Smoking behavior among Benha University students and its impact on their quality of life

Thesis
Submitted for Fulfillment of Master Degree in Public Health and Community Medicine

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FACULTY OF MEDICINE
BENHA UNIVERSITY
2015
قالوا:
سبحانك اللهم لنا إلا ما علمتنا إنك أنت
العليم الإلها العزيز

سورة البقرة الآية: 33
صدقة الله العظيم
Acknowledgements

First and foremost, I thank "ALLAH" the beneficent and the most merciful for granting me the power to proceed and to accomplish this work.

No words can express my feelings of gratitude and respect for Dr. Hala Moustafa El Hady, professor of public health and community medicine, Benha Faculty of Medicine, for her support and continuous supervision. She granted much time and effort to facilitate the completion of this work.

I like to express my deepest thanks and appreciation to Dr. Mahmoud Ali Saleh, professor of preventive medicine and occupational diseases, Benha Faculty of Medicine, for his close supervision, support and skillful scientific guidance.

I wish to express my gratitude and appreciation to Dr. Rasha Shaker Eldesouky, lecturer of public health and community medicine, Benha Faculty of Medicine, for her practical and statistical advices, faithful help and close supervision throughout the whole work.

I am also very appreciative of the efforts of Dr. Hanaa El-sayed Bayomy, lecturer of public health and community medicine, Benha Faculty of Medicine for her continuous encouragement, endless effort and guidance in each step in this work.

I am also indebted to all staff members of Public Health and Community Medicine, my colleagues and my lovely family for their continuous support and encouragement.

Last but not least, I wish to thank all participating students for their cooperation.
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<td>BP</td>
<td>Bodily pain scale</td>
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<td>CCQ</td>
<td>Clinical COPD Questionnaire</td>
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<td>CDC</td>
<td>Centers for Disease Prevention and Control</td>
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<td>CSOs</td>
<td>Civil Society Organizations</td>
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<td>CTUMS</td>
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<td>EGP</td>
<td>Egyptian pounds</td>
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<td>EURO-QOL Questionnaire</td>
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<td>ESPRI</td>
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<td>ETC</td>
<td>Eastern Tobacco Company</td>
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<td>ETS</td>
<td>Environmental Tobacco Smoke</td>
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<td>EV</td>
<td>Energy and vitality scale</td>
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<td>F test</td>
<td>Analysis Of Variance</td>
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<td>FDA</td>
<td>Food and Drug Administration</td>
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<td>GATS</td>
<td>Global adult tobacco survey</td>
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<td>GH</td>
<td>General health perception scale</td>
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<td>GHPSS</td>
<td>Global Health Professions Student Survey</td>
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<td>GLF</td>
<td>General Lifestyle Survey</td>
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<td>GSPS</td>
<td>Global School Personnel Survey</td>
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<td>GTSS</td>
<td>Global Tobacco Surveillance System</td>
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<td>GU</td>
<td>Georgetown University</td>
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<td>GYTS</td>
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<td>HRQOL</td>
<td>Health Related Quality Of Life</td>
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<td>IARC</td>
<td>International Agency for Research on Cancer</td>
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<td>MH</td>
<td>Mental health scale</td>
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<td>MOHP</td>
<td>Ministry Of Health and Population</td>
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<td>NAT</td>
<td>N-nitrosoanatabine</td>
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<td>NGOs</td>
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<td>NNAL</td>
<td>4-(methylnitrosamino)-1-(3-pyridyl N-oxide)-1-butanol</td>
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<tr>
<td>NNK</td>
<td>(4-methylnitrosamino)-1-(3-pyridyl)-1-butanone</td>
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<tr>
<td>NNN</td>
<td>N-nitrosonornicotine</td>
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<tr>
<td>NRTs</td>
<td>Nicotine replacement therapies</td>
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<td>NTP</td>
<td>National Toxicology Program</td>
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<td>( P )</td>
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<td>PF</td>
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<td>PHC</td>
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<td>PHRQL</td>
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<td>QOL</td>
<td>Quality Of Life</td>
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<td>QBW</td>
<td>Quality of well being scale</td>
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<td>RCTs</td>
<td>Randomized controlled trials</td>
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<td>RE</td>
<td>Role limitation-emotional scale</td>
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<td>RP</td>
<td>Role limitation-physical scale</td>
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<td>Variance</td>
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<td>SAMHSA</td>
<td>Substance Abuse and Mental Health Services Administration</td>
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<td>SCQoL</td>
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<td>SD</td>
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<td>SES</td>
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<td>SF</td>
<td>Social functioning scale</td>
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<td>Short From 36-Item</td>
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<td>SHS</td>
<td>Second Hand Smoke</td>
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<td>SLE</td>
<td>Systemic Lupus Erythematosus</td>
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<td>SWOT</td>
<td>Strength, Weakness, Opportunities &amp; Threats</td>
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<td>TFHC</td>
<td>Tobacco-Free Hospital Campus policy</td>
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<td>TSNAs</td>
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<td>UAE</td>
<td>United Arab Emirates</td>
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<tr>
<td>UFMT</td>
<td>Federal University of Mato Grosso</td>
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<tr>
<td>UMB</td>
<td>University of Maryland in Baltimore</td>
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<tr>
<td>USDHHS</td>
<td>U.S Department of Health and Human Services</td>
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<td>WHI</td>
<td>Women’s Health Initiative</td>
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<td>WHO</td>
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<td>WHO Framework Convention on Tobacco Control</td>
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<td>World health organization quality of life questionnaire</td>
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<td>$X^2$</td>
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<td>YRBSS</td>
<td>Youth Risk Behavior Surveillance - United States</td>
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ABSTRACT

Background: Smoking persists as a global health problem being one of the major risk factors to non-communicable diseases and early death particularly among youth. However little is known about smoking impact on person's HRQOL.

Objectives: This study aimed to determine the prevalence of tobacco smoking among Benha University students; assess the relationship between smoking behavior and their QOL and recommend a program for prevention smoking and control of related adverse health effects.

Methods: This cross-sectional study was conducted on 771 students from four colleges of Benha University. Information on sociodemographic data, smoking behavior and Nicotine dependence was collected using a self-administered questionnaire. HRQOL was measured using SF-36 questionnaire. Multiple linear regression analysis was used to assess the most important predictors for HRQOL domains.

Results: The prevalence of ever smoking was 43.7% while current smoking was 39.4%. Current smokers were older than never smokers (P < 0.001). Students who were males, from urban areas and of middle social class were current smokers at higher percentage than former and never smokers (P= 0.001). Comparing with never smokers, current smokers had lower score means for general health perception, physical functioning, bodily pain and mental health scales; among former smokers, lower scores were observed in physical functioning, social functioning and bodily pain (P<0.001). Duration of smoking was a significant predictor for role emotional limitation (-0.13; - 0.83 to - 0.08), social functioning (-0.12; - 0.28 to - 0.02) and bodily pain (- 0.14; - 0.37 to - 0.05) scales. Smoking status (never smokers) was associated with general health perception (0.14; 0.26 to1.9) and social functioning scales scores (0.16; 0.15 to1.8).

Conclusion: Smoking is a troublesome problem in university students and associated with worse HRQOL. This study pointed out the importance of the strategic policies against smoking, to reduce morbidity and premature death and to increase the QOL and well-being.

Keywords: University students; Smoking; HRQOL; Nicotine dependence; SF-36; Egypt.
Introduction

Tobacco smoking is the leading preventable cause of death in the world. Tobacco use causes more than 5 million deaths per year. Current trends show that tobacco use will cause more than 8 million deaths annually by 2030 (WHO, 2011b).

The most common form of tobacco use is cigarette smoking. The number of smoking individuals is 1.1 billion worldwide. A total of 700 million male smokers and 100 million female smokers are living in developing countries. In other words, 47% of the males living in developing countries and 7% of the females are smokers (WHO, 2008).

Global Tobacco Epidemic revealed that the adult daily smoking prevalence was 14% (WHO, 2009a). Non-communicable disease survey in 2006 reported that the overall prevalence of daily tobacco smoking was 15.6%, the percentage of the population that reported using any tobacco product was ~11% and ~23% among the age groups 15–24 years and 25–44 years, respectively (WHO, 2009b).

Besides the obvious damage of smoking on mortality and incidence of the disease, it is important to evaluate the relationship of smoking with positive aspects of health, as functional capacity, well-being, social relationships, mental health, considering that, besides the disease, the health and well-being shall be an important focus of health policies (Lima et al., 2012).

The association of smoking and nicotine dependence with the different dimensions of health has been assessed by many researches and
indicated that current smokers were in worse health conditions and HRQOL compared with never smokers (Vogl et al., 2012).

University students are at high risk of smoking as they become exposed to greater availability of cigarettes and intimate association with smoking peers. At the same time, they face additional social, emotional and educational challenges when they enter the university (Halperin et al., 2010).

A number of studies concentrated on the evaluation of smoking cessation interventions. It is much more important to prevent youth from ever smoke via continuous monitoring of risk factors for smoking among them in addition to health education and smoking prevention programs (Colby et al., 2010; Baska et al., 2010).

RATIONAL

Progressive increase in the prevalence of smoking among Benha university students was noticed. Therefore, it was immensely needed to study the prevalence and pattern of smoking and its motives among the University students and to investigate the relationship between smoking behavior and nicotine dependence and their QOL in order to collect baseline data for further interventions.

RESEARCH QUESTIONS

The research questions of this study were; what are the prevalence and underlying factors of tobacco smoking among Benha University students and whether smoking and nicotine dependence are associated with adverse effects on QOL of university students?
AIM OF THE WORK

Goal:

Prevention of Tobacco smoking among university students and improvement of their quality of life.

Objectives:

The specific objectives of this study were to:

1. Determine the prevalence of tobacco smoking among Benha University students.

2. Detect motives and risk factors for smoking.

3. Assess the relationship between smoking behavior and the quality of life of University students.

4. Recommend smoking control program.
Chapter (1)

SMOKING PROBLEM

1.1 HISTORY OF TOBACCO SMOKING

The history of smoking goes back to 4000 years ago. It has been revealed by the scientists that the native Mexicans, Central and South Americans chewed tobacco in those ages. Tobacco was introduced to Europe by Christopher Columbus, who set foot in continental America in 1492 and presented to the Queen of France by the Portuguese Ambassador. Tobacco smoking has rapidly increased in Europe during the Crimean War, World War I and World War II. There were hundreds of tobacconists in London in 1614 (Bilir et al., 1997).
1.2 PREVALENCE OF SMOKING WORLDWIDE

Figure I: Percentage of adult tobacco use worldwide.
(Source: WHO, 2008).

Nearly 20% of the world’s adult population smoked cigarettes. Smokers consumed nearly 5.9 trillion cigarettes in 2009, representing a 13% increase in cigarette consumption in the past decade. Cigarette consumption historically has been highest in high-income countries, but because of targeted marketing, increased social acceptability, continued economic development, and population increases, consumption is expected to increase in low- and middle-income countries. Cigarette consumption in Western Europe dropped by 26% between 1990 and 2009.
but increased in the Middle East and Africa by 57% during the same period. This change has occurred as people in high-income countries increasingly understand the dangers of smoking and governments continue to implement tobacco control policy and legislation. Globally, the increase in cigarette consumption in low- and middle-income countries was significant enough to offset the decrease in high-income countries (Mackay et al., 2006).

Figure II: Global smoking prevalence
(Source: Euromonitor international, 2013)
1.3 PROBLEM IN EGYPT

1.3.1 SMOKING PREVALENCE IN EGYPT:

Egypt has the largest population of tobacco users in the Arab world. Smoking prevalence has been rising in Egypt, with the number of smokers increasing at about twice the rate of population growth over the past few decades (Hanafy et al., 2010).

Tobacco use in Egypt is largely concentrated among males, with nearly 40% of men using tobacco products in 2009. Given cultural norms against female smoking, estimates for tobacco use prevalence among women vary widely, ranging from less than 1% to almost 30% (CDC, 2010a). However, these norms appear to be weakening, with female smoking prevalence rising more rapidly than male prevalence in recent years. Nearly 32% of adult Egyptian males (ages 15 and older) smoke cigarettes (Hanafy et al., 2010).

Table I: Adult (aged 15 and older) prevalence of tobacco use, 2009

<table>
<thead>
<tr>
<th></th>
<th>cigarette smoking</th>
<th>Shisha smoking</th>
<th>Smokeless tobacco use</th>
<th>Any tobacco use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>31.8%</td>
<td>6.2%</td>
<td>4.8%</td>
<td>38.1%</td>
</tr>
<tr>
<td>females</td>
<td>0.2%</td>
<td>0.3%</td>
<td>0.3%</td>
<td>0.6%</td>
</tr>
<tr>
<td>overall</td>
<td>16.3%</td>
<td>3.3%</td>
<td>2.6%</td>
<td>19.75</td>
</tr>
</tbody>
</table>

Source: Global Adult Tobacco Survey - Egypt, 2009 (CDC, 2010).

1.3.2 SMOKING-RELATED DISEASES IN EGYPT:

Egyptian adults are regularly exposed to tobacco smoke in public places, at work, and at home. More than half (around 51%) of Egyptian adults report exposure to tobacco smoke on a weekly basis, with over 60% of indoor workers exposed at work. About 80% of adults using
public transportation, about 49% of those who visit health care facilities, and more than 70% of those visiting restaurants, shopping malls, and various governmental and nongovernmental buildings are exposed (CDC, 2010a).

Consistent with the tobacco epidemic experience in other countries, the percentage of all cancer deaths from tobacco consumption increased from 8.9% in 1974 to 14.9% in 1987 among men. Among women, the proportion is still relatively low. It was reported that smoking causes 90% of the lung cancer cases in Egypt (WHO, 2002).

1.3.3 ECONOMICS OF TOBACCO IN EGYPT:

In Egypt, cigarette consumption increased from 12,027 million sticks in 1970 to 51,814 million sticks in 1997. The number of smokers in Egypt has increased over twice as fast as the population growth over the past 30 years. Per capita consumption declined between 1980 and 1990, continued to decline until 1994 and then rose steadily until 1998 (Nassar, 2003).

1.3.4 CIGARETTE PRODUCTION AND EMPLOYMENT:

There are 29 tobacco companies in Egypt. The public sector dominates production. The Eastern Tobacco Company (ETC), a joint stock company that was established in 1920, nationalized in 1956, and partially privatized during the 1990s, is the largest cigarette manufacturer in the Middle East. It controls about 92% of the Egyptian market, although it is beginning to lose ground to foreign cigarettes. In 1996, ETC seven cigarette factories, sold 45 thousand million cigarettes domestically and exported 1 thousand million (Nassar, 2003).
1.3.5 TOBACCO TRADE IN EGYPT:

Tobacco cultivation has been banned in Egypt since the 1800s, although small areas of tobacco are illegally cultivated in the Upper Nile region, primarily for personal use. The ban makes Egypt an important importer of unprocessed tobacco. Between 1996 and 1998, tobacco imports increased by 162% to reach over 55,000 tones. Egypt imports a large amount of inexpensive tobacco from India and China (Nassar, 2003).
Chapter (2)

FACTORS AFFECTING SMOKING

2.1 FORMS OF TOBACCO

Smoked forms of tobacco include various kinds of cigarettes (manufactured, hand-rolled, filtered, unfiltered, and flavored) cigars and pipes. Although manufactured cigarettes are the most common type of smoked tobacco, other smoked tobacco products such as shisha is gaining popularity, often in the mistaken belief that it is less hazardous to health, however all forms of tobacco are lethal, smoked tobacco in any form causes up to 90% of all lung cancers and is a risk factor for six of the leading causes of death in the world (WHO, 2008).

2.1.1 CIGARETTE:

A cigarette is a combination of cured and finely cut tobacco, reconstituted tobacco and other additives rolled or stuffed into a paper wrapped cylinder. Many cigarettes have a filter on one end. More than 4,000 different chemicals have been found in tobacco and Tobacco smoke. Among these are more than 60 chemicals that are known to cause cancer (Wigand, 2006 and CDC, 2009b).
2.1.2 WATERPIPE:

Water pipe use accounts for over half of non-cigarette use of tobacco in Egypt. There are three distinct types of water pipes: the gouza, the bouri, and the shisha, with use of each type largely corresponding to social class and location. The gouza is the least expensive, usually handmade, and most widely used among the poor in rural areas. The bouri (also known as the elmasry) is a low-cost, manufactured water pipe, largely used by the urban poor. The shisha (also known as narghile or hookah) is a larger, more ornate water pipe, typically available in upscale restaurants and cafes, and is used mostly by middle and upper class smokers. All water pipes use a form of tobacco called ‘Ma’assel’-tobacco mixed with molasses and generally sold in the quantity needed for a single water pipe smoking session (*Hanafy et al.*, 2010).

In Egypt, use of shisha is the second most common type of tobacco consumed. The use of shisha is an old tradition that goes back centuries. In the past, shisha smoking was generally limited to older males, usually of low socioeconomic level, in rural areas and in the older parts of cities. However, since the early 1990s there has been an increase in shisha use in cities and among new groups such as females, young people and those from high socioeconomic levels (*WHO*, 2009c).
A detailed survey of shisha smoking in the rural areas of the Nile Delta, carried out in 2003–2004 in nine randomly selected villages, revealed that most users believed that it was less hazardous than smoking cigarettes, especially among those at a lower educational level (WHO, 2009c).

2.1.3 CIGAR:

A single large cigar can contain as much tobacco as an entire pack of cigarettes. The secondhand smoke it gives off can fill a room for hours. Most cigars have as much nicotine as several cigarettes. If cigar smokers inhale, Nicotine is absorbed as rapidly as it is with cigarettes. For those who do not inhale, it is absorbed more slowly through the lining of the mouth. People who use smokeless tobacco absorb nicotine the same way. Both inhaled and non-inhaled Nicotine are highly addictive (American Cancer Society, 2006b).

Cigar smokers with a history of cigarette smoking, however, are more likely to inhale. According to American Cancer Society study, those who inhale have an increased risk of death from lung cancer 11 times greater than that of nonsmokers. The study also found that for those who inhale, the risks are increased for other types of cancer. Compared to nonsmokers, cigar smokers who inhale deeply are 6 times more likely to die from oral cancer and 39 times more likely to die from cancer of the larynx. They also face more than twice the risk of death from pancreatic
review of literature

Cancer and more than 3 times the risk of death from bladder cancer compared to nonsmokers (*Shapiro et al., 2000*).

There are some differences between cigar and cigarette smoke, which are due to the long aging and fermentation process used for cigar tobacco and to the fact that the cigar wrapper is not as porous as cigarette paper. Cigar tobacco has a high concentration of nitrogen compounds (nitrates and nitrites). During fermentation and smoking, these compounds give off several tobacco-specific nitrosamines (TSNAs), some of the most potent human carcinogens known. Also, because the cigar wrapper is less porous than cigarette paper, the tobacco doesn't burn as completely. The result is a higher concentration of nitrogen oxides, ammonia, carbon monoxide and tar which are all very harmful (*American Cancer Society, 2006b*).

2.1.4 BIDIS AND KRETEKS:

Bidis (pronounced “bee-dees”) are small, thin hand-rolled cigarettes originated in India and other Southeast Asian countries. They consist of tobacco wrapped in a tendu or temburni leaf (plants native to Asia), and may be secured with a colorful string at one or both ends. Bidis can be flavored (e.g., chocolate, cherry, and mango) or unflavored. They have higher concentrations of nicotine, tar, and carbon monoxide than conventional cigarettes sold in the United States (*CDC, 1999*).
Kreteks (pronounced “cree-techs”) are sometimes referred to as clove cigarettes. Imported from Indonesia, kreteks typically contain a mixture consisting of tobacco, cloves, and other additives. As with bidis, standardized machine-smoking analyses indicate that kreteks deliver more nicotine, carbon monoxide, and tar than conventional cigarettes (Malson et al., 2003). There is no evidence to indicate that bidis or kreteks are safe alternatives to conventional cigarettes (Watson et al., 2003).

2.1.5 SMOKELESS TOBACCO:

There is another type of tobacco which is smokeless tobacco; these products include gutkha, snuff and chewing tobacco (Salojee and Chaouki, 2007). Chewing tobacco comes in the form of loose leaf, plug, or twist. Snuff is finely ground tobacco that can be dry, moist, or in sachets (tea bag-like pouches). Although some forms of snuff can be used by sniffing or inhaling into the nose, most smokeless tobacco users place the product in their cheek or between their gum and cheek. Users then suck on the tobacco and spit out the tobacco juices, which is why smokeless tobacco is often referred to as spit or spitting tobacco. Smokeless tobacco is a significant health risk and is not a safe substitute for smoking cigarettes (U.S. Department of Health and Human Services, 1994).
2.2 WOMEN AND SMOKING:

Smoking among women increased at the beginning of the 1920s due to social changes that affected women's behavior and gave a chance to industry marketing strategy to target them. Data on adults in the WHO Eastern Mediterranean Region countries showed that there was high prevalence of male smokers compared with females as a result of social and cultural barriers. However, the prevalence of smoking among youth showed the sex difference could be small in some countries in the Region, indicating that social and cultural barriers may be changing (WHO, 2009c).

According to the Global Youth Tobacco Survey (GYTS), tobacco use among young girls appears to be changing. In most countries in the Region, GYTS results showed the prevalence of smoking among girls was as high as, or higher than, the prevalence of smoking among adult women. In the Egypt 2005 GYTS, 5.9% of boys and 1.4% of girls reported currently smoking cigarettes. The WHO noncommunicable disease study, reported
that 0.4% of adult women smoked, so the girls in GYTS were over three times as likely as adult women to currently smoke cigarettes. If these trends continue, Egypt will experience longer lifetime duration of smoking among these young smokers, and consequently the burden of smoking-related diseases will also increase (WHO, 2009c).

2.3 YOUTH AND SMOKING:

Teens like to act as if they are someone special or dangerous. By smoking they can act on those feelings. Because it is so forbidden it becomes more alluring to teens. The problem is that when they take that first puff, they can become addicted. The idea that they are breaking the law or going against their parents and schools is an addiction within itself. Kids like to get attention; it does not matter if it’s good attention or bad attention. They crave attention and by smoking they get big attention. The other teens look at them in all kinds of ways and the adults get upset and don’t know what to do (Teen Drug Abuse Article, 2014).

Youth smoking is a growing problem in Egypt, with the 2005 (GYTS) showing tobacco use prevalence of 16% and 7.6% among male and female students aged 13 to 15 years. The relatively higher prevalence ratio for girls to boys compared to the ratio for women to men suggested that prevalence among future cohorts of adult females will rise rapidly in
coming years if interventions are not implemented. It was reported that many Egyptian youth were regularly exposed to tobacco smoke at home (38.7%) or in public places (43.7%) (Hanafy et al., 2010).

To curb the rising smoking epidemic in Egypt, appropriate adolescent smoking prevention programs need to be developed. Most of the effective adolescent smoking prevention programs are based on the social influence approach, which targets the proximal psychosocial variables believed to promote adolescent smoking. An understanding of the psychosocial correlates of smoking behavior among Egyptian adolescents may help in designing the appropriate smoking prevention program aimed at this population. Results of a cross-sectional survey administered to a random sample of 1930 students in grades 7, 9 and 12 in the city of Alexandria, Egypt, in 2003, demonstrated that adolescent smoking behavior was positively associated with positive beliefs about smoking, sibling, parent and peer smoking, and social smoking norms, with sibling smoking and perceived adult smoking norms having a stronger influence on adolescents' smoking behavior than peer smoking and perceived peer smoking norms. Refusal self-efficacy was protective against smoking behavior, while knowledge of the short-term negative consequences of smoking was protective against susceptibility to future smoking among females only. The results suggest that adolescents from collective cultures, like Egypt, are more influenced by their family's smoking behavior and perceived adult smoking norms than their peers' smoking behavior and perceived peer smoking norms. Smoking prevention programs aimed at Egyptian adolescents should be accompanied by smoking cessation programs for the family and adult community members (Islam and Johnson, 2005).
Notably, peer group influences emerge as powerful motivators of behavior change. These changes create a unique window of vulnerability for tobacco use onset in adolescence and young adulthood, one of the factors promote the initiation and use of tobacco products is the use of tobacco by significant others and approval of tobacco use among those persons (Rockville, 2012).

As for shisha, findings from a national survey carried out by the Egyptian Smoking Prevention Research Institute (ESPRI) in 2005 revealed that shisha smoking among young people 18 years or older was 5.5% in rural areas and 4.3% in urban areas. In rural areas shisha smoking among males was 15.3% and 0.1% among females, while in urban areas it was 10.9% among males and 0.2% among females (WHO 2005). In comparison to the previous survey, the GYTS 2005 gave alarming percents to shisha prevalence among 13-15 aged participants where more than 10% of students were currently using tobacco products other than cigarettes with relatively narrow gap between the prevalence among boys (12.3%) and girls (6.7%) moreover, the likelihood of initiating smoking in the next year by never smokers was 18.3% (El-Awa et al., 2010).

2.4 MEDIA AND SMOKING:

Marketing studies have proven that advertising is one of the key means of supporting the initial addiction of new smokers and of preventing
current smokers from quitting. WHO Framework Convention on Tobacco Control (WHO FCTC) declared that comprehensive ban on advertising, promotion and sponsorship would reduce the consumption of tobacco products (WHO, 2003b).

Media continues to play an important role on the promotion of smoking. Even though advertisements for tobacco use have been banned by law, large numbers of young persons are continuing to be exposed to tobacco use images from movies and television. Current movies have many of the heroes smoking cigarettes or water-pipes. Also the movies send a powerful and wrong message to impressionable teenagers that mature adult men handle their anxieties, nervousness and anger by lighting up a cigarette (Israel et al., 2003).

Media has also a very powerful role in fighting tobacco use, mass media campaigns can increase knowledge about the health effects of smoking and the benefits of stopping. They can also change and reinforce attitudes towards stopping, provide clues to simple action and influence smoking behavior (WHO, 2003b).

According to Global adult tobacco survey WHO (2009c), in Egypt; among manufactured cigarette smokers, 83.2% bought their last cigarettes in a shop and 98.6% reported that they noticed health warnings on the packages. Overall, 79.1% noticed anti-cigarette advertisements, mostly on satellite television (55.8%) or local television (51.9%), followed by billboards (27.5%), radio (18.9%), and in newspapers and magazines (13.7%). Overall, 72.6% noticed anti-shisha advertisements, mostly on satellite television (51.5%), local television (47.4%), on billboards (18.2%) and radio (15.7%).
Overall, 10.5% noticed promoting-cigarette advertising, mostly in stores (8.0%). Overall, 3.2% noticed pro-cigarette promotions, such as clothing with a brand name or logo on it; and 2.1% noticed pro-cigarette sponsorship. Overall, 4.2% noticed shisha marketing, mostly in stores (2.5%) (WHO, 2009c).
Chapter (3)
SMOKING BEHAVIOR

Smoking remains a foremost behavioral health problem, although the health risks of smoking are well-known, many people choose to continue to smoke. Many smokers indicate that they smoke because it helps control their mood (e.g. smoking to relax, smoking to be alert). It is also known that nicotine, the primary addictive substance in tobacco, can affect mood. It may also be that, once the person smokes regularly for some time, temporary withdrawal from nicotine generates mood disturbances which are then eliminated by smoking, an apparent but false benefit (Olmstead, 1997). Another reason for smoking reported by heavy dependent smokers was that they don't know what to do with their hands without a cigarette and it has been recognized that dependent smokers develop strong and repetitive behaviors associated with smoking (Gad et al., 2003).

3.1 FACTORS AFFECTING INITIATION OF TOBACCO USE:

Initiation of cigarette smoking was associated by several types of factors: environmental, behavioral, personal and sociodemographic. Also
genetic factors are often suggested to play a role in smoking initiation (Lynch and Bonnie, 1994).

In a study on smoking initiation, the main risk factors for children who had tried at least one cigarette was grade level in school. That is the higher the grade, the older the child, the higher the likelihood of trying a cigarette. Also, having a best friend who was a smoker and risk taking behavior were identified as risk factors for smoking initiation. Progression to a second cigarette was predicted by life stress, friends who smoked, lack of negative attitudes towards smoking and experience of dizziness when smoking the first cigarette. Progression to a third cigarette was predicted by best friend smoking, feelings of helplessness and rapid progression to the second cigarette (Lee et al., 2005).

Behavioral analysis indicates that cigarette smoking has been an early manifestation of behavioral problem. A number of personal characteristics of adolescents have been linked to cigarette smoking: low self-esteem, poor self-image, sensation-seeking, rebelliousness, low knowledge of the adverse effects of smoking, depression and/or anxiety (Lee et al., 2005).

