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**Al-Quds University**



**Assessment of Selected Health Risk Behaviors among  
Students of Al-Quds University: Knowledge and  
Determinants**

**Amer Yousef Mohammad Ayyad**

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**Assessment of Selected Health Risk Behaviors among  
Students of Al-Quds University: Knowledge and  
Determinants**

Prepared By

**Amer Yousef Mohammad Ayyad**

**B.Sc. Al-Quds University/Palestine**

Supervisor:

**Dr. Lina El-Khairiy**

Co- Supervisor:

**Dr. Khuloud Khayyat Dajani**

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## **Dedication**

To spirit of my dear father who I wished to be with me in this special moments of my life.

To my dear mother which helped me in the first steps of science and knowledge.

To my dear wife and my kids who helped me to complete this stage of science and knowledge.

To my brothers and sisters which are they always side by side with me in every way.

To my in-laws for their encouragement and support.

## **Declaration**

I certify that this thesis submitted for the degree of Master is the result of my own research, except where otherwise acknowledged, and that this thesis (or any part of the same) has not been submitted for a higher degree to any other university or institution.

Signed:

**Amer Yousef Mohammad Ayyad**

Date: **4.6.2007**

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## Conceptual definitions

**Current smokers:** Those who are smoking at the time of the data collection and are currently smoking cigarettes every day (regular) or some days (occasional).

**Non-current smokers:** those who are not smoking at the time of the data collecting and that they currently not smoke cigarettes.

**Underweight:** a person who has a body mass index less than 18.5

**Normal weight:** a person who has a body mass index from 18.5 to 24.9

**Overweight:** a person who has a body mass index from 25 to 29.9

**Obese:** a person who has a body mass index equal or over 30

**Physical activity concept:** any bodily movement produced by skeletal muscles that result in energy expenditure.

**Physical activity duration:** the length of time spent participating in physical activity as self reported by the respondent within a reporting period.

**Physical activity frequency:** the number of times the respondent self-reported participating in physical activity, within a reporting period.

**Vigorous physical activity:** a person who engaged in vigorous activities such as jogging, swimming, yard work, and bicycling in high speed, 2-3 times per week or more for at least 20 minutes per occasion, that causes large increasing in breathing and heart rate.

**moderate physical activity:** a person who engaged in moderate activities such as carrying light things, bicycling in normal speed, washing car, and house work, 2-3 times per week or more for at least 20 minutes per occasion, that causes small increasing in breathing and heart rate.

**Low physical activity:** a person who engaged in very little physical activity, such as walking inside the house or in or to the university, in addition to recreational walking.

**Physical inactivity:** all time that is a person spends it in sitting such as time in sitting for study, for work on computer, visits of friends, viewing TV, and in home.

## **Acronyms**

**ACSM:** American College of Sports Medicine

**BMI:** Body Mass Index

**BP:** Blood Pressure

**CAD:** Coronary Artery Disease

**CDC:** Disease Control & Prevention

**CFLRI:** Canadian Fitness and Lifestyle Research Institute

**CHD:** Coronary Heart Disease

**CHP:** Chronic diseases and Health Promotion

**CI:** Confidence Interval

**COPD:** Chronic Obstructive Pulmonary Disease

**CVD:** Cardiovascular Diseases

**DM:** Diabetes Mellitus

**DNA:** Deoxyribonucleic Acid

**EU:** European Union

**HDL-C:** High-Density Lipoprotein Cholesterol

**LDL-C:** Low -Density Lipoprotein Cholesterol

**MFMER:** Mayo Foundation for Medical Education and Research

**MOH:** Ministry Of Health

**MRL:** Merck Research Laboratories

**NCD:** Non-Communicable Diseases

**NCI:** National Cancer Institute

**NIDDK:** National Institute of Diabetes and Digestive and Kidney diseases

**NWCR:** National Weight Control Registry

**PCBS:** Palestine Central Bureau of Statistics

**PR:** prevalence ratio

**SD:** Standard Deviation

**SES:** Socio-Economic Status

**UNPD:** United Nations Population Division

**USDHHS:** United State Department of Health and Human Services

**VLDL:** Very Low-Density Lipoprotein

**WHO:** World Health Organization

## Abstract

**Background:** Chronic non-communicable diseases like cardiovascular diseases, cancer, chronic lung diseases, and diabetes mellitus are considered the major causes of death in the world. Risk factors like smoking, obesity, and physical inactivity, are associated with a variety of chronic diseases. The prevalence of selected risk factors and their determinants have rarely been studied among Palestinian young generation.

