinforcing. (Donatelle, 2003).

Although adult health beliefs and attitudes may be influenced by childhood experiences with families, peers, and illness has received sporadic attention. (Bush, 2007).

To understand the process of behavior change, first identify specific behavior patterns and attempt to understand the reasons for them. (Donatelle, 2003).

A common perception is that students are not interested in smoking cessation efforts. However, a recent study reported that 70% of cigarette smokers had tried to quit smoking. Unfortunately, three out of four were still smokers.

However, many chronic smokers know the risks yet continue to smoke. (Donatelle, 2003).

A reorientation of health services can play a critical role in preventing tobacco use, by supporting relevant activities within the school, but such services can also provide advocacy within the community and at the national level for strong anti-tobacco Policies and enforcement. (WHO, 1997).

1-2 Rationale:

Adolescence is the age period from 10-19 years when lifestyle patterns of behavior are being formed. These behaviors set the stage for future health problems. Behaviors and lifestyles are determinants of future health, illness, disability, and premature mortality.

Overall, it has been estimated that 40% of premature deaths in developing countries, and 70 to 80% in developed countries, are attributable to many behaviors that begin in adolescence (WHO, 1995). The most important behaviors that impact on health are considered to be smoking, alcohol consumption, dietary habits and physical inactivity. Studies indicate that there is an increase in the use of tobacco and alcohol among young people in developing countries, where restrictions on advertising and access are often weaker than in industrialized countries.

In Sudan the overall prevalence of smoking among adolescents is 4.9%, more males than females report to smoke. (Moukhyer, 2005).

Adolescences represent a large number of populations in Sudan (96.286) for male under 16 years old. (Khartoum locality, 2008).

1-3 The objectives:

1-3-1 General objective:

To identify the knowledge, perceptions, and intentions of male student smokers toward quitting cigarettes smoking in secondary schools in Khartoum locality.

1-3-2 Specific objectives:

- 1- To determine the male smoker student's knowledge about the risk of smoking cigarettes and the diseases associated with the behavior.
- 2- To identify the male smoker student's perceptions about smoking cigarettes.
- 3- To specify the male smoker student's intentions about quitting smoking within the next six months.

Literature Review

Currently, about billion of people are smoking, and it's expected to increase to more than 1.7 billion by 2025. (WHO, 2004).

In a study of Tobacco use among secondary students, in El- shohada and Khartoum locality, the study showed that (33%) of students had tried to use Tobacco at least once in them lives. (Elham, 2000).

1-3-1 History:

Explorer Christopher Columbus is generally credited with the introduction of tobacco to Europe. Two of Columbus's crewmen during his 1492 journey, Rodrigo de Jerez and Luis de Torres, are said to have encountered tobacco for the first time on the island of San Salvador in the Bahamas, when natives presented them with dry leaves that spread a peculiar fragrance. Tobacco was widely diffused among all of the islands of the Caribbean and therefore they again encountered it in Cuba, where Christopher Columbus and his men had settled. Around 1592, the Spanish galleon San Clemente brought 50 kilograms (110 lb) of tobacco seed to the Philippines over the Acapulco-Manila trade route. The seed was then distributed among the Roman Catholic missions, where the clerics found excellent climates and soils for growing high-quality tobacco on Philippine soil. In the 19th century, cigar smoking was common, while cigarettes were still comparatively rare. The cigar business was an important industry, and factories employed many people before mechanized manufacturing of cigars became practical. Many modern cigars, as a matter of prestige and quality, are still rolled by hand, most especially in Central America and Cuba: some boxes bear the phrase *totalmente a mano* (totally by hand) or *hecho a mano* (made by hand). (Rarick, 2008).

1-3-2 Cigar culture:

The original home of Tobacco is the North America, and American Indians were the first to use Tobacco with all kinds of uses. Indigenous people in St. Salvador some Tobacco leaf to Columbus and his men, then they transmitted to Spanish and the rest of Europe. (Kamal, 1999).

The Maltese and Italians named the strange plant and had followed its spread to the Netherlands, Turkey, and Algeria and even arrived in Japan. Until that time Tobacco was so rare and precious and was smoked in small quantities at the traders and dignitaries.

Tobacco is grown in the country, already warm, but it has the ability to adapt to the different cold climate. (Abdel-gani, 1997).

Although some cigars are cut on both ends, or twirled at both ends, the vast majority come with one straight cut end and one end in a "cap". Most quality handmade cigars, regardless of shape, will have a cap which is one or more small pieces of a wrapper pasted on to one end of the cigar with either a natural tobacco paste or with a mixture of flour and water. The cap end of a cigar must be cut off for the cigar to be smoked properly. It is the rounded end without the tobacco exposed, and this is the end one should always cut. If the cap is cut jaggedly or without care, the end of the cigar will not burn evenly and smokeable tobacco will be lost. Some cigar manufacturers purposely place different types of tobacco from one end to the other to give the cigar smokers a variety of tastes, body and strength from start to finish. Smoking a cigar from the wrong end may result in a bad experience. (Maricarmen, R, 2002).

1-3-3 Tobacco manufacture:

Tobacco belongs to the family of (Sold Nasa) and therefore belongs to the family of tomatoes, potatoes, and the toxic plant "Bladona". (Abdel-gani, 1997).

Tobacco plant from Albaznjanip platoon, one of the herbs yearbooks. The plant rises from the ground between two and a half meters, according to species, and the leaves are only used of Tobacco making, the roots and stalks is not good to get off a good Tobacco. However, the roots are used in the manufacture of what is known as the (smoke rose up) and it's a mixture of Tobacco on the black honey and has been smoked in water pipe or (shisha). There are about forty known type of Tobacco plant, including Iran, Alhavani, and nudity. The most famous of which is commonly a scientific name (*Nicotian tabacum*) which is characterized by large and boorach fruit in the form of packaging to contain a large number of seeds. (El-gamed, 2003).

Tobacco leaves are harvested and aged using a process that combines use of heat and shade to reduce sugar and water content without causing the large leaves to rot. This first part of the process, called curing, takes between 25 and 45 days and varies substantially based upon climatic conditions as well as the construction of sheds or barns used to store harvested tobacco. The curing process is manipulated based upon the type of tobacco, and the desired color of the leaf. The second part of the process, called fermentation, is carried out under conditions designed to help the leaf die slowly. Temperature and humidity are controlled to ensure that the leaf continues to ferment, without rotting or disintegrating. This is where the flavor, burning, and aroma characteristics are primarily brought out in the leaf.

Once the leaves have aged properly, they are sorted for use as filler or wrapper based upon their appearance and overall quality. During this process, the leaves are continually moistened and handled carefully to ensure each leaf is best used according to its individual qualities. The leaf will continue to be baled, inspected, unbaled, reinspected, and baled again repeatedly as it continues its aging cycle. When the leaf has matured according to the manufacturer's specifications, it will be used in the production of a cigar. (Rarick, 2008).

1-3-4 The chemical composition of tobacco:

Tobacco leaf is composed of water by (70-80%), Alhvujat, volatile oil, material chromosomal winter, metal materials and cellos, sugar materials, and semi Alkali, headed nicotine. The greater the proportion of water increased the greater of nicotine increased.

Studies have confirmed that Tobacco smoke contains 4000 harmful chemical compounds. Five hundred of them very damaging, but 43 compound of which causes cancer. (Who, 2000).

Cigarette smoke, a combination of materials that could be divided into two groups:

1-3-4-1 Group of gases:

Cigarette consists of 5% of the gases and steam, however fluidized, (75%) ozone oxide (25%) carbon oxide, formaldehyde and okrawlin.

1-3-4-2 Group of particles:

Hydrocarbons (95%), Methyl, Bnzoubiat, Acids, Cadmium, and Nickel the release of each cigarette

Molecular/ML. 5×10^9 Without filter

And these particles ranging in size (0.1-0.8) Micrometer. (Who, 1999).

British Minister of health announced that chemicals used in the manufacture of dyes and fuel rockets are among a list of 600 chemicals used in the manufacturing of cigarette. (El gamed, 2003).

1-3-5 Types of cigarettes:

There is no type of safe cigarette, but there certainly is a wide array of them. Different types of cigarettes are usually classified by flavor, but specialty cigarettes provide different features, such as smokeless or electronic cigarettes. Specialty cigarettes are normally considered novelty items, and are generally harder to obtain than the normal types.

1-3-5-1 Non-Menthol Filtered Cigarettes:

Non-menthol cigarettes with a filter are the most common type of cigarette. They come in two standard lengths, "kings" and "100's." 100's are longer, but often skinnier than king-sized cigarettes. They come in full flavor; light and ultra light varieties, the difference being the strength of the flavor.

1-3-5-2 Menthol Filtered Cigarettes:

Menthol cigarettes come in the same sizes as non-menthol filtered cigarettes. The difference is that the tobacco is mixed with a substance called menthol, imbuing them with a many flavor. There are full flavor, light, and ultra light menthol cigarettes as well.

1-3-5-3 Roll Your Own:

Some people choose to roll their own cigarettes to save on cost. These cigarettes can be filtered, by making them with a rolling machine, or unfiltered by using papers that are gummed on one side.

1-3-5-4 Special Flavors:

Some cigarettes come with different flavoring options added. Clove, orange, vanilla, and cherry are some of the options available. These are generally only found in specialty shops, and are usually more costly.

1-3-5-5 Novelty Cigarettes:

Electronic cigarettes and smokeless cigarettes are two types of novelty cigarettes. An electronic cigarette vaporize the nicotine, do not contain tobacco and do not create any first or secondhand smoke but allows the smoker to still get the rush of nicotine, the main drug in tobacco.(Tumbarello, 2008).