Differences in Nicotine consumption may be related to variation in nicotine and cotinine metabolism. Nicotine from tobacco smoke is absorbed quickly (in seconds) throughout the body on initial dosing and then is eliminated with a half-life of 2-3 hours. Nicotine is metabolized principally (80%) to cotinine by cytochrome P450 2A6, which is also responsible for much of the metabolism of cotinine and for much of the activation of the potent tobacco smoke carcinogen NNK (Bergen and Caporaso, 1999).

The typical smoker experiences a Nicotine concentration nadir in the morning after overnight abstinence and then smokes to increase Nicotine
levels over the first few hours of the day and to maintain a plateau throughout the remainder of the day. Clearance of Nicotine in humans is primarily diurnal, peaking at midday, with spikes of increased clearance after meals, which is concordant with increased human smoking rates early in the day, lowest smoking rates in the evening, and increased smoking after meals (Bergen and Caporaso, 1999).

Smokers experience self-reported increases in arousal and decreases in stress after smoking cigarettes, with absolute levels of arousal and stress peaking in midday and in the morning, respectively. Smokers experience stimulation and sedation simultaneously from each cigarette; however, they also experience lower equilibrium levels of arousal and higher equilibrium levels of stress than nonsmokers. After smoking cessation, mean arousal and stress levels are increased and reduced, respectively, suggesting that smoking cigarettes may contribute to the increased stress observed in smokers (Parrott, 1994).

3.2 UNDERSTANDING SMOKING BEHAVIOR:

It is widely recognized that cigarette smoking is a complex behavior which involves three distinct processes: an uptake process, nicotine addiction and a quitting process. These processes are time dependent. A program aiming at reducing smoking prevalence may act effectively on the early phases of either of these processes, and consequently make an important contribution to reducing tobacco use. However, the impact of such a program may not be detected if the reduction of prevalence is the only measure that is evaluated. Accordingly, a meaningful evaluation of a Tobacco Control Program must include indicators of where the population is with respect to these processes. These indicators provide relevant information regarding the likely future impact of the program on the ultimate goal of reducing smoking prevalence. Furthermore, different
program elements may exhibit varying time lags in their effects on smoking prevalence. For instance, assisting people to quit may have a relatively quick impact on smoking prevalence. Preventing individuals from becoming addicted to tobacco in the first place may lead to a drop in prevalence in the longer term (Gilpin and Pierce, 1993).

3.2.1 SMOKING UPTAKE PROCESS

The smoking uptake process is complete when an individual can be said to be addicted to cigarettes. Recent longitudinal studies of adolescents indicated that many of those in the early stages of the uptake process didn’t progress all the way to addiction in the space of 3 to 4 years, even though they were more advanced at follow-up than they were at baseline. Furthermore once addicted, most smokers were unable to successfully quit overnight. A previous study suggested that the quitting process can last as long as 10 years (Pierce, 1990).

3.2.2 NICOTINE ADDICTION PROCESS

The terms "Drug Addiction" and "Drug Dependence" are scientifically equivalent: both terms refer to the behavior of repetitively ingesting mood alerting substances by individuals. The term "Drug Dependence" among adult smokers is characterized by the emergence of withdrawal symptoms in response to abstinence and by unsuccessful attempts to reduce the use of tobacco or to quit altogether (Fiore et al. 2008). Therefore, both the neuro-substrates (brain structures, pathways, and systems) mediating the reinforcing effects of acute administration of nicotine and those mediating the nicotine withdrawal syndrome are relevant to Nicotine addiction. The physiological systems that develop adaptations to repeated nicotine administration, and lead to the emergence of withdrawal signs on cessation of Nicotine administration, are likely to intersect with systems that mediate the acute effects of Nicotine (Kenny
and Markou 2001). That is, Nicotine addiction develops as a neurobiologic adaptation to chronic Nicotine exposure (USDHHS, 2014).

The Tobacco Advisory Group of the Royal College of Physicians (2000), report on Nicotine addiction concluded that "Cigarettes are highly efficient Nicotine delivery devices and are as addictive as drugs such as heroin or cocaine".

Addiction to nicotine has been established as the psychopharmacologic mechanism that maintains cigarette smoking behavior. Nicotine activates the brain’s mesolimbic dopaminergic reward system and produces dependence resulting in physical and neurobiologic withdrawal symptoms on abrupt cessation (Bergen and Caporaso, 1999).

The vast majority of people who become regular smokers begin their smoking career in adolescence. The cigarette smoked is often perceived as aversive, producing coughing, dizziness and/or nausea. With repeated smoking, tolerance develops to the noxious effects of cigarette smoking and smokers tend to report positive effects of smoking. As the daily intake of Nicotine increases, the development of physical dependence, experiencing withdrawal symptoms becomes established between cigarettes or when cigarettes are not available. Thus, there appears to be a progression over time from smoking initially for social reasons to smoking for pharmacological reasons. The latter includes both smoking for positive effects of nicotine and smoking to avoid withdrawal symptoms (Zevin et al., 1998). Russell (1990), suggested that the first signs of addiction may occur in some people after as few as four cigarettes (one a week for four consecutive weeks).

In contrast to the hypothesis that smoking even few cigarettes may result in addiction, there exists the assumption that heavy daily use (one half pack per day) is necessary for dependence. This hypothesis was
Review of literature derived from observations in "chippers" adult smokers who didn't develop dependence despite smoking up five cigarettes per day over many years. Also many people who were instructed to quit, reported cutting down to about 10 cigarettes per day and couldn't reduce their consumption to fewer than 10. At 10 cigarettes per day smokers could still absorb adequate nicotine to maintain nicotine addiction (Lynch and Bonnie, 1994).

The development of Nicotine addiction in youth involves a progression through a series of stages. Lynch and Bonnie (1994) postulated a five-stage model: 1) Preparatory, 2) Initial trying, 3) Experimentation, 4) Regular use and 5) Nicotine addiction.

"Preparatory stage" includes formation of knowledge, beliefs and expectations about smoking.

"Initial trying" refers to trials with the first two or three cigarettes.

"Experimentation" refers to repeated irregular use over an extended period of time; such smoking may be situation-specific (e.g. smoking at parties).

"Regular smoking" by youth may mean smoking every weekend or in certain times of each day (e.g. after school with friends).

"Nicotine addiction" refers to regular smoking, usually every day, with an internally regulated need for nicotine. Thus, for individual youth, there is progression of smoking over time from initiation to experimentation with light smoking to regular and heavy smoking.

The earlier age of initiation of smoking is associated with higher dependency and more difficulty with quitting (Gad et al., 2003). Also research has shown that delaying the onset of smoking might reduce the likelihood of becoming addicted to nicotine and smoking heavily (Gadalla et al., 2003).
3.2.3 QUITTING PROCESS

Many researchers have observed that the problem for smokers is not quitting, but staying quit. Thus, how long an individual is able to maintain the quit attempt is important in assessing the probability that the person will stay quit. Data from previous California Tobacco Surveys indicated that the majority of smokers who quit for at least a day relapsed within the first week following their quit attempt. More than 50% of smokers who maintained their quit attempt for at least 3 months were successful in staying quit. More than 95% of smokers who remain abstinent for at least 12 months were successful in staying quit indefinitely (Gilpin et al., 1997).

Barriers to quitting smoking can include fear of stress or anxiety when refraining from cigarettes, fear of significant weight gain (often what is “significant” to a patient is only a few pounds), pressure from other smokers to relapse, a general fear of relapse and lack of self-efficacy (Strecher and Rosenstock, 1997).

Gad et al. (2003) reported that the heavy dependent smokers considered themselves lacking the ability to quit smoking on their own and were less willing to quit within the next year. Most of them never tried to quit smoking before. Also, reported that the withdrawal symptoms of nicotine abstinence, e.g. headache, irritability, difficulty in concentration, nervousness, hostility, frustration and stress, were claimed
by the heavy dependent smokers to be the reasons of relapse after quitting.

Another reason reported in this study for restarting smoking after quitting was that the more dependent smokers enjoy smoking. This could be attributed to the Nicotine perceived value as a coping response to help regulate mood, boredom and other psychological needs. In addition, smokers who came to rely on the psychoactive benefits of nicotine that it is helping them to think, concentrate and make them more alert might also be less motivated to try to quit (Abrams and Niaura, 2003).

*Cohen and Lichtenstein (1990)* mentioned that the lighter, perhaps the less addicted smokers (<25 cigarettes/day) were twice as likely to quit on their own when compared to the more heavily addicted smokers.

### 3.2.3.1 BENEFITS OF QUITTING:

Within the first day of not smoking, a number of health improvements will be probably observed. As early as the first 20 minutes of abstaining from smoking blood pressure and pulse rate drop to a normal rate, temperature of hands and feet increases to normal. After only 8 hours, the oxygen level in blood goes up to normal and carbon monoxide level in blood drops to normal. After as little as 24 hours, the statistical risk of suffering a heart attack is reduced. After 48 hours, nerve endings start growing again and the ability to smell and taste begins to improve (*USDHHS, 1988*).

After 2 weeks to 3 months, circulation improves, walking gets easier and lung function improves up to 30%. After 1 month to 9 months, coughing, sinus congestion, tiredness and shortness of breath decrease and cilia grow back in lungs to better handle mucous, clean the lungs and reduce infection (*USDHHS, 1990*).
After 1 year, the risk of coronary artery disease is half that of a smoker. After 5 years, the risk of stroke becomes the same as non-smoker. After 10 years, lung cancer death rate goes down by one half and the risk of cancer of the mouth, throat, oesophagus, bladder, kidney and pancreas goes down. After 15 years, the risk of coronary heart disease becomes the same as non-smoker. In addition, if the smoker has a chronic illness like diabetes, asthma or kidney failure, quitting can dramatically improve his health (*USDHHS, 1990*).

### 3.2.3.2 METHODS OF QUITTING SMOKING:

Various methods are available to help quitting smoking. The choice is left to the smoker. No method works best for everyone. Smoking cessation methods include: Cold Turkey Method, Nicotine Delivery Substitution (Nicotine Patch or Nicotine Gum), Cigarette Brand Switching, Cutting Down, Postponing Smoking Time and Miscellaneous Methods (*www.4nau.edu*).

**Cold Turkey Method:**

It is the abrupt cessation of all forms of tobacco use. It is the most popular method reported by 50 million former smokers from 1964-2000. This method is the most common way to quit smoking. About 1 in 10 people using this method by itself will remain smoke-free after 1 year. However, the chance of success can be improved by combining COLD TURKEY with another method such as using the nicotine patch, hypnosis or working with a smoking-cessation counselor or group. By adding another method to COLD TURKEY, three out of 4 will remain smoke-free after 6-8 weeks, and about 1 in 4 will remain smoke-free after 1 year (*www.indiana.edu*).

COLD TURKEY works best because the smoker makes an immediate commitment to quit smoking. This helps the person avoid
Review of literature

Putting off the smoking cessation until a "better" day. There is no ideal "better" day. But many smokers have not examined their smoking situation very well. Immediate COLD TURKEY without a well-thought out plan of attack often does not succeed (www.indiana.edu).

The American Cancer Society recommends going Cold Turkey as the best method for smoking cessation. Withdrawal symptoms are the leading reason why people who try this method relapse (American Cancer Society, 1995).

Nicotine Delivery Substitution:

Studies have shown that, in combination with counseling, this method could double the chances of staying permanently off cigarettes. Most people want a quick, easy, pain-free way to quit smoking. This would appear to be the most convenient way for many. This method helps reduce the physical discomfort of withdrawing from Nicotine. If the smoker has had strong withdrawal symptoms in past quitting attempts, he may want to consider this method. But it has the following disadvantages:

1. Cost: The cost will include physician visits and the prescription which costs about the same as cigarettes over the treatment period.
2. Addiction: Some people remain as addicted to the nicotine in the patch or gum as the cigarette and cannot wean themselves of the drug.
3. Side-effects: These effects may include elevated blood pressure, dizziness, insomnia, bizarre dreams, skin irritation, heart palpitations and anxiety (American Cancer Society, 2005).

Cigarette Brand Switching:

It is changing the regular brand of cigarettes smoked to one with a lower level of tar and nicotine. This method works best over a period of several weeks with heavy smokers using a high-Nicotine brand. Those
who already smoke a low-nicotine brand may want to use the CUTTING DOWN method. It has the following disadvantages:

(1) Many so-called low-Nicotine brands are just as high in nicotine as the full-strength brand. The labeling is influenced by laboratory tests that do not measure how smokers really inhale.

(2) Deep inhaling can result in absorbing just as much Nicotine from the "low-Nicotine" brands.

If smoking control is a problem using this method, then there may be a need to use another method such as COLD TURKEY (www.4nau.edu).

**Cutting Down:**

CUTTING DOWN (Tapering or Controlled Smoking) is the gradual reduction of the number of cigarettes and the amount of each cigarette smoked. It should only be considered as a tool towards smoking cessation as decreasing the number of cigarettes doesn't decrease the health risks (American Cancer Society, 2005).

CUTTING DOWN can help build confidence and gain insight into the smoker’s smoking habits. But it has the following disadvantages:

(1) Some people find it difficult to taper off because they feel tempted to smoke one more cigarette than they should with this method.

(2) Some people inhale stronger and hold the smoke in longer to take in a greater amount of Nicotine per puff when trying to CUT DOWN.

If temptation is a problem when using this method, then COLD TURKEY is probably a better way to quit smoking (American Cancer Society, 2005).

**Postponing Smoking Time:**

It is postponing each cigarette until a predetermined length of time has passed between cigarettes. Like CUTTING DOWN this method can
help building confidence and gain insight into the person’s smoking habits. This method could work along with other approaches such as drinking lots of water and using planned activities that the person want to do instead of smoking. But it needs lots of willpower. If willpower is not the person’s strong suit, then he would be wise to choose another way (www.brown.edu).

**Miscellaneous Methods:**
A variety of methods are available and often marketed for their effectiveness and convenience. These may include hypnosis, acupuncture, herbs and diet. Many of these methods have an unproven track record for smoking-cessation success. Some may be more effective than others (www.brown.edu).

Regardless, the choice of the method depends on: degree of addiction, smoking patterns, how stressed out the person is and how good he is at managing stress without cigarettes (www.4nau.edu).
Chapter (4)

EFFECTS OF TOBACCO SMOKING

Smoking tobacco has many health consequences that produced through toxic chemicals in tobacco products. It affects many systems in the body depending on number of cigarettes per day and duration of smoking. Smoking has dangerous effects on cardiovascular, respiratory and nervous systems. Environmental Tobacco Smoke (ETS) has significant effects on human health through passive smoking. Finally, tobacco related illness has great economic burden at individual and national level.

4.1 TOXIC CHEMICALS IN TOBACCO PRODUCTS

Cigarette smoke is a complex mixture of compounds produced by the burning of tobacco and additives. The smoke contains tar, which is made up of more than 4,000 chemicals, including over 60 known to cause cancer (Figure II). Some of these substances cause heart and lung diseases, and all of them can be deadly. Some of the chemicals found in cigarette smoke include: cyanide, benzene, formaldehyde, methanol (wood alcohol), acetylene (the fuel used in welding torches), and ammonia. It also contains the poisonous gases nitrogen oxide and carbon monoxide. Its main active ingredient is nicotine, an addictive drug (American Cancer Society, 2006a).
4.1.1 NICOTINE:

Nicotine is the drug in tobacco that causes addiction; and it is also a psychoactive (mood altering) drug. Nicotine is a euphoriant and its withdrawal symptoms can include irritability, difficulty in concentration, cognitive impairment, anxiety and weight gain (Cohen et al., 1991).

Nicotine in large doses is a poison and can kill by stopping a person's breathing muscles. Smokers usually take in small amounts that the body can quickly break down and get rid of. The first dose of nicotine causes a person to feel awake and alert, while later doses result in a calm, relaxed feeling. Nicotine can make new smokers, and regular smokers who get too much of it, feel dizzy or sick to their stomachs. The resting heart rate for young smokers increases 2 to 3 beats per minute. Nicotine also lowers skin temperature and reduces blood flow in the legs and feet (American Cancer Society, 2006a).
4.1.2 CARCINOGENS:

Tobacco smoke contains more than 60 cancer-causing chemicals (carcinogens) \( (Hoffmann \ et \ al., \ 2001) \). These chemicals represent approximately seven chemical classes (polycyclic aromatic hydrocarbons, arenes, N-nitrosamines, aromatic and heterocyclic aromatic amines, aldehydes, organic compounds, and inorganic compounds). Twenty of the carcinogens cause cancer in the respiratory tract. In an exposed individual, numerous irritants, inflammatory agents and reactive species work in concert with the carcinogens to induce replication of initiated or precancerous cells. Because of the chemical complexity of tobacco smoke it is unlikely that there is a single measurable mechanism of tobacco carcinogenesis \( (Hecht, \ 1999) \).

Tobacco-specific nitrosamines (TSNAs) are a class of known carcinogens that are formed during the curing, processing, fermentation, and combustion of tobacco. They have been identified in cigarette tobacco, tobacco smoke, environmental tobacco smoke, smokeless tobacco and other tobacco products such as cigars and bidi cigarettes \( (CDC, \ 2005) \).

There are seven known TSNAs. Of these N-nitrosonornicotine (NNN), (4-methylnitrosamino)-1-(3-pyridyl)-1-butanol (NNK), and N-nitrosoaanatabine (NAT) generally occur in greater quantities in tobacco products than the others and NNN, NNK and N-oxide, 4-(methylnitrosamino)-1-(3-pyridyl N-oxide)-1-butanol (NNAL), a metabolic product of NNK, are clearly the most carcinogenic \( (Hecht, \ 1998) \). The TSNAs, NNN, and NNK are categorized as "reasonably anticipated to be human carcinogens" by the National Toxicology Program \( (NTP, \ 2001) \). The International Agency for Research on Cancer
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(IARC, 1985) has classified NNN and NNK as "possibly carcinogenic to humans" (Group 2B).

The TSNAs show the highest concentration of any group of strong carcinogens in main stream cigarette smoke. TSNAs are also considered the carcinogen class of concern in smokeless tobacco. NNN is measured at 0.3 to 89 μg/g in processed tobacco, at 0.12 to 3.7 μg per cigarette in main stream smoke and at 0.15 to 1.7 μg per cigarette in side stream smoke. NNK is measured at 0.2 to 7 μg/g in processed tobacco, at 0.08 to 0.77 μg per cigarette in mainstream smoke and at 0.2 to 1.4 μg per cigarette in side stream smoke. Information on levels of TSNAs in cigarette tobacco filler is relevant to levels of TSNAs in tobacco smoke. An average of 9% (6.9 to 11%) of NNK transfers from tobacco to smoke when the tobacco is burned and this represents, on average, 32% (26 to 37%) of the NNK in smoke (CDC, 2005).

Exposure to TSNAs from tobacco products is confirmed by their detection in a variety of biological samples. TSNAs have been measured in saliva (Hoffmann and Adams, 1981), urine (Milunsky et al., 2000) and cervical mucus (Prokopczyk et al., 1997) of people exposed to tobacco or tobacco smoke, TSNAs have been also detected in fetal tissue (Milunsky et al., 2000) and the urine of infants born to smoking mothers (Lackmann et al., 1999).

An extensive body of scientific evidence reveals that TSNAs are an important group of potent carcinogens in tobacco and tobacco smoke. People are exposed to TSNAs by using tobacco (smoking or oral) and by exposure to other people's smoke i.e. ETS or second hand smoke. Evidence was sufficient that the lung was a target of TSNA-induced cancer and that NNK was one carcinogen likely to play a role in human tobacco-induced lung cancer. NNN occured in greater concentrations in
cigarette smoke than any other esophageal carcinogen. Smoking was also a cause of esophageal cancer and was responsible for 70-80% of esophageal cancer deaths in the United States (Hecht, 1999).

4.2 EFFECTS ON HEALTH

Tobacco use is one of the biggest public health threats the world has ever faced. It kills more than five million people a year – an average of one person every six seconds and accounts for one in 10 adult deaths. Up to half of current users will eventually die of a tobacco-related disease (WHO, 2010b).

The relationship between tobacco smoking and several forms of cancer, heart disease, stroke, chronic lung disease, and other medical diseases is well recognized beside the previous mentioned diseases recent epidemiological studies are now focusing on the link between tobacco use and psychiatric diseases. Experts now suggest that in the differential diagnosis of "smoker," depression, alcohol dependence, and schizophrenia are highest on the list. Studies are also focusing on the role of secondhand tobacco exposure, either in utero or during childhood, in the risk of dual disorders. Prenatal exposure may alter gene expression and change the risk for a variety of life-long psychiatric diseases, e.g., antisocial personality disorders, substance use disorders, and major depression (Graham et al., 2007).

4.2.1 RESPIRATORY SYSTEM:

Smoking causes a wide spectrum of respiratory and breathing-related diseases. This includes airway diseases, such as chronic bronchitis and emphysema, where there is inflammation, narrowing and eventual destruction of the airways. The average lung function and lung capacity in smokers is consistently worse than in nonsmokers, with up to double
the rate of decline with age, even in smokers who do not develop chronic bronchitis or emphysema (Apostol et al., 2002).

Smoking cessation in those who have already developed a chronic obstructive lung disease, such as chronic bronchitis or emphysema, results in a significant decrease in the frequency of hospitalizations, slows the rate of deterioration of their lungs over time to near non-smokers’ rate and it significantly improves their symptoms and shortness of breath (Godtfredsen et al., 2002).

As regard asthma here is one possible factor that may be contributing to the epidemic of childhood asthma. The scientists hypothesized that (1) there has been a marked increase in smoking during the past century, (2) this increase in smoking has resulted in a substantial increase in exposure to environmental tobacco smoke among children, and (3) increased exposure to environmental tobacco smoke has contributed to the increase in childhood asthma. Data on trends in cigarette use among adults and asthma prevalence among children during the past century were presented as ecological evidence in support of this hypothesis (Goodwin, 2007). Evidence-based asthma guidelines reported passive smoke exposure as one of the triggers of asthma symptoms and exacerbations and its prevalence was still high among children with asthma especially in those coming from low income families. Passive smoke exposure affects different aspects of asthma control not only
diurnal and nocturnal symptoms and exacerbations but also rescue medication use and lung functions as well as bronchial hyperactivity, school absenteeism and quality of life. Immediate effects of passive smoke exposure in all these asthma parameters seem to be additive to those of chronic exposure. Smoking cessation interventions therefore play a pivotal role for a better asthma control (Bakirtas, 2009).

In 2003 lung cancer was the leading cause of cancer death in both men and women in the United States, and the same trend was seen in many other countries. It has been estimated that cigarette smoking is responsible for more than 1 of every 6 deaths in the United States. It accounted for about 90% of the lung cancer deaths in men and about 80% in women in 1985. The risks of dying of lung cancer were 22 times higher for male smokers and 12 times higher for female smokers than for people who have never smoked (Kufe et al., 2003).

The risk for lung cancer increases with quantity, duration, and intensity of smoking. The risk for dying of lung cancer was 20 times higher among women who smoked two or more packs of cigarettes per day than those who did not smoke (Bethesda, 2003).

The risk of lung cancer declined steadily in people who stop smoking, until, after 10 years, the risk became 30%–50% of that in continuing smokers (American Thoracic Society, 1996).

4.2.2 CARDIOVASCULAR SYSTEM:

4.2.2.1 HEART:

Smoking is clearly implicated in the development of coronary heart disease with increased risk by up to three-fold in men and six-fold in women. This risk appears to be seriously unrecognized or underestimated by smokers (Ayanian and Cleary, 1999).
Cigarette smoking is also an independent risk factor in the development of congestive heart failure which is associated with significantly short survival rates (Gustafsson et al., 2003).

4.2.2.2 ARTERIAL SYSTEM:

Smoking causes narrowing and potential blockage of the carotid arteries increasing the incidence of, and creating a predisposition to, even if initially without symptoms, different kinds of stroke as shown in Figure III and its complications (Tejada et al., 2003).

Smoking is a major contributing factor in the development of atherosclerotic peripheral arterial diseases most commonly affecting the lower extremities, with the potential to cause serious limitations in the ability to walk and to perform daily activities. Patients with peripheral arterial disease are at a very high risk of developing serious and life-threatening illnesses, such as heart attacks and strokes (Cimminiello, 2002).

4.2.3 NERVOUS SYSTEM:

Smoking increases the risk of different types of dementia and cognitive decline. Smoking-associated cognitive impairment and decline could begin as early as middle age, between the ages of 43 and 53 years (Richards et al., 2003), smoking cessation was considered essential in the management of dementia resulting from vascular diseases (Roman, 2002).

Smoking has also been found to increase the risk of developing Alzheimer disease, while smokers who quit had a reduced risk of developing the disease (Merchant et al., 1999).

Cigarette smoking was reported as a major cause of untreated visual impairment and was significantly associated with cataract and
glaucoma. Continued smoking might perpetuate further ocular damage and lead to permanent blindness as a result (Wilson et al., 2001). Smoking was the only known preventable risk factor associated with any form of age-related macular degeneration (Hyman and Neborsky, 2002).

4.2.4 SKELETAL SYSTEM:

Smoking was associated with severe spinal column degenerative diseases and with greater susceptibility to traumatic vertebral injury. Certain spinal surgical procedures were less often successful in smokers compared to non-smokers (Hadley and Reddy, 1997). In addition, it led to a lower rate of bone healing with more complications after treatment for fractures (Harvey et al., 2002).

4.2.5 DIGESTIVE SYSTEM:

In addition to the use of tobacco being a contributory factor in the development of many digestive system cancers, it was also a major contributing factor to other diseases of the digestive system. Smoking was found to be the main factor in the development of peptic ulcers, both gastric and duodenal. Continued smoking lead to a negative effect on, and delayed healing of, duodenal peptic ulcers with a higher relapse rate (Rosenstock et al., 2003).

Smoking was reported as a risk factor in the development of gastro-oesophageal reflux disease, which was found to be a risk factor for the development of laryngeal and pharyngeal cancer, independent of the effect of smoking on the development of such cancers (El-Serag et al., 2001).

4.2.6 CANCER:

In addition to lung cancer tobacco use has been firmly linked to the risk of developing the following cancers: urinary bladder cancer,
pancreatic cancer, kidney cancer, oral cavity and pharyngeal cancer and stomach cancer shown in (Figure III). It has also been linked to the risk of developing colorectal cancer, liver cancer, cervical cancer, nasal sinuses cancer, and leukaemia (Thun et al., 2002). It was also found to be an independent risk factor in the development of squamous cell carcinoma with a rate being affected by the number of cigarettes smoked (De Hertog et al., 2001).

Studies showed that women who smoke had up to four times higher risk of developing cervical cancer compared to those who were non-smokers, and the risk increases with duration of smoking. The United States Surgeon General report on tobacco and health in 2004 concluded that smoking causes cervical cancer. Cervical cancer is the leading killer cancer in women worldwide, with more than half a million new cases diagnosed annually (USDHHS, 2004).

Figure IV: Health effects of tobacco use
(Source: USDHHS, 2012).
4.2.7 ORAL AND DENTAL HEALTH:

Tobacco use was reported as a significant risk factor in the development of a very wide spectrum of oral and dental diseases, and pathological conditions and lesions. A cross-sectional study on smoking and caries in an Italian military academy, concluded that heavy smokers had a higher prevalence of caries compared to non-smokers, confirming a correlation between the disease and tobacco use (Campus et al., 2011).

It was also associated with mucosal lesion, such as smoker’s melanosis, keratotic patches, nicotinic stomatitis, leukoplakia, palatal erosions and black hairy tongue, tooth staining and abrasions. In addition, it was associated with increased prevalence of periodontal and gingival disorders, including periodontitis as shown in (figure III), acute necrotizing ulcerative gingivitis (Reibel, 2003).

4.2.8 SKIN AND HAIR

Tobacco use was linked to premature skin wrinkling and aging, particularly of the facial skin, in men and women (Yin et al., 2001). A strong link was suggested between smoking and tendency to greyness, baldness and hair loss (Trueb, 2003).

Smoking was a clinically important contributing factor in increased incidence and severity of acne (Schafer et al., 2001). It was also associated with a number of skin diseases, such as psoriasis (Naldi et al., 1999), eczema (Onder et al., 2002).

4.2.9 IMMUNE SYSTEM:

Cigarette smoke and nicotine were reported to have a suppressive effect on the immune system as shown in (Figure III) (Godtfredsen et al., 2002), which explained, in part, the number of increased respiratory
tract infections and increased rates of wound infections after surgery in smokers (Sorensen et al., 2003).

Cigarette smoking appeared to be an important risk factor in the development and the increased severity of rheumatoid arthritis as shown in (Figure III) (Albano et al., 2001).

Cigarette smoking also significantly increased the risk of developing systemic lupus erythematosus (Ghaussy et al., 2001).