**Purpose:** To estimate the percentage of selected risk factors (obesity) and behaviors (smoking, and physical inactivity), and to investigate some of determinants of these risk factors among students (male, female) aged (18-24) of Al-Quds University.

**Methods:** A cross-sectional-study design was used. The data were collected by questionnaire and physical examination. Information regarding smoking habits and physical activity in addition to determinants of obesity was collected through questionnaire, whereas both weight and height were measured by physical examination. The total number of undergraduate students which are considered regular students were 6203, 3048 (49%) were males and 3155(51%) were females. A non-random convenience sample was used to select study participants. Between April and July2005, 400 questionnaire were distributed, and the numbers of respondents were 330 students with the response rate of 82.5%.

**Results:** 33.3% of the students studied were smokers, whereas 66.7% where non smokers. Smoking was significantly higher in males than females ( $P=0.00$ ). In addition, having family smoking members ( $P=0.01$ ), having friends smoking ( $P=0.00$ ) were the only significant determinants of smoking among these students. Logistic regression analysis revealed that the same factors significantly contributed to smoking after adjusting for potential confounding factors. Most of the smokers (98.2%) thought cigarettes were bad for health, and more than one third (46.36%) thought the most probable health problem caused by smoking was different types of cancer.

The results showed that 25.5% of the students studied were overweight (BMI 25-29.9 Kg/ m<sup>2</sup>) and 2.4% were obese (BMI  $\geq$  30 Kg/ m<sup>2</sup>). Eating snacks ( $P=0.01$ ), and eating breakfast ( $P=0.03$ ) were both significantly associated with high BMI. The results of logistic regression analysis showed that eating snacks between meals was the only significant factor that was associated with high BMI .Eating snacks increased the risk of high BMI by 2 folds.



There was no compatibility between the perception of weight problem and actual body mass index. Most of the participants (96.4%) thought that overweight and obesity were bad for their health, and 70.9% thought that overweight and obesity cause chronic diseases.

The results indicate that most of the students (63%) were physically active and 37% were inactive. Engaging in vigorous physical activity was significantly higher in males than females ( $P=0.001$ ), while engaging in moderate physical activity was statistically significantly higher in females than males ( $P=0.001$ ). Gender ( $P=0.03$ ), time constraints ( $P=0.00$ ), unavailability of place ( $P=0.00$ ), lack of skills ( $P=0.01$ ), lack of money ( $P=0.00$ ), and the belief that physical activity is not important ( $P=0.00$ ), were the main reasons for not engaging in physical activity. Logistic regression analysis revealed that the same factors were significant determinants of not engaging in physical activity. After adjusting for all factors, gender and unavailability of place were no longer statistically significant determinants of physical inactivity. However, the Odds ratios for the other factors were altered slightly, but this did not affect the statistical significance. Most of the participants (97.9%) thought that physical activity were good for their health, while 47.9% thought that chronic diseases were the most probable consequences of physical inactivity.

**Conclusion:** Smoking was highly prevalent among students, especially males. Peers and family had the strongest influence on smoking behavior. More than one quarter of students were considered overweight and more than one third of the students were not engaging in any physical activity. The results indicate that unhealthy behaviors are prevalent. Therefore there is a need to intervene in order to promote healthy behaviors among the university students.

## الخلاصة

**خلفية عن البحث:** الأمراض المزمنة غير المعدية مثل أمراض القلب، السرطان، أمراض الرئة المزمنة، وداء السكري تعتبر من الأسباب الرئيسية التي تؤدي إلى الموت في العالم. من العوامل التي تؤثر على الصحة سلباً و قد تؤدي إلى الإصابة بمختلف الأمراض المزمنة التدخين، السمنة، وحمول النشاط البدني. إن نسبة إنتشار هذه العوامل وبعض محدداتها نادراً ما درست بين جيل الشباب الفلسطيني.

**الغرض من البحث:** لتقدير نسبة إنتشار عوامل الخطر (سمنة) وسلوك الخطر (تدخين، وحمول طبيعي) المختارة، وللتحري عن بعض من محددات هذه العوامل بين الطلاب (ذكر، أنثى) بعمر (18-24) في جامعة القدس.