1-3-6 Reasons for smoking:

1-3-6-1 Advertising:

Why do teenagers continue lighting up when they know the consequences? Surprisingly, advertising is largely attributed to teenage smoking. Cigarettes are advertised more heavily than any product except cars. Many cigarette advertisements take place in gorgeous and fun locations. To get closer to these exciting locations, teenagers might feel the need to purchase that product. Teenagers claim that advertisements do not directly influence their decision to smoke. Yet, when they do eventually decide to smoke they chose

one of the most advertised brands. At least eighty-five percent of teen smokers surveyed in 1993 purchased Marlboro, Camel or Newport--the three brands that led the industry in advertising spending that year (Guttman, 1995).

1-3-6-2 Everybody's Doing It:

A second factor contributing to teen smoking is the every body's doing it philosophy. During those early teenage years, kids are desperately trying to fit in and be cool. Most kids think they are invincible and they cannot become addicted to cigarettes. For this reason, some teenagers decide to join in the smoking crowd. It is much easier to give in to peer pressure when you are at an age where you are not sure what you want. Also most teenagers are not concerned with the long term effects of anything, even if premature death is a consequence.

1-3-6-3 Independence:

For some teenagers, smoking might mean independence. One of the main developmental tasks of adolescence is to assert independence from one's parents by construction of one's own identity. Marlboro had successfully exploited that need for years with its cowboy alone on the range. A Virginia Slims campaign once claimed that the cigarette was as free-spirited as you.

1-3-6-4 Weight Control:

Lastly, weight control is a major issue among teenage girls and is it exemplified in cigarette advertisements. Misty's cigarettes are slim and sassy. A Virginia Slims ad says, "If I ran the world, calories wouldn't count". The models in the advertisements are extremely thin wearing fashionable clothes. Even the cigarettes themselves are extra slender. Fashion and celebrity magazines help promote an ultra-slim beauty ideal by carrying plenty of cigarette advertising. Yet, they rarely speak out editorially about the dangers of smoking. Teenagers are only given the so called positive side of smoking in advertisements. They are never shown what tobacco does to their heart and lungs. (Roberts, 1994).

Other reasons that make the person seeking to exercise or smoking Tobacco are:

Smoking for testing, and often the young people do it either as a matter of curiosity, or simulation or modeling, or to completion of the shortcomings of manhood.

Smoking for more fun, which is called self-adaptation of the most common patterns of smoking.

Smoking to calm a nerve, which is called a truce tension.

Smoke to alert nerves and to maintain vigilance. (Kamal, 1999).

1-3-7 Health Effects of Smoking:

Many teenagers and adults think that there are no effects of smoking on their bodies until they reach middle age. (Milam, 2000).

Many teenagers and younger children inaccurately believe that experimenting with smoking or even casual use will not lead to any serious dependency. (Russell, 1990).

1-3-7-1 Effects on the Brain

Increases Stress: Contrary to popular belief, smoking does not relieve stress. Studies have shown that on average, smokers have higher levels of stress than non-smokers. (Caumo et al, 2001). The feelings of relaxation that smokers experience while they are smoking are actually a return to the normal unstressed state that non-smokers experience all of the time.

Alters brain chemistry: When compared to non-smokers, smokers brain cells- specifically brain cell receptors- have been shown to have fewer dopamine receptors. Brain cell receptors are molecules that sit on the outside of the cell interacting with the molecules that fit into the receptor, much like a lock and key. Receptors (locks) are important because they guard and mediate the functions of the cell. For instance when the right molecule (key) comes along it unlocks the receptor, setting off a chain of events to perform a specific cell function. Specific receptors mediate different cell activities. (Parrott, 1999).

1-3-7-2 Effects on the Respiratory System

The respiratory system includes the passages from the nose and sinuses down into the smallest airways of the lungs. Because all of these spaces are in direct communication with one another, they can all be affected by tobacco smoke simultaneously.

Bronchospasm: This term refers to “airway irritability” or the abnormal tightening of the airways of the lungs.

Bronchospasm makes airways smaller and leads to wheezing similar to that experienced by someone with asthma during an asthma attack.

While smokers may not have asthma, they are susceptible to this type of reaction to tobacco smoke. (Behrman, 2000). An asthmatic that starts smoking can severely worsen his/her condition. Bronchospasm makes breathing more difficult, as the body tries to get more air into irritated lungs.

Increases phlegm production: The lungs produce mucus to trap chemical and toxic substances.

Small “finger like” hairs, called cilia, coat the lung's airways and move rhythmically to clear this mucus from the lungs.

Combined with coughing, this is usually an effective method of clearing the lungs of harmful substances. Tobacco smoke paralyzes these hairs, allowing mucus to collect in the lungs of the smoker. Cigarette smoke also promotes goblet cell growth resulting in an increase in mucus. (Maestrelli et al, 2001). More mucus is made with each breath of irritating tobacco and the smoker cannot easily clear the increased mucus.

Persistent cough: Coughing is the body's natural response to clear irritants from the lungs. Without the help of cilia (above), a smoker is faced with the difficult task of clearing increased amounts of phlegm with cough alone. A persistent coughs, while irritating, is the smoker's only defense against the harmful products of tobacco smoke. A smoker will likely have a persistent, annoying cough from the time they start smoking.

A smoker who is not coughing is probably not doing an effective job of clearing his/her lungs of the harmful irritants found in tobacco smoke. (Takeyama et al, 2001).

Decreases physical performance: When the body is stressed or very active (for example, running, swimming, playing competitive sports), it requires that more oxygen be delivered to active muscles.

The combination of bronchospasm and increased phlegm production result in airway obstruction and decreased lung function, leading to poor physical performance. In addition, Smoking has been shown to stunt lung development in adolescent girls, limiting adult breathing capacity. Smoking not only limits one's current state of fitness, but can also restrict future physical potential. (Louie , 2001).

1-3-7-3 Effects on the Cardiovascular System

The cardiovascular system includes the heart and all of the blood vessels that carry blood to and from the organs.

Blood vessels include arteries, veins, and capillaries, which are all connected and work in unison with the lungs to deliver oxygen to the brain, heart, and other vital organs.

Adverse lipid profile: Lipids, a form of fat, are a source of energy for the body. Most people use this fat in its good form, called high-density lipoproteins, or HDLs. Some forms of fat, such as low-density lipoproteins (LDLs, triglycerides and cholesterol) can be harmful to the body. These harmful forms have their greatest effects on blood vessels. If produced in excess or accumulated over time, they can stick to blood vessel walls and cause narrowing. (Mitchell et al, 1999).

Atherosclerosis: Atherosclerosis is a process in which fat and cholesterol form "plaques" and stick to the walls of an artery.

These plaques reduce the bloods flow through the artery. While this process starts at a very young age (Some children younger than 1 year of age already show some of the changes that lead to plaque formation).

Thrombosis: Thrombosis is a process that results in the formation of a clot inside a blood vessel.

Normally, clots form inside blood vessels to stop bleeding, when vessels have been injured. However, components of tobacco smoke result in dangerously increased rates of clot formation. Smokers have elevated levels of thrombin, an enzyme that causes the blood to clot, after fasting, as well as a spike immediately after smoking. (Hioki et al, 2001).

Increases heart rate: Heart rate is a measure of how fast your heart is pumping blood around your body.

Young adult smokers have a resting heart rate of two to three beats per minute faster than the resting heart rate of young adult nonsmokers. (Rose et al, 2001).

Increases blood pressure: Blood pressure is a measure of tension upon the walls of arteries by blood. Nicotine consumption increases blood pressure.

Older male smokers have been found to have higher systolic blood pressure than nonsmoking men do.

Higher blood pressure requires that the heart pump harder in order to overcome the opposing pressure in the arteries. (Primatesta et al, 2001).

1-3-7-4 Effects on the Immune System

The immune system is the body's major defense against the outside world. It is a complicated system that involves several different types of cells that attack and destroy foreign substances. It begins in the parts of the body, which are in direct contact with the environment, such as the skin, ears, nose, mouth, stomach, and lungs.

When these barriers become compromised, there are serious health consequences. Tobacco smoke weakens the immune system in a number of ways. (Moszczynski et al, 2001).

1-3-7-5 Effects on the Metabolic System

Your metabolic system includes a complicated group of processes that break down foods and medicines into their components. Proteins, called enzymes, are responsible for this breakdown. The metabolic system involves many organs, especially those of the gastrointestinal tract.

Scurvy and Other Micronutrient Disorders: Micronutrients are dietary components necessary to maintain good health. These include vitamins, minerals, enzymes (above) and other elements that are critical to normal function. They must be consumed and absorbed in sufficient quantities to meet the body's needs.

The daily requirement of these micronutrients changes naturally with age and can also be affected by environmental factors, including tobacco smoke. Smoking interferes with the absorption of a number of micronutrients, especially vitamins C, E, and folic acid that can result in deficiencies of these vitamins. (Goldman, 2000).

Oxidative Damage: Oxidants are active particles that are byproducts of normal chemical processes that are constantly underway inside the body. Their formation is called oxidation. These particles are usually found and destroyed by antioxidants, including vitamins A, C, and E.

The balance of oxidation and anti-oxidation is critical to health. When oxidation overwhelms anti-oxidation, harmful consequences occur.

Oxidants directly damage cells and change genetic material, likely contributing to the development of cancer, heart disease, and cataracts. Oxidants also speed up blood vessel damage due to atherosclerosis (above) which is a known risk factor for heart disease. Because smoking increases the number of circulating oxidants, it also increases the consumption of existing antioxidants. (Goldman, 2000).