4.2.10 DIABETES MELLITUS:

Smokers were at an increased risk of developing type II diabetes as shown in (figure 2), and patients with diabetes who were smokers were at an increased risk of diabetic nephropathy, retinopathy, neuropathy, coronary heart disease, stroke and peripheral vascular disease (Eliasson, 2003).

4.2.11 TUBERCULOSIS:

Smokers were at an increased risk of contracting active pulmonary tuberculosis as shown in (Figure III), and they also appeared to develop more cases of extra-pulmonary tuberculosis. This risk increases with the number of cigarettes smoked (Kolappan and Gopi, 2002).

A 14-year prospective cohort study (1992-2006) was carried out in 1,294,504 South Koreans. Participants were grouped by smoking history, and the authors assessed tuberculosis incidence, mortality, and recurrence risk for each group. This study provided evidence that smoking increased risk of incident tuberculosis, mortality from tuberculosis, and tuberculosis recurrence (Jee et al., 2009).
4.2.12 MALE REPRODUCTIVE HEALTH:

4.2.12.1 FERTILITY:

There was significant evidence that smoking leads to a decreased sperm count, an increased frequency of abnormal sperm morphology, and an inferior quality of sperm in smokers compared with non-smokers. Smoking by men was also associated with delayed conception and reduced fertility rates \((Hull \ et \ al., \ 2000)\).

4.2.12.2 IMPOTENCE:

The evidence that smoking is a significant risk factor for impotence was strong. Smokers were one and a half times more likely to suffer erectile dysfunction than non-smokers as shown in \((\text{Figure III})\) \((Dorey, \ 2001)\).

\(Kupelian, \ (2007)\) concluded that there was an association between smoking and erectile dysfunction, this was a result of a study done among 2301 men aged 30-79 in Boston. The same result was given by a study done in Upper Egypt which concluded that smoking, hypertension and diabetes were significant risk factors for erectile dysfunction \((Zedan \ et \ al., \ 2010)\).

4.2.13 FEMALE REPRODUCTIVE HEALTH:

4.2.13.1 FERTILITY, COURSE AND OUTCOME OF PREGNANCY:

The link between smoking and fertility disorders, including poor embryo development following in-vitro fertilization treatment and even infertile offspring, was well established \((Zen zes, \ 2000)\). Active and passive smoking can affect a pregnant woman; it can cause spontaneous abortion, intrauterine death, prematurity, low birth weight, placental abruption, chronic fetoplacental dysfunction and other adverse perinatal outcomes \((Subramoney \ et \ al., \ 2010)\). A prospective, two group parallel
study on in utero exposure to heavy maternal smoking and nicotine withdrawal symptoms in neonates, reported significant correlations between markers of nicotine exposure and neurologic and withdrawal scores, indicating that withdrawal symptoms occurred in newborns exposed to heavy maternal smoking during pregnancy (Godding et al., 2004).

Smoking also increased the occurrence of babies with low birth weight, even with low levels of exposure, or with low tar or nicotine concentrations (Mitchell et al., 2002). In addition, it was associated with intrauterine growth retardation (Dejmek et al., 2002).

Smoking during pregnancy and lactation was linked to the development of eczema in children of smoking mothers (Schafer et al., 1997). Women who quit smoking before or during pregnancy reduce the risk for these adverse reproductive outcomes (Bethesda, 2003).

4.3 ENVIRONMENTAL TOBACCO SMOKE (ETS)

4.3.1 DEFINITION:

ETS, also known as secondhand smoke, is a mixture of the smoke given off by the burning end of tobacco products (sidestream smoke) and the smoke exhaled by smokers (mainstream smoke) (USDHHS, 1999).

When a smoker lights up a cigarette, he or she only inhales about 15% of that smoke. The remaining 85% pollutes the air for the rest of the world to breathe in. As a result, when someone around a smoker, he or she engage in passive smoking by proximity. Interestingly, when someone spend two or more hours in the same room where another one is smoking, he or she inhale the equivalent of four cigarettes! Passive smoking is the third leading cause of preventable disability and early death in the United States. (Active smoking and alcohol take the first two
spots for leading cause of early death.) Sadly, for every eight smokers who die from smoking, one innocent second hand "smoker" will also die (Brann, 2012).

A detailed survey of shisha smoking in the rural areas of the Nile Delta, in 2003–2004 was carried out in nine randomly selected villages, and found that more than 70% of male shisha smokers smoked in the presence of their children and wives at home, which calls attention to the unfortunate fact of indoor second-hand smoke exposure (WHO, 2009c).

4.3.2 HEALTH EFFECTS:

ETS exposure affects almost every organ and system in the body with a wide spectrum of ailments and diseases. It was clearly implicated as the cause of death in many of those who were exposed to it (Bartal, 2001).

There was evidence that ETS might cause narrowing of the carotid arteries predisposing to strokes (Kiechl et al., 2002). It was also associated with an increased risk for coronary heart disease in nonsmoking adults (USDHHS, 1999).

Young children are particularly susceptible to ETS because their lungs are not fully developed. Exposure to ETS was associated with an
increased risk for asthma, bronchitis, and pneumonia in young children (USDHHS, 2001).

A meta-analysis of the association between maternal smoking during pregnancy was carried out using data from 24 case-control and cohort studies. The conclusion that the evidence of an association between maternal tobacco smoking and orofacial clefts was strong enough to justify its use in anti-smoking campaigns (Little et al., 2003).

Another serious effect of parental smoking was the significantly increased likelihood that their children will become smokers themselves (Jackson and Henriksen, 1997), and therefore become subjected to all the health hazards associated with tobacco use. In addition to the risk-taking behavior in adolescents that was associated with smoking (Weitzman et al., 2002).

The Council on Scientific Affairs, American Medical Association, agrees that environmental tobacco smoke should be classified as a human carcinogen (a substance that causes cancer in humans), and the Environmental Protection Agency has classified it as a Class A (known human) carcinogen (American Thoracic Society, 1996).
### 4.4 ECONOMIC BURDEN

In 2010 there were more than 80% of the one billion smokers worldwide live in low and middle income countries where the burden of tobacco related illness and death is heaviest. Tobacco users who die prematurely deprive their families of income raise the cost of health care and hinder economic development (*WHO, 2010b*).

Tobacco products are very affordable in Egypt compared to many countries in the region. According to the WHO Global Tobacco Epidemic Report in 2009, the most popular brand is a local brand that is sold and marketed at prices well below that of the other countries' most popular brands. The applied taxation on tobacco products is 59% of the price which is below the international recommendations of 70%. Average cigarette expenditure per month among manufactured cigarette smokers was 109.8 Egyptian pounds (EGP). Cleopatra (84.5%) was the most popular brand purchased (*WHO, 2009c*).

According to the Economics of Tobacco and Tobacco Taxation in Egypt Report in 2010 “Raising the average cigarette tax to £E 4.08 per pack (70% of retail price) would prevent over 600,000 premature deaths in current and future smokers and raise cigarette tax revenues by almost £E 5.2 billion.” (*Hanafy et al, 2010*).

Smoking prevalence in men tends to be higher in low and middle-income countries. The overall smoking prevalence among men in 2003 was nearly 50% in low and middle-income countries, whereas in high-income countries it was 35% (*Shafey et al, 2003*).

At the country level, tobacco consumption varies according to socioeconomic group. In many countries, including the developed ones, it is the poor who consume tobacco the most and who bear most of the
economic and disease burden of tobacco use. A study of smoking prevalence among men in Chennai (India) in 1997 showed that the highest rate was found among the illiterate population (64%). Tobacco use was inversely related to education level across all types of tobacco use (Gajalakshmi and Peto, 1997).

In 1995, a study in the United Kingdom showed that only 10% of women and 12% of men in the highest socioeconomic group were smokers while 35% of women and 40% of men in the lowest socioeconomic group smoke (www.archive.official-documents.co.uk).

There are several ways in which tobacco increases poverty at the individual, household and national levels.

4.4.1 AT THE INDIVIDUAL AND HOUSEHOLD LEVEL:

At the individual and household level, money spent on tobacco can have a very high cost. For the poor, money spent on tobacco is money not spent on basic necessities, such as food, shelter, education and health care. Factors such as weak public policies coupled with a lack of access to information on living healthily, attractive and mass-targeted tobacco advertising and, ultimately, addiction to nicotine—all contribute to poor people spending their money on tobacco rather than on essential needs. In the case of the poorest households, where a significant portion of income is devoted to food, expenditures on tobacco can mean the difference between an adequate diet and malnutrition. Given high rates of malnutrition in low-income countries and the aggressive marketing of tobacco products, the use of tobacco by the poor constitutes a serious challenge to human development (WHO, 2004).

Previous research showed, for example, that over 10.5 million people in Bangladesh who were currently malnourished could have an
adequate diet if money spent on tobacco were spent on food instead, saving the lives of 350 children under age five each day. Expenditures on tobacco also deprived people of educational opportunities that could help lift them out of poverty. The poorest households in Bangladesh spent almost 10 times as much on tobacco as on education (Efroymson et al., 2001). In Egypt, over 10% of household expenditures in lower income households went for cigarettes or other tobacco products. The average amount spent by poor households in Morocco on tobacco was virtually the same as the amount spent on education, and more than half the amount spent on health (Nassar, 2003). The lowest income group in Indonesia spent 15% of their total expenditure on tobacco (De Beyer et al., 2001).

The ill-health caused by tobacco use is often the trigger for a downward slide into more extreme poverty. The poor have few or no assets aside from their ability to work, meaning that poor families are particularly vulnerable. If the main breadwinner became ill from tobacco use, the family’s ability to purchase food and other necessities was threatened (De Beyer et al., 2001).

4.4.2 AT THE NATIONAL LEVEL:

At the national level, countries suffer huge economic losses as a result of high health care costs, as well as lost productivity due to tobacco-related illnesses and premature deaths. In high-income countries in 1999, the overall annual cost of health care attributed to tobacco use was estimated at between 6% and 15% of total health care costs (Jha and Chaloupka, 1999).

In the United States, for example, tobacco use accounted for more than US$ 157 billion in annual health-related economic costs between 1995 and 1999, The country lost, during that period, an average of US$
81.9 billion per year in mortality-related productivity losses and US$ 75.5 billion in excess medical expenditures (*CDC*, *2002*).

Premature deaths from tobacco can also have a devastating impact on national economies, robbing them of productive workers. About 650 million people were at risk of being killed by tobacco, half of them in productive middle age, each losing 20 to 25 years of life (*WHO*, *2003a*). In China alone in 1998, where an estimated 514 100 people died prematurely from smoking-related illnesses, the country suffered a productivity loss of 1146 million person years (*Jiang and Jin, 2002*).

**4.5 TOBACCO CONTROL**

Several strategies have been shown to reduce tobacco use. However, these were developed more than 50 years after the health dangers of smoking were scientifically proven, and more than 20 years after evidence confirmed the hazards of second-hand smoke. Few countries have implemented effective and recognized strategies to control the tobacco epidemic. Of these, developing countries are even less likely to have done so. Women and young adults in these countries have been specifically targeted by the tobacco industry. International efforts led by WHO resulted in rapid entry into force of the WHO FCTC which has 168 signatories and more than 150 parties. The WHO FCTC provides the principles and context for policy development, planning of interventions and mobilization of political and finical resources for tobacco control. Achievement of tobacco control goals require coordination among government agencies, academic institutes, professional associations and civil society organizations at the country level as well as the coordinated support of international cooperation and development agencies. To help countries fulfill the promise of the WHO FCTC and turn this global consensus into a global reality the WHO published a report showed the
"MPOWER" a policy package that builds on the measures of the WHO FCTC that have been proven to reduce smoking prevalence (WHO, 2008). "MPOWER" comes from m: monitor tobacco use, p: protect people from tobacco smoke, o: offer help to quit tobacco use, w: warn about the dangers of tobacco, e: enforce bans on tobacco advertising and promotion and r: raise taxes on tobacco products

Monitoring the tobacco epidemic through an efficient surveillance system is one of the essential components of a comprehensive tobacco control program.

The determination of suitable tobacco-control policies is a complex matter and policies must be tailored to each country. Comprehensive control programs need to be based on multiple interventions, and they should include coordination and evaluation functions. In the high-income countries, research on the causes, the consequences, and the costs of tobacco use has contributed to a social climate where effective tobacco control can occur. The lack of such information in most low-income and middle-income countries may hinder control efforts. Awareness of the health consequences of smoking appears to be a key determinant of the success of some other interventions. For example, high awareness of the consequences of environmental tobacco smoke helps to make clean-air laws, and awareness of the benefits of smoking cessation is likely to increase demand for Nicotine replacement therapies (NRTs). The experience of the industrialized countries shows that rising incomes in the earlier decades of the twentieth century initially led to increased consumption of tobacco, but that with increased information and education about the hazards of smoking, consumption is now in steady overall decline. Similar patterns might be expected to emerge in low-income and middle-income countries as information is made more widely
available. Finally, a critical feature of a successful tobacco-control program is its ability to engage many different sectors of government as shown in (table 2). Effective tobacco control involves several disciplines, and the staffing and skill mix is likely to be determined by each country’s specific needs at the time (*Jha et al.*, 2000).

**Table II: Inter-ministerial action required for tobacco control**

<table>
<thead>
<tr>
<th>Issue</th>
<th>Agency or ministry</th>
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</thead>
<tbody>
<tr>
<td>Taxation</td>
<td>Finance, Trade, Customs, Social Security</td>
</tr>
<tr>
<td>Research on causes, consequences and costs of tobacco use</td>
<td>National Statistics Offices, Industry Commerce, Trade, Agriculture, Health (for smoking on death certificates)</td>
</tr>
<tr>
<td>Mass information</td>
<td>Education, Telecommunication, Health</td>
</tr>
<tr>
<td>Ban advertising and promotion</td>
<td>Commerce, Finance, Telecommunication</td>
</tr>
<tr>
<td>Deregulate nicotine replacement markets</td>
<td>Commerce, Trade, Drug Controller, Health</td>
</tr>
<tr>
<td>Restrict public and workplace smoking</td>
<td>Commerce, Tourism, Hotels</td>
</tr>
<tr>
<td>Control smuggling</td>
<td>Trade, Customs, Finance</td>
</tr>
<tr>
<td>Employment and agricultural issues</td>
<td>Agricultural, Labor, Commerce</td>
</tr>
</tbody>
</table>

(Source: *WHO*, 2009).

Egypt has three laws governing prevention of tobacco hazards: Law 52 of 1981, Law 85 of 2002 and Law 154 of 2007. However, comprehensive tobacco control laws’ implementation is still a challenge. In 2002, Law 85/2002 included amendments to enforce Law 52/1981 concerning the written health warnings on the cigarettes packets and to ban tobacco advertisements, promotion and sponsorship totally. It also
bans cigarettes or any other tobacco products sale to minors. In July 2007, new legislation was adopted with the following measures for the first time: i) Establishment of a directorate of tobacco control in the Ministry of Health, ii) Establishment of an implementation/enforcement cell in the Ministry of Health to follow up on implementation, iii) Adoption of pictorial health warnings on all tobacco packs; this was implemented in August 2008, iv) Total ban on tobacco use in public places and cancellation of designated areas, although restaurants and bars were spared, v) Adoption of the principle of taxation increase as a tool for controlling tobacco, vi) Establishment of a national coordinating mechanism; a high national committee for tobacco control was formed that involved multisectoral representation and vii) A plan of action was approved by the National Democratic Party to free Egypt from tobacco in 5 year (WHO, 2009c).

Egypt was one of the first signatory countries of WHO FCTC in 2003 and ratified it in June 2005, and in attempt to fulfill the six effective strategies of MPOWER Egypt offered the following: i) A surveillance system to monitor tobacco epidemic is in place since 2000, it is the Global Tobacco Surveillance System (GTSS) of which three surveys have been periodically implemented by the Ministry of Health: GYTS,
the Global School Personnel Survey (GSPS) and Global Health Professions Student Survey (GHPSS). Egypt’s first GYTS was conducted in 2001 and was repeated in 2005 and most recently in 2009. Also Egypt conducted the GHPSS in medical schools in 2005, ii) Protection through the 2007 legislations, iii) A number of cessation clinics which offer help to quit are now available in Egypt. However, they are not as effective as hoped for as no nicotine replacement therapy is offered, iv) Pictorial health warnings occupying 50% of the packs were introduced and adopted by the 2007 law since August 2008.

However, the by-law issued by the Minister of Health ignored shisha and other tobacco product packaging, v) A 100% total ban on advertising was adopted by Law 85/2002 and enforced by the government. The complete ban on advertising was extended to radio, TV and cinema. Despite this total ban on advertising, indirect advertising is widespread, mainly through drama and vi) Currently, taxes comprise an estimated 59% of the cost of a pack of domestic cigarettes, while imported cigarettes are subject to an 85% customs tariff. Although the 2007 legislation adopted in principle the increase, it left it to the Ministry
of Health and Minister of Finance to agree on the implementation (WHO, 2009c).

Laws and policies are very important in provoking quitting attempts. A study in US done to examine the influence of a Tobacco-Free Hospital Campus policy (TFHC) on employee smoking behavior concluded that TFHC policy may lead to increased employee smoking quit attempts and successful cessation. Health care facilities should broaden smoking restrictions to include the entire workplace campus, not only to reduce exposure to environmental tobacco smoke, but also to increase tobacco cessation.

4.5.1 Role of health professionals:

Training of health professionals is an essential part of a cost effective, evidence based strategy on smoking cessation and treatment of tobacco dependence because of their interaction with smokers and other tobacco consumers as care providers and their role as health communicators in societies. However, health care providers and professionals often lack sufficient motivation to undertake smoking cessation as a mean of prevention, misinformation about effective interventions. Inadequate training in all health care settings are factors among other factors that impede health professionals from taking action. Building capacity among health professionals includes the integration of smoking cessation as part of training activities in health programs (WHO, 2003b).

4.5.2 Egyptian Smoking Prevention Research Institute (ESPRI):

In 2002, the University of Maryland in Baltimore (UMB) was one of three major partners: Georgetown University (GU) and Egyptian
Ministry of Health and Population (MOHP) that involved in establishment of this project. The overall goal of the ESPRI is to reduce tobacco use in Egypt by carrying out interlocking observational, intervention and policy research, and through capacity building for research, prevention, communications and policy on smoking prevention. Having the ability to rely on ESPRI for the best scientific knowledge will add momentum to the current efforts underway to curb smoking in Egypt (El-Setouhy, 2003).

4.5.3 Role of civil society in tobacco control:

Civil Society Organizations (CSOs) are any organizations that work in an arena between the household, the private sector and the state to negotiate matters of public concern. There are several types of CSOs including Non-Governmental Organizations (NGOs), community groups, professional associations, trade unions, media organizations, research institutes, advocacy and human rights CSOs (Khallaf, 2010).

As for tobacco control activities, there was an interregional meeting in Cairo 2003, on enhancing the role of NGOs in support of the Frame Work Convention on Tobacco Control initiated by WHO (WHO FCTC), since the preparatory phases of WHO FCTC, the NGOs played a key role in supporting the convention and in taking a leading role at the national level to enhance the public’s knowledge of tobacco control and to support tobacco control related activities, In their efforts to control tobacco, NGOs took various routes including lobbying, creating alliances, holding workshops, meetings and press conferences, as well as disseminating materials. To support the continuance of these activities, in 2001, WHO launched its global project channelling the Outrage which aimed at supporting the efforts of NGOs in different regions in tobacco
control particularly in line with the FCTC. In the Eastern Mediterranean Region, 11 projects were carried out under the umbrella of channeling the Outrage, a workshop was held at the Regional Office in Cairo, in 2003, hosting 20 participants which represented a wide range of NGOs from all over the Region participating in the channeling outrage global project. The objectives of the workshop were to advance NGO’s tobacco related knowledge, ensure that NGOs will take a leading role in lobbying for ratification of the (FCTC) through learning more skills and gaining new experience and draft a new regional plan of action (El Awa, 2004).

A major conclusion of CDC and USDHHS was that school-based interventions, when implemented with community- and media-based activities, could reduce or postpone the onset of smoking among adolescents by 20–40%. Also, multicomponent interventions that combine the above mentioned items with price increasing including those that result from tax increases, and statewide or community wide changes in smoke free policies and norms are effective in reducing the initiation, prevalence, and intensity of smoking among youth and young adults (Rockville, 2012).

Public health approaches at the general population level such as mass media campaigns, Quit and Win competitions and telephone help lines play an important role in changing societal norms and promoting smoking cessation. Quit-lines have an important role to play as part of an overall comprehensive smoking cessation program; they provide a low cost, easily accessible popular and effective service (WHO, 2003b).

According to the United States Clinical Practice Guidelines, both social support as part of treatment (intra-treatment social support) and help in securing social support outside of treatment (extra-treatment
social support) are especially effective in increasing quitting. All countries have a lay persons who can provide informal social support for quitting and who can be trained to conduct more formal interventions. For example ex-smokers who can serve as role models in encouraging quitting, and can provide social support to individuals who are attempting to quit they also may reflect an environment in which quitting is a great priority (WHO, 2003b).
Chapter (5)

THE CONCEPTUAL ASPECTS OF QUALITY OF LIFE

Scientifically, the study of Quality Of Life (QOL) is complicated by the divergent ways in which the term is used in our everyday language. Some people view QOL as the relationships and interactions with family and friends while to others it is about material wealth. To many people, QOL is simply equivalent to happiness. Hence, the concept of QOL is liable to numerous interpretations (Eiser and Morse, 2001a).

5.1 DEFINING QOL

Cella, (1991), referred to QOL as a persons’ appraisal of and satisfaction with their current level of functioning as compared to what they perceived as possible or ideal. Thus, an acceptably good QOL is accomplished when the gap between a person’s aspirations and hopes and their actual experience is narrow.

Generally, definitions and ideals are dependent on social and cultural contexts. It has long been emphasized that perceptions and definitions, of QOL as with other concepts, differ over time and between cultures. QOL was perceived as a subjective evaluation of the positive or negative attributes that characterize one’s life. QOL was thus defined as a person’s sense of wellbeing, stemming from satisfaction or dissatisfaction with life areas of relevant importance to him or her (Taylor et al., 1998).

In 1998, Staniszewska, asserted the challenging complexity of defining QOL, which was used interchangeably with terms such as Health Related Quality Of Life (HRQOL), Subjective health status and Functional status. Such interchangeable use of terminology related to the lack of a conceptual definition of QOL, although most researchers agreed
it is a multi-dimensional construct and that there are a variety of approaches to its measurement.

*Feeny et al., 1999*, defined QOL as a broad, multi-dimensional concept applied to an individual’s status that includes characteristics of the community and environment, economic welfare, and health status.

Although there is no consensus over a definition of QOL, there is a communal acceptance that it is a multi-dimensional measure. A wide range of components was covered by the literature such as functional ability, including role functioning, the degree of social and community interaction and participation, psychological well-being, somatic sensation and life satisfaction (*Bowling, 1997*).

The strongest area of consensus was the fact that QOL is extraordinarily broad and conceptually complex. It was popularly viewed to convey a sense of overall well-being, including aspects of happiness and satisfaction with one's self as well as with life as a whole (*CDC, 2000*).

In the past, many researchers measured only one dimension such as physical function, economic concern or sexual function. More comprehensively, *El-Lawindi, 1999* stated QOL to be identified through three inter-related levels; 1) Overall assessment of well-being, 2) Broad domains of physical, psychological, economic, and social function and 3) The components of each domain.

WHO has included in the definition of QOL the individuals' perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns (*WHO, 1993*).
In 2001, several core elements in defining the concept of QOL were identified. First and foremost was that each individual has their own unique perspective on QOL, which depends upon past experience, present life style, future hopes, dreams and ambitions. Second, when used in a medical context, QOL was generally conceptualised as a multi-dimensional construct encompassing several domains. Third, QOL includes both objective and subjective perspectives in each domain (Eiser and Morse, 2001b).

5.2 PERSPECTIVES OF QOL

From the objective perspective, it is assumed that an individuals’ health, environment, income, housing and other observable and quantifiable indicators are valid measures of QOL, with absolute standards for assessing these variables existing and used to determine or define QOL (Spilker, 1996).

However, assessment of QOL on the basis of objective indicators alone does not account for sub-cultural differences in perceptions. Even granting a certain group shares the same culture, individuals still varies widely in personal beliefs, values, goals and needs (Barnett, 1991).

Therefore, an objective assessment alone cannot be used to evaluate feelings and concerns of QOL for any particular person. Without a prior understanding of the values and beliefs of a population and how these are manifested in individuals, the weighing and priority attached to any life area is arbitrary. Hence, subjective measures of QOL, which allow inclusion of a participant’s implicit personal and cultural values in the assessment, had to be annexed. It has strongly been accentuated that a person’s perceptions and attributes of dysfunction are as important as their existence (Schipper et al., 1996).
Several approaches such as ratings of happiness, well-being or life satisfaction have long been used to emphasize an individual’s subjective perception as recognized to be a key component of QOL. This approach is to a certain degree of disadvantage. Levels of well-being or life satisfaction are related to the disparity between a person’s needs or subjective standard for life and his or her objective situation (Spilker, 1996).

5.3 THE CONCEPT OF Health Related Quality of Life (HRQOL)

The terms QOL and HRQOL have often been used interchangeably, yet clarification of the fine distinction between the two terms is essential. QOL is essentially viewed as a subjective, multi-dimensional experience involving summary evaluations of the positive and negative attributes characterising one’s life. On the other hand, HRQOL highlights the summary evaluation of attributes that characterise one’s life at a point in time, when health, illness and treatment conditions are relevant (El-Lawindi, 1999).

HRQOL was originally adapted to consolidate a new comprehensive approach to medical outcomes. In psychological terminology, it denotes a multi-dimensional construct encompassing physical, emotional, mental, social and behavioural components of well-being and function as perceived by patients (Sieberer and Bullinger, 1997).

Theoretically, approaches defining and conceptualising HRQOL stem from the definition put forward by Calman, (1984) stating that; “QOL measures the difference, at a particular period in time, between the hopes and expectations of the individual, and the individual’s experience.
It is concerned with the difference between perceived goals and actual goals. It is an assessment of the potential for growth.”

Thus the term HRQOL refers to the distinct areas of physical, psychological and social domains of health, which are influenced by a person’s experiences, beliefs, expectations and perceptions. It is concerned with the opportunities afforded by a person’s health status and the constraints that it places upon that person as well as the value assigned by the individual regarding their health status (*Feeny et al., 1999*).

Symptoms associated with a disease would undoubtedly impact on HRQOL. Moreover, being labelled of having a certain disease e.g. “a diabetic”, can directly impact upon a patient’s HRQOL, where this labelling causes greater concern and distress than the type or frequency of attacks of the specific disease (*Swain, 2001*).

Essentially, the goal of medical treatment is to make patients feel better, thus enhancing their QOL. Since the expectations regarding health and the ability to cope with limitations and disability are greatly affected by a person’s perception of health and satisfaction with life, two people with the same health status may have very different qualities of life (*Feeny et al., 1999*).

It has been viewed that the concept of HRQOL and its determinants have evolved to encompass those aspects of overall QOL that clearly affect either physical or mental health. At the individual level, this incorporates both physical and mental health perceptions and their corresponding correlates of health risks and conditions, functional and socio-economic status as well as social support. On the community level, HRQOL includes resources, conditions, policies and practices that influence a population’s health perceptions and functional status. Hence,
the definition that HRQOL is “an individual’s or group’s perceived physical and mental health over time” \textit{(CDC, 2000)}. 

\section*{5.4 QOL DOMAINS}

It has been shown that any definition of QOL implicitly compromises the notion of a multi-dimensional measure involving physical, cognitive, emotional and social domains as well as spiritual and environmental issues \textit{(Eiser, 1997)}.

\subsection*{5.4.1 PHYSICAL FUNCTIONING (FUNCTIONAL ABILITY)}

Measurement of physical functioning is equivalent to assessing physical disability. It involves appraisal of the ability to perform specific tasks (e.g. the ability to climb stairs) in addition to the less simply defined concepts related to role \textit{(Muldoon et al., 1998)}.

Hence, the term “Functional” denotes performance of a purposeful, meaningful or useful task that has a beginning and end with a measurable result. Therefore, functional capacity evaluation focalises around the effect of the patient’s condition on his or her ability to perform meaningful tasks \textit{(Matheson, 1996)}.

Ideally, the functional status was defined as the degree to which an individual is capable to perform socially allocated roles free of physically or mentally related limitations. It is only a single component of health that measures the effects of disease rather than the disease itself \textit{(Bowling, 1997)}.

Thus an individual’s functional status includes two concepts: Functional capacity and Functional performance. The former represents the maximum capacity of an individual to perform daily activities in the physical, psychological and social domains of life. On the other hand, the latter refers to actual activities done during the course of everyday life. It
has been shown that numerous factors, such as symptoms, mood and health perceptions, influence both capacity and performance (*Wilson and Cleary, 1995*).