**طرق البحث:** نمط إجراء الدراسة كان وصفيًا. البيانات جُمعت عن طريق الاستبيان والفحص الفسيولوجي. اشتمل الاستبيان على معلومات بخصوص سلوك التدخين والنشاط الطبيعي بالإضافة إلى محددات السمنة، بينما كل من الوزن والطول أخذت بالفحص الفسيولوجي. كان العدد الكلي لطلاب الجامعة 6203 طالب و هذا العدد يمثل عدد الطلاب المنتظمين في الدراسة، 3048 (49%) كانوا ذكور و 3155 (51%) كانوا اناث. استخدمت طريقة العينة السهلة الغير عشوائية لاختيار الطلبة المشاركين في الدراسة. بين أبريل/نيسان ويوليو/تموز 2005، 400 استبيان قد وزعت، و عدد المستجيبين كان 330 طالب بنسبة الرد 82.5%.

**النتائج:** 33.3% من الطلاب المشاركين في الدراسة كانوا مدخنين، بينما 66.7% غير مدخنين. التدخين كان أعلى جداً في الذكور من الإناث ( $P=0.00$ ). بالإضافة إلى، وجود افراد من العائلة مدخنين ( $P=0.01$ )، أصدقاء مدخنون ( $P=0.00$ ) كانوا المحددين الهامين الوحيدين للتدخين بين هؤلاء الطلاب. كشف تحليل الإنحدار اللوجستيكي بأن نفس هذه العوامل ساهمت في التدخين بشكل ملحوظ بعد التعديل لبعض العوامل. أغلب المدخنين (98.2%) اعتقدوا بان السجائر سيئة للصحة، وأكثر من ثلث (46.36%) المدخنين اعتقدوا بان المشكلة الصحية الأكثر احتمالاً ان تنتج من التدخين كانت أنواع مختلفة من السرطان.

اظهرت النتائج بأن 25.5% من الطلاب المشاركين في الدراسة كان عندهم زيادة وزن، و 2.4% كان عندهم سمنة. أكل الوجبات الخفيفة ( $P=0.01$ )، و تناول الفطور كل يوم ( $P=0.03$ ) ارتبطت بشكل ملحوظ بدليل كتلة الجسم الفعلي العالي. أظهرت نتائج تحليل الإنحدار اللوجستيكي بان أكل وجبات خفيفة بين وجبات الطعام كانت العامل الهام الوحيد الذي يرتبط بزيادة خطر دليل كتلة الجسم الفعلي العالي، حيث ان اكل وجبات خفيفة يزيد الخطر بضعفين عن الذين لا ياكلون وجبات خفيفة. لم يكن هناك توافق بين فهم الوزن ودليل كتلة الجسم الفعلي. أغلب المشاركين في الدراسة (96.4%) اعتقدوا بان زيادة الوزن و السمنة سيئة لصحتهم، و 70.9% من المشاركين اعتقدوا بأن زيادة الوزن و السمنة تسبب الأمراض المزمنة.

تُشير النتائج بأن أغلب الطلاب (63%) كانوا نشيطون جسدياً و (37%) كانوا خاملون. النشاط الطبيعي النشط كان أعلى جداً في الذكور من الإناث ( $P=0.001$ )، بينما النشاط الطبيعي المعتدل كان أعلى جداً بشكل إحصائي في الإناث من الذكور ( $P=0.001$ ). الجنس ( $P=0.03$ )، قيود الوقت ( $P=0.00$ )، عدم توفر المكان ( $P=0.00$ )، قلة المهارات ( $P=0.01$ )، قلة المال ( $P=0.00$ )، و الاعتقاد بان النشاط الطبيعي ليس مهم ( $P=0.00$ )، كانت الأسباب الرئيسية لعدم ممارسة النشاط الطبيعي.

كشفت تحليل الانحدار اللوجستيكي بأن نفس هذه العوامل كانت محدّدت هامة في عدم ممارسة النشاط الطبيعي. بعد التعديل لكل العوامل، الجنس وعدم توفر المكان لم يعدوا محددين هامتين بشكل إحصائي من الخمول الطبيعي. على أية حال، نسب الإحتمالات للعوامل الأخرى عدلت بعض الشيء، لكن هذه لم تؤثر على الأهمية الإحصائية. أغلب المشاركين (97.9%) إعتقدوا بأن النشاط الطبيعي جيد لصحتهم، بينما 47.9% إعتقد بأن الأمراض المزمنة كانت النتائج الأكثر إحتمالاً من الخمول الطبيعي.