1-3-7-6 Effects on the Reproductive Health

Impact of cigarette smoking on reproduction in women:

Virtually all scientific studies support the conclusion that smoking has an adverse impact on fertility. The prevalence of infertility is higher, and the time it takes to conceive is longer, in smokers compared to nonsmokers. Active smoking by either partner has adverse effects, and the impact of passive cigarette smoke exposure is only slightly smaller than for active

smoking. Research indicates that cigarette smoking is harmful to a woman's ovaries, and the degree of harm is dependent upon the amount and the period of time a woman smokes. Smoking appears to accelerate the loss of eggs and reproductive function and may advance the time of menopause by several years. Components in cigarette smoke have been shown to interfere with the ability of cells in the ovary to make estrogen and to cause a woman's eggs (oocytes) to be more prone to genetic abnormalities. Smoking is strongly associated with an increased risk of spontaneous miscarriage and possibly ectopic pregnancy as well. Pregnant smokers are more likely to have low birth weight babies and premature birth. The incidence of sudden infant death syndrome (SIDS) also increases in households where someone smokes.

Impact of cigarette smoking on reproduction in men:

Men who smoke cigarettes have a lower sperm count and motility and increased abnormalities in sperm shape and function. The effect of smoking on male fertility, however, is more difficult to discern because it is difficult to create studies to address that question. Although the effects of cigarette smoking on male fertility remain inconclusive, the harmful effect of passive smoke on the fertility of female partners and the evidence that smoking adversely affects sperm quality suggest that smoking in men should be regarded as an infertility risk factor. (Patient's Fact Sheet, 2003).

1-3-7-7 Health Effects of Water pipe

Contrary to ancient lore and popular belief, the smoke that emerges from a water pipe contains numerous toxicants known to cause lung cancer, heart disease, and other diseases. (Knishkowsky, Amitai, 2005).water pipe tobacco smoking delivers the addictive drug nicotine, and, as is the case with other tobacco products, more frequent use is associated with the smokers being more likely to report that they are addicted.(Maziak, Ward, Eissenberg, 2004).

A water pipe smoking session may expose the smoker to more smoke over a longer period of time than occurs when smoking a cigarette. Cigarette smokers typically take 8-12, 40-75 ml puffs over about 75-7 minutes and inhale 0.5-0.6 liters of smoke. (Djordjvic et al, 2000). In contrast, water pipe smoking session typically last 20-80 minutes, during which the smoker may take 50-200 puffs which range from about 0.15 to 1 liter each. The water pipe smoker may therefore inhale as much smoke during one session as a cigarette smoker would inhale consuming 100 or more cigarettes.

While the water does absorb some of the nicotine, water pipe smokers can be exposed to a sufficient dose of this drug to cause addiction. (Maziak et al, 2004).

Nicotine intake is an important regulator of tobacco intake in general, as evidenced by the fact that cigarette smokers tend to smoke until they get enough nicotine to satisfy their need and addiction, but not so much as to cause nausea. (National Cancer Institute, 2001). It is likely that the reduced concentration of nicotine in the water pipe smoke may result in smokers inhaling higher amounts of smoke and thus exposing themselves to higher levels of cancer-causing chemicals and hazardous gases such as carbon monoxide than if none of the nicotine was absorbed by the water; however this issue needs further study. (Shihadeh , Saleh , 2005).

This put water pipe smokers and second-hand smokers at risk for the same kinds of diseases as are caused by cigarette smoking, including cancer, heart disease, respiratory disease, and adverse effects during pregnancy. (Nuwayhid et al, 1998).

1-3-8 Negative (Passive) Smoking:

Involuntary (or passive) smoking is exposure to secondhand tobacco smoke, which is a mixture of exhaled mainstream smoke and sidestream smoke released from the smouldering cigarette or other smoking device (cigar, pipe, bidi, etc.) and diluted with ambient air. Involuntary smoking involves inhaling carcinogens, as well as other toxic components, that are present in secondhand tobacco smoke. Secondhand tobacco smoke is sometimes referred to as 'environmental' tobacco smoke.

Carcinogens that occur in secondhand tobacco smoke include benzene, 1,3-butadiene, benzo[a]pyrene, 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone and many others. Secondhand tobacco smoke consists of a gas phase and a particulate phase; it changes during its dilution and distribution in the environment and upon ageing. The concentrations of respirable particles may be elevated substantially in enclosed spaces containing secondhand tobacco smoke. The composition of tobacco smoke inhaled involuntarily is variable quantitatively and depends on the smoking patterns of the smokers who are producing the smoke as well as the composition and design of the cigarettes or other smoking devices. The secondhand tobacco smoke produced by smoking cigarettes has been most intensively studied. Secondhand tobacco smoke contains nicotine as well as carcinogens and toxins. Nicotine concentrations in the air in homes of smokers and in

workplaces where smoking is permitted typically range on average from 2 to 10 micrograms/m³.

1-3-8-1 The effects of negative smoking:

Passive smoking involves exposure to the same numerous carcinogens and toxic substances which cause lung cancer in smokers. This implies some risk of lung cancer from exposure to secondhand smoke. More than 50 studies have been published on lung cancer risk in people who have never smoked but who have been exposed to tobacco smoke, especially spouses of smokers. Most studies show an increased risk, particularly for persons with higher exposures. The overall finding is an increased risk of lung cancer in spouses of smokers of 20% in women and 30% in men. Non-smokers exposed at the workplace have a 12-19% increased risk of lung cancer.

This evidence is sufficient to conclude that passive smoking is a cause of lung cancer in never-smokers. (Davis , 1997).

1-3-9 Other effects of smoking:

For diseases attributable to a causal risk factor, such as smoking, the “disease burden” associated with that risk factor can be estimated for a particular population using epidemiologic methods. Different types of estimates can be made, such as mortality, morbidity, disability-adjusted life years (DALYs) lost. (Murray , Lopez , 1996).

Measuring changes in smoking attributable mortality (SAM) over time provides a periodic ongoing indication of the burden of disease caused by tobacco use. This information can be used to guide national and state comprehensive tobacco control programs, facilitating decisions on resource allocation and needs by comparing the impact of tobacco use with other risk factor disease burdens (McGinnis and Foege 1993).

Published studies on the medical costs of smoking have used a number of approaches to estimate costs, including PAR calculations, model-based approaches, incidence-based measures of present and future costs attributable to smoking (Hodgson 1992), indirect costs of human capital lost from disability and premature deaths, and net social costs. (Warner et al, 1999).

1-3-10 Adolescents and initiation of smoking:

Despite a steady decline in adult smoking, tobacco use among children and teenagers continues at alarming rates. Smoking among high school seniors dropped by 29% in the 4 years preceding 1981, but since then the decline has slowed to less than one tenth of that rate. Furthermore, the use of smokeless tobacco by youths has increased dramatically during the past two decades. (Connolly GN et al, 1986).

Whereas early research suggested that peer pressure and parental example were the key factors contributing to tobacco use by adolescents, more recent studies indicate that three factors are of greater importance: the sale of tobacco to minors, school policies on smoking, and the advertising and promotion of tobacco.

During the 1970s and 1980s, many schools made it convenient for students to smoke by setting up smoking areas within schools. This was done even in states where it was illegal to purchase or possess tobacco products before the age of 18 or 19. School smoking areas then, as now, provided students with a safe haven where they could obtain and experiment with tobacco without fear of repercussions. School smoking areas have been a public health policy disaster. A British study showed early in the 1980s that smoking rates were much higher among students graduating from schools that permitted student smoking. (Porter , 1982).

More than a third of all kids who ever try smoking a cigarette become regular, daily smokers before leaving high school. In fact, the addiction rate for smoking (the percentage of experimenters who ultimately become habitual users) is higher than the addiction rates for marijuana, alcohol, or cocaine. (CDC, 1998).

Although some kids who become regular smokers quit before leaving high school, almost three out of every four regular smokers in high school have already tried to quit but failed. At any given time, fewer than one in seven high school smokers have even been able to successfully stop smoking for just 30 days or more. While only three percent of daily smokers in high school think that they will still be smoking at all in five years, more than 60 percent are still regular daily smokers seven to nine years later.

Accordingly, any efforts to decrease future smoking levels among high school students, college-aged youths, or adults need to include a focus on reducing experimentation and regular smoking among teenagers and even pre-teens, as well. Delaying the age when kids first experiment with cigarettes or first begin smoking can also reduce the risk that they become regular or daily smokers and increase their chances of successfully quitting if they do begin regular smoking. (Johnston , et al, 1998).

In addition, a comprehensive approach to prevent both minors and adults from using tobacco should include: local community programs, evidence-based school programs, tobacco counter marketing, tobacco-use cessation programs, and surveillance and evaluation systems to monitor progress in reducing the use of tobacco (CDC, 1999).

1-3-11 Smoking and addiction:

Nicotine is a drug found naturally in tobacco. It is highly addictive as heroin or cocaine. Over time, a person becomes physically and emotionally addicted to (dependent on) nicotine. Studies have shown that smokers must deal with both the physical and psychological (mental) dependence to quit and stay quit. Nicotine produces pleasant feelings that make the smoker want to smoke more. It also acts as a kind of depressant by interfering with the flow of information between nerve cells. As the nervous system adapts to nicotine, smokers tend to increase the number of cigarettes they smoke. This, in turn, increases the amount of nicotine in the smoker's blood. After a while, the smoker develops a tolerance to the drug. Tolerance means that it takes more nicotine to get the same effect that the smoker used to get from smaller amounts. This leads to an increase in smoking over time. The smoker reaches a certain nicotine level and then keeps smoking to maintain this level of nicotine. In fact, nicotine inhaled in cigarette smoke reaches the brain faster than drugs that enter the body intravenously. (American Cancer Society, 2008).