Over the past decades, the terms “impairment”, “disability” and “handicap” have often been inaccurately used interchangeably, and adding to the confusion is the increasing use of the term “functional dependency”. An attempt to define these terms was proposed by the WHO linking them all together as follows (*WHO, 1980*):

\[
\text{Disease /disorder} \rightarrow \text{Impairment} \rightarrow \text{Disability} \rightarrow \text{Handicap}
\]

**Impairment** is considered to represent a deviation from some norm in the individual’s biomedical status, and is defined as the loss or abnormality of psychological or anatomical structure or function in the context of the health experience.

**Disability** is defined as any limitation or inability to perform an activity, in the manner or within the range considered normal for a human being due to impairment.

**Functional handicap** is described as a disadvantage resulting from an impairment or disability which restricts or prevents the fulfilment of a role considered normal for an individual depending on age, sex, social and cultural factors. In this sense it is a social phenomenon and a relative concept where the attitudes and values of the non-handicapped play a crucial role in its definition.

Ultimately, these definitions have led to the concept of *dependency* on other people or service providers. **Dependency** is viewed as a state of an individuals’ reliance upon others for assistance in meeting recognized needs (*Abdelhai, 2000*).
5.4.2 PSYCHOLOGICAL FUNCTION AND MENTAL WELL-BEING

The concept of psychological well-being attains the state of feelings that cannot be appraised by observation or asking about behaviour. An individual’s ability to rise to life’s cognitive and social challenges, which range from specific to complex tasks and social interactions, is reflected in their mental functioning (Muldoon et al., 1998).

It has constantly been emphasised that one of the most important components of the health status is mental health. This concept is of utmost importance not merely due to its major diagnostic category, but because psychological distress and well-being are usually afflicted by disease and treatment interventions (Veit and Ware, 1983).

Assessing mood, anxiety or depression has long been recognised as important components of QOL serving as broad indicators of overall psychological functioning. Individuals with considerably good and satisfying QOL are found to possess high self-esteem, viewing themselves happy and fulfilled as well as able to make decisions and actively participate socially (Eiser and Morse, 2001a).

5.4.3 THE CONCEPT OF SOCIAL WELL-BEING

Social well-being is known to be a key component of health. Unquestionably, any disease profoundly affects an individuals’ social life, yet social functioning has less frequently been considered as distinct domain in QOL measures as compared with other domains such as physical functioning (Schipper et al., 1996).

Social health is viewed as a dimension of the individuals’ well-being that stands distinct from physical and mental health. It has been
identified in terms of interpersonal interactions and relations, e.g. visits with friends, and active social participation. It has also been conceptualised as the individuals’ ability to adequately function as a member of any community (Bowling, 1997).

It has been shown that socially healthy individuals are more able to cope successfully with day-to-day challenges, actively participating in community activities and conforming to socially allocated roles, inevitably, living in families that are more stable and cohesive (George et al., 1989).

5.4.4 ENVIRONMENTAL ASPECT OF QOL

Human health is strongly linked to environmental well-being, yet the relationship between them is complex and multidimensional. Environmental health has been recognised to compromises those aspects of human health, which are determined by physical, chemical, biological, social and psychological processes in the environment. It is thus an important component of QOL and HRQOL since it refers to the theory and practice of assessing, correcting, controlling and preventing the various factors in the environment that can potentially affect present and future generations (Goldman, 2001).

The constant interaction between people and the natural resources that surround them has created the concepts of the social and physical aspects of the environment. The distinction between the two is only arbitrary, since they are not independent. Rather they are created together and as a result of each other (Fullilove, 2001).

When focusing on the child, the quality and design of the surrounding physical environment is considered a core element in the cause or prevention of illness, disability and injury. Therefore, to achieve
optimal health and development for children and consequently a good and satisfactory QOL, a high quality environment is essential. As children grow and mature the scope of their environmental predictability expands from the womb to the wider community, to encompass the broadest reach of the planet. Hence, the child’s built environment is considered a central factor in this progression (Cummins and Jackson, 2001).

Globally, given the variations in historical development and multiplicity of cultures, it is not possible to say there is one “right” way to promote childhood development. The evolving child interacts with specific socio-physical attributes of the surrounding environment, gaining mastery with unique resources and demands (Fullilove, 2001).

Two major issues arise when contemplating the range of issues enclosed by the interaction of children and their environment. The tangible world experienced by the child every day and the future world into which the child is growing. Every child is entitled to a healthy environment which not only provides excellent medical care but one that encourages physical activity and social contact ensuring health and development (Cummins and Jackson, 2001).

5.4.5 SPIRITUAL HEALTH

Despite the importance of the spiritual status of individuals in determining their perception of QOL, little attention has been given to this domain. The spiritual status of individuals or groups has been found to be integral in describing the overall QOL that determines the self-perception of individuals within their society (Bonomi et al., 2000).

The domain of spiritual well-being is known to contain an individual’s personal beliefs regarding various concepts including;
religion, transcendence, the meaning of illness, hope, uncertainty, and inner strength \cite{El-Lawindi, 1999}.

5.5 ASSESSMENT OF HEALTH STATUS AND QOL

More than half a century ago, in 1948, the WHO defined health very broadly as “a state of complete physical, mental and social well-being, not merely the absence of disease or infirmity” \cite{WHO, 2003c}. Yet health has traditionally been viewed and measured narrowly in the negative sense taking health as a baseline and measuring deviations away from it. This approach arose since it is usually easier to measure departures from health rather than find indices of health itself \cite{Bowling, 1997}.

QOL measures encompass multiple components of the broad concept of positive health. They have recently become essential in assessing the results of health care interventions as a means for prioritising limited resources among competing health care programmes. Showing advantage over conventional measures as predictors of long-term outcomes of morbidity and mortality, they can therefore identify patients needing special attention. In addition they can be used to screen for certain problems e.g. psychiatric, as well as monitor progress related to disease management \cite{Fitzpatrick, et al. 1992}.

5.5.1 Health Related Quality Of Life (HRQOL)

Measuring HRQOL, has been found to be useful for tracking population trends and identifying health disparities that is compatible with the WHO definition of health. It is increasingly being used as an outcome measure in clinical trials, effectiveness research and research on quality of care \cite{Wilson and Cleary, 1995}. 
HRQoL specifically focuses on disease and treatment-related aspects of the individual, such as pain, limitations in motor ability, energy level, or mood (Argwal, 2012).

Measures of HRQOL provide a more comprehensive account of individual patient experience as well as information on which to base decisions about service provision (Eiser, et al. 1999). The measurement of HRQOL has also been found crucial for the estimation of the impact of chronic diseases especially since it correlates well with functional capacity and well-being, areas in which patients are most interested and familiar with (Guyatt, et al. 1993).

It is implicitly understood that providing valuable insights into the relationship between HRQOL and risk factors of disease, will help monitor progress in achieving health objectives and identify interventions to improve the health situation of the deprived (CDC, 2000).

5.5.2 OVER-VIEW OF MEASURES

There have been two general approaches to the measurement of quality of life. The first is an attempt to produce instruments that provide a single global score of well-being, they were designed in such a way as to permit all items on a questionnaire to be summed into a single health index. The other method was the development of questionnaire designed to measure a number of dimensions of health status (Jenkinson, 1997).

5.5.2.1 SINGLE INDEX MEASURES OF HEALTH STATUS

They were designed to provide a single scale of health state. An example of this measure is the quality of well being scale (QWB). The intention of this index was to combine mortality, morbidity, and the benefits and side effect of treatment into a single global score, which can permit for the comparison of health states, and treatments. However, it
Review of literature

was long as it takes 15 minutes to complete, its value was comparing disease state was dependent on gaining reliable prognosis and without this latter information it is not possible to calculate potential 'well years' accruing from, treatments, and another limitation was that it was administrated by inter-viewer, as the self-completion version resulted in unreliable data (Kaplan and Anderson, 1987).

Attempts have been made to gain a questionnaire that is both short, easy to complete, and a reliable indicator of well being. A widely used measure is the Euro QOL- 5D, which was developed by a multidisciplinary group of researchers from five European countries (Euro QOL group, 1990).

There were five questions covering the areas of mobility, self-care, usual activity, pain/discomfort, and anxiety/depression. Each question has three response categories; level I 'no problem' -- level II 'some problems' - level III 'inability or extreme problems'. Then an over - all health state can be calculated from response to these items. A single over-all score can also be gained from the Euro QOL thermometer, on which respondents mark their over- all perceived health state from worst imaginable health state' to 'best imaginable health state(Euro QOL group, 1990).

A number of researches have begun the possibility of asking patients to individually nominate areas of their life which have been adversely affected by health state, and to then assess the extent of this impact. A variety of methodologies to this approach existed, but in essence they all permitted each individual to select and weigh their own chosen area. And such a procedure had the advantage of not imposing pre-existing definitions of health and well being upon respondents (Ruta and Garratt, 1994).
There were attempts to gain single index figures of health states from these measurements, but there were number of issues needed to be addressed as, whether aggregating potentially unrelated dimensions are appropriate methodology, and whether the patients should select a dimension from a list, or simply select from any areas they think important (Jenkinson, 1997).

Single index figures of health status appealed to those who wish to compare different treatments and interventions. However such, single index figures might do so unfairly. For example the Euro QOL questionnaire did not contain a dimension evaluating sleep disturbance, and a treatment aimed primarily at improving this dimension of health might not appear to have been efficacious if assessed by this measure. Single index figures gained from patient generated measures, such as those of Ruta and Garratt (1994) might overcome the above criticism (Jenkinson, 1997).

5.5.2.2 HEALTH STATUS PROFILES

Health status profiles were measures that tap a number of dimensions of functioning and well-being. Many instruments developed were illness specific or aimed at tapping a specific aspect of ill-health (e.g.: arthritis measurement scale, kidney disease questionnaire). They have been designed for specific use and would be inappropriate for most other patients or for general population (Vetter and Natthews, 1999).

Generic health measures could assess wider issues and involve general questioning such as physical functioning, social roles, and psychological' states. The focus was more on the impact of symptoms on a person's life rather than on symptoms themselves. The advantage of such instruments was that we could use them in a variety of clinical setting allowing comparisons between different patients with different
diseases (Barr, 1999). The Medical Outcome Study- Short From 36-Item health survey (SF - 36) is an example of generic QOL measure and HRQoL. The instrument was submitted to validation and is widely used internationally (Fryback et al., 2010).

It is considered more suitable measurement tool as it's self-administered, 36 item questionnaire that take approximately 10 minutes to complete, the SF - 36 yields a profile of eight components of health (physical functioning, role limitation due to physical functioning, pain, health perceptions, vitality, social functioning, role limitation due to emotional status, and mental health) (Ware and Sherbourne, 1992).

The usefulness of the SF-36 in estimating disease burden and comparing disease-specific benchmarks with general population norms is illustrated in articles describing more than 200 diseases and conditions. Among the most frequently studied diseases and conditions were: arthritis, cancer, cardiovascular disease, chronic obstructive pulmonary disease, depression, HIV/AIDS, hypertension, psychiatric diagnoses, substance abuse (Turner-Bowker et al., 2002). A score is calculated from each of the dimensions by summing responses to the individual items and converting, by a scoring algorithm, to a scale from 0 (poor health) to 100 (good health) (Ware and Sherbourne, 1992).

World health organization quality of life questionnaire (WHOQOL) include 100 items covering the following domains physical, psychological, level of independence, social relationship, environment, and spiritual together with four questions on the overall quality of life and perceived health. A short version of the questionnaire, containing 26 items, has recently been developed which is used in clinical practice and in research where repeated assessment have to be made (WHO, 1996).
It is important to note that subjective health measurement questionnaire was not designed to be used as substitutes for traditional measures of clinical end points. They were intended to complement, existing measures and to provide a full practice of health state than can be gained by medical measures alone. However, to be useful such measures must be carefully chosen and adequate care must be taken to ensure appropriate measures tapping relevant domains are being utilized in clinical trials (Jenkinson, 1997).

The ultimate HRQOL instrument should be both discriminative i.e. differentiating between individuals as to who has a better QOL, as well as evaluative i.e. measuring how much HRQOL has changed (Guyatt, et al. 1993).

5.5.2.3 VALID QOL MEASURES

Valid QOL measures have to assess multiple dimensions of health (physical, psychological, and social) and include patient centered form of assessment. These measures are intended to measure the effect of clinical condition on the patient as perceived by the patient, not a health care provider or relative of the patient (Barr, 1999).

Patients' assessments of their overall QOL depend on the severity of the physiological problems, the amount of symptoms, whether symptoms affect functional status, and patient's perception of their health. Figure IV shows that this assessment was influenced by patient's values and beliefs, social and psychological support need to help them to continue to function in all aspects of life, and nonmedical factors such as economic stability, family relationship, and spirituality (Wilson and Cleary, 1995).
5.6 APPLICATION OF QOL

Multi-dimensional QOL measures provided an opportunity to move beyond the traditional assessments of physical function and other objective measures and now include a broader assessment of patient status, as objectively and subjectively perceived by the patient, in order to study the various effects that illness and treatment have on daily life and life satisfaction (Barr, 1999).

Assessment of QOL could be used as an outcome measure in research on the relative benefits of different treatment methods. For example, radiotherapy and radical surgery may have equal efficacy against a particular kind of cancer, but if subjective quality of life of patient is significantly better with one method it should be preferred. Such assessment can provide a key parameter in cost-benefit studies and can thus contribute towards achieving optimal resource use. In general a
consideration of the subjective QOL is likely leads to improvements in the quality of health care (WHO, 1996).

Although QOL assessment was almost unknown 15 years ago, it has rapidly become an integral variable of outcome in clinical research, over 1000 new articles every year are indexed under QOL (Muldoon et al., 1998).

5.7 SMOKING AND QOL

Smoking is closely associated with a loss of years of healthy life (Ostbye and Taylor, 2004). The human cost of smoking is premature death, illness, incapacity, and unnecessary suffering.

Numerous deleterious effects of active smoking on health have been documented over the past half-century, including bladder, cervical, and lung cancer; leukemia; coronary heart disease; reduced fertility; and peptic ulcer disease (USDHHS, 2004). However, recent research suggests that smoking may also be associated with other adverse health characteristics, including lower HRQOL (Strine et al., 2005).

5.7.1 QOL Measures in Smoking

QOL in smokers has been measured by both generic instruments (ie, SF-36, WHO-QOL, EQ-5D) and smoking specific scales (ie, SCQOL
and CCQ). Generic instruments facilitate comparisons across a wide range of conditions. In contrast, specific scales were designed with psychometrics that were tailored to the specific condition being evaluated (Shaw et al., 2001).

Two smoking-specific scales were created for use in populations of smokers and smoking cessation trials. The first, the Smoking Cessation Quality of Life questionnaire (SCQOL), incorporates five smoking cessation targeted scales (social interactions, self-control, sleep, cognitive functioning, and anxiety) and eight generic multi-item scales of the SF-36. The SCQOL is sensitive to changes in smoking status (scores increase upon smoking cessation) (Shaw et al., 2001).

The second smoking-specific scale was developed for use in patients with the smoking-related illness COPD. The Clinical COPD Questionnaire (CCQ) has 10 items divided into three domains (symptoms, functional, and mental state). Data supports the validity, reliability, and responsiveness of the CCQ in smokers and for use in smoking cessation (Reda et al., 2010).

5.7.2 The Relationship between Smoking Initiation and QOL

Experiencing stressful events and depression have been shown to increase risk of smoking initiation and are related to QOL. Compared to adolescents who have never smoked, adolescents with a history of smoking report more recent physically unhealthy days, mentally unhealthy days, and activity limitation days (Mendelsohn, 2012; Dube et al., 2013).

While the lack of prospective randomized controlled trials (RCT’s) limits our knowledge of the directionality of the relationship, four studies utilizing QOL measures reveal data that furthers our understanding of the
relationship between smoking initiation and QOL. A large cross-sectional study of youths in Washington State found low QOL to be associated with higher odds of smoking in both girls and boys (Wang et al., 2012).

The three additional studies also reported a negative association between smoking initiation and QOL. The first found lower QOL scores in persons who initiate smoking before the age of 15 on SF-20 subscales of mental health, health outlook, and social functioning. These differences were more pronounced for females on all of the scales except for physical functioning (Bass et al., 2004).

Martinez and colleagues (2004) found that individuals with a short smoking history reported worse QOL, than their non-smoking counterparts. The differences were far reaching, including statistically significant differences for the domains of physical functioning, general health perceptions, vitality, social functioning, and mental health index.

Mitra et al., (2004), reported that adults with disabilities who initiated smoking during the study score significantly lower than non-smokers in the dimensions of role limitations due to physical health, role limitations due to emotional problems, mental health, energy and vitality, bodily pain, and general health.

5.7.3 QOL of Smokers

Smoking and QOL was found to have a negative association. This negative relationship has been described across populations of diverse socioeconomic and cultural groups from around the world (Toghianifar et al., 2012; Vogl et al., 2012).

The magnitude of the association appears to be dose dependent on number of cigarettes smoked and is maintained up to 3 years after an individual achieves smoking cessation (Holahan et al., 2013).
Differences between smokers and non-smokers domain and subscale scores uncover specific factors, which influence the relationship between QOL and smoking. The physical domain score represents the smoker’s perception of their health. As expected, smokers consistently reported lower physical domain scores than non-smokers \cite{Guiterrez-Bedmar_2009}. Smokers also reported suffering from greater disability, impairment in mobility, and self-care \cite{Rachiotis_2006}.

Social functioning, role-emotional, and vitality domain scores have also been found to be negatively associated with smoking. However, the largest number of studies reported a negative relationship between smoking and the mental domain of QOL \cite{Fritschi_2013}.

Associations between smoking behavior and QOL were more pronounced for mental health than for physical health \cite{Woolf_1999}.

The research results also showed major damage to health and in the HRQoL of smokers, with the increase of Nicotine dependence \cite{Vogl_2012}.

Although studies regarding the association between smoking and HRQoL are scarce according to sex, \cite{Heikkinen_2008} found a greater association among men than among women.

### 5.7.4 The Impact of Smoking Cessation on QOL

Knowledge of the impact of smoking cessation on health-related quality of life may be important in encouraging smokers to quit, since possible beneficial effects on quality of daily living may be seen readily.

In general, the most important reason to give up smoking is concern about one’s health \cite{Klemp_1998}. Smoking cessation was
strongly associated with an overall improvement in general health, mental health, physical health and activity limitations \cite{Erickson2004}.

Several studies that utilize validated QOL measures; there was a consistent finding that achieving smoking cessation was associated with improved QOL \cite{Piper2012}.

Ex-smokers were reported to have more limitations in role functioning due to physical problems, but also to have more vitality and to experience a better mental and perceived health than current smokers \cite{Mino2000}.

Domains that were specifically improved in quitters include physical function, role-function, pain, general health perception, vitality, social function, role-emotional, self-control, and mental health \cite{Zillich2002}.

These improvements in QOL were observed within 1 week of quitting and have been shown to be maintained at follow-up of up to 3 years \cite{Hays2012}.

However, findings from other studies have indicated that cessation does not lead to improvement in HRQOL. Specifically, a study to a smoking cessation intervention concluded that while smoking cessation was associated with improved cardiovascular health, it was not associated with improved overall well-being; however, because this study was conducted among clinical outpatients with atherosclerotic disease, these findings might not be applicable to the general population \cite{Tillman1997}. 
SUBJECTS AND METHODS

This cross-sectional study was carried out on Benha University students. The field work was carried out during the period from 1st March to 31st May 2014.

1. ADMINISTRATIVE DESIGN:

1.1 Ethical consideration

An approval from the Research Ethics Committee in Benha faculty of medicine was obtained to conduct this study. An Informed written consent in Arabic language was obtained from all participants. It included all details about the study (title, objectives, methods, expected benefits and confidentiality of data).
2. TECHNICAL DESIGN:

2.1 Study design:

This was a cross-sectional study.

2.2 Target population & duration:

Benha University students were the target population of this work.
The practical part of this study lapses 3 months during the period from 1\textsuperscript{st} March to 31\textsuperscript{th} May 2014.

2.3 Study sample:

Multistage random sampling technique was used where; four colleges were selected out of 15 faculties of Benha University by simple random method. These colleges were: Faculty of Medicine, Faculty of Engineering, Faculty of Law and Faculty of Arts. Students were chosen by cluster sample techniques i.e.: The University students were divided into sampling unit; sections for practical colleges (Faculty of Medicine, Faculty of Engineering) and Faculty of Law and specialties for Faculty of Arts. One section or specialty was chosen from all grades of each college by simple random
sample. All students in each chosen section or specialty were involved. Of these 771 out of 810 students completed the questionnaires with response rate 95.1%.
2.4 Tool of data collection:

A structured self-administered questionnaire sheet was used.

3. OPERATIONAL DESIGN:

3.1 Preparatory phase:

This comprised writing the protocol, reviewing related literature, choosing the site of the study and obtained the appropriate study tools (self-administered questionnaire).

3.2 Pilot study:

A pilot study was undertaken on 30 students at Faculty of Commerce, that chosen by simple random sample method in the late half of February, to assess (clarity, time consumed and different responses). Their questionnaires were not included in the study. This helped to reduce limitations of understanding as well as non-response to questions.
3.3 Data collection phase:

Data were collected using a structured self-administered questionnaire in Arabic language (*Appendix I*). It was distributed to all students who were attending the section/specialty. It consists of the following sections:

**A-Sociodemographic data:**

The participants were asked about his/her age, sex, residence, nationality, type of faculty, study year and social score.

- **Social score:** it is used to assess the socioeconomic status of included students. It was calculated according to (*El Gilany et al., 2012*).

The final scale included 7 domains with a total score of 84, with a higher score indicating better SES:
1) **Education and cultural domain:** for both Father and Mother (score = 30)

<table>
<thead>
<tr>
<th>Educational level</th>
<th>Father</th>
<th>Mother</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illiterate</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Read &amp; write</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Primary education</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Preparatory</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Secondary</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Intermediate institutes</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>University graduate</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Postgraduate degree</td>
<td>14</td>
<td>14</td>
</tr>
</tbody>
</table>

- Access to health information (1) for each of the following items:
  Printed materials, e.g. books or audiovisual messages on TV&/ radio.

2) **Family domain:** (score = 10)
   - Residence:
     Urban slum = 0; Rural = 1; Urban = 2
   - Number of family members: (parents, children & all dependents)
     More than or equal 5 members = 1; less than 5 members = 2
   - Number of earning family members:
     1 member = 1; 2 members = 2; ≥ 3 members = 3
   - Education of children: (aged ≥ 5 years whether free or private education)
     All children going or ever gone to school/university = 3; ≥ 50% going or ever gone to school/university = 2; < 50%
going or ever gone to school/university = 1; none go/gone to school/university/ not applicable = 0

3) Occupation domain: for both Father and Mother (score = 10)

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Father</th>
<th>Mother</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-working/house wife</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Unskilled manual worker</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Skilled manual worker/farmer</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Trades/business</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Semi-professional/clerk</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Professional</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

4) Economic domain: (score = 5)

- Income from all sources:
  - In debt = 0; just meet routine expenses = 1; meet routine expenses and emergencies = 2; able to save/invest money = 3
- Family receives governmental support:
  - Yes = 1; No = 0
- Family pays tax:
  - Yes = 1; No = 0

5) Family possessions domain: (score = 12; 1 for the presence of each of items given below)

6) **Home sanitation domain:** (score = 12)

- Services: (1) for the presence of each of the following items:
  
  Pure water supply – Electricity – Natural gas – Sewerage system – Municipal collection of solid wastes – Flush latrine – Air conditioning

- Type of house:
  
  Owned, ≥ 4 rooms = 4; Owned, < 4 rooms = 3; Rented, ≥ 4 rooms = 2; Rented, < 4 rooms = 1; No place to reside = 0

- Crowding index: (number of family members divided by number of rooms)
  
  ≤ 1 person per room = 1; > 1 person per room = 0

7) **Health care domain:** (score = 5)

- Usual source of health care:
  
  Private health facilities = 5; Health insurance = 4; Free governmental health service = 3; More than one of the above sources = 2; Traditional healer/self-care = 1

Socioeconomic level was classified into four levels depending on the quartiles of the score calculated: those with score range from 1 – 21, from 22 – 42, from 43 – 63 and from 64 – 84 were classified as very low, low, middle and high social levels respectively.

**B- Smoking questionnaire:**

It was adopted from *Abd Allah, 2003; WHO, 2011a; Fagerstrom, 2012; Refay, 2012*. It included data about the participants' smoking history, reasons for smoking, previous quitting trials and health conditions related to smoking.

Smoking status was established in accordance with the US Centers for Disease Control and Prevention that developed and updated the
following criteria for cigarette smoking: ever and never-smoker where ever smokers were sub-classified into former and current smokers. Never smokers were respondent who have never smoked a cigarette or who smoked fewer than 100 cigarettes (5 packs) in their entire lifetime. Current smokers were defined as the respondents who have smoked 100 cigarettes in their lifetime and currently smoke cigarettes. A respondent who have smoked at least 100 cigarettes in his/her lifetime and currently does not smoke was categorized as a former smoker (CDC, 2010b; (Canadian Tobacco Use Monitoring Survey (CTUMS), 2012).

Nicotine dependence was studied using the "Heaviness of Smoking Index" (Heatherton et al., 1989) which is a short form of the Fagerstrom Test for Nicotine Dependence. The Index includes two questions Q no.3&4 in smoking section which was "how soon after waking up do you smoke your first cigarette?"

The smoker was given: a score of 0 if he smoked more than 60 minutes after waking up, a score of 1 if within 31-60 minutes, a score of 2 if within 6-30 minutes and a score of 3 if within 5 minutes. The second question was about the "average number of cigarettes smoked per day"; the smoker was given: a score of 0 if he smoked less than 10 cigarettes per day, a score of 1 if 10-20 cigarettes per day, a score of 2 if 21-30 cigarettes per day and a score of 3 if more than 30 cigarettes per day. The sum of the 2 questions was calculated. Heavy, moderate and light smokers were defined as those having a score of 5-6 points, 3-4 points and 0-2 points respectively.

C- HRQOL SF-36:

Modified Heath Related Quality of Life Short Form-36 was used. It was adopted from (Ware et al, 1994; Ware and Kosinski, 2001). The
scales that compose the SF-36 were analyzed as dependent variables, they are:

- **Physical functioning scale (PF)**: it measures the performance of all physical activities.

- **Role limitation-physical scale (RP)**: it assesses the effect of physical health on work and daily activities.

- **Role limitation-emotional scale (RE)**: it detects whether there are emotional problems and their effects on work and daily activities.

- **Social functioning scale (SF)**: it detects the effect of physical and emotional health on social activities.

- **Mental health scale (MH)**: it measures the different feelings e.g: nervousness, depression, peacefulness, happiness and calm.

- **Energy and vitality scale (EV)**: it assesses whether respondents felt tired, worn out or full of energy.

- **Bodily pain scale (BP)**: it measures the limitations due to pain if present.

- **General health perception scale (GH)**: it evaluates the personal health.

**● SCORING OF SF-36**

**STEP 1: SCORING QUESTIONS**

Precoded numeric values were recoded per scale from 0 to 100; zero corresponds to the worst health status and 100 to the best. Scores represent the percentage of total possible score achieved where; questions with:

- 2 response options were coded as 0 and 100
- 3 response options were coded as 0, 50 and 100
- 5 response options were coded as 0, 25, 50, 75 and 100
- 6 response options were coded as 0, 20, 40, 60, 80 and 100

**STEP 2: AVERAGING ITEMS TO FORM 8 SCALES**

<table>
<thead>
<tr>
<th>SCALE</th>
<th>NUMBER OF ITEMS</th>
<th>AFTER RECODING PER STEP 1, AVERAGE THE FOLLOWING ITEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical functioning</td>
<td>10</td>
<td>3, 4, 5, 6, 7, 8, 9, 10, 11, 12</td>
</tr>
<tr>
<td>Role limitations due to physical health</td>
<td>4</td>
<td>13, 14, 15, 16</td>
</tr>
<tr>
<td>Role limitations due to emotional problems</td>
<td>3</td>
<td>17, 18, 19</td>
</tr>
<tr>
<td>Energy/ vitality</td>
<td>4</td>
<td>23, 27, 29, 31</td>
</tr>
<tr>
<td>Mental health</td>
<td>5</td>
<td>24, 25, 26, 28, 30</td>
</tr>
<tr>
<td>Social functioning</td>
<td>2</td>
<td>20, 32</td>
</tr>
<tr>
<td>Bodily pain</td>
<td>2</td>
<td>21, 22</td>
</tr>
<tr>
<td>General health</td>
<td>5</td>
<td>1, 33, 34, 35, 36</td>
</tr>
</tbody>
</table>

**Note:** The SF-36 item 2 (change in health) and item 1 (over-all health rating) were scored as single items in general health perception domain.