1-3-12 Smoking cessation:

The US Surgeon General has said, "Smoking cessation [stopping smoking] represents the single most important step that smokers can take to enhance the length and quality of their lives." In view of the prevailing health hazards of tobacco smoking, it is important to emphasize smoking cessation. It is also not out of place to emphasize that smokers need help and not hostility from health care providers and counselors. Therefore there is need to develop a therapeutic partnership which provides practical advice and support in order to surmount smoking and prevents its hazards. Physicians should routinely ask patients about their smoking status and render advice on the need to contemplate the health risk of smoking, benefit of cessation of smoking and assess their attitude towards smoking cessation. Such advice should be individualized to their current health status like asthma, pregnancy etc. Sometimes shock tactics may help them contemplate the future. For

example when your son is getting married in 25-30 years time who will sign his marriage register if you have lung cancer? They must be assured that it is never too late to stop smoking and that they should never stop trying to stop. They should not rely on will power, but, to consider the use of nicotine replacement therapy. The support of close associates should be involved and follow up visits are arranged where success is applauded and encouraged to avoid relapse. Group sessions with smokers can also provide additional support. (Anderson , 2002).

1-3-12-1 Cost of smoking:

Smoking is expensive. It isn't hard to figure out how much you spend on smoking: multiply how much money you spend on tobacco every day by 365 (days per year). The amount may surprise you. Now multiply that by the number of years you have been using tobacco and that amount will probably shock you. Multiply the cost per year by 10 (for the next 10 years) and ask yourself what you would rather do with that much money. And this doesn't include other possible costs, such as higher costs for health and life insurance, and likely health care costs due to tobacco-related problems.

1-3-12-2 Benefits of smoking cessation:

No matter how old you are or how long you've smoked, quitting can help you live longer and be healthier. People who stop smoking before age 50 cut their risk of dying in the next 15 years in half compared with those who keep smoking. Ex-smokers enjoy a higher quality of life with fewer illnesses from cold and flu viruses, better self-reported health, and reduced rates of bronchitis and pneumonia. (American Cancer Society, 2008).

1-3-13 Stages of Change Model:

Transtheoretical Model is an integrative model of behavior change. Key constructs from other theories are integrated. The model describes how people modify a problem behavior or acquire a positive behavior. The central organizing construct of the model is the Stages of Change. The model also includes a series of independent variables, the Processes of Change, and a series of outcome measures, including the Decisional Balance and the Temptation scales. The Processes of Change are ten cognitive and behavior activities that facilitate change. Behavior change was often construed as an event, such as quitting smoking, drinking, or over-eating.

The Transtheoretical Model construes change as a process involving progress through a series of five stages:

Precontemplation is the stage in which people are not intending to take action in the foreseeable future, usually measured as the next six months. People may be in this stage because they are uninformed or under-informed about the consequences of their behavior. Or they may have tried to change a number of times and become demoralized about their ability to change. Both groups tend to avoid reading, talking or thinking about their high risk behaviors. They are often characterized in other theories as resistant or unmotivated or as not ready for health promotion programs. The fact is traditional health promotion programs are often not designed for such individuals and are not matched to their needs.

Contemplation is the stage in which people are intending to change in the next six months. They are more aware of the pros of changing but are also acutely aware of the cons. This balance between the costs and benefits of changing can produce profound ambivalence that can keep people stuck in this stage for long periods of time. We often characterize this phenomenon as chronic contemplation or behavioral procrastination. These people are also not ready for traditional action oriented programs.

Preparation is the stage in which people are intending to take action in the immediate future, usually measured as the next month. They have typically taken some significant action in the past year. These individuals have a plan of action, such as joining a health education class, consulting a counselor, talking to their physician, buying a self-help book or relying on a self-change approach. These are the people that should be recruited for action-oriented smoking cessation, weight loss, or exercise programs.

Action is the stage in which people have made specific overt modifications in their life-styles within the past six months. Since action is observable, behavior change often has been equated with action. But in the Transtheoretical Model, Action is only one of five stages. Not all modifications of behavior count as action in this model. People must attain a criterion that scientists and professionals agree is sufficient to reduce risks for disease. In smoking, for example, the field used to count reduction in the number of cigarettes as action, or switching to low tar and nicotine cigarettes. Now the consensus is clear--only total abstinence counts. In the diet area, there is some consensus that less than 30% of calories should be

consumed from fat. The Action stage is also the stage where vigilance against relapse is critical.

Maintenance is the stage in which people are working to prevent relapse but they do not apply change processes as frequently as do people in action. They are less tempted to relapse and increasingly more confident that they can continue their change. (Prochaska , Velicer , 1997).

1-3-13-1 Trastheoretical Model and smoking behavior:

The Stages of Change Model identifies the stages that a person goes through in making a change in behavior. Here are the stages as they apply to quitting smoking:

Pre-contemplation: At this stage, the smoker is not seriously thinking about quitting.

Contemplation: The smoker is actively thinking about quitting but is not quite ready to make a serious attempt. This person may say, "Yes, I'm ready to quit, but the stress at work is too much," or "I don't want to gain weight," or "I'm not sure if I can do it."

Preparation: Smokers in the preparation stage seriously intend to quit in the next month and often have tried to quit in the past 12 months. They usually have a plan.

Action: This is the first 6 months when the smoker is actively quitting.

Maintenance: This is the period of 6 months to 5 years after quitting when the ex-smoker is aware of the danger of relapse and takes steps to avoid it. (American Cancer Society, 2008).

Prochaska et al. (1991) demonstrated using 6-monthly stage classifications over a 2-year period that, although 36% of smokers and ex-smokers stayed in the same stage for all of the five examination points, 16% progressed from one stage to the next in the specified sequence without any regression. Prochaska also predicts future behavior: smokers in the preparation stage are three times as likely to quit smoking over 18 months as those in the precontemplation stage (Prochaska et al. 1992). "Prochaska observed that self-efficacy contributed strongly both to the transition from contemplation to action and from action to maintenance, but that decisional balance

predicted change for those in the precontemplation and contemplation stages.” (Horwath C, 1999).

1-3-14 smoking Prevention:

Primary prevention involves planning strategies to discourage non smokers from smoking tobacco. This should involve teenagers who are vulnerable to cigarette advertisement and peer group influence. Teenagers have the rebellious attitude of feeling healthy, young and immortal without considering the concepts of ageing and disease. It is important to emphasize the promotion of a healthy life style and the unattractiveness of the smokers whose clothes, hands, teeth and breath smells tobacco. Sports seem to promote self confidence, encourage a healthy life style and reduce peer influence of smoking. Mass media intervention that advertises and promote the anti-smoking message will be very effective. In conclusion, outright cigarette prohibition may not be feasible but the examples of parents, teachers, sports men and women, politicians and the general public is vital. The epidemic of smoking related mortality and morbidity should therefore be the concern of all levels of the society. (Anderson , 2002).

1-3-15 Health education in schools:

Children spend almost a third of their waking time in school, and much of the peer pressure kids feel regarding whether or not to smoke occurs in school. Accordingly, school-based programs can reach children and teenagers when they are most vulnerable to starting a tobacco habit -- or before their tobacco use has become a strong addiction. At the same time, these programs are most likely to have strong, lasting effects when supplemented by strong anti-smoking policies at the schools and when they serve as just one part of a comprehensive local or state tobacco prevention program. (HHS, 1994).

School tobacco-prevention programs must be comprehensive and address several aspects of tobacco use in order to be effective in preventing use by students. Beyond trying to scare kids, these programs must educate them about the real dangers of smoking and prepare them to resist tobacco offers. To reinforce this educational work, schools should also enforce strong school policies that forbid smoking or other tobacco use by students, staff, or visitors on school property or at school activities, and provide students and staff who smoke with cessation information and assistance. To further ensure that they are sending a strong, clear and consistent anti-smoking

message, schools should also adopt firm policies of not displaying any direct or indirect tobacco advertising and not taking any tobacco industry funding or assistance. (CDC, 1994).

1-3-16 Researches conducted in smoking behavior in the Sudan:

Tobacco use in Sudan includes both smoking (mainly cigarettes but also water pipe) and snuff dipping, using a traditional and highly addictive form of moist oral snuff called toombak. Few women admit to tobacco use due to cultural norms in the society, and among males the estimated prevalence is around 20%. This document is a description of Sudan's experience (as a developing country) in fighting tobacco use and participating in global tobacco research.

In a study of tobacco use in Sudan among children and adolescents (4–17 years) the prevalence of tobacco use was quite low (2%, range 1–2%), but there was an abrupt increase up to 25% in late adolescence. Among the adult population aged 18 years and older the prevalences of toombak use (34%) and cigarette smoking (12%) among males were significantly higher than among females (2.5 and 0.9%, respectively). The prevalence of toombak use among the male population aged 18 years and older was significantly higher in the rural than in the urban areas (35% vs 24%), while cigarette smoking had a higher prevalence in urban areas (18% vs 12%). The highest rates of toombak use were found in rural areas among the male population ages 30 years and older (mean 46.6%, range 45–47%). (Idris et al, 1998).

Despite the fact that this legal framework might help combat tobacco addiction, the study conducted by the Federal Health Ministry, in association with the National Committee for Combating Tobacco in 2005, showed that 20.1 per cent of all students aged 13 - 15 years surveyed by the study smoke cigarettes at least once in their life. These ratios by sex are of 30.2 per cent for males versus 10 per cent for females. The study also showed that 8.1 per cent of all students of both sexes smoke cigarettes in the last three days and that 20.5 per cent of students and 11.8% of female students abused bubble and / or tobacco during the last thirty days which is much higher proportion than cigarettes smoking.

It should be noted that this study was elaborated as part of the world survey of tobacco consumption among youth and adolescents in Sudan and its results were announced on May 31, 2006. The study, which covered (50) schools of the Sudanese capital Khartoum and targeted (2783) students of the eighth level of basic education and the first and second level of secondary schools (12-15 years), is the most recent one in this field in Sudan. (Howeida, 2007).

The STEPS survey of chronic disease risk factors in [Sudan/Khartoum] was carried out from [December/2005] to [January/2006]. The STEPS survey was a population-based survey of adults aged 25-64. A Stratified systematic sample design was used to produce representative data for that age range in Khartoum state. A total of 1573 adults participated in the [Sudan/Khartoum State] STEPS survey. From the survey results the percentage who currently smoke tobacco daily are: (24.7%) for males, (2.9%) for females, and (12%) for both sexes. (Elzein , 2006)

Chapter Two

Material & methods

2- Material & methods:

2-1 Study design:

This is a descriptive cross-sectional school based study conducted to identify the male smoker student's knowledge, perceptions about smoking cigarettes and their intentions to quit that behavior in Khartoum locality.

2-2 Study area:

The geographical location of Khartoum locality as follows:

Bordered to the north Al Khartoum_bahri locality, to the south Jabal awlia locality, to the east Blue Nile River, and to the west White Nile River.

Khartoum locality has three administrative units; its population number about (639.598). (Khartoum locality, 2008).

2-2-1 Study population:

Consist of the male students of secondary schools in Khartoum locality. The total number of secondary school students in the locality were (15084), (8210) of them male student distributed in 46 governmental secondary school. (Ministry of Education, 2009).

2-2-2 Educational services:

There are 46 governmental secondary school (23 for males, and 23 for females). The total number of private secondary school is 113 (45 for males, and 68 for females). The number of teachers in secondary schools is (4953). (Ministry of Education, 2009).

2-2-3 Health services:

The area is served by 31 hospitals, 36 health centers, and a number of clinics. (Khartoum locality, 2008).

2-3 Determination of sample size:

The size of the sample was determined using the following formula:

$$n = \frac{z^2 \cdot p \cdot q}{d^2}$$

Since the:

n= is the sample size.

z= is the value of standard normal variable corresponding to 95% level of significance=1.96.

p= is the proportion of smokers among secondary school students= 0.049. (Moukhyer, 2005).

q=1-p

d=is a marginal error = 0.027

Accordingly a sample size of 245 was obtained out of total (8210) male student in Khartoum locality. Of the total 245 students 186 smoker students were selected using two-stage sampling technique. 11 schools were selected out of 23 governmental schools using the simple random sample. The private schools were not selected because there were some problems facing me as a researcher in entering these schools and collecting data. The sample was distributed to schools using the proportional allocation as follows:

The total number of students per school × the sample size
The total number of schools students

$$\text{School no.1 } \left(\frac{1186}{4991} \times 245 \right) = 58$$

$$\text{School no.2 } \left(\frac{1007}{4991} \times 245 \right) = 49$$

$$\text{School no.3 } \left(\frac{308}{4991} \times 245 \right) = 15$$

$$\text{School no.4 } \left(\frac{337}{4991} \times 245 \right) = 17$$

$$\text{School no.5 } \left(\frac{457}{4991} \times 245 \right) = 22$$

$$\text{School no.6 } \left(\frac{534}{4991} \times 245 \right) = 26$$

$$\text{School no.7 } \left(\frac{174}{4991} \times 245 \right) = 9$$

$$\text{School no.8 } \left(\frac{276}{4991} \times 245 \right) = 14$$

$$\text{School no.9 } \left(\frac{293}{4991} \times 245 \right) = 14$$

$$\text{School no.10 } \left(\frac{252}{4991} \times 245 \right) = 12$$

$$\text{School no.11 } \left(\frac{167}{4991} \times 245 \right) = 8$$

2-4 Data collection methods:

The data were collected through the distribution of questionnaires among the male smokers of secondary school students.

2-5 Data analysis:

The data were analyzed using statistical package for social science (SPSS) and the relationship between different variables was determined using Chi-square test.

2-6 Data depiction:

Data were depicted in tables and histograms.

Chapter three

Results

3- Results:

Table (1):

Number of students family members in Khartoum locality-2009:

N= (245)

Family members	Number	Percent %
From 1-3	31	12.7
From 4-6	132	53.9
More than 7	82	33.5
Total	245	100

Table (1) presents the number of students family members as follows: (12.7%) of student's families consist of 1-3member, and (33.5%) consist of more than 7 members.

Table (2):

Educational levels of student's fathers in Khartoum locality-2009:

N= (245)

Level of education	Number	Percent %
Illicit	11	4.5
Primary	26	10.6
Secondary	85	34.7
Graduate	97	39.6
Post graduate	26	10.6
Total	245	100

Table (2) demonstrates the educational levels of student's fathers as follows: (4.5%) of student's fathers were illicit, and (39.6%) of them were graduated.

Table (3):

Student's families' income per month in Khartoum locality-2009:

N= (245)

Income/ SDG	Number	Percent %
From 69-149	65	26.5
From 150-249	75	30.6
More than 250	105	42.9
Total	245	100

Table (3) emerges the income of families per month as follows: (26.5%) of families' income in between (69-149), and (42.9%) of families income is more than 250 SDG.

Table (4):
Distribution of students according to smoking habits in Khartoum locality-2009:

N= (245)

Smoking/not smoking	Number	Percent %
Smoker	186	75.9
Not smoker	59	24.1
Total	245	100

Table (4) shows the distribution of students according to smoking habits as follows: (75.9%) are currently smokers that means currently about three quarters in the targeted schools were smokers, and (24.1%) were non-smokers.

Table (5):
Knowledge of smoker students about smoking harms in Khartoum locality-2009:

N= (186)

Knowledge of smoking harms	Number	Percent %
Yes	186	100
No	0	0
Total	186	100

Table (5) demonstrates the knowledge of smoker students about smoking harms as follows: all of students (100%) under study know the harms of smoking and (0%) doesn't know these harms.

Figure (1):
Knowledge of smoker students about the effect of smoking on smokers in
Khartoum locality-2009:

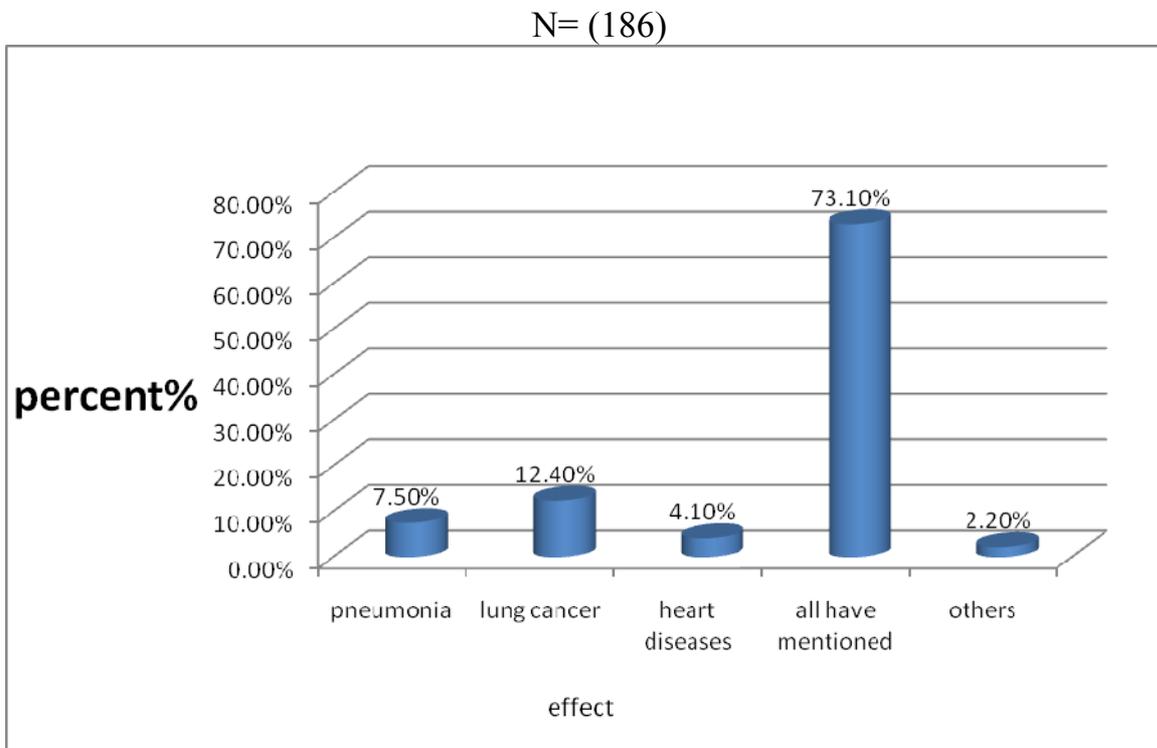


Figure (1) presents the knowledge of smoker students about the effect of smoking on smokers as follows: (7.5%) of students think that the effect is pneumonia, (12.4%) lung cancer, (4.8%) heart diseases, ,(73.1%) all have mentioned, and (2.2%) other effects.