Items in the same scale were then averaged together. Items that were left blank (missing data) were not included in statistical analysis when calculating the scale score. Hence, scale score represent the average for all items in the scale that the respondent answered (*Ware and Sherbourne, 1992; Hays et al., 1992*).

**4. DATA ANALYSIS:**

The collected data were tabulated and analyzed using SPSS version 16 software (Spss Inc, Chicago, ILL Company). Categorical data were presented as number and percentages while quantitative data were
expressed as mean and standard deviation. Chi square test ($X^2$), Fisher's exact test and Analysis Of Variance (F) test were used as tests of significance, significant ANOVA was followed by post hoc multiple comparisons using Bonferroni test to detect the significant pairs. Multiple linear regression analysis was used to detect the significant predictors of QOL scores among the studied sample. The accepted level of significance in this work was stated at 0.05 ($P < 0.05$ was considered significant).

- $P$ value $> 0.05$ insignificant
- $P < 0.05$ significant
- $P < 0.001$ highly significant

**Mean:**

Is the sum of the values in a set of data divided by the number of the values in the set. It is denoted by the sign $\bar{X}$ (called X bar).

$$\bar{X} = \frac{\sum X}{n}$$

*Where:* $X$ denotes any value of observation.  
$\sum$ the Greek capital letter sigma, means the sum of.  
$n$ The number of observations.

**Standard deviation (SD):**

It is the positive square root of the variance.

**Variance = $S^2$**

The sum of the squares of the deviation of each measurement in a series from the mean of the series, divided by the total number of the observation minus one. (The degree of freedom).
Subjects and Methods

\[ \sum \text{Squared deviation of the mean} \]

\[ S^2 = \frac{\sum (X - \bar{X})^2}{n - 1} \]

Chi square test

\[ \sum (O - E)^2 \]

\[ X^2 = \frac{\sum (O - E)^2}{E} \]

Where \( O \) is the observed value

\( E \) is the expected value

It compares between 2 or more categorical groups (tables 2x2 or more)

Fisher's exact test is used when you have two nominal variables.
Fisher's exact test is more accurate than the chi-squared test when the expected numbers are small.

ANOVA (F test) compares between more than 2 continuous variables expressed as mean ± SD, \((F)\) is the ratio between variation due to the studied variable to variation due to error. The more the value of \((F)\) the more significant is the result.
RESULTS

Table (1): Age and sex distribution of the studied group.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Age</th>
<th>Sex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean ±SD</td>
<td>20.7±1.9</td>
<td>Male 396, 51.4%</td>
</tr>
<tr>
<td>Range</td>
<td>17-28</td>
<td>Female 375, 48.6%</td>
</tr>
<tr>
<td>Total No.</td>
<td>= 771</td>
<td>% (100.0)</td>
</tr>
</tbody>
</table>

Table (1) shows that the mean age of studied group was 20.7±1.9 and ranging between 17 and 28 years. More than half of the students were males (51.4%).
Table (2): Socio-demographic characteristics of the studied group.

<table>
<thead>
<tr>
<th>Socio-demographic characteristics</th>
<th>No. = 771</th>
<th>% (100.0)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Residence</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>312</td>
<td>40.5</td>
</tr>
<tr>
<td>Semi urban</td>
<td>82</td>
<td>10.6</td>
</tr>
<tr>
<td>Urban</td>
<td>377</td>
<td>48.9</td>
</tr>
<tr>
<td><strong>Father's education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illiterate/read and write</td>
<td>50</td>
<td>6.5</td>
</tr>
<tr>
<td>Basic education</td>
<td>29</td>
<td>3.7</td>
</tr>
<tr>
<td>Secondary education</td>
<td>173</td>
<td>22.4</td>
</tr>
<tr>
<td>Intermediate institutes</td>
<td>149</td>
<td>19.3</td>
</tr>
<tr>
<td>University graduate</td>
<td>329</td>
<td>42.7</td>
</tr>
<tr>
<td>Postgraduate degree</td>
<td>41</td>
<td>5.3</td>
</tr>
<tr>
<td><strong>Mother's education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illiterate/read and write</td>
<td>74</td>
<td>9.6</td>
</tr>
<tr>
<td>Basic education</td>
<td>80</td>
<td>10.3</td>
</tr>
<tr>
<td>Secondary education</td>
<td>255</td>
<td>33.1</td>
</tr>
<tr>
<td>Intermediate institutes</td>
<td>119</td>
<td>15.4</td>
</tr>
<tr>
<td>University graduate</td>
<td>233</td>
<td>30.2</td>
</tr>
<tr>
<td>Postgraduate degree</td>
<td>10</td>
<td>1.3</td>
</tr>
<tr>
<td><strong>Father's occupation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not working</td>
<td>9</td>
<td>1.2</td>
</tr>
<tr>
<td>Unskilled manual worker</td>
<td>53</td>
<td>6.9</td>
</tr>
<tr>
<td>Skilled manual worker/farmer</td>
<td>70</td>
<td>9.1</td>
</tr>
<tr>
<td>Business</td>
<td>138</td>
<td>17.9</td>
</tr>
<tr>
<td>Semiprofessional/clerk</td>
<td>203</td>
<td>26.3</td>
</tr>
<tr>
<td>Professional</td>
<td>298</td>
<td>38.7</td>
</tr>
<tr>
<td><strong>Mother's occupation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>House wife</td>
<td>450</td>
<td>58.4</td>
</tr>
<tr>
<td>Working</td>
<td>321</td>
<td>41.6</td>
</tr>
<tr>
<td><strong>No. of dependent family members</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 5 members</td>
<td>343</td>
<td>44.5</td>
</tr>
<tr>
<td>≤ 5 members</td>
<td>428</td>
<td>55.5</td>
</tr>
<tr>
<td><strong>Social class</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>106</td>
<td>13.7</td>
</tr>
<tr>
<td>Middle</td>
<td>466</td>
<td>60.4</td>
</tr>
<tr>
<td>High</td>
<td>199</td>
<td>25.8</td>
</tr>
</tbody>
</table>

*→ There is no very low social class.

Table (2) shows that the highest percentage of the participants were from urban areas (48.9%), the fathers of the majority of the students were university graduated (42.7%), while more than one third 33.1% reported that their mothers were secondary educated.
As regards father's and mother's occupation, 38.7% were professionals and 58.4% were housewives respectively.

Concerning social class, most of the students were from the middle social class (60.4%). The number of dependent family members were less than five members in 55.5% of the study group.

Figure (2a): Sociodemographic characteristics of the studied group
Figure (2b): Sociodemographic characteristics of the studied group
Table (3): Frequency distribution of the studied group according to their academic data

<table>
<thead>
<tr>
<th>Academic data</th>
<th>No. = 771</th>
<th>% (100.0)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of college</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Practical</td>
<td>439</td>
<td>56.9</td>
</tr>
<tr>
<td>Theoretical</td>
<td>332</td>
<td>43.1</td>
</tr>
<tr>
<td><strong>Academic year</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st year</td>
<td>235</td>
<td>30.5</td>
</tr>
<tr>
<td>2nd year</td>
<td>161</td>
<td>20.9</td>
</tr>
<tr>
<td>3rd year</td>
<td>134</td>
<td>17.4</td>
</tr>
<tr>
<td>4th year</td>
<td>120</td>
<td>15.6</td>
</tr>
<tr>
<td>5th year</td>
<td>84</td>
<td>10.9</td>
</tr>
<tr>
<td>6th year</td>
<td>37</td>
<td>4.8</td>
</tr>
<tr>
<td><strong>Place of living during study</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>with family</td>
<td>512</td>
<td>66.4</td>
</tr>
<tr>
<td>Away from family*</td>
<td>259</td>
<td>33.5</td>
</tr>
</tbody>
</table>

*→ Student hostel, with friends, private flats.

**Table (3)** shows that the students from practical colleges represented 56.9% of the study group. Those in the 1st academic year accounted for 30.5% of the studied group. It is noticed that the majority of the students (66.4%) were living with their families.
Figure (3a): Frequency distribution of the studied group according to their type of college.

Figure (3b): Frequency distribution of the studied group according to their academic year.
Table (4): Frequency distribution of the studied group according to their smoking behavior.

<table>
<thead>
<tr>
<th>Smoking status</th>
<th>No.</th>
<th>% (100.0)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ever smoker</strong></td>
<td>337</td>
<td>43.7</td>
</tr>
<tr>
<td>1) Current smoker</td>
<td>304</td>
<td>39.4</td>
</tr>
<tr>
<td>2) Former - smoker</td>
<td>33</td>
<td>4.3</td>
</tr>
<tr>
<td><strong>Never smoker</strong></td>
<td>434</td>
<td>56.3</td>
</tr>
<tr>
<td>Total</td>
<td>771</td>
<td>100.0</td>
</tr>
</tbody>
</table>

* → Have smoked at least 100 cig (5 packs) in their lifetime.

Table (4) demonstrates that more than half (56.3%) of the studied group were never smokers and students who ever smoke accounted for 43.7% of the surveyed students; (39.4%) were current smokers and only 4.3% were former smokers.

Figure (4): Frequency distribution of the studied group according to their smoking behavior.
Table (5): Frequency distribution of the ever smokers according to their smoking behavior.

<table>
<thead>
<tr>
<th>Ever smokers</th>
<th>No. = 337</th>
<th>% (100.0)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Duration of smoking</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; one year</td>
<td>154</td>
<td>45.7</td>
</tr>
<tr>
<td>1-5 years</td>
<td>120</td>
<td>35.6</td>
</tr>
<tr>
<td>&gt; 5 years</td>
<td>63</td>
<td>18.7</td>
</tr>
<tr>
<td><strong>No. of cig/ day</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;10 cig/day</td>
<td>56</td>
<td>16.6</td>
</tr>
<tr>
<td>10-20 cig/day</td>
<td>138</td>
<td>40.9</td>
</tr>
<tr>
<td>&gt;20-30 cig/day</td>
<td>77</td>
<td>22.8</td>
</tr>
<tr>
<td>&gt; 30 cig/day</td>
<td>64</td>
<td>19.0</td>
</tr>
<tr>
<td>Missed data</td>
<td>2</td>
<td>0.6</td>
</tr>
<tr>
<td><strong>First cig, after getting up</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within 5 mins</td>
<td>63</td>
<td>18.7</td>
</tr>
<tr>
<td>6-30 mins</td>
<td>108</td>
<td>32.0</td>
</tr>
<tr>
<td>31-60 mins</td>
<td>63</td>
<td>18.7</td>
</tr>
<tr>
<td>After 60 mins</td>
<td>100</td>
<td>29.7</td>
</tr>
<tr>
<td>Missed data</td>
<td>3</td>
<td>0.9</td>
</tr>
<tr>
<td><strong>Place of smoking</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At home</td>
<td>27</td>
<td>8.0</td>
</tr>
<tr>
<td>In college</td>
<td>80</td>
<td>23.7</td>
</tr>
<tr>
<td>Public places</td>
<td>91</td>
<td>27.0</td>
</tr>
<tr>
<td>All of the above</td>
<td>131</td>
<td>38.9</td>
</tr>
<tr>
<td>Missed data</td>
<td>8</td>
<td>2.4</td>
</tr>
<tr>
<td><strong>Other forms of smoking</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>203</td>
<td>60.2</td>
</tr>
<tr>
<td>Yes*</td>
<td>129</td>
<td>38.3</td>
</tr>
<tr>
<td>Missed data</td>
<td>5</td>
<td>1.5</td>
</tr>
<tr>
<td><strong>Other drugs (alcohol, caffeine)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>203</td>
<td>60.2</td>
</tr>
<tr>
<td>Yes</td>
<td>129</td>
<td>38.3</td>
</tr>
<tr>
<td>Missed data</td>
<td>5</td>
<td>1.5</td>
</tr>
<tr>
<td><strong>Smoker father/mother</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No one</td>
<td>407</td>
<td>52.8</td>
</tr>
<tr>
<td>My father</td>
<td>327</td>
<td>42.4</td>
</tr>
<tr>
<td>My mother</td>
<td>5</td>
<td>0.6</td>
</tr>
<tr>
<td>Both</td>
<td>8</td>
<td>1.0</td>
</tr>
<tr>
<td>Missed data</td>
<td>24</td>
<td>3.1</td>
</tr>
</tbody>
</table>

* Other forms → waterpipe (shisha), cigar, pipe.

Table (5) shows that the proportion of the ever smoked students (45.7%) started less than one year ago. 40.9% of the smokers used to
smoke about 10 to 20 cigarettes daily and 38.3\% of smokers group smoke cigarettes and other forms.

Figure (5a): Frequency distribution of the ever smokers according to their smoking behavior.

Figure (5b): Frequency distribution of the ever smokers according to their smoking behavior.
Table (6): Frequency distribution of the ever smoked students according to motives for smoking.

<table>
<thead>
<tr>
<th>Motives for smoking</th>
<th>No. = 337</th>
<th>% (100.0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Help to relax</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To great extent</td>
<td>110</td>
<td>32.6</td>
</tr>
<tr>
<td>To some extent</td>
<td>162</td>
<td>48.1</td>
</tr>
<tr>
<td>No</td>
<td>59</td>
<td>17.5</td>
</tr>
<tr>
<td>Missed data</td>
<td>6</td>
<td>1.8</td>
</tr>
<tr>
<td>Help to spend work time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To great extent</td>
<td>139</td>
<td>41.2</td>
</tr>
<tr>
<td>To some extent</td>
<td>147</td>
<td>43.6</td>
</tr>
<tr>
<td>No</td>
<td>46</td>
<td>13.6</td>
</tr>
<tr>
<td>Missed data</td>
<td>5</td>
<td>1.5</td>
</tr>
<tr>
<td>Habit to avoid boring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To great extent</td>
<td>94</td>
<td>27.9</td>
</tr>
<tr>
<td>To some extent</td>
<td>144</td>
<td>42.7</td>
</tr>
<tr>
<td>No</td>
<td>94</td>
<td>27.9</td>
</tr>
<tr>
<td>Missed data</td>
<td>5</td>
<td>1.5</td>
</tr>
<tr>
<td>Help coping with stress</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To great extent</td>
<td>91</td>
<td>27.0</td>
</tr>
<tr>
<td>To some extent</td>
<td>167</td>
<td>49.6</td>
</tr>
<tr>
<td>No</td>
<td>73</td>
<td>21.7</td>
</tr>
<tr>
<td>Missed data</td>
<td>6</td>
<td>1.8</td>
</tr>
<tr>
<td>Enjoy with it</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To great extent</td>
<td>132</td>
<td>39.2</td>
</tr>
<tr>
<td>To some extent</td>
<td>104</td>
<td>30.9</td>
</tr>
<tr>
<td>No</td>
<td>95</td>
<td>28.2</td>
</tr>
<tr>
<td>Missed data</td>
<td>6</td>
<td>1.8</td>
</tr>
<tr>
<td>Something done with friends and siblings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To great extent</td>
<td>72</td>
<td>21.4</td>
</tr>
<tr>
<td>To some extent</td>
<td>145</td>
<td>43.0</td>
</tr>
<tr>
<td>No</td>
<td>113</td>
<td>33.5</td>
</tr>
<tr>
<td>Missed data</td>
<td>7</td>
<td>2.1</td>
</tr>
</tbody>
</table>

Table (6) describes that the percentages of the ever smokers thought that smoking help them to some extent to relax was (48.1%) and the majority of them 49.6% thought that smoking to some extent help them to cope with stress. It is noticed that 39.2% of smokers enjoyed smoking to great extent.
Results

Figure (6a): Frequency distribution of the ever smoked students according to motives for smoking.

<table>
<thead>
<tr>
<th>Motive</th>
<th>To great extent</th>
<th>To some extent</th>
<th>No</th>
<th>Missed data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Help to relax</td>
<td>32.6</td>
<td>48.1</td>
<td>1.8</td>
<td>1.5</td>
</tr>
<tr>
<td>Help to spend work time</td>
<td>41.2</td>
<td>43.6</td>
<td>13.6</td>
<td>1.5</td>
</tr>
<tr>
<td>Habit to avoid boring</td>
<td>27.9</td>
<td>27.9</td>
<td>27.9</td>
<td>1.5</td>
</tr>
</tbody>
</table>

Figure (6b): Frequency distribution of the ever smoked students according to motives for smoking.

<table>
<thead>
<tr>
<th>Motive</th>
<th>To great extent</th>
<th>To some extent</th>
<th>No</th>
<th>Missed data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Help coping with stress</td>
<td>27</td>
<td>21.7</td>
<td>1.8</td>
<td>1.8</td>
</tr>
<tr>
<td>Enjoy with it</td>
<td>39.2</td>
<td>30.9</td>
<td>28.2</td>
<td>21.4</td>
</tr>
<tr>
<td>Something done with friends and siblings</td>
<td>43</td>
<td>33.5</td>
<td>33.5</td>
<td>2.1</td>
</tr>
</tbody>
</table>
Table (7): Frequency distribution of the ever smoked students according to challenges for quitting.

<table>
<thead>
<tr>
<th>Challenges for quitting</th>
<th>No. = 337</th>
<th>% (100.0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Being very interested in smoking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To great extent</td>
<td>104</td>
<td>30.9</td>
</tr>
<tr>
<td>To some extent</td>
<td>133</td>
<td>39.5</td>
</tr>
<tr>
<td>No</td>
<td>89</td>
<td>26.4</td>
</tr>
<tr>
<td>Missed data</td>
<td>11</td>
<td>3.3</td>
</tr>
<tr>
<td>Insufficient well</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To great extent</td>
<td>105</td>
<td>31.2</td>
</tr>
<tr>
<td>To some extent</td>
<td>154</td>
<td>45.7</td>
</tr>
<tr>
<td>No</td>
<td>70</td>
<td>20.8</td>
</tr>
<tr>
<td>Missed data</td>
<td>8</td>
<td>2.4</td>
</tr>
<tr>
<td>Being very compressed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To great extent</td>
<td>101</td>
<td>30.0</td>
</tr>
<tr>
<td>To some extent</td>
<td>119</td>
<td>35.3</td>
</tr>
<tr>
<td>No</td>
<td>111</td>
<td>32.9</td>
</tr>
<tr>
<td>Missed data</td>
<td>6</td>
<td>1.8</td>
</tr>
<tr>
<td>Think being nicotine addict</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To great extent</td>
<td>83</td>
<td>24.6</td>
</tr>
<tr>
<td>To some extent</td>
<td>141</td>
<td>41.8</td>
</tr>
<tr>
<td>No</td>
<td>106</td>
<td>31.5</td>
</tr>
<tr>
<td>Missed data</td>
<td>7</td>
<td>2.1</td>
</tr>
<tr>
<td>Missing smoking with friends</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To great extent</td>
<td>115</td>
<td>34.1</td>
</tr>
<tr>
<td>To some extent</td>
<td>130</td>
<td>38.6</td>
</tr>
<tr>
<td>No</td>
<td>81</td>
<td>24.0</td>
</tr>
<tr>
<td>Missed data</td>
<td>10</td>
<td>3.0</td>
</tr>
<tr>
<td>Quitting may be bored</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To great extent</td>
<td>83</td>
<td>24.6</td>
</tr>
<tr>
<td>To some extent</td>
<td>144</td>
<td>42.7</td>
</tr>
<tr>
<td>No</td>
<td>102</td>
<td>30.3</td>
</tr>
<tr>
<td>Missed data</td>
<td>8</td>
<td>2.4</td>
</tr>
<tr>
<td>Wait break period at work for smoking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To great extent</td>
<td>81</td>
<td>24.0</td>
</tr>
<tr>
<td>To some extent</td>
<td>137</td>
<td>40.7</td>
</tr>
<tr>
<td>No</td>
<td>110</td>
<td>32.6</td>
</tr>
<tr>
<td>Missed data</td>
<td>9</td>
<td>2.7</td>
</tr>
</tbody>
</table>

Table (7) illustrates that more than one third of the smokers (39.5%) were very interested in smoking to some extent. The highest percentage of smokers (42.7%) described that quitting may be bored as important challenge for cessation to some extent.
Results

Figure (7a): Frequency distribution of the ever smoked students according to challenges for quitting.

Figure (7b): Frequency distribution of the ever smoked students according to challenges for quitting.
Table (8): Impact of smoking on the health of the studied smokers

<table>
<thead>
<tr>
<th>Impact of smoking on health</th>
<th>No. = 337</th>
<th>% (100.0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you think smoking is harmful for your health?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>27</td>
<td>8.0</td>
</tr>
<tr>
<td>I don't think so</td>
<td>67</td>
<td>19.9</td>
</tr>
<tr>
<td>May be</td>
<td>138</td>
<td>40.9</td>
</tr>
<tr>
<td>Absolutely yes</td>
<td>101</td>
<td>30.0</td>
</tr>
<tr>
<td>Missed data</td>
<td>4</td>
<td>1.2</td>
</tr>
<tr>
<td>Do you have diseases due to smoking?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>231</td>
<td>68.5</td>
</tr>
<tr>
<td>Yes</td>
<td>99</td>
<td>29.4</td>
</tr>
<tr>
<td>Missed data</td>
<td>7</td>
<td>2.1</td>
</tr>
</tbody>
</table>

Table (8) demonstrates that thirty percentage (30.0%) of the smokers were sure that smoking was harmful. The proportion of diseased smokers was 29.4%.

Figure (8): Impact of smoking on the health of the studied smokers
Table (9): Frequency distribution of the ever smoked students according to past thinking of quitting behavior.

<table>
<thead>
<tr>
<th>Quitting behavior</th>
<th>No.  = 337</th>
<th>% (100.0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did you think to quit before?</td>
<td>Yes</td>
<td>163</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>174</td>
</tr>
</tbody>
</table>

Table (9) describes that more than half of the ever smokers (51.6%) didn't thought to quit before.

Figure (9): Frequency distribution of the ever smoked students according to past thinking of quitting behavior.
Table (10): Frequency distribution of the ever smoked students according to quitting behavior.

<table>
<thead>
<tr>
<th>Causes of thinking to quit</th>
<th>No. (N=163)</th>
<th>% (100.0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative effects of smoking on health</td>
<td>64</td>
<td>39.3</td>
</tr>
<tr>
<td>Family advice</td>
<td>58</td>
<td>35.6</td>
</tr>
<tr>
<td>Friend advice</td>
<td>21</td>
<td>12.9</td>
</tr>
<tr>
<td>Awareness by media</td>
<td>20</td>
<td>12.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Did you use a method for quitting?</th>
<th>No. (N=163)</th>
<th>% (100.0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>62</td>
<td>38.0</td>
</tr>
<tr>
<td>Yes</td>
<td>101</td>
<td>62.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Outcome</th>
<th>No. (N=163)</th>
<th>% (100.0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Could not stop</td>
<td>64</td>
<td>39.3</td>
</tr>
<tr>
<td>Stopped and still</td>
<td>33</td>
<td>20.2</td>
</tr>
<tr>
<td>Stopped but returned</td>
<td>66</td>
<td>40.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stopped and still</th>
<th>No. (N=33)</th>
<th>% (100.0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The period since you have stopped</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 1 week</td>
<td>3</td>
<td>9.1</td>
</tr>
<tr>
<td>1 week to &lt; 1 month</td>
<td>4</td>
<td>12.1</td>
</tr>
<tr>
<td>1 to &lt; 3 months</td>
<td>7</td>
<td>21.2</td>
</tr>
<tr>
<td>3 to &lt; 6 months</td>
<td>1</td>
<td>3.0</td>
</tr>
<tr>
<td>6 to 12 months</td>
<td>9</td>
<td>27.3</td>
</tr>
<tr>
<td>&gt; 1 year</td>
<td>9</td>
<td>27.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stopped but returned</th>
<th>No. (N=66)</th>
<th>% (100.0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The longest period you stopped smoking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 1 week</td>
<td>12</td>
<td>18.2</td>
</tr>
<tr>
<td>1 week to &lt; 1 month</td>
<td>10</td>
<td>15.2</td>
</tr>
<tr>
<td>1 to &lt; 3 months</td>
<td>17</td>
<td>25.8</td>
</tr>
<tr>
<td>3 to &lt; 6 months</td>
<td>2</td>
<td>3.0</td>
</tr>
<tr>
<td>6 to &lt; 12 months</td>
<td>8</td>
<td>12.1</td>
</tr>
<tr>
<td>&gt; 1 year</td>
<td>15</td>
<td>22.7</td>
</tr>
<tr>
<td>Missed data</td>
<td>2</td>
<td>3.0</td>
</tr>
</tbody>
</table>

Table (10) describes that the proportion of the smokers thought to quit smoking due to its negative effects on their health was (39.3%). The majority of the smokers have stopped but returned to smoking (40.5%), while (33.0%) of them have stopped smoking and still.
Results

Figure (10a): Frequency distribution of the ever smoked students according to quitting behavior.

Figure (10b): Frequency distribution of the ever smoked students according to quitting behavior.
Table (11): Frequency distribution of the current smoker students according to the degree of Nicotine dependence.

<table>
<thead>
<tr>
<th>Smoking degree</th>
<th>No. = 304</th>
<th>% (100.0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light nicotine dependence</td>
<td>116</td>
<td>38.2</td>
</tr>
<tr>
<td>Moderate nicotine dependence</td>
<td>135</td>
<td>44.4</td>
</tr>
<tr>
<td>Heavy nicotine dependence</td>
<td>48</td>
<td>15.8</td>
</tr>
<tr>
<td>Missed data*</td>
<td>5</td>
<td>1.6</td>
</tr>
</tbody>
</table>

*5 students lacked the data for classification

Table (11) shows that the highest percentage of the current smokers were moderate Nicotine dependent (44.4%), 38.2% were light and 15.8% were heavy Nicotine dependent.

Figure (11): Frequency distribution of the current smoker students according to the degree of Nicotine dependence.
Table (12): The relationship between smoking habit and some sociodemographic characteristics among the studied students.

<table>
<thead>
<tr>
<th>Demographic characteristics</th>
<th>Current smoker (N=304)</th>
<th>Former-smoker (N=33)</th>
<th>Never smoker (N=434)</th>
<th>Test of sig.</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>*21.1 2.0</td>
<td>20.3 1.5</td>
<td>20.4 1.8</td>
<td>F =8.32</td>
<td>&lt;0.001 (HS)</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td>X²/Fisher</td>
<td>P</td>
</tr>
<tr>
<td>Male (N=396)</td>
<td>277 69.9</td>
<td>33 8.3</td>
<td>86 21.7</td>
<td>X² = 396.5</td>
<td>&lt;0.001 (HS)</td>
</tr>
<tr>
<td>Female (N=375)</td>
<td>27 7.2</td>
<td>0 0.0</td>
<td>348 92.8</td>
<td>FET = 20.4</td>
<td>&lt;0.001 (HS)</td>
</tr>
<tr>
<td>Residence</td>
<td></td>
<td></td>
<td></td>
<td>FET = 16.3</td>
<td>0.008 (S)</td>
</tr>
<tr>
<td>Rural (N=312)</td>
<td>100 32.1</td>
<td>16 5.1</td>
<td>196 62.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semi-urban (N=82)</td>
<td>25 30.5</td>
<td>3 3.7</td>
<td>54 65.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban (N=377)</td>
<td>179 47.5</td>
<td>14 3.7</td>
<td>184 48.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social score</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High (N=199)</td>
<td>71 35.7</td>
<td>2 1.0</td>
<td>126 63.3</td>
<td>FET = 16.3</td>
<td>0.008 (S)</td>
</tr>
<tr>
<td>Middle (N=466)</td>
<td>195 41.8</td>
<td>23 4.9</td>
<td>248 53.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low (N=106)</td>
<td>38 35.8</td>
<td>8 7.5</td>
<td>60 56.6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* → significant in comparison with never smoker.

Table (12) shows that there were significant associations between age, sex, residence (P<0.001) and social score (P = 0.008) and the prevalence of smoking. Current smokers were older than the never smokers (21.05±1.99 vs. 20.4±1.83). Males, those from urban areas and those of middle social class were current smokers at higher percentage than former and never smokers.
Figure (12a): The relationship between smoking habit and age among the studied students.

Figure (12b): The relationship between smoking habit and sex among the studied students.
Figure (12c): The relationship between smoking habit and residence among the studied students.

Figure (12d): The relationship between smoking habit and social class among the studied students.
Table (13): The relationship between smoking habit and the academic data among the studied students.