Table (6):

Knowledge about the effect of active smokers on passive smokers in Khartoum locality-2009:

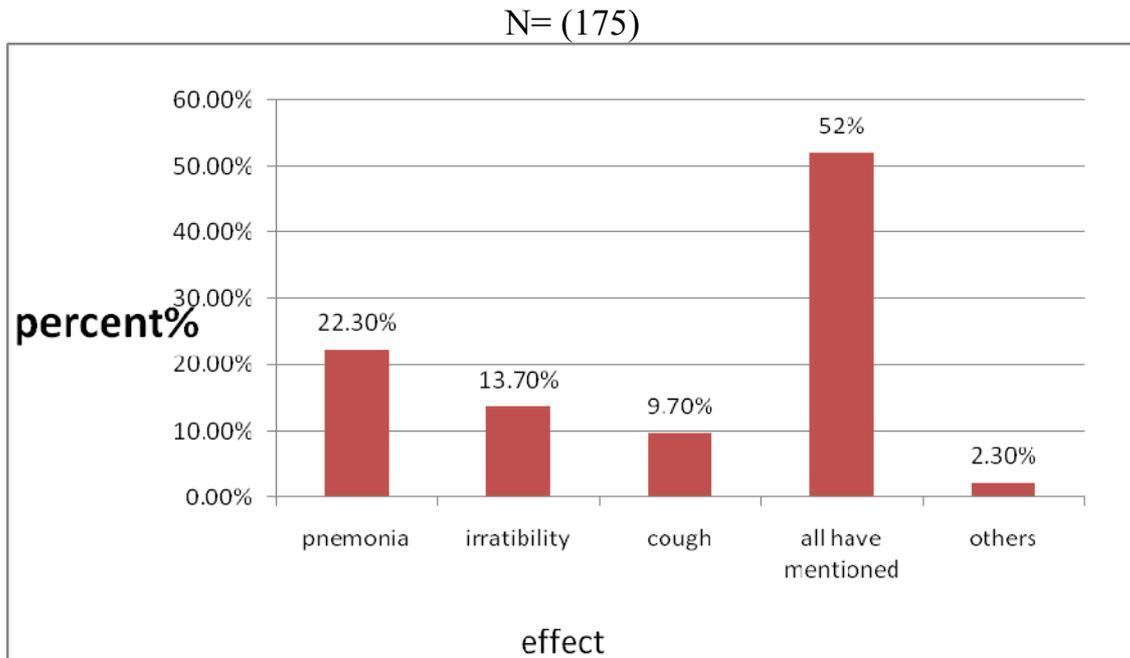
N= (186)

Knowledge	Number	Percent %
There is an effect	175	94.1
There is no effect	11	5.9
Total	186	100

Knowledge about the effect of active smokers on passive smokers has shown in table (6) as follows: (94.1%) of students know that there is an effect and (5.9%) doesn't know.

Figure (2):

Type of the effects of active smokers on passive smokers in Khartoum locality-2009:



Type of the effects of active smokers on passive smokers has found in Figure (2) as follows: (22.3%) of students think that the effect is pneumonia, (13.7%) irritability, (9.7%) cough, (52%) all have mentioned and (2.3%) other effects.

Table (7):

Annoyance of smoker students if someone smokes in front of hem in Khartoum locality-2009:

N= (186)

Annoyed	Number	Percent %
Annoyed	102	54.8
Not annoyed	84	45.2
Total	186	100

Table (7) presents the annoyance of smoker students from smoking in front of them as follows: (54.8%) were annoyed and (45.2%) were not annoyed.

Table (8):

Intention of smoker students to quit smoking in the foreseeable future in Khartoum locality-2009:

N= (186)

Intention	Number	Percent %
Intention to quit	93	50
No intention to quit	93	50
Total	186	100

Table (8) emerges the Intention of smoker students to quit smoking in the foreseeable future as follows :(50%) of students have intention to quit smoking in the coming future, (50%) have no intention.

Table (9):

Attitude towards the difficulties facing smoker students to stop smoking in Khartoum locality-2009:

N= (186)

Difficult to stop	Number	Percent %
Yes	152	67.2
No	61	32.8
Total	186	100

Table (9) presents the attitude towards the difficulties facing smoker students to stop smoking as follows: (67.2%) of students think that they may face difficulties to stop, (32.8%) think that they may not face these difficulties.

Figure (3):
The reasons for students smoking in Khartoum locality-2009:

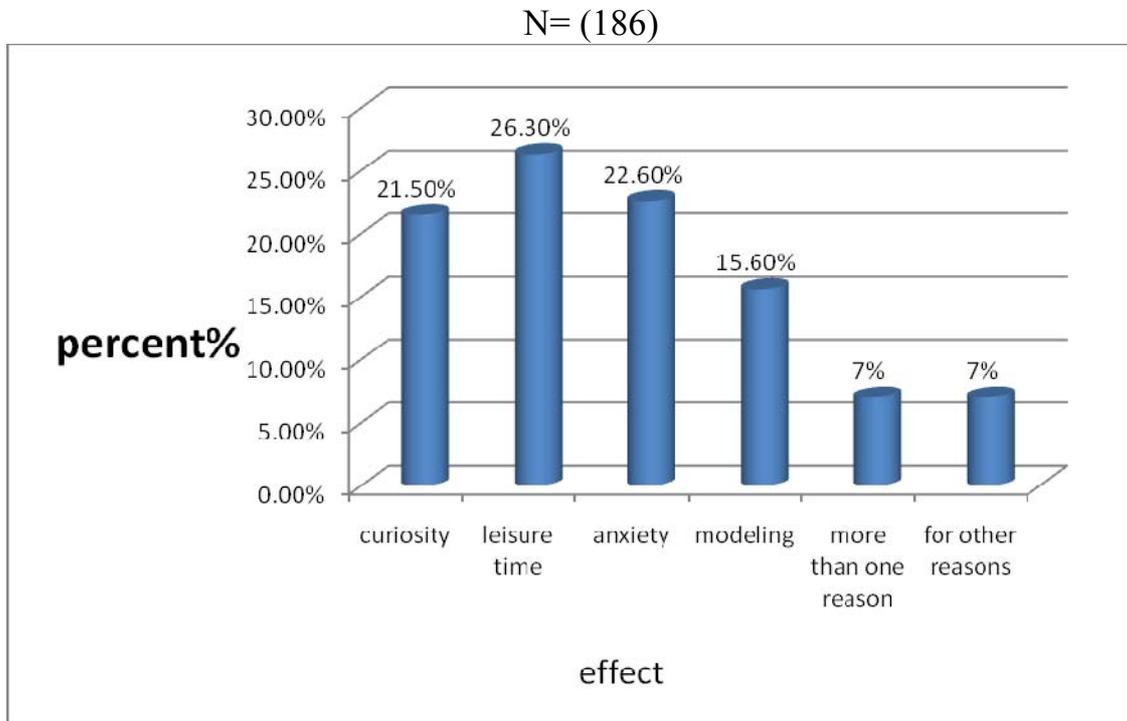


Figure (3) shows the reasons for students smoking as follows: (21.5%) of students smoked for curiosity, (26.3%) leisure time, (22.6%) anxiety, (15.6%) modeling, (7%) more than one reason, and (7%) for other reasons.

Table (10):

Knowledge of smoker students if sharing one cigarette may help to transmit diseases in Khartoum locality-2009:

N= (186)

Knowledge	Number	Percent %
Yes	160	86
No	26	14
Total	186	100

Table (10) finds the knowledge of smoker students if sharing one cigarette may help to transmit diseases as follows: (86%) of students know that sharing may help to transmit diseases, (14%) doesn't know.

Table (11):

Knowledge of smoker students about the kinds of diseases caused by sharing cigarettes in Khartoum locality-2009:

N= (160)

Diseases caused by Sharing	Number	Percent %
Tuberculosis	13	8.1
Influenza (Cold)	38	23.8
Respiratory infections	55	34.4
All of above	51	31.9
others	3	1.9
Total	160	100

The knowledge of smoker students about the kinds of diseases caused by sharing cigarettes demonstrated in Table (11) as follows: (8.1%) tuberculosis, (23.8%) Influenza, (34.4%) Respiratory infections, (31.9%) all have mentioned and (1.9%) other diseases.

Table (12):

Number of cigarettes that students smoke per day in Khartoum locality-2009:

N= (186)

No. of cigarettes/D	Number	Percent %
1-4	100	53.8
5-8	29	15.6
More than 8	57	30.6
Total	186	100

Table (12) shows that (53.8%) of students smoked from 1-4 cigarettes per day, and about (30.6%) of students smoked more than 8 cigarettes per day which is a rather high consumption.

Table (13):

Smoker students who may have a smoker friend or relative in Khartoum locality-2009:

N= (186)

Have smoker friend	Number	Percent %
Yes	175	94.1
No	11	5.9
Total	186	100

Table (13) presents the smoker students who may have a smoker friend or relative as follows: (94.1%) have a smoker friend or relative and (5.9%) doesn't have.

Table (14):

The place that students smoke in usually in Khartoum locality-2009:

N= (186)

Place of smoking	Number	Percent %
Home	13	7
School	5	2.7
Street	137	73.7
At home & street	16	8.6
All of above	5	8
Total	186	100

Table (14) shows the place that usually students smoke in as follows: (7%) of students smoke at home, (2.7%) at school, (73.7%) in street, (8.6%) at home and street, (8%) at all these places.

Table (15):

Presence of restrictions that forbid smoking in the school in Khartoum locality-2009:

N= (186)

Restrictions in school	Number	Percent %
Yes	158	84.9
No	28	15.1
Total	186	100

Table (15) demonstrates the presence of restrictions that forbid smoking in the school as follows: (84.9%) of students said there are restrictions that forbid smoking in the school, (15.1%) said there are no restrictions.