<table>
<thead>
<tr>
<th>Academic data</th>
<th>Prevalence of smoking</th>
<th>Current Smoker (N=304)</th>
<th>Former-smoker (N=33)</th>
<th>Never smoker (N=434)</th>
<th>X²</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
<td>No.</td>
</tr>
<tr>
<td><strong>Academic year</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Juniors (N=530)</td>
<td></td>
<td>186</td>
<td>35.1</td>
<td>25</td>
<td>4.7</td>
<td>319</td>
</tr>
<tr>
<td>Seniors (N=241)</td>
<td></td>
<td>118</td>
<td>49.0</td>
<td>8</td>
<td>3.3</td>
<td>115</td>
</tr>
<tr>
<td><strong>Place of living during study</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>With family (N=512)</td>
<td></td>
<td>170</td>
<td>33.2</td>
<td>17</td>
<td>3.3</td>
<td>325</td>
</tr>
<tr>
<td>Away from family</td>
<td></td>
<td>134</td>
<td>51.7</td>
<td>16</td>
<td>6.2</td>
<td>109</td>
</tr>
<tr>
<td>(N=259)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Type of college</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Practical (N=439)</td>
<td></td>
<td>176</td>
<td>40.1</td>
<td>13</td>
<td>3.0</td>
<td>250</td>
</tr>
<tr>
<td>Theoretical (N=332)</td>
<td></td>
<td>128</td>
<td>38.6</td>
<td>20</td>
<td>6.0</td>
<td>184</td>
</tr>
</tbody>
</table>

Table (13) shows that there was a significant association between the academic year (P = 0.001) and the place of living and the prevalence of smoking (P<0.001). Current smokers were seniors at higher percent (49.0%) than former and never smokers (3.3% and 47.7%). Also, students living away from their families were smokers at higher percent (51.7%) than former and never smokers (6.2% and 42.1%).
Results

Figure (13a): The relationship between smoking habit and the academic year among the studied students.

Figure (13b): The relationship between smoking habit and the place of living during study among the studied students.
Table (14): Nicotine dependence among the current smokers group in relation to their sociodemographic characteristics.

<table>
<thead>
<tr>
<th>Demographic characteristics</th>
<th>Nicotine dependence</th>
<th>Light Nicotine dependence (N=116)</th>
<th>Moderate Nicotine dependence (N=135)</th>
<th>Heavy Nicotine dependence (N=48)</th>
<th>Test of sig.</th>
<th>$P$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>Mean ±SD</td>
<td>Mean ±SD</td>
<td>Mean ±SD</td>
<td>Mean ±SD</td>
<td>$F=0.27$</td>
<td>0.76</td>
</tr>
<tr>
<td>Male (N=272)</td>
<td>21.0 ±1.8</td>
<td>21.1 ±2.0</td>
<td>21.2 ±2.4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female (N=27)</td>
<td>17 ±63.0</td>
<td>10 ±37.0</td>
<td>0 ±0.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>No. %</td>
<td>No. %</td>
<td>No. %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semiurban (N=25)</td>
<td>9 ±36.0</td>
<td>12 ±48.0</td>
<td>4 ±16.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural (N=96)</td>
<td>37 ±38.5</td>
<td>39 ±40.6</td>
<td>20 ±20.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban (N=178)</td>
<td>70 ±39.3</td>
<td>84 ±47.2</td>
<td>24 ±13.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social score</td>
<td>High (N=68)</td>
<td>22 ±32.4</td>
<td>31 ±45.6</td>
<td>15 ±22.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middle (N=194)</td>
<td>80 ±41.2</td>
<td>85 ±43.8</td>
<td>29 ±14.9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low (N=37)</td>
<td>14 ±37.8</td>
<td>19 ±51.4</td>
<td>4 ±10.8</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table (14) demonstrates that there was a significant association between sex and Nicotine dependence among smokers group ($P = 0.005$). Sixty three percent of females were light smokers compared with 36.4% of males. Male smoker students were moderate and heavy smokers, at higher percentages (46.0% and 17.6%) than females (37.0% and 0.0%), where none of the females were heavy smokers.
Results

Figure (14): The relationship between nicotine dependence and sex among the current smokers group.
Table (15): Nicotine dependence among the current smokers group in relation to their academic data.

Table (15) shows that there was a significant association between the type of college and Nicotine dependence among smokers students (P = 0.041), where moderate and heavy smokers in practical faculties at higher percent (47.7% and 19.2% respectively) than students of theoretical faculties (41.7% and 11.8%). On the other hand light smokers were in theoretical faculties at higher percent (46.5%) compared with 33.1% of the students of practical faculties.
Figure (15): The relationship between nicotine dependence and type of college among the studied current smokers.
Table (16): QOL scores according to the smoking status among the studied students

<table>
<thead>
<tr>
<th>Smoking status</th>
<th>QOL domain</th>
<th>Current smoker (N=304)</th>
<th>Former smoker (N=33)</th>
<th>Never smoker (N=434)</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean ± SD (N)</td>
<td>Mean ± SD (N)</td>
<td>Mean ± SD (N)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General health perception</td>
<td>*60.1±16.6 (N=302)</td>
<td>63.6±17.7 (N=33)</td>
<td>66.8±16.1 (N=412)</td>
<td>14.52</td>
<td>&lt;0.001 (HS)</td>
<td></td>
</tr>
<tr>
<td>Physical functioning</td>
<td>*63.3±20.8 (N=301)</td>
<td>*63.1±21.3 (N=33)</td>
<td>78.1±20.6 (N=417)</td>
<td>47.28</td>
<td>&lt;0.001 (HS)</td>
<td></td>
</tr>
<tr>
<td>Role limitation physical</td>
<td>49.7±29.9 (N=303)</td>
<td>47.9±28.8 (N=33)</td>
<td>51.9±36.3 (N=414)</td>
<td>0.54</td>
<td>0.58</td>
<td></td>
</tr>
<tr>
<td>Role emotional limitation</td>
<td>36.2±31.6 (N=303)</td>
<td>34.4±34.2 (N=33)</td>
<td>37.1±37.4 (N=418)</td>
<td>0.11</td>
<td>0.89</td>
<td></td>
</tr>
<tr>
<td>Social functioning</td>
<td>†49.7±16.8 (N=298)</td>
<td>*40.4±16.0 (N=33)</td>
<td>56.8±17.7 (N=419)</td>
<td>24.57</td>
<td>&lt;0.001 (HS)</td>
<td></td>
</tr>
<tr>
<td>Bodily pain</td>
<td>*47.9±20.6 (N=299)</td>
<td>*43.9±18.8 (N=33)</td>
<td>55.1±24.9 (N=410)</td>
<td>10.29</td>
<td>&lt;0.001 (HS)</td>
<td></td>
</tr>
<tr>
<td>Energy/Vitality</td>
<td>48.7±19.0 (N=304)</td>
<td>47.1±17.5 (N=33)</td>
<td>49.5±17.4 (N=422)</td>
<td>0.38</td>
<td>0.68</td>
<td></td>
</tr>
<tr>
<td>Mental health</td>
<td>*41.8±14.5 (N=304)</td>
<td>42.1±16.0 (N=32)</td>
<td>47.5±15.3 (N=431)</td>
<td>13.35</td>
<td>&lt;0.001 (HS)</td>
<td></td>
</tr>
</tbody>
</table>

* → significant in comparison with never smokers
† → significant in comparison with former smokers

Table (16) illustrates that there were statistically significant association (P<0.001) between smoking status and all QOL domains except the energy/vitality, role limitation physical and role emotional limitation domains (P>0.05). Current smokers had lower means of QOL scores in comparison to the never smokers in general health perception, physical...
functioning, social functioning, bodily pain and mental health scales. Their score was lower than that of the former smokers regarding the social functioning score only (49.7±16.7 and 56.8±17.7 respectively).

Regarding former smokers, they had statistically significant lower mean scores than the never smokers in the dimensions of physical functioning, social functioning and bodily pain (P<0.001).

![Figure (16a): QOL scores according to the smoking status among the studied students.](image)
Figure (16b): QOL scores according to the smoking status among the studied students.
Table (17): QOL scores according to the degree of Nicotine dependence among the studied current smokers.

<table>
<thead>
<tr>
<th>Smoking status</th>
<th>QOL domain</th>
<th>Light Nicotine dependence (N=116)</th>
<th>Moderate Nicotine dependence (N=135)</th>
<th>Heavy Nicotine dependence (N=48)</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean ± SD (N)</td>
<td>Mean ± SD (N)</td>
<td>Mean ± SD (N)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General health perception</td>
<td>61.3±15.8 (N=116)</td>
<td>60.4±15.8 (N=133)</td>
<td>55.9±20.3 (N=48)</td>
<td>1.86</td>
<td>0.15</td>
<td></td>
</tr>
<tr>
<td>Physical functioning</td>
<td>64.8±22.5 (N=116)</td>
<td>62.3±21.1 (N=133)</td>
<td>61.4±17.1 (N=47)</td>
<td>0.62</td>
<td>0.54</td>
<td></td>
</tr>
<tr>
<td>Role limitation physical</td>
<td>51.9±29.1 (N=116)</td>
<td>48.4±27.5 (N=134)</td>
<td>48.5±36.2 (N=48)</td>
<td>0.49</td>
<td>0.61</td>
<td></td>
</tr>
<tr>
<td>Role emotional limitation</td>
<td>38.1±30.3 (N=116)</td>
<td>37.9±31.3 (N=134)</td>
<td>30.3±35.0 (N=48)</td>
<td>1.2</td>
<td>0.3</td>
<td></td>
</tr>
<tr>
<td>Social functioning</td>
<td>50.6±16.8 (N=116)</td>
<td>50.0±15.9 (N=131)</td>
<td>45.5±18.8 (N=46)</td>
<td>1.59</td>
<td>0.2</td>
<td></td>
</tr>
<tr>
<td>Bodily pain</td>
<td>49.1±21.0 (N=115)</td>
<td>48.3±18.9 (N=132)</td>
<td>44.7±23.7 (N=47)</td>
<td>0.78</td>
<td>0.46</td>
<td></td>
</tr>
<tr>
<td>Energy/Vitality</td>
<td>50.3±18.0 (N=116)</td>
<td>49.9±19.1 (N=135)</td>
<td>43.1±19.4 (N=48)</td>
<td>2.79</td>
<td>0.06</td>
<td></td>
</tr>
<tr>
<td>Mental health</td>
<td>*42.8±14.3 (N=116)</td>
<td>42.5±14.1 (N=135)</td>
<td>37.0±14.7 (N=48)</td>
<td>3.16</td>
<td>0.04</td>
<td></td>
</tr>
</tbody>
</table>

*→ significant in comparison with heavy smokers

Table (17) shows that there was a significant difference (P = 0.04) in the mean scores for mental health scale among smokers. Light Nicotine dependent smokers had higher scores compared to heavy Nicotine dependent smokers (42.8 ± 14.34 vs. 37.03 ± 14.67).
Results

Figure (17a): QOL scores according to the degree of nicotine dependence among the studied current smokers.

Figure (17b): QOL scores according to the degree of nicotine dependence among the studied current smokers.
Results

Table (18): Stepwise multiple linear regression analysis for the predictors of QOL scores for general health perception and role emotional limitation domains *

<table>
<thead>
<tr>
<th>QOL domain</th>
<th>General health perception score</th>
<th>F &amp;P of the model</th>
<th>Adjusted R²</th>
<th>beta</th>
<th>t</th>
<th>P</th>
<th>95% CI of B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoking status (never smokers )</td>
<td></td>
<td>F(1,333)=6.7</td>
<td>0.017</td>
<td>0.141</td>
<td>2.59</td>
<td>0.01</td>
<td>0.26-1.9</td>
</tr>
<tr>
<td></td>
<td>P=0.01</td>
<td>(S)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Role emotional limitation score</td>
<td></td>
<td>F(1,334)=5.86</td>
<td>0.014</td>
<td>-0.131</td>
<td>2.42</td>
<td>0.016</td>
<td>-0.83- (-0.08)</td>
</tr>
<tr>
<td>Duration of smoking</td>
<td></td>
<td>P=0.016</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Role physical limitation has insignificant model.

Age, gender, residence, the place of living during study, social score, academic year, smoking status, the duration of smoking and the degree of nicotine dependence were entered the multiple linear regression model, stepwise method was used, to detect the significant predictors of QOL scores for different domains.

Table (18) illustrates that smoking status (never smokers) was a significant predictor for general health perception scale score (P = 0.01), where this score tended to increase by 0.14 unit among students who were never smokers compared to current smokers (coefficient; 95% CI, 0.14; 0.26 to 1.9).

Concerning role emotional limitation score can be significantly (P = 0.016) predicted by duration of smoking where it tended to be lower by 0.13 unit as the duration of smoking increased (-0.13; -0.83 to -0.08).
Table (19): Stepwise multiple linear regression analysis for the predictors of QOL scores for physical functioning domain.

<table>
<thead>
<tr>
<th>Predictors</th>
<th>QOL domain</th>
<th>Physical functioning score</th>
<th>F &amp; P of the model</th>
<th>Adjusted R²</th>
<th>beta</th>
<th>t</th>
<th>P</th>
<th>95% CI of B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residence (rural and semi urban)</td>
<td></td>
<td></td>
<td>F(2,331)=10.8</td>
<td>0.056</td>
<td>-0.170</td>
<td>3.19</td>
<td>0.002</td>
<td>-2.5 to -0.58</td>
</tr>
<tr>
<td>Place of living during the study (away from family)</td>
<td></td>
<td></td>
<td>P&lt;0.001 (HS)</td>
<td></td>
<td>-0.166</td>
<td>3.11</td>
<td>0.002</td>
<td>-3.1 to -0.71</td>
</tr>
</tbody>
</table>

Table (19) shows that the physical functioning score can be significantly (P < 0.001) predicted by residence and place of living during study where it decreased by 0.17 units among students who were from rural or semi urban areas compared to those who were from urban areas (- 0.17; - 2.5 to - 0.58). This score tended to decrease by 0.16 units among students living away from their families compared to those living with their families (-0.16; -3.1 to - 0.71).
Table (20) Stepwise multiple linear regression analysis for the predictors of QOL scores for social functioning and bodily pain domains

| Table (20) demonstrates that the smoking status (never smokers) (P = 0.004) and the duration of smoking (P = 0.022) were significant predictors for social functioning (P = 0.001), where this score tended to increase by 0.16 unit among students who were never smokers compared to current smokers (0.16; 0.15 to 1.8). An increase in the duration of smoking was associated with a decrease of 0.12 unit in this score (- 0.12; - 0.28 to - 0.02).

The score of bodily pain can be significantly predicted (P <0.001) by the socioeconomic score (P = 0.006) and the duration of smoking (P = 0.01). Where it increased by 0.15 units among students of middle social class compared to those of high and low social classes (0.15; 0.05 to 0.79). While an increase in the duration of smoking was associated by a decrease of 0.14 unit in this score (- 0.14; - 0.37 to - 0.05). |
Table (21) Stepwise multiple linear regression analysis for the predictors of QOL scores for energy/vitality and mental health domains

<table>
<thead>
<tr>
<th>Predictors</th>
<th>QOL domain</th>
<th>Energy/Vitality score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic year</td>
<td>F &amp; P of the model</td>
<td>F = (2,334)=8.4</td>
</tr>
<tr>
<td></td>
<td>Adjusted R²</td>
<td>0.042</td>
</tr>
<tr>
<td></td>
<td>beta</td>
<td>0.165</td>
</tr>
<tr>
<td></td>
<td>t</td>
<td>3.08</td>
</tr>
<tr>
<td></td>
<td>P</td>
<td>0.002 (S)</td>
</tr>
<tr>
<td></td>
<td>95% CI of B</td>
<td>0.08-0.37</td>
</tr>
<tr>
<td>Place of living during the study</td>
<td>F &amp; P of the model</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td>(with family)</td>
<td>(HS)</td>
<td>0.138</td>
</tr>
<tr>
<td></td>
<td>Adjusted R²</td>
<td>0.138</td>
</tr>
<tr>
<td></td>
<td>beta</td>
<td>0.138</td>
</tr>
<tr>
<td></td>
<td>t</td>
<td>2.58</td>
</tr>
<tr>
<td></td>
<td>P</td>
<td>0.01 (S)</td>
</tr>
<tr>
<td></td>
<td>95% CI of B</td>
<td>0.14-1.03</td>
</tr>
</tbody>
</table>

| Mental health score                     | F & P of the model              | F = (1,297)=3.99      |
|                                         | P<0.046 (S)                     | 0.01                  |
|                                         | Adjusted R²                      | -0.115                |
|                                         | beta                            | 1.99                  |
|                                         | t                               | 0.046 (S)             |
|                                         | 95% CI of B                     | -4.66-(-0.037)        |

Table (21) shows that the academic year of students (P = 0.002) and the place of living during the study (P =0.01) were significant predictors for energy/vitality score. This score was higher among students in later academic years than the earlier years (0.16; 0.08 to 0.37). Also, this score was higher among students who were living with family compared to those living away from family (0.14; 0.14 to1.0).

The mental health score was associated with the degree of Nicotine dependence (P =0.05). This score tended to decrease as the level of Nicotine dependence increased (- 0.11; - 4.66 to - 0.04).
DISCUSSION

Although smoking is not a new problem, it has become a source of increasing concern due to the increase in realization of its size, horrible morbidity and mortality. Since the development of the Framework Convention for Tobacco Control (FCTC) in 2005, all countries all over the world try to activate and initiate efforts to face smoking, especially among youth (CDC, 2009a; WHO, 2010a).

Smoking is a great national disaster in Egypt as it impacts health, economy and social aspects of the community. It has become worse and worse since 1990s as it has become more and more prevalent among youth and teenagers (Egyptian Smoking Prevention Research Institute, 2007).

The current study was conducted upon Benha University students, as it's believed that cigarette smoking prevalence among adolescents is high because of the desire of experimentation, peers' effect or certain mental health problems.

The response rate to the questionnaire was (95.1%; 771 out of 810 students) which indicated a high degree of willingness by the students to participate in the study.

- Smoking prevalence

  - Studies in Egypt

  This work revealed that the prevalence of smoking, students who ever smoke accounted for 43.7% of the surveyed students including current smokers (39.4%) and former smokers (4.3%), while never smokers (56.3%) (Table 4). These percentages are higher than El
**Discussion**

**sharkawy, 2011** who conducted a cross-sectional study upon 1072 Zagazig university students to assess family-related and personal risk factors for smoking. She declared that the ever smoking prevalence was (22.1%) and 20.2% were current smokers. Also, the revealed prevalence in the current study is higher than **Abdelwahid et al., 2012** who carried out a study on the pattern of smoking among 1450 undergraduates of Suez Canal University and found the prevalence of smoking (17.7%). The above mentioned difference in prevalence of smoking among university students may be attributed to increased exposure of Egyptian youth to stressful political and economic conditions recently.

Among younger age Egyptian adolescents, the prevalence of the current work is higher than the result of a cross sectional study conducted by **Gadalla et al. (2003)**, on 635 secondary school students in Qalyubiyah Governorate and showed that the overall prevalence of cigarette ever-smokers was 29% and current cigarette smoking prevalence was found to be 8%. Also, the percentage of smokers among male secondary school students was 29.3% in Alexandria city (**Conrad et al., 1992**). Furthermore, the prevalence of the current study was also higher than the previously reported figure through school-based survey among 2,898 Egyptian adolescents aged 13-15 in Global Youth Tobacco Survey, 2005 (13.6% for ever smoking with among males prevalence of 19.6% while current smokers were 4.1%) (**CDC, 2009a**). The possible explanations are different age group where on entrance the universities there is more exposure to peers' pressure, feeling more freedom and lessen family pressure.
- Studies in Arab countries and worldwide

The prevalence of smoking in the present study is in accordance with a study that carried out among males > 15 years in Libyan Arab Jamahiriya which revealed that the prevalence of smoking was 47.6% \textit{(WHO, 2009d)}. This may be due to that the study in Libya was conducted among males only who showed higher prevalence of smoking. Also, similar findings were obtained by \textit{Khader and Alsadi, 2008}, who conducted a study upon 712 Yarmouk University students, Jordan. They revealed that the proportion of current smokers was 35%.

However, the prevalence of smoking revealed by the present study is higher than the results of other studies; a study found that the prevalence of cigarette smoking among 304 university students at AL-Jabal AL-Gharbi University, Libya was 28.3% \textit{(Abou-Faddan and Sabra, 2012)}. Also, \textit{Mandil, (2007)} who conducted a cross-sectional study upon 1057 students with age range (from 17 to 37 years) at University of Sharjah, United Arab Emirates (UAE) to assess the prevalence, patterns and risk factors of tobacco consumption. He declared that the smoking prevalence was (15.1%) that is less than the reported prevalence by this study.

In contrast, the reported prevalence in the current study was greater than the result of a study which was carried out in Lebanon among health professional students current cigarette use ranged from 14.8% for pharmacy students, to 26.9% for nursing students, and 27.4% for medical students, \textit{(Saade et al., 2009)}. In Saudi Arabia, prevalence of tobacco smoking among 215 male medical colleges in Riyadh was 24% \textit{(Ali et al., 2010)}. The explanation of the difference in
the prevalence of smoking between the current study and the other study may be due to greater awareness to the harmful effects of smoking on health by medical students and health professionals.

Although, lower prevalence of smoking than this study was obtained by Halperin et al., (2010) who conducted a health screening survey upon 2,091 university students, in USA. They found smoking prevalence was (25%). The explanation of the lower prevalence of smoking in developed than developing countries can be due to higher socioeconomic level with increased awareness with hazardous consequences of smoking and improved health services.

- **Relationship between smoking and potential risk factors.**

The current study showed that there was a significant association between age and smoking (P<0.001). Current smokers were older than the never smokers (21.05± 1.99 vs. 20.4± 1.83) as shown in Table (12). This finding is consistent with Abd El wahirid et al., 2012 who stated that current smokers were significantly older than non-smokers as the risk of smoking was significantly doubled in older student (≥ 20 years) compared to younger students (< 20 years). Also, this result agrees with Eid et al., 2015, who conducted a cross-sectional study among Helwan University students to assess the magnitude of smoking problem among university students and its related factors. They declared that the mean age of current smokers among the students was significantly higher than mean age of non-smokers (20.89± 2.12 year versus 20.11 ± 1.57 year; P =0.005). Older teenagers can be under a lot of pressure, and many issues can contribute to stress, including academic expectations and employment, some of the ways teenagers respond to stressful situations is through smoking (Maughan, 2013).
In this study, male students were current smokers at higher percentage (69.9%) compared to females (7.2%) as shown in Table 12. These results were in accordance with the finding obtained by El-Zanaty and Way 2009 who carried out a study among women and men aged 15–59 years, in Egypt. They declared that 0.7% of women currently used tobacco compared with 43.9% of men. Also, similar findings were obtained by Eid et al., 2015, who found that the prevalence of current smokers among males was significantly higher than females (28.5% versus 0.9%; P < 0.001). This may be due to cultural factors in many societies, such that smoking may be viewed as an acceptable male social behavior, while being considered a cultural taboo for females with underestimation of the true female prevalence, since many young females may be reluctant to admit to smoking (Hassan, 2003; Islam and Johnson, 2003).

Moreover, similar results were obtained by Nassar, (2003) who carried out a study upon 559 Cairo University students. He stated that about 51% of males and 12% of females had ever smoked, and 22% of males and 2% of females were currently smokers.

Also, these findings are in accordance with two studies that were carried out in Syria, where the first research revealed that the crude prevalence of current smoking among adults was 48% for males and 9% for females (Moore and Tsuda, 2002). The other study reported that the prevalence of current smoking among high school adolescents was 16% for boys and 7% for girls, respectively (Maziak, 2002).
Urban residence was significantly associated with smoking in the current study (Table 12). This result is supported by the result of a study that was conducted on 1382 male students of King Faisal University, Saudi Arabia. Logistic regression model for current smoking against possible correlates revealed that Urban residence was a significant risk factor \((P = .004)\) (Al-Mohamed and Amin, 2010). Students living in urban areas may feel more freedom more liable effect of modernization and imitation of peers.

The result of this study showed that the students of middle social class were current smokers at higher percentage than former and never smokers (Table 12). This finding coincides with the result obtained by Robinson and Lader, 2008, who conducted the General Lifestyle Survey (GLF) in England upon 16,407 adults aged 16 and over and revealed that there was a stark gradient in smoking by SES with those from lower grades most likely to smoke.

Also, similar finding was obtained by Amos et al., (2009) who carried out a smoking toolkit study, In England. They found that smoking prevalence among 16-24 years old increased as social grade decreased, with those in the lowest social grade having 4.5 times the odds of being a smoker than those in the highest social grade. This difference may be due to different social classes between countries, where middle class is more prevalent in Egypt which subjected to more stress than high class. In the same time they have the ability to buy cigarettes compared to low social class.

Regarding the study level, there was a significant association between academic year and smoking prevalence \((P<0.001)\). Current smokers were seniors at higher percent \((49.0\%)\) than former and never
smokers (3.3% and 47.7%) (Table 13). These findings are supported by a Turkish study that was conducted on 3,659 students attending six universities in Ankara and revealed that 40.2% of the last year students smoke regularly and this rate is 10.2% higher than that of the first year students. This difference was statistically significant (P= 0.001) (Erdogan and Erdogan, 2009). Possible explanation is senior students may be exposed to more stress of passing exams, unemployment or affected by unstable political and economic conditions of the country.

However, these results disagree with Alexopoulos et al., (2010), who carried out a cross-sectional study at Patras University on 1205 medical and non-medical students, in Greece and reported that seniority (4th year and higher compared with the first two study years) was associated with a decreased possibility of smoking (OR = 0.53, 95% CI; 0.32–0.88).

In Palestine, a cross-sectional study that was carried out on 960 university students, An-Najah National University and reported that the proportion of smokers was nearly equal among senior and junior students (34.9% vs 34.3%). However, the study level was insignificantly associated with smoking (Musmar, 2012).

In the current study, smoking was significantly associated with the place of living. Students living away from their families were smokers at higher percent (51.7%) than former and never smokers (6.2% and 42.1%) as shown in Table 13. These results are consistent with Abd El Rahim (2005) who conducted a study on Health Risk Behaviors among students of private universities in Egypt and stated that the percentage of smoking was significantly higher among students living away from their families compared to those living with their families.
Also, these findings coincide with a cross-sectional study which included a representative sample of 1072 Egyptian University students and revealed that the percentage of students living away from their family among smokers was (16.9 %) compared to (2.8%) among non-smokers with high statistical significance and increased risk of smoking to 7 times (OR= 7.17, 95% CI :4.07-12.69) (El-Sharkawy, 2011). This may be attributed to the lack of family supervision.

In contrast, the revealed results of the present study disagree with the results obtained by Ulus et al., (2012) who conducted a study upon 373 students in İstanbul University School of Physical Education and Sports. They declared that the prevalence of smoking was significantly associated with the place of residence with smokers were more likely to be living with family (87.2%). Parent-child relationship factors—such as limited or poor quality familial attachments; low levels of parental supervision and strictness; inadequate parental monitoring; and lack of parental affection, concern, and involvement—have also been related to smoking (Biglan et al., 1995).

Previous studies revealed that smokers were more likely to belong to theoretical faculties than practical faculties; about two times risk (Abdel Hamid, 2000; Mandil, 2007). However, there was no significant association between smoking and the type of college in the present study. Students studying in practical faculties may be exposed to more stress of passing exams and unemployment.

Regarding smoking intensity, this study showed that the duration of smoking was about 1-5 years in 35.6% of smokers and 40.9% of the smokers used to smoke about 10 to 20 cigarettes daily as shown in Table 5. These results are consistent with the results of other studies, in Egypt.
A study that was carried out in 2001 among 559 Cairo University students found that about 50.9% of male students had smoked for 5 years and 11.9% of females had smoked for 4 years and among current smokers; 74% of males on average smoked 14 cigarettes per day and 40% of females smoked 6 cigarettes per day on average (Nassar, 2003). Also, these findings agree with Sabra (2007), who carried out a study on a sample of 220 PHC personnel in urban family medicine centers in Alexandria, Egypt; reported that 10.1% of smokers had smoked for less than 5 years while 51.5% of study group had smoked 10-20 cigarettes per day.

Moreover, these findings come in accordance with WHO (2009c), the target population included all men and women aged 15 years and above, a total sample of 23,760 households, overall, 81.5% of current daily cigarette smokers consumed between 16 and 20 cigarettes per day; on average, men who smoked daily, smoked 19.4 cigarettes per day.

However, the number of cigarettes smoked per day by highest percentage of smokers reported by the present study was higher than that in Youth Risk Behavior Surveillance - United States, 2011 (YRBSSS) in which 7.8% of students had smoked more than 10 cigarettes per day on the days they smoked during the 30 days before the survey (CDC, 2012). One possible explanation for this finding was increased awareness to hazards of smoking and legislations against smoking in public places.

Concerning parental smoking, adolescents observe the smoking behavior of their parents, consider it to be normal, and initiate the smoking behavior (White et al., 2003). Adolescents may also see smoking as an adult activity, and they may initiate this behavior to indicate their maturity into adulthood (Milton et al., 2008).
This study revealed that (43.0%) of smokers reported that their parents were smokers (Table 5). This finding is supported by Gilman et al., (2009) who conducted a study of the influence of parental smoking histories on adolescent smoking initiation. The results showed that adolescents who had parents who were regular smokers had a higher likelihood of initiating smoking (OR=2.81, 95% CI; 1.78-4.41) as compared to adolescents whose parents had never smoked.

As for whether smoking facilitated or encouraged substance abuse, it was suggested that cigarette smoking was strongly associated with the use of other substances (Benjamin et al., 2012)

In the current study, 38.3% of smokers reported taking other drugs e.g. alcohol as shown in Table 5. This finding agrees with other studies; a quasi-experimental study that was conducted on 880 students hostels in Cairo University (ranging from 17 to 23 years); about 24.8% of ever smoker students reported alcohol intake that was significantly different from never smokers (P <0.001) (Elshair and Shafik, 2012)

Also, similar result was obtained by Kutlu and Marakoğlu (2005) who carried out a study on ex-smokers, in Turkey. They reported that there was a significant relation between smoking and alcohol use in, the rate of alcohol use was significantly lower than among the ever-smokers (P=0.001). In addition, this finding coincides with the result of a population-based longitudinal study that was conducted on 72 292 adults (≥ 18 years), in rural western Kenya and revealed that the percentage of current smokers rose with
the number of drinking days in a month (P < 0.0001) (Lo et al., 2013)

As for psychological concerns related to smoking, in the current study, 48.1% of smokers reported that smoking helps to relax, 39.2% of smokers enjoyed smoking to great extent and 49.6% of studied smokers gave the same response when they were asked if smoking helps to cope with stress (Table 6 and Table 7). These results agree with a study that was conducted on 2133 smokers participating in monthly cross-sectional surveys (the Smoking Toolkit Study) in England (Fidler and West, 2009), enjoyment and stress relief were the most commonly reported motives (51% and 47%, respectively). The explanation of these findings is may be that worse mental condition due to stress of the students making them vulnerable to more tobacco consumption and having greater difficulties to quitting smoking.

Also, similar findings were obtained by Martini and Sulistyawati (2004) who conducted a survey on 1,630 students whose age ranged from 13 to 21 years, in East Java Province, Indonesia. They reported that 30% of their study group were motivated to smoke because of stress. In addition, these results are supported by Booker et al. (2004) who conducted a study on 1,074 sixth-grade students in urban Los Angeles of multiethnic adolescent smokers. They concluded that there was a significant association between high levels of total stress and smoking behavior.

Moreover, the findings of the present study agree with a study concerning psychological distress and its association with tobacco smoking and quitting behavior in the Australian population which collected data from two large Australian national household surveys.
of individuals over 20 years of age, Multinomial logistic regression was used to assess the relationships between smoking behaviors and psychological distress, results were and resulted in current smokers, especially those who smoke more cigarettes per day and those who report less success at quitting or reducing smoking, had higher levels of psychological distress. Ex-smokers were also more likely to experience psychological distress than those who never smoked. Current smokers with psychological distress were just as, or more likely, to report planning to quit as those without psychological distress. Smokers who did not plan to quit due to addiction, past failure at quitting, and using smoking for relaxation or to deal with stress were more likely to report psychological distress than those who did not report these reasons (Leung et al., 2011).

Also, these results come in accordance with a Turkish study that was conducted on 613 ex-smoker university students whose age interval was (17 to 31 years), 30.5% of participants reported that the reason to start smoking was distress and anxiety (Kutlu and Marakoğlu, 2005).

As regards the impact of smoking on smokers' health, in the current study, (30.0%) of smoker group were sure that smoking was harmful to health as shown in Table 8. However, the result revealed by this study is lower than the result of a survey that was conducted on a total sample of 23,760 households (men and women aged 15 years and above), in Egypt. It revealed that 97.6% of the studied group believed that smoking causes serious illness (WHO, 2009c). This difference may be referred to the fact that different sample size between the current study and the other national
study that used population-based samples. Also, in the present study, smokers perceived that smoking may be harmful to justify this behavior.

In contrast, the finding of this study as regard awareness of health hazards of smoking was less than other studies Siddiqui and Ogbeide (2001) who reported that awareness regarding the harmful effect of smoking was 96% out of 230 respondent health care staff at a general hospital in Riyadh, Saudi Arabia. A study done in Bosnia and Herzegovina, 100% of the Family Medicine physicians and nurses studied were found to know that smoking is dangerous to health (Hodgetts et al., 2004). Although, Khan et al. (2005) who found that 98% of the medical students surveyed in Karachi, Pakistan, knew that smoking active and passive is hazardous to health. This awareness regarding harmful effects may be due to strong social and cultural consensus against smoking. Also, these studies among health care staff and medical students with greater awareness about hazards of smoking to health.

However, this finding was lower that the result of a study carried out among university students, In Turkey, reported that about 70.7% of ex-smokers were aware of the hazards of smoking (Kutlu and Marakoğlu, 2005). Possible explanation for higher percentage of awareness of harmful effects of smoking to health among smokers in the Turkish study than the present study is that it was conducted on ex-smokers who experienced adverse health effects of smoking and to quit.

Among the smokers group in the present study, about one third of them 29.4% were found to have a smoking-related health problem (Table
These results are similar to those reported by Seif Elnasr (2001); about one third of them suffered chronic illness related to smoking.

Concerning the quitting trials and intention to quit; in the current study, 48.4% of ever smokers tried to quit but only 20.2% succeeded. The longest abstinence period of one to less than three months was reported by 25.8% of relapsed smokers (Table 9 and Table 10). These results agree with studies in literature as; GATS revealed that among ever daily smokers 16.6% had quit smoking, among those who smoked in the past 12 months 41.1% had made an attempt to quit and 17.9% had successively quit (WHO, 2009c). Also, similar findings were obtained by Elshair and Shafik (2012) who conducted a study on students' hostels in Cairo University. They revealed that 40.3% tried to quit last year but only 6.9% succeeded and about last quit trial duration, 51.5 % ever smokers tried <7 days.

About the reasons for quitting smoking, the result of the current study reported that 39.3% of smokers thought to stop smoking due to its negative effects on health (Table 10). This finding is consistent with a cross-sectional study that was conducted on 2620 employees of randomly selected three factories in Sabhan Industrial Area, Kuwait, where knowledge of the harmful effects of smoking on health was the highest percentage (61.2%) followed by scientific evidence of the hazards of smoking (51.7%) (Gaafar and Basiony, 2013).

In the current study, Nicotine dependence was studied using the "Heaviness of Smoking Index" (Heatherton et al., 1989). The heavy nicotine dependent smokers constituted 15.8% of the overall number of current cigarette smokers studied (Table 11). This result is supported with a population-based cross-sectional study that was conducted on 957
adults in Campinas, SP, Brazil, and reported 16.2% of smokers were heavy nicotine dependence (Lima et al., 2014).

However, the result of this study is higher than the result obtained by Gad et al., (2003) who carried out a study upon 938 adult male smokers in rural Egypt. They reported that 9% of them to be heavy nicotine dependent.

On the other hand, the prevalence of Nicotine dependence in the current study was much lower than the prevalence of Nicotine dependent smokers in United States which was found to be 24% diagnosed by the World Health Organization's Composite International Diagnostic Interview (Breslau et al., 2001). This difference may be due to the use of different tools in diagnosing dependence.

Fagerstrom et al. (1996) has found that the lower the prevalence of smoking in a country, the higher the average dependence among those who do smoke. This negative correlation between dependence and prevalence of smoking may only exist when prevalence has started to decline. This was the case in the United States where the smoking prevalence decreased among persons aged ≥18 years from 42.4% in 1965 to 24.7% in 1997 (Morbidity and Mortality Weekly report MMWR, 1999), but in Egypt the number of smokers is increasing by 8% per year (Nassar, 2003).

In this study, there was a significant association between sex and Nicotine dependence among smokers group, where male smoker students were moderate and heavy smokers, at higher percentages (46.0% and 17.6%) than females (37.0% and 0.0%) as shown in Table 14. Similar findings were obtained by Kishore et al., (2013) who carried out a study upon 391 (Methamphetamine) synthetic drug users, their age were above
18 years old, in Beijing and Guangdong, China. They found that men (49.4%) were more likely to be highly dependent on nicotine than women users (28.9%), with a $P$ value of 0.001. Some researchers have found that males are more likely to be "hardcore" smokers (daily smokers with high nicotine dependence) than women.

However, the revealed results by this study are in disagreement with a study that was conducted on a total of 1,245 undergraduate students with their age ranged from 17 to 48 years at the Cuiabá campus of Federal University of Mato Grosso (UFMT) in 2001, using Fagerström Test, which found that no statistically significant association was found between nicotine dependence and gender (Rodina et al., 2003). The possible explanation is may be due to the small number of dependent smokers 8.75% ($n = 7$) found in there study.

**Impact of smoking on QOL**

Considering the impact of smoking on HRQOL, this study revealed that there was a significant difference between studied students regarding smoking status and QOL in all domains ($P<0.001$) except the energy/vitality, role physical limitation and role emotional limitation domains($P>0.05$), current smokers had lower means of QOL scores in comparison with the never smokers in general health perception, physical functioning, role physical limitation, role emotional limitation, social functioning, bodily pain and mental health scales. Their scores were lower than that of the former smokers regarding the social functioning domain only (49.7±16.7 and 56.8±17.7 respectively) as shown in Table 16.

These results are in accordance with a cross-sectional study was conducted on 174 healthy young subjects with a short history of smoking from two universities, in Brazil and found that never smokers had higher
mean QOL scores than smokers in all domains. Statistically significant differences were observed for the domains physical functioning (86.5_12.9 vs. 93.4_9.6), general health perceptions (64.3_19.8 vs. 79.2_13.4), and mental health dimension (66.4_21.1 vs. 71.9_15.5) (Martinez et al., 2004).

Also, similar findings were obtained by Mitra et al (2004), who carried out a prospective cohort study on 355 adults with disabilities, in Massachusetts, using SF-36 enabled version. They found that current smokers and those who began smoking during follow-up had significantly poorer HRQOL compared with non-smokers with disabilities. Longitudinal analysis suggests that controlling for age, gender, race/ethnicity, education, and activities of daily living, changes in HRQOL scores over time were associated with changes in smoking status.

Moreover, these results agree with Laaksonen (2006), who carried out three cross-sectional surveys upon 8,970 (1,799 men and 7,171 women), of middle-aged employees of the City of Helsinki. He declared that men who were current smokers reported poorer health, general health and physical functioning than non-smokers. On the mental subscales, current smokers had consistently poorer health than non-smokers.

Also, these findings come in agreement with Balfour et al. 2006, who conducted a cross-sectional study on 123 male patients with hepatitis C ranging from 20 to 67 years of age at Ottawa Hospital Viral Hepatitis Clinic, Ottawa, Ontario, using SF 36. They revealed that smokers have lower scores for general health (p<.05), mental health (p<.05), and bodily pain (p<.01) than nonsmokers.
In addition, these results are supported by other authors; *Guiterrez-Bedmar et al. (2009)* who conducted a study upon 5234 adults in Spain. They found that the lowest scores in smokers, in the scales of general health, social functioning, role emotional and mental health.

Moreover, similar results were obtained by *Barta et al. 2010* who carried out a cross-sectional study on 181 patients aged >18 years old with Systemic Lupus Erythromatosis (SLE), in Greater Manchester, England. They concluded that smoking was associated with poor physical functioning and bodily pain as well as reduced vitality, reduced mental health and reduced physical and mental component scores.

The results of this study are supported by other studies; *Diez et al. (2010)* who carried out a study, in Madrid. They reported that compared to nonsmokers, smokers consumes more antidepressants and tranquilizers, drink more alcohol beverage and practice less physical activity. Also, a cross-sectional study that conducted by *Jang et al., (2011)* upon 1,920 women, who were survivors of breast, colorectal, or endometrial cancers, using SF36. They declared that smokers were more likely than former or non-smokers to have poor QOL. Compared with non-smokers, persistent smokers had higher likelihood of reporting poor physical functioning (OR=2.40, 95% CI=1.32–4.37) and mental health (OR=1.92, CI=1.09–3.40).

Moreover, According to other studies; a study conducted by *Lima et al. (2011)* upon 1958 elderly people, in Brazil. They found that worst ratings of the dimensions in smokers; where the worst health conditions were observed on the role emotional and mental health scales. And *Fritschi et al. (2013)* who conducted a cross-sectional study on 105 patients with peripheral arterial disease. They reported that smokers had
lower levels of mean scores in physical functioning scale, and mental health well-being.

Also, similar findings were obtained by Stafford et al., (2013) who carried out a prospective cohort study on 193 subjects for Assessment of depression occurred at 3, 6, and 9 months following discharge from hospital for a cardiac event. They found that smoking independently predicted worse mental HRQOL.

However, the result of this study disagree with Funahashi et al., 2011 who conducted a cross-sectional study upon 823 subjects (female = 578, Smokers= 152) in a rural Japanese population. They stated that there was no significant difference in SF-36 scores between non-smokers and smokers. The possible explanation of this difference is that Japanese study showed higher proportion of female subjects who presented lower percentage of smoking.

In the present study, comparing former smokers with never smokers, there was a significant reduction of the mean scores of physical functioning, social functioning and bodily pain scales (Table 16). Wilson et al. (1999), who carried out a study on 3,010 Australian adults, reported similar results: the worst HRQOL situations, using the SF-36, on ex-smokers, in dimensions of physical functioning and pain, comparing with never smokers.

Also, similar finding was obtained by Gulliford et al. (2003) who conducted a cross-sectional survey on 1,899 people registered with diabetes mellitus at 29 general practices in inner London. They reported that there was a difference in the physical functioning mean scores, where ex-smokers -4.0 (-7.6 to -0.3) compared to non-smokers.
Results from other studies showed similarity in comparing the quality of life of ex-smokers with non-smokers (Heikkinen et al., 2008; Lima et al., 2011). It is also important to emphasize that longitudinal studies have found an increase in the HRQOL, in individuals who stopped smoking compared with those who still smoke (Piper et al., 2012).

Regarding associations of HRQOL with Nicotine dependence, this study reported that light Nicotine dependent smokers had higher scores for mental health domain compared to heavy Nicotine dependent smokers (Table 17). The explanation of this result is that worse mental health conditions of the students may be vulnerable to greater tobacco consumption and increasing Nicotine dependence.

This result is in accordance with other studies; Schmitz et al. (2003) who carried out a cross-sectional study on 3,293 subjects aged 18 to 65 from the German National Health Interview and Examination Survey. They found that Nicotine-dependent smokers reported a poorer QOL than the subjects without Nicotine dependence. These relationships were stable after adjustment for sociodemographic characteristics. Also, Laaksonen et al. (2006), revealed that overall heavy smokers report limitations with daily activities as well as loss of well-being. Differences between smoking categories were found on some physical and all mental subscales.

Moreover, this result agrees with Guiterrez- Bedmar et al. (2009) who concluded that differences in the mean scores in the fields of role-emotional and mental health, comparing with individuals who smoke less than 15 cigarettes per day with those who do not smoke, and the differences increase, with gradient, in individuals who smoke 15 to 24
cigarettes and 25 or more, impacting the physical functioning, general health, vitality and mental health dimensions.

In addition, similar finding was obtained by Holahan et al. 2013, who carried out a prospective cohort study upon 90,849 postmenopausal women with an average age of 63.6 years to examine the relation of smoking status to physical health–related quality of life (PHRQL) and total mortality in Women’s Health Initiative (WHI). They reported that heavier smokers showed large associations with HRQOL while light smokers showed small associations.

As regard the predictors of QOL scores, the present study reported that smoking status (never smokers) was a significant predictor for general health perception scale score (P = 0.01), where this score tended to increase by 0.14 unit among students who were never smokers compared to current smokers (Table 18). Along with this finding by Holahan et al., (2013) who declared that for general health perception, pain and physical functioning domains, light (P < .05) and heavy smokers (P < .01) had significantly worse PHRQL than participants who had never smoked.
CONCLUSION

Smoking is an increasing epidemic among youth with significant physical and psychosocial consequences. It is an important public health issue especially in developing countries like Egypt as a result of increasing prevalence in adolescent population.

According to main results of this study, the current smokers students had the lower SF-36 score mean in general health perception, physical functioning, bodily pain and mental health scales. Former-smokers were with the lower score mean in physical functioning, social functioning and bodily pain, comparing with never smokers. According to Nicotine dependence, the mental health score was negatively associated with the degree of Nicotine dependence.

There was an association between the general health perception and social functioning scores and the smoking status of students. This score tended to increase among students who were never smokers compared to current smokers.

The results of this study direct attention to the fact that problem of smoking among university students had a strong association with worst HRQoL conditions, reinforcing the importance of strategic policies against smoking and avoiding the rise of cigarette marketing, aiming for reducing morbidity and premature death and improving QOL and well-being.
RECOMMENDATIONS

Tobacco smoking is the leading preventable cause of death in the world. Tobacco use causes more than 5 million deaths per year. Current trends show that tobacco use will cause more than 8 million deaths annually by 2030 (WHO, 2011b). The health and economic burden of tobacco use can be dramatically reduced by employing proven tobacco control and prevention strategies.

Policy interventions offer the greatest opportunity to influence decisions regarding tobacco use at the societal level. Tobacco control policy can drive social, environmental, and systems changes, and has a substantially greater impact than interventions that target individuals. A policy approach engages the larger community and empowers it to establish healthy social norms.

After situational analysis using SWOT analysis technique we concluded that there are some strength points and opportunities that we could rely upon them to achieve the specific objectives of this study and certain points of weakness and threats that we should work to overcome them.

► Strength points and opportunities:

1. All studied group was highly educated students and this will facilitate achievement of our objectives.
2. Easy accessibility to University students.
3. The majority of students had educated parents.
4. Affordability for treatment as most of students of middle or high social class.
5. Students who were living in student hostel are easily accessed.
6. Governmental and non-governmental policies to promote clear indoor air through prohibiting smoking at smoke-free places like in public places.

7. University resources can be employed to prevent and control of smoking among university students e.g. physicians and health educators.

8. Staff members of Public health &Community Medicine can provide health education message in a simplified method to the target group.

9. Developing quit lines and smoking cessation clinics available at psychological medicine hospital and addiction treatment.

10. Developing of curricula that increase the awareness of the students about the smoking problem and its health hazards.

11. The majority of the students know that smoking is harmful to health.

► Weakness and threats:

1. Limited governmental financial resources that facilitate the availability of cost free Nicotine Replacement Therapy (NRT) among community health centres in region.

2. Difficulty assembling accurate data on reach and outcomes for existing regional cessation services

3. Varying quality of existing smoking cessation programs

4. Lack of coordinated communication strategy

5. Unsupported insurance coverage for smoking cessation treatment.

6. Linking of inpatients to outpatient resources (transfer between programs)

7. Lack of active cessation efforts in community pharmacies.

8. Hardening of smokers due to risk taking behavior.

9. High rates of smoking in general the prevalence of ever smokers was very high.
10. Lacking of studies on QOL outcomes among University students.

*This study revealed through the high prevalence of smoking among University students that there is an urgent need to develop an effective and nationwide cessation programme:*

**Objectives:**

1) **Prevent initiation of tobacco use among young people.**

*Specific Objectives:*

- a. To increase public awareness on the consequences of tobacco use.
- b. To increase anti-tobacco policies and programs in schools and universities.
- c. To reduce access to tobacco products to minors.
- d. To reduce access to tobacco products through illicit trade.
- e. To increase the price of tobacco products.
- f. To reduce the influence of the tobacco industry on young people and adults.

2) **Protect from exposure to Environmental Tobacco Smoke (ETS).**

*Specific Objectives:*

- a. To increase awareness on the harmful effects of ETS.
- b. To control the contents and emissions of tobacco products.
- c. To reduce exposure to environmental tobacco smoke in indoor and outdoor public places.
3) **Promote cessation among smokers.**

*Specific Objectives:*

a. To increase awareness and the intention to quit among smokers.
b. To increase awareness among health professionals on smoking cessation programs.
c. To provide treatment for tobacco dependence.

4) **Improve HRQOL of adults.**

**Planning:** The resources of the program that are needed to achieve the objectives will be:

(a) **Human resources:**

**Technical skillful group:** Health professionals such as health educators, physicians, nurses, pharmacists, dentists, physiologists, community leaders and influential personnel are credible sources of smoking cessation advice. Physicians should screen for tobacco use during office visits with adolescents and discuss advantages of being smoke-free, they can motivate parents to quit by pointing out the dangers of second hand smoke to their children and the future health risks to the children if they become smokers.

(b) **Non-Human resources:**

**Pamphlets, films, posters, etc:** are the most necessary and possible to provide information about health hazards of smoking that encourage smokers to quit.

**Budget:** A special budget has to be planned to cover the needed expenses. It could be obtained from the Ministry of High Education,
Ministry of Health, Ministry of Social Affairs, Ministry of Youth and Qualyobia governorate.

**Time:** Ongoing activity because the program will be integrated with other health services.

**Strategies and program activities:**

1. **Monitor tobacco use and prevention policies.**
   Assessment of tobacco use and its impact must be strengthened as it provides information about the extent of the epidemic in a country, as well as how to tailor policies to specific country needs. Both global and country-by-country monitoring are critical to understanding and reversing the tobacco epidemic.

2. **Health education of university students**
   **Objectives:**
   a. To increase awareness on the hazards of tobacco smoking and the harmful effects of ETS.
   b. To promote smoking cessation
   - **Educator:**
     • Health staff members e.g. health educators, physicians and nurses
     • Social workers.
     • Community leaders and influential personnel e.g. religious leaders
   - **Recipient:**
     • University students, parents and the community
   - **Method of communication:**
     • Face to face communication through talk, lectures and group discussion in the University or clubs.
• Mass communication through posters, booklets, curricula and media.

- **Message:**
  • Information about recent prevalence of smoking among university students, health hazards of smoking, methods of prevention and control of smoking.
  • Provide information about advantages and methods of quitting and how to obtain treatment for Nicotine dependence through available smoking cessation clinics.
  • All people have a fundamental right to breathe clean air at home and public places.
  • Specific parents teaching programs should be conducted especially for families with smoked parents.

3- **Development and implementation of policies through legislations**

- **Objectives:**
  1. To reduce smoking epidemic.
  2. To decrease the impact of tobacco on smokers.
  3. To protect nonsmokers from passive smoking and starting smoking.
  4. To positively affect public attitudes.

- The legislative actions should be realistic and applicable. These include:
  a) Cigarette packets on the market should give Nicotine ant Tar content of Tobacco per cigarette and health warning messages like those on cigarette boxes but they should not be monotonous. They should vary from time to time.
  b) Mandatory health education in different curricula.
c) All people have a fundamental right to breathe clean air, so this require total ban of smoking in public places and workplaces to provide smoke-free places that protects people from second-hand smoke and helps smokers quit.
d) Enforce bans on tobacco advertising, promotion and sponsorship that can reduce tobacco consumption and protect people, particularly youth, from industry marketing tactics.
e) Controlling tobacco agriculture.
f) Raise taxes on tobacco and therefore prices, is the most effective way to reduce tobacco use, and especially to discourage young people from using tobacco. It also helps convince tobacco users to quit. Higher taxes can provide countries with funding to implement and enforce tobacco control policies and can pay for other public health and social programs.
g) Distribution and sales policy (vending machines, selling to children and by children in streets, buses and trains).
h) Counter-Marketing through activities intended to offset tobacco industry influences and to increase pro-health messages throughout a state, region, or community. They include media relations, media advocacy and counter-advertising, reducing tobacco industry sponsorships and promotions, and exposing tobacco industry tactics.

4- Integration of smoking cessation program with primary health care services.

- Ministry Of Health and Population (MOHP) should provide services at PHC that include advice by medical providers and
counseling to prevent and control smoking behavior especially among youth.

• Provide tobacco cessation clinics and treatment for Nicotine dependence.

- Objectives:

1) To increase awareness among health professionals on smoking cessation programs.
2) To provide treatment for tobacco dependence.
   a) Establishing population-based treatment programs:
      1. Telephone cessation helplines
      2. Working to ensure that treatment for tobacco use is covered under both public and private insurance
      3. Eliminating cost barriers to treatment for underserved populations, particularly the uninsured.
   b) Integration of mental health program as an important component of any tobacco cessation program among adolescents and youth as improvement of mental health would help to decrease the prevalence of smoking and help smokers to quit.
   c) Developing partnerships with local organizations for conducting educational programs for young people, parents, enforcement officials, community and business leaders, health care providers and school personnel.
   d) Integration of tobacco control programs with programs for prevention and early detection of tobacco-related diseases e.g, cardiovascular disease prevention, asthma prevention, oral health program and cancer registries, to reduce the burden of tobacco related diseases.
e) Tobacco control programs can be supported by providing technical assistance in conducting program evaluations, using the media to discourage tobacco use.

5- **Youth development.**

a) Solve the problems affecting young people by elimination of unemployment and housing problems.
b) Provide clubs for sports and recreation.
c) Engaging youth in developing and implementing tobacco control interventions.

**Surveillance and evaluation of implemented tobacco cessation programs**

- Regular monitoring of relevant measures:
  a. Cigarette smoking prevalence
  b. Smoking initiation by adolescents and children
  c. Smoking cessation attempts
  d. "Tobacco prevention" in educational curricula at schools and universities
  e. Tobacco free universities
  f. Tobacco product advertising and promotion to youth

- **Objectives:**
  1- To inform program and policy direction and interventions and point-in-time assessments
  2- To measure the effectiveness of programs, policies, and media efforts.
Administration and management of the program

• Program should be started at all national levels (governorate, cities and villages)

• Strong management structure is needed to coordinate program components, involve multiple state and local agencies (e.g., health, education, law enforcement) and levels of local government, and partner with statewide voluntary health organizations and community groups.

• Leadership and top management commitment and support to tobacco cessation program.

• Enforcement: To be effective, tobacco control policies must be vigorously enforced, particularly policies that restrict minors’ access to tobacco and those that restrict smoking in public places. State enforcement efforts should be coordinated with those of the Food and Drug Administration (FDA) and the Substance Abuse and Mental Health Services Administration (SAMHSA).

• Engage stakeholders e.g. MOHP, Ministry of Higher Education, Ministry of Education, Ministry of Social Affairs, Ministry of Youth and Sports and Ministry of information. Participation of non-governmental organizations (NGOS)
SUMMARY

Smoking is a great national disaster in Egypt as it affects health, economy and social aspects of the community. It has become worse and worse since 1990s as it has become more prevalent among youth and teenagers (Egyptian Smoking Prevention Research Institute (ESPRI), 2007).

Tobacco-related illness is the leading cause of preventable and premature death around the world. Approximately one person dies every 6 seconds due to tobacco, accounting for one in five deaths. Additionally, the average smoker dies at least 10 years earlier than nonsmokers. If current trends continue worldwide, over one-half of all long-term smokers will die of a tobacco-related disease, leading to eight million deaths annually by 2030. (Jha et al., 2013).

University students are at high risk of smoking as they become exposed to greater availability of cigarettes and intimate association with smoking peers. At the same time, they face additional social, emotional and educational challenges when they enter the university (Almutairi, 2010).

Several studies have shown that smokers have lower scores on physical and mental Health Related Quality of Life (HRQOL) dimensions compared to non-smokers (Martinez et al., 2004).

Aim of the work:

This study aimed at determination of the prevalence of tobacco smoking among Benha University students, detection of motives and risk factors for smoking, assessment of the impact of smoking behavior on
QOL. In addition, the study recommended a program for the prevention of smoking, smoking cessation and improving QOL for this age group.

**Subjects & Methods:**

This cross-sectional study was carried out on Benha University students over the period from 1st March to 31st May 2014. A total of 771 students (response rate was 95.1%) from four colleges, two practical and two theoretical, were recruited using multistage random sampling technique.

A structured self-administered questionnaire sheet was used to collect detailed information on socio-demographic data, smoking behavior and nicotine dependence. HRQOL (SF-36) was used to collect information on the eight scales of QOL namely; physical functioning, role physical limitation, role emotional limitation, energy/vitality, social functioning, bodily pain, general health perception and mental health.

**Results:**

The mean age of the studied group was 20.7± 1.9 ranging between 17 and 28 years. More than half of the student were males (51.4%).

More than half (56.3%) of them were never smokers and students who ever smoke accounted for 43.7% of the surveyed students; (39.4%) were current smokers and only 4.3% were former smokers.

Current smokers were older than the never smokers (21.05± 1.99 vs. 20.4± 1.83). Males, those from urban areas and those of middle social class were current smokers at higher percentage than former and never smokers.