Table (16):

Students who had an advice to stop smoking in Khartoum locality-2009:

N= (186)

Having an advice	Number	Percent %
Yes	138	74.2
No	48	25.8
Total	186	100

Table (16) shows the students who had an advice to stop smoking as follows: (74.2%) of students had an advice and (25.8%) weren't had.

Table (17):

Presence of programs about quitting smoking in schools in Khartoum locality-2009:

N= (186)

Presence of programs in the school	Number	Percent %
Yes	57	30.6
No	129	69,4
Total	186	100

Presence of programs about quitting smoking in schools is appeared in table (17) as follows: (30.6%) of students said that their schools present programs about quitting smoking in schools and (69.4%) said there are no programs presented.

Table (18):

Trying of smoker students to stop smoking in Khartoum locality-2009:

N= (186)

Have tried to stop	Number	Percent %
Yes	135	72.6
No	51	27.4
Total	186	100

Table (18) demonstrates the trying of smoker students to stop smoking as follows: (72.6%) of students had tried to stop and (27.4%) hadn't tried.

Table (19):

The reasons that lead smoker students to try stopping of smoking in Khartoum locality-2009:

N= (135)

Reasons for trying	Number	Percent %
Conviction	76	56.3
Influence of someone	43	31.9
For conviction & Influence	6	7.4
Other reasons	10	4.4
Total	135	100

Table (19) shows the reasons that lead smoker students to try stopping of smoking as follows: (56.3%) of students had tried to stop for conviction with smoking effects, (31.9%) for Influence of someone, (7.4%) for both reasons and (4.4%) for other reasons.

Table (20):

Possibility of smoker students to stop smoking in Khartoum locality-2009:

N= (186)

Possibility to stop	Number	Percent %
Yes	159	85.5
No	27	14,5
Total	186	100

Table (20) finds the possibility of smoker students to stop smoking as follows: (85.5%) of students can stop smoking and (14.5%) can not stop.

Figure (4):

The reasons for stopping smoking as stated by the smoker students in Khartoum locality-2009:

N= (159)

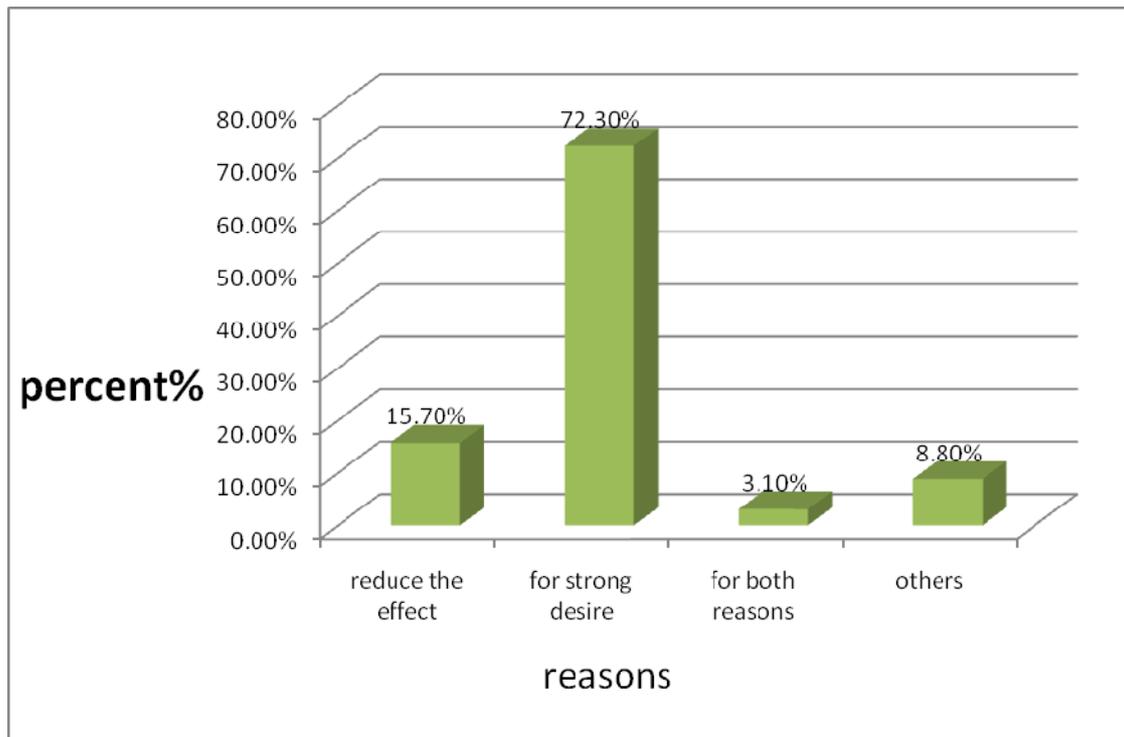


Figure (4) depicts the reasons for stopping smoking as stated by the smoker students as follows: (15.7%) for reducing the effect of smoking, (72.3%) for strong desire to stop, (3.10%) for both reasons and (8.8%) for other reasons.

Table (21):

The relationship between place of smoking and presence of restrictions in the school in Khartoum locality-2009:

Place of smoking	Restrictions in school		Total
	yes	No	
Home	11	2	13
School	3	2	5
Street	120	17	137
Home and street	16	0	16
All of above	8	7	15
Total	158	28	186

$$X^2 = 16.14$$

Table (18) demonstrates the strongly significant P value at 0.05 in the relationship between place of smoking and presence of restrictions in the school.

Table (22):

The relationship between having an advice and trying to stop smoking in Khartoum locality-2009:

Having an advice	Trying to stop		Total
	yes	No	
yes	107	31	138
No	28	20	48
Total	135	51	186

$$X^2 = 6.61$$

Table (22) shows the strongly significant P value at 0.05 in the relationship between having an advice or assistance and trying to stop smoking.

Table (23):

The relationship between smoking in future and possibility of stopping in Khartoum locality-2009:

Smoking in future	possibility of stopping		Total
	yes	No	
Will smoke	70	23	93
Will not smoke	89	4	93
Total	159	27	186

$$X^2 = 9.43$$

Table (23) emerges the strongly significant P value at 0.05 in the relationship between smoking in future and possibility of stopping.

Table (24):

The relationship between the effect of active smokers on passive smokers and annoyance from smoking in front of them in Khartoum locality-2009:

Effecting non-smokers	Annoyance		Total
	annoyed	Not annoyed	
yes	83	92	175
No	1	10	11
Total	84	102	186

$$X^2 = 15.68$$

Table (24) presents the strongly significant P value at 0.05 in the relationship between the effect of active smokers on passive smokers and annoyance from smoking in front of them.

Chapter Four

*Discussion, Conclusion, Recommendations,
References & Appendices*

4-1 Discussion:

This descriptive study was conducted to identify the male smoker student's knowledge, perceptions about smoking cigarettes and their intentions to quit that behavior in Khartoum locality, and the following were the results reached:

- While all of students (100%) under study know the harms of smoking (table 5), most of them (75.9%) still smoking (table 4), that means they need more than knowledge to stop smoking, or they may looking to themselves as non-smokers, or they think if they test smoking they will not be regular smokers.(In a study of Tobacco use among secondary students, in El- shohada and Khartoum locality, the study showed that (33%) of students had tried to use Tobacco at least once in them lives). (Elham, 2000).
- Almost half of students (52%) under study believed that the effect of smoking on non-smokers include pneumonia, irritability, and cough (figure 2). There are other important effects such as: lung cancer, and the impact on fertility rate, especially in the case of sustainable exposure to tobacco smoke, the possibility of exposing to chronic diseases increases. (More than 50 studies have been published on lung cancer risk in people who have never smoked but who have been exposed to tobacco smoke, most studies show an increased risk, particularly for persons with higher exposures). (Davis, 1997).
- Half of students (50%) confirmed that they will smoke in the next twelve months(table 8), this may be because they think that they will face difficulties to stop in the future, so they should have assistance to quite smoking by steps such as reducing the number of cigarettes smoked per a day. (Any efforts to decrease future smoking levels among high school students need to include a focus on reducing experimentation and regular smoking among teenagers and even pre-teens, as well.). (Johnston et al, 1998).
- One fifth of students (21.5%) regard their smoking for the reason of curiosity (figure 3). why every body's doing it and I'm not! The other reasons for smoking may have an effect on this on, such as parents' simulation, and peer pressure play an important role in this side.(During those early teenage years....It is much easier to give in to peer pressure when you are at an age where you are not sure what you want). (Roberts, 1994).
- About one third of students (30.6%) smoke more than 8 cigarettes per day (table 12), which intern means that the consumption of cigarettes is very high. The more increase of cigarettes number, the more increase the chances of successfully quitting if they do begin

regular smoking. Nicotine produce pleasant feelings that make the smoker want to smoke more. (As the nervous system adapts to nicotine, smokers tend to increase the number of cigarettes they smoke). (American Cancer Society, 2008).

- Despite the presence of the restrictions that forbid smoking in schools as mentioned by the most of students under study (84.9%) (Table 15), few number of them (2.7%) still smoking at school (table 14). (In a study conducted by the Federal Health Ministry in association with the National committee for combating tobacco in 2005, showed that 30.2% of the male students aged 13-15 years surveyed by the study smoke cigarettes at least once in their life). (Howeida, 2007).
- More than two thirds of students under study (69.4%) confirmed that their school's doesn't present programs about quitting smoking (table 17). Schools have an essential role in educating and preparing students to avoid the risky and harmful behaviors, to build a healthy community. One of the school responsibilities is to offer programs about smoking prevention. (School tobacco-prevention programs must be comprehensive and address several aspects of tobacco use in order to be effective in preventing use by students, these programs must educate them about the real dangers of smoking and prepare them to resist tobacco offers). (CDC, 1994).
- More than one fourth of students (27.4%) hadn't tried to stop smoking (table 18). They may be at the stage of precontemplation because at this stage the smoker is not seriously thinking about quitting. (People may be in this stage because they are uninformed or under-informed about the consequences of their behavior) (Prochaska, Velicer, 1997).
- The majority of students (72.6%) had at some time tried to stop smoking (table 18). Some of the trials were successful. Smokers in this stage can be characterized as the stage of contemplation, which people are intending to change in the next six months. (The smoker is actively thinking about quitting but is not quite ready to make a serious attempt. This person may say, "I'm not sure if I can do it."). (American Cancer Society, 2008). The trials that failed to take an action, those people do not progress to the next stage, because they can't make a good decisional balance between pros and cons of this behavior. (That decisional balance predicted change for those in the precontemplation and contemplation stages). (Horwath, 1999).

4-2 Conclusion:

This descriptive study was conducted to identify the male smoker student's knowledge, perceptions about smoking cigarettes and their intentions to quit that behavior in Khartoum locality, and the following were the conclusion reached:

- ❖ Most of students under study (75.9%) are current smokers.
- ❖ More than half of students under study (52%) believed that the effects of second hand smoke were limited in pneumonia, irritability, and cough.
- ❖ Half of students (50%) confirmed that they will smoke in the next twelve months.
- ❖ Half of students (50%) had intending to quit smoking in the foreseeable future.
- ❖ Almost one fifth of students (21.5%) regard their smoking for the reason of curiosity.
- ❖ More than one third of students (30.6%) smoke more than 8 cigarettes per day.
- ❖ While (84.9%) of students mentioned that their schools have restrictions forbidding smoking in schools, (2.7%) of them still smoking at school.
- ❖ More than two thirds of students under study (69.4%) confirmed that their schools didn't present programs about quitting smoking.
- ❖ One fourth of students (27.4%) hadn't tried to stop smoking.
- ❖ The majority of students (72.6%) had at some time tried to stop smoking.

4-3 Recommendations:

This descriptive study was conducted to identify the male smoker student's knowledge, perceptions about smoking cigarettes and their intentions to quit that behavior in Khartoum locality, and the following were the recommendations suggested:

- ❖ Awareness and educational programs should be included in schools on smoking and its implications.
- ❖ Introduction of courses within the school curriculum dealing with smoking and its dangerous.
- ❖ Providing of school activities such as establishment of association of school health.
- ❖ The role of social workers and teachers in schools to identify and provide counseling of smoker students to motivate them for quitting.
- ❖ Activating the role of the laws in schools to stop smoking absolutely.
- ❖ Cooperation with families, teachers, and communities as good examples for students in smoking fighting.
- ❖ At the governmental level allocating a portion of tobacco taxes and customs to support the national program for tobacco control.
- ❖ The gradual introduction of clinics treating smokers in primary health care centers.
- ❖ The need for further surveys on the size and dimensions of tobacco problem, especially at risk or targeted population.

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Appendix

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

University of Khartoum
Faculty of Public and Environmental Health
Department of Health Education

Questionnaire about knowledge, perceptions, and intentions of
male smokers among secondary school students toward quitting
smoking cigarettes

- 1- How many of your family member?
a- From 1-3 () b- From 4-6 () c- More than 7
- 2- Father's educational level:
a- Illicit () b- Primary () c- Secondary () d- Graduate () e- Post graduate ()
- 3- Family income per month:
a- From 69-149 () b- From 150-249 () c- More than 250 ()
- 4- Do you smoke?
a- Yes () b- No ()
- 5- Does smoking cause harm?
a- Yes () b- No ()
- 6- If the answer was yes, what are these harms?
a- Pneumonia () b- lung cancer () c- Heart diseases () d- All of above () e- Others () define
- 7- Dose smoking affect non-smokers?
a- Yes () b- No ()
- 8- If the answer was yes, what is the effect?
a- Pneumonia () b- Irritability () c- Cough () d- All of above () e- Others () define
- 9- Would you accept if someone is smoking in front of you?
a- Yes () b- No ()
- 10- Do you think that you will continue smoking through the coming 12months?
a- Yes () b- No ()
- 11- Do you think that is difficult to stop smoking?
a- Yes () b- No ()
- 12- What is the reason that leads you to smoke?
a- curiosity () b- leisure time () c- Anxiety () d- Modeling () e- more than one reason () f- Others () define
- 13- Do others sharing one cigarette help to transmit diseases?
a- Yes () b- No ()
- 14- If the answer was yes, what are these diseases in your opinion?

a- Tuberculosis () b- Influenza (cold) () c- Respiratory infections () d- All of above () e- Others () define.....

15-How many cigarettes do you smoke daily?

a- 1-4 () b- 5-8 () c- More than 8 ()

16- Do you have any of your friends or relative smokers?

a- Yes () b- No ()

17- Where do you smoke usually?

a- At home () b- At school () c- In street () d- At home and street () e- All of above ()

18- Is there any restrictions forbidding smoking in the school?

a- Yes () b- No ()

19- Have you ever had an advice to stop smoking?

a- Yes () b- No ()

20- Does school present any programs about quitting smoking?

a- Yes () b- No ()

21- Have you ever tried to stop smoking?

a- Yes () b- No ()

22- If the answer was yes, why?

a- Convinced with smoking harms () b- Influenced by someone ()
c- For both reasons () d- Others () define.....

23- Could smoking be stopped?

a- Yes () b- No ()

24- If the answer was yes, why?

a- To reduce the harm if you had stopped () b- For strong desire to stop ()
c- for both reasons () d- Others ()
define.....

جامعة الخرطوم
كلية الصحة العامة و صحة البيئة

استبيان حول معرفة وتصور طلاب المدارس الثانوية عن تدخين السجائر ونيتهم في الاقلاع عن هذا السلوك

1. كم عدد أفراد أسرتك؟
أ- من 1-3 () ب- من 4-6 () ج- أكثر من 7 أفراد
- 2- المستوى التعليمي للأب:
أ- أمي () ب- ابتدائي () ج- ثانوي () د- جامعي ()
هـ- فوق جامعي ()
- 3- الدخل الشري للأسرة:
أ- من 69-149 () ب- من 150-249 () ج- أكثر من 250 جنيه
4- هل تدخن؟
أ- نعم () ب- لا ()
- 5- هل للتدخين مضار؟
أ- نعم () ب- لا ()
- 6- اذا كانت الاجابة بنعم ما هي تلك المضار باعتقادك؟
أ- التهاب الرئة () ب- سرطان الرئة () ج- أمراض القلب () د- كل ما ذكر ()
هـ- أخرى () حدد
- 7- هل يؤثر التدخين على غير المدخنين؟
أ- نعم () ب- لا ()
- 8- اذا كانت الاجابة بنعم هل هو :
أ- التهاب الرئة () ب- حساسية () ج- سعال () د- كل ما ذكر ()
هـ- أخرى () حدد.....
- 9- هل تقبل بأن يدخن أمامك شخص؟
أ- نعم () ب- لا ()
- 10- هل تعتقد أنك ستستمر في التدخين خلال ال12 شهراً المقبلة؟
أ- نعم () ب- لا ()
- 11- هل تعتقد بأنه اذا بدأ أحدهم بالتدخين سيكون من الصعب عليه أن يتوقف عنه بعد ذلك؟
أ- نعم () ب- لا ()
- 12- ما هي الأسباب التي قادتك للتدخين؟
أ- رغبة () ب- فراغ () ج- قلق () د- تقليد () هـ- لأكثر من سبب ()
و- أخرى () حدد.....
- 13- هل مشاركة الآخرين سيجارة واحدة يساعد على نقل الأمراض؟
أ- نعم () ب- لا ()
- 14- اذا كانت الاجابة نعم ما هي تلك الأمراض باعتقادك؟
أ- السل () ب- النزلات () ج- التهاب الجهاز التنفسي () د- كل ما ذكر ()
هـ- أخرى () حدد.....
- 15- كم سيجارة تدخن في اليوم؟
أ- من 1-4 () ب- 5-8 () ج- أكثر من 8 ()

- 16- هل يوجد أحد من أقرباك أو أصدقائك يدخن؟
أ- نعم () ب- لا ()
- 17- أين تدخن عادة؟
أ- في البيت () ب- في المدرسة () ج- في الشارع () د- في البيت
والشارع () هـ- كل ما ذكر ()
- 18- هل توجد قوانين تمنع التدخين بالمدرسة؟
أ- نعم () ب- لا ()
- 19- هل سبق وأن تلقيت نصيحة للاقلاع عن التدخين؟
أ- نعم () ب- لا ()
- 20- هل يتم تقديم برامج عن مكافحة التدخين بالمدرسة؟
أ- نعم () ب- لا ()
- 21- هل حاولت الاقلاع عن التدخين؟
أ- نعم () ب- لا ()
- 22- إذا كانت الإجابة بنعم، لماذا؟
أ- لمعرفة مضار التدخين والابتعاد بها () ب- لتأثير شخص ما () ج- لكلا
السببين () د- أخرى () حدد.....
- 23- هل يمكن الاقلاع عن التدخين؟
أ- نعم () ب- لا ()
- 24- إذا كانت الإجابة نعم، لماذا؟
أ- لقلة الآثار المترتبة على الاقلاع () ب- الرغبة القوية في الاقلاع () ج-
لكلا السببين () د- أخرى () حدد.....