Academic year and the place of living were significantly associated with the prevalence of smoking (P<0.001). Current smokers were seniors at higher percent (49.0%) than former and never smokers (3.3% and
47.7%). Also, students living away from their families were smokers at higher percent (51.7%) than former and never smokers (6.2% and 42.1%).

Sex and the type of college were significantly associated with degree of Nicotine dependence among current smokers group (P < 0.05).

There were statistically significant differences (P<0.001) between smoking status and all QOL domains except the energy/vitality, role emotional limitation and role physical limitation domains (P>0.05).

There was a significant difference (P = 0.04) in the mean scores for mental health scale among smokers. Light Nicotine dependent smokers had higher scores compared to heavy Nicotine dependent smokers (42.8 ± 14.34 vs. 37.03 ± 14.67)

According to adjusted stepwise multiple regression analysis for the predictors of QOL scores, there was an association between the general health perception score (0.14; 0.26 to1.9) and social functioning (0.16; 0.15 to1.8) and the smoking status of students, Never smokers tended to have score higher compared to current smokers. While the duration of smoking was associated with the role emotional limitation, bodily pain and social functioning scores, an increase in the duration of smoking was associated by decrease in these scores by (-0.13; - 0.83 to - 0.08) (- 0.14; - 0.37 to - 0.05) (- 0.12; - 0.28 to - 0.02) respectively.

The score for energy/vitality and physical functioning was associated with and the place of living during the study. Students who were living with family tended to have greater scores compared to those who were living away (0.14; 0.14 to1.0) (-0.16; -3.1 to - 0.71) respectively.
The mental health score was associated with the degree of Nicotine dependence (P =0.05). This score tended to decrease as the level of Nicotine dependence increased (- 0.11; - 4.66 to - 0.04).

Conclusion:

The results of this study directs the attention to the fact that problem of smoking among university students had a strong association with worst HRQOL conditions, reinforcing the importance of strategic policies against smoking and avoiding the rise of cigarette marketing, aiming for reducing morbidity and premature death and improving QOL and well-being.

Recommendations:

- This study revealed through the high prevalence of smoking and its adverse impact on QOL of the university students that there is an urgent need to develop an effective and nationwide cessation programme.
- This suggests a comprehensive program comprised of:
  - Health education of university students about the hazards of smoking on their health especially their QOL and how to prevent and control smoking habit.
  - Development and implementation of policies through legislations that control tobacco agriculture, industry, sales, advertisement and ban of smoking in public places.
  - Integration of smoking cessation program with primary health care services where health care providers give advice about hazards of smoking and methods of quitting and provide facilities for tobacco cessation clinics.
- Health promotion of youth through solving the problem of unemployment and problems of housing and other stressful conditions that motivate to smoking.
- Continuous monitoring of tobacco use and prevention policies to provide information about the extent of the epidemic in a country.
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Y


Z


"استمارة استبيان"

عزيزي الطالب، يهدف هذا البحث إلى كشف مشكلة التدخين والأسباب التي تؤدي إليه لدى شباب الجامعات، برجاء التعاون معنا والإجابة على هذه الأسئلة بعناية مع العلم أن جميع البيانات التي ترد بهذه الاستمارة يتم تناولها بسرية تامة و شكراً.

أولاً: معلومات هامة:

(1) السن:
(2) النوع:
(3) أين تقيم?
(4) ما هي جنسيتك؟
(5) في أي كلية تدرس؟
(6) كلية عمليه
(7) في أي سنة دراسية أنت؟
(8) موقفك من الدراسة في الكلية:
(9) تكرار الدراسة في هذه الكلية
(10) الباحث أو الباحثة في هذه الكلية
(11) كيف كنت في كلية علمية ما هو:
(12) تكرار الدراسة في هذه الكلية
(13) لا يقرأ ولا يكتب
(14) أمي
(15) الأب
(16) الأم
(17) الأب
(18) الأم

ثانياً: مقياس المستوى الاجتماعي والاقتصادي:

1- المستوى التعليمي للأب والأم:

<table>
<thead>
<tr>
<th>حاصل على دراسات علمية</th>
<th>تعليم جامعي</th>
<th>تعليم ثانوي متوسطة (دبلوم)</th>
<th>تعليم إعدادي</th>
<th>التعليم الابتدائي</th>
<th>يقرأ ويكتب أمي (لا يقرأ ولا يكتب)</th>
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الوصول إلى المعلومات الصحية:

1) مواد مطبوعة، وعلى سبيل المثال الكتب أو الملفات
2) الرسائل السمعية والبصرية على شاشة التلفزيون و/ أو الراديو.

٢٠٨٨٠٠٨
2- بيانات العائلة:
● محل الإقامة (1) مدينة (2) قريه (3) حضر (أحياء فقيرة)
● عدد أفراد الأسرة (والوالدين والأبناء) (4) أفراد أو أكثر
● عدد أفراد الأسرة قادر على الكسب:
(1) فرد واحد (2) 2 فرد (3) 3-4 أفراد (4) 5 أفراد أو أكثر

المستوى التعليمي للخواة (الأكبر من 5 سنوات سواء تعلم حكومي أو خاص)
● كل الخواة يذهبون أو ذهبوان إلى (المدرسة الجامعية)
● أكثر من نصف الخواة يذهبون أو ذهبوان إلى (المدرسة الجامعية)
● أقل من نصف الخواة يذهبون أو ذهبوان إلى (المدرسة الجامعية)
● لم يذهب أحد من الخواة إلى (المدرسة الجامعية)

3- الدخل المالي للأسرة:
● هل كاف لقضاء الاحتياجات اليومية
(1) قادراً علي الاستمرار والاتخاذ منه (2) لا
● هل تلققَ الأسرة أي مبالغ دعم حكومي؟
(1) مرفوع (2) لا
● هل تدفع الأسرة ضرائب؟

4- وظيفة الأب والأم:

<table>
<thead>
<tr>
<th>موظف متخصص</th>
<th>مهنة متخصص</th>
<th>مجال التجارة والأعمال الحرة</th>
<th>عمل ملزم غير ملزم</th>
<th>غير يعمل</th>
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5- ممتلكات الأسرة:
● تلفزيون
● غسالة
● راديو
● كمبيوتر
● أرض زراعية
● أرض بناء
● موانئ مزروعات أو مزرعات حيوانات
● محلات تجارية
● بيت آخر (غير الذي تعيش فيه)
● حيوانات دواجن

6- مرفقات الأسرة:
● ماء نقي
● نظام صرف صحي
● نظام دفق المرحاض

7- موانع المنزل:
● غاز طبيعي
● أنبوب طبيعي
● مكيفات هواية
● نظام صرف صحي
● نظام دفق المرحاض
● كهرباء
● جمع القنوات المنزلية على طريق البلدية
● نظام صرف صحي
● نظام دفق المرحاض

8- عدد غرف منزل:
● (1) ملك أقل من 4 غرف
● (2) إيجار أقل من 4 غرف
● (3) إيجار أكبر من أو يساوي 4 غرف
● (4) لا يوجد محل إقامة

7- العامل الصحي:
● من أي خدمات الصحية يحصلون؟
(1) عيادات و مستشفيات خاصة (2) عن طريق التأمين الصحي
ثالثاً: التدخين:

1- هل سبق لك أن دخنت 100 سيارة (5 علب) بحياتك؟

2- إذا كانت الإجابة لا من فضل انقل إلى السؤال رقم (19).

3- كم تبلغ المدة منذ بدأت التدخين?

(1) أقل من سنة (2) من سنة إلى 5 سنوات (3) أكثر من 5 سنوات

4- في الأيام التي تدخن فيها، تتناول أول سيارة باكرا بعد الاستيقاظ؟

(1) في خلال 2 دقائق (2) من 2 إلى 6 دقائق (3) بعد 6 دقائق

5- هل تدخن عادة في...........

6- ما هي الأمور التي تعتمد أنها جيدة بالنسبة لك عن التدخين؟

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<th>غير مهم</th>
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- تساعد على الاسترخاء
- تساعد على قضاء ساعات العمل
- التدخين عادة لكسر الملل
- تساعد على التعامل مع الضغط
- تستمع بها
- شيء أقوم به مع الأصدقاء أو العائلة

7- ما الذي يمكن أن يجعل من الصعب عليك أن تتوقف عن التدخين؟

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- أنا استمتع بالتدخين جداً
- أنا اعتقيد أن لا أملك الإرادة الكاملة
- أكون تحت ضغط شديد
- أنا اعتقيد أن لا أملك الإرادة الكاملة
- أنا اعتقيد أن لا أملك الإرادة الكاملة
- أنا اعتقيد أن لا أملك الإرادة الكاملة
- أنا اعتقيد أن لا أملك الإرادة الكاملة
- أعتقد فترات الراحة لتدخين المثل
لا قطعا
لا أظِ
ٍَنِ
ّؼٌ ٗبذُٗ شل
لا )
لا (إٌّجٙبد -اٌىحٌٛ١بد -اٌّى١فبد)
هل جربت أوواع أخرى مه التدخيه؟
هل فىشد فٟ الإللاع عٓ اٌزذخ١ٓ؟
إرا وبٔذ الإجبثخ ٔعُ, ً٘ وبْ اٌغجت فٟ رٌه ٘ٛ
إرا وبٔذ الإجبثخ ٔعُ ِٓ فضٍه أوًّ الأعئٍخ اٌزبٌٟ
رابع تقسيمك لحالة الحياة اليومية:
1 - ما رأيك في صحتك، تقرر تقول عليها:
(1) كريسة جدا (2) كريسة معقولة (3) كريسة
(4) وحشة جدا (5) وحشة
2 - بالمقارنة بالعام الماضي هل تقرر أن تقول أن صحتك الآن:
(1) أحسن كثير (2) إلى حد ما أحسن (3) تقريبًا زى السنة الماضية
(4) أقل بكثير (5) إلى حد ما أقل
3 - هل صحتك الآن تقلل من قدرتك للقيام بالأعمال اليومية التالية، و إلى أي مدى؟
<table>
<thead>
<tr>
<th>أعمال عينة مثل الجري، ورفع أعمال أو المشاركة في رياضات عينة؟</th>
</tr>
</thead>
<tbody>
<tr>
<td>لا تحتني مطلقا</td>
</tr>
<tr>
<td>أعمال متوسطة مثل تحريك مائدة، دفع المكنسة الكهربائية، لعب البولنج؟</td>
</tr>
<tr>
<td>رفع أو حمل البقالة؟</td>
</tr>
<tr>
<td>صعود عدة طوابق من السلم؟</td>
</tr>
<tr>
<td>صعود طابق واحد من السلم؟</td>
</tr>
<tr>
<td>الاحتراء والركوع (إن توفي) أو إن تجلس على ركبتك؟</td>
</tr>
<tr>
<td>المشي أكثر من واحده كيلو متر (ثلاث ساعات)؟</td>
</tr>
<tr>
<td>المشي مسافة نصف كيلو متر (عشرة دقائق)؟</td>
</tr>
<tr>
<td>المشي مسافة مئة متر؟</td>
</tr>
<tr>
<td>أخذ حمام أو النص بمفرع؟</td>
</tr>
</tbody>
</table>

4 - هل صادفت أي من المشاكل في عملك أو من الأنشطة اليومية العادية نتيجة لصحتك الجسدية في خلال الأربع أسابيع الماضية:
| نعم | لا |
|---------------------------------|
| الإقلال من الوقت التي تقضيه في العمل أو الأنشطة الأخرى؟ |
| إجازة أقل ما كنت تمنى؟ |
| الحد من نوعية العمل والأنشطة الأخرى؟ |
| صعوبة في إنجاز العمل والأنشطة الأخرى؟ |

5 - هل صادفت أي من المشاكل في عملك أو من الأنشطة اليومية العادية نتيجة لصحتك النفسية (مثل القلق والاكتئاب وما شابه ذلك) في خلال الأربع أسابيع الماضية:
| نعم | لا |
|---------------------------------|
| الإقلال من الوقت التي تقضيه في العمل أو الأنشطة الأخرى؟ |
| إجازة أقل ما كنت تمنى؟ |
| لم تتم إجازة عملك أو الأنشطة الأخرى بنفس الكفاءة المعتادة؟ |
6- هل تدخلت مشاكل الجسمانية والنفسية مع الأنشطة الاجتماعية العادية التي كنت تقوم بها مع الأهل واصدقاءك والجيران في خلال الأربع أسابيع الماضية:
(1) لم تتأثر أطلاقاً  (2) تأثرت قليلاً (3) بدرجة متوسطة (4) بدرجة كبيرة جداً

7- هل عانتي من ألم الجسماني في خلال الأربع أسابيع الماضية؟ وكيف كان؟
(1) لم أعاني مطلقأ (2) بسيط جداً (3) متوسط (4) شديد جداً

8- إذا كانت نعم في أي صورة أثر هذا الألم على أعمالك العادية (بما فيها الأعمال داخل المنزل وخارجه)
(1) لا يؤثر إطلاقاً (2) بسيط جداً (3) متوسط (4) صورة كبيرة جداً

9- الأسئلة التالية عن إحساسك وكيف كانت الأمور معك في الأربع أسابيع الماضية:

<table>
<thead>
<tr>
<th></th>
<th>لم أشعر</th>
<th>بعض الوقت</th>
<th>لفترة طويلة</th>
<th>معظم الوقت</th>
<th>كل الوقت</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/ أحسست بالحيوية؟</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2/ كنت عصبي جداً؟</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3/ كنت تشعر لك مكتب؟</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4/ تشعر بالسكينة و الهدوء؟</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5/ كنت مليء بالنشاط؟</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6/ تشعر بالإحباط؟</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7/ تشعر بالقلق الشديد؟</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8/ تشعر بالسعاده؟</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9/ تشعر بالتعب والإرهاق؟</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10- ما هي الفترة التي أثرت فيها مشاكل الصحة النفسية على نشاطك الاجتماعي (مثل زيارة الأصدقاء والآخرين) في خلال الأربع أسابيع الماضية؟
(1) كل الوقت (2) مнстم الوقت (3) بعض الوقت (4) لم أشعر

11- ما هي صحة أو خطا العبارات التالية بالنسبة لك؟

<table>
<thead>
<tr>
<th></th>
<th>صح في الغالب</th>
<th>لا أعرف</th>
<th>صحة م باكدة</th>
<th>خطأ</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/ يبدو أنني أمرض بشهولة أكثر من الآخرين؟</td>
<td>صحي</td>
<td>لا أعرف</td>
<td>صح في الغالب</td>
<td>خطأ</td>
</tr>
<tr>
<td>2/ صحتي مثل أي شخص أعرفه؟</td>
<td>صحفياً</td>
<td>لا أعرف</td>
<td>صح في الغالب</td>
<td>خطأ</td>
</tr>
<tr>
<td>3/ أتوقع أن تسوء صحتي؟</td>
<td>صحفياً</td>
<td>لا أعرف</td>
<td>صح في الغالب</td>
<td>خطأ</td>
</tr>
<tr>
<td>4/ صحتي ممتازة؟</td>
<td>صحفياً</td>
<td>لا أعرف</td>
<td>صح في الغالب</td>
<td>خطأ</td>
</tr>
</tbody>
</table>
الموافقة المستنيرة

عنوان البحث باللغة العربية: سلوك التدخين بين طلاب جامعة بنها وتأثيره على جودة حياتهم.

الباحث الرئيسي: مهبة عبد الله المهدي على

الباحثون المشاركون:
- أ.د. هالة مصطفى الهادي
- أ.د. محمود على صالح
- د. رشا شاكر الدسوقي
- د. هناء السيدي بيرم

ملخص موجز

الخلفية العلمية:

الأمراض المرتبطة بالتدخين هي السبب الرئيسي للوفاة المبكرة التي يمكن توقعها في جميع أنحاء العالم. حوالي شخص واحد يموت كل 6 ثواني بسبب التبغ، وهو ما يمثل واحد من غير المدخنين. كمعيار، في عام 2000، الوفيات التي تعزى إلى التدخين تجاوزت مجموع الوفيات المهتمكة فيروس نقص المناعة البشرية، الكحول، المخدرات غير المشروعة وحوادث السيارات. وإذا استمرت الاتجاهات الحالية في جميع أنحاء العالم، فإن أكثر من نصف جميع المدخنين على المدى الطويل سوف يموتون من الأمراض ذات الصلة بالتبغ، مما يؤدي إلى ثمانية ملايين حالة وفاة سنويا بحلول عام 2030.

طلاب الجامعات هم عرضة للتدخين لأنهم يصبحون عرضة لزيادة توافر السجائر وتكوين الروابط الحميمة مع أفرادهم التدخين. وفي الوقت نفسه، فإنهم يواجهون تحديات إجتماعية وعاطفية وترابية إضافية عندما يدخلون الجامعة.

يرتبط التدخين بشكل وثيق مع فقدان سنوات الحياة الصحية. وقد أظهرت العديد من الدراسات أن المدخنين أقل الدرجات في الأبعاد البدنية والعقلية لجودة الحياة ذات الصلة الصحية مقارنة مع غير المدخنين. لذلك كان الهدف من الدراسة الاتى:
1- حساب معدلات التدخين بين طلاب جامعة بنها.
2- التعرف على الحوافز والمواصلاتairedة التي تؤدي إلى التدخين.
3- تقييم العلاقة بين سلوك التدخين و جودة الحياة لطلاب الجامعة.


سيتم تصنيف كليات جامعة بنها إلى كليات نظرية وأخرى عملية، وسيتم اختيار كليتتين من الكليات العملية وكلية نظرية بطريقة عشوائية بسيطة، سوف يتم تقسيم الكليات العملية إلى مجموعات ومجموعات النظرية إلى تخصصات، وسيتم اختيار مجموعتان أو تخصصات من كل من الكليات محل الدراسة بالطريقة العشوائية العقودية بحيث تشمل الدراسة جميع الطلاب الحاضرين بالمجموعة في الأيام التي تجري فيها الدراسة.

أدوات الدراسة:

استبان استبيان تشمل المعلومات الشخصية، الاجتماعية، والدراسية للطلاب ووصف كامل لتأريخ التدخين للمشتركين،الأسباب المؤدية للتدخين، المحاولات السابقة للإقلاع والحالة الصحية المتعلقة بالتدخين ومعلومات عن نوعية الحياة للطلاب (النشاط البدني مثل المشي وصعود السلالم، الألم الجسدي، الصحة بشكل عام، الحيوية، النشاط الاجتماعي، الدور العاطفي والصحة الذهنية).

الفوائد المتوقعة من البحث:

تقليل معدل انتشار سلوك التدخين بين الشباب عن طريق عمل برنامج قوي لمكافحة التدخين.

لا يوجد مخاطر متوقعة من هذا البحث للمشارك الحق في قبول أو رفض المشاركة أو الانسحاب وقائما شاء.

سوف تعامل البيانات بسرية كاملة ولن يطلع عليها سوى الباحث الرئيسي والباحثون المشاركون في هذا البحث.

في حالة رغبتك في طرح أي استفسار أو شكوي يمكنك الاتصال بالدكتورة: مى عبد الله المهدي

ت/12/1882742
أقر أنني قد فهمت الإجراءات التي ستتم خلال هذا البحث ووافقت على المشاركة في البحث.

اسم المشاركة: ...........................................

النوع: ..............................................

التاريخ: ..............................................

التاريخ

التوقيع: ..............................................

تمت الموافقة على هذا البحث من قبل لجنة أخلاقيات البحث العلمي بتاريخ .................. وهذه الموافقة سارية حتى.................

مع خالص التحية والتقدير

رئيس لجنة أخلاقيات البحث العلمي أ.د إبراهيم الجندي

التوقيع: ..............................................

خاتم اللجنة: ........................................
الملخص العربي

التدخين كارثة وطنية كبيرة في مصر تستنزف المجتمع صحياً، واقتصادياً، واجتماعياً. فقد أصيبت هذه الكارثة أكثر سناً منذ التسعينيات نتيجة انتشارها بين الشباب والمراهقين.

تعد الأمراض الناتجة عن التدخين السبب الرئيسي للوفاة المبكرة في العالم، وهي يمكن الوقاية منها. يؤدي التدخين إلى وفاة شخص كل 6 ثواني، وهو ما يمثل واحد من كل خمس حالات وفاة. بالإضافة إلى ذلك، يعد متوسط عمر المدخنين أقصر بعشر سنوات على الأقل مقارنة بغير المدخنين. من المتوقع أن يموت أكثر من نصف المدخنين بسبب الأمراض الناتجة عن التدخين، مما يؤدي إلى ثمانية ملايين حالة وفاة سنوياً بحلول عام 2030.

إن طلاب الجامعات أكثر عرضة للتدخين لأن السجائر تصبح في متناول أيديهم بالإضافة إلى تكوين الروابط الحميمة مع أقرائهم المدخنين، وكثرة التحديات الاجتماعية والعاطفية والتربيوية التي يواجهونها عندما يدخلون الجامعة.

يرتبط التدخين بشكل وثيق مع فقدان سنوات الحياة الصحية، وقد أظهرت العديد من الدراسات السابقة أن المدخنين يحصلون على معدلات أقل في الأبعاد البدنية والعقلية لجودة الحياة ذات الصلة الصحية مقارنة مع غير المدخنين.

المصطلحات العربية

الهدف من البحث:

تهدف هذه الدراسة إلى تحديد معدلات تدخين التبغ بين طلاب جامعة بنها، و التعرف على الانتهاكات والضوابط التي تدفعهم إلى التدخين، و تقييم العلاقة بين سلوك التدخين و جودة حياتهم، و أخيراً، تصميم برنامج للوقاية من التدخين و الإقلاع عنه وتحسين جودة الحياة لهذه الفئة العمرية.

طريقة البحث:

هذه دراسة مسترورة أجريت على طلاب جامعة بنها في الفترة من 1 مارس حتى 31 مايو 2014.

عينة البحث:

عينة عشوائية متعددة المراحل حيث تم اختيار أربع كليات عشوائياً من أصل 15 كلياً تابعة لجامعة بنها، وكانت هذه الكليات هي كلية الطب، وكلية الهندسة، وكلية الحقوق، وكلية الآداب. قد تم اختيار الطلاب باستخدام تقنيات العينة العشوائية، حيث تم اختيار قسم أو تخصص واحد من جميع الصفوف من كل كلياً. جميع الطلاب في القسم المختار أو التخصص تم استهدافهم في الدراسة. فقط 781 طالباً أتموا الإجابة على الاستبيانات من بين 810 طالباً بنسبة 95.1% استجابة وتم الحصول على الموافقة المستنيرة الخطط من جميع المشاركين.
أدوات البحث:

قامت الدراسة بجمع معلومات عن الخصائص الاجتماعية والديموغرافية للطلاب باستخدام استبيان ذاتي. كما تم الحصول على بيانات حول السلوك التدخني وادمان النيكوتين بين الطلاب كذلك، استخدمت الدراسة استبيان قياس جودة الحياة ذات الصلة الصحية (النموذج القصير - 46) والذي يشمل على ثمانية أبعاد: الوظائف البدنية، و دور الحد البدني، و دور الحد العاطفي، و الطاقة / حيوية، و الأداء الاجتماعي، و تصور الصحة العام، و الام الجسدية والصحة العقلية وتم جدولة وتحليل البيانات باستخدام برنامج الحزمة الإحصائية للعلوم الاجتماعية وأستخدم الاختيارات الإحصائية المناسبة لتحليل البيانات.

النتائج:

تراع أن المجموعة التي تم دراستها بين 17 و 28 عامًا بمتوسط 20.4 ± 1.9 سنة على الترتيب. وجدت الدراسة أن الطلاب الذكور الذين يعيشون في المناطق الحضرية وينتمون إلى الطبقة الاجتماعية المتوسطة كانوا مدخنين حاليين بنسبة أعلى من المدخنين السابقين وغير المدخنين.

كما توصلت الدراسة إلى أن هناك علاقة ذات دلالة إحصائية بين العام الدراسي ومكان المعيشة، وانتشار التدخين. كانت نسبة المدخنين الحاليين أعلى بين طلبة السنوات الدراسية المتقدمة (69.4 %) بالمقارنة مع المدخنين السابقين (32.3 %) وغير المدخنين (47.7 %). أيضاً، كانت نسبة المدخنين الحاليين أعلى بين الطلاب الذين يعيشون بعيدا عن أسرهم (51.7 %) مقارنة بالمدخنين السابقين (20.2 %)، وغير المدخنين (16.1 %).

امتدد الجنس ونوع الكلية بشكل ذو دلالة إحصائية مع درجة الاعتماد على النيكوتين بين مجموعات المدخنين الحاليين.

أوضحت الدراسة أن هناك اختلاف ذو دلالة إحصائية في مستوى الصحة العقلية بين المدخنين. قد حصل المدخنون ذوي الاعتماد الخفيف على النيكوتين على أعلى متوسطدرجات على مقياس الصحة العقلية مقارنة للمدخنين ذوي الاعتماد القليل على النيكوتين (0.8 ± 1.4 نقاط، P < 0.05).

وفقاً لتحليل الانحدار الخططي المتعدد التدريجي للتنبؤ بدرجات جودة الحياة، كان هناك ارتباط ذو دلالة إحصائية بين تصور الصحة العام والأداء الاجتماعي و حالة التدخين لدى الطلاب. من المرجح أن يحرز المدخنين السابقين نتيجة أعلى من حيث متوسط الدرجات.
بالمقارنة مع المدخنين الحاليين، كانت هناك علاقة إيجابية ذات دلالة إحصائية بين مدة التدخين ودور الحد العاطفي، الألم الجسدي والأداء الاجتماعي.

كذلك كشفت الدراسة أن هناك ارتباط ذو دلالة إحصائية بين نتيجة متوسط الدرجات في مقياس الطاقة/الحيوية والوظائف البدنية مع مكان المعيشة خلال فترة الدراسة. حيث أن الطلاب الذين كانوا يعيشون مع العائلة لديهم على الأرجح درجات أكبر مقارنةً مع أولئك الذين كانوا يعيشون بعيداً. وكانت هناك علاقة ذات دلالة إحصائية بين متوسط درجات الصحة النفسية مع درجة الاعتماد على النيكوتين. حيث يقل متوسط الدرجات كلما زادت درجة الاعتماد على النيكوتين.

الاستنتاج:

أشارت نتائج هذه الدراسة إلى حقيقة أن مشكلة التدخين بين طلاب الجامعات كان لها علاقة قوية مع تدني مستوى جودة حياتهم، مما يعزز أهمية السياسات الاستراتيجية ضد التدخين وتسوية السجناء، والتي تهدف للحد من الأمراض والوفاة المبكرة وتحسين جودة الحياة والرفاهية.

التوصيات:

وكشفت هذه الدراسة أن من خلال ارتفاع معدل انتشار التدخين بين طلاب الجامعات وتأثيره على جودة حياتهم بأن هناك حاجة ملحة لوضع برنامج فعال لالقلاع عن التدخين.

استراتيجيات البرنامج:

- رصد تعاطي التبغ وسياسات الوقاية لتوفير المعلومات حول مدى انتشار وباء التدخين في الدولة.
- التثقيف الصحي لطلاب الجامعة حول مخاطر التدخين على صحتهم خاصة جودة الحياة وكيفية مكافحة ومنع عادة التدخين.
- وضع وتنفيذ السياسات من خلال التشريعات التي تنظم زراعة وصناعة ومبيعات والإعلان عن التبغ وحظر التدخين في الأماكن العامة.
- دمج برنامج الإقلاع عن التدخين مع خدمات الرعاية الصحية الأولية حيث يعطي مقدمي الرعاية الصحية المشورة حول أخطار التدخين وطرق الإقلاع عنه وتوافر عيادات للإقلاع عن التدخين.
- تنمية الشباب من خلال حل مشكلة البطالة ومشكلات الإسكان والتي تمثل ظروفًا ضاغطة مما يجعل حافزاً للتدخين لديهم.
سلوك التدخين بين طلاب جامعة بنها وتأثيره على جودة حياتهم

رسالة مقدمة من الطبيبة/يٌٌى عبدالله المهدي على المعيدة بقسم الصحة العامة وطب المجتمع كلية الطب - جامعة بنها

توطنة للحصول على درجة الماجستير في الصحة العامة وطب المجتمع

تحية إشراك

أ.د / هالة مصطفى الهادي
استاذ الصحة العامة وطب المجتمع كلية الطب - جامعة بنها

أ.د/ محمـود علي صالح
استاذ الطب الوقائي والأمراض المهنية كلية الطب - جامعة بنها

د / رشا شاكر الدسوقي
مدرس الصحة العامة وطب المجتمع كلية الطب - جامعة بنها

د / هناء السيد بيومي
مدرس الصحة العامة وطب المجتمع كلية الطب - جامعة بنها

كلية الطب - جامعة بنها

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