**الخاتمة:** ساد التدخين بين الطلاب و خصوصاً الذكور منهم، كما ان للعائلة و النظراء الاثر الاقوى في انخراط المبحوثين في سلوك التدخين. اعتبر أكثر من ربع الطلاب من ذوي زائدي الوزن فيما لم ينخرط ما يزيد عن الثلث في أي نشاط جسدي. تشير النتائج الى سيادة السلوك غيرالصحي، الامر الذي يدعو الى التدخلات الهادفة الى الترويج للسلوك الصحي بين صفوف طلاب الجامعة.

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## **Chapter.1 Introduction**

1.1 Background

1.2 Problem statement

1.3 Justification of the study

1.4 Objectives of the study

1.5 Research questions

1.6 Overview on the thesis chapters

## 1.1 Background

Chronic non-communicable diseases like cardiovascular diseases, cancer, chronic lung diseases, and diabetes mellitus are considered the major causes of death in the world; contributing almost 60% of global death, and almost half (47%) of the global burden of diseases [WHO, 2004]. The majority of chronic diseases mortality, disability and morbidity currently take place in low- and middle-income countries [Yach, Hawkes, Gould, and Hofman, 2004].

Chronic diseases tend to affect individuals in middle and old age [Yusuf et al., 2001].

In Palestine, inadequate national data are available on the overall incidence, prevalence, and severity of chronic diseases [MOH, 2005]. The ministry of health depends on mortality data to estimate the influences of chronic diseases; also current system reports mainly the visits of the patients to primary health care, which does not reflect the real prevalence or incidence of chronic diseases [MOH, 2005].

The risk factors of chronic diseases are well recognized and considered responsible for most of the main chronic diseases [Yusuf et al., 2001]. Risk factors such as smoking, obesity, unhealthy diet, drug use, and physical inactivity are considered as modifiable risk factors [Yach, Hawks, Gould, and Hofman, 2004]. The relationship between the major modifiable risk factors and the main chronic diseases is similar in all regions of the world [WHO, 2005(b)].

The current burden of chronic diseases reflects past exposure to these health risk behaviors, and the future burden will be largely determined by current exposures. [Yach, Hawkes, Gould, and Hofman, 2004].

The prevalence of aforementioned risk factors and their determinants have rarely been studied among Palestinian young generation [PCBS, 1997, PCBS, 2001].

According to the annual report of health status in Palestine in 2004, the prevalence of smoking in was 18.6% in Gaza strip and 23.9% in the west bank in general population [MOH, 2005].

The only available data on the prevalence of overweight and obesity from governmental sources was from the health institution for the diabetic patient in Remal health clinic.

The data showed that 58% of diabetic patients were obese and 27.4% were overweight. [MOH, 2005]. However this does not represent the prevalence of obesity in the general population.

Students of Al-Quds University constitute a group of young men and women from different parts of the West bank and Gaza strip, with various backgrounds and socioeconomic status. Hence, they offer a convenient sample for studying the prevalence of these risk factors and their determinants among young Palestinians.

This study aims to estimate the percentage of risk factors (smoking, obesity, physical activity) and investigate determinants of these risk factors among students of Al-Quds University aged (18-24) years.

## **1.2 Problem statement**

Chronic diseases are a major concern in Palestine, not enough research has been done to indicate the scope of the problem. In addition, there is very little available data on the prevalence and determinants of health risk behaviors (smoking, obesity, and physical inactivity) among young educated Palestinians who are supposed to be more aware of health consequences of these risk factors.

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## **1.3 Justification of the study**

Palestine is undergoing an epidemiologic transition from predominance of nutritional deficiencies and infectious diseases to chronic diseases such as cancer, cardiovascular diseases, diabetes, and chronic lung diseases.

According to Palestine ministry of health (MOH), chronic diseases are the major causes of death in 2003. Cardiovascular diseases constitute 38% of the total deaths, cancers contribute 9% of the total deaths, and diabetes mellitus formed 4.1% of the total deaths [MOH, 2004].

Smoking, obesity, and physical inactivity are linked with several chronic diseases.

If we can determine the prevalence of these risk factors and their determinants among young generation of Palestinians, it will give us further indication of the expected burden of chronic diseases in the future, and then we can make a plan for decreasing the incidence of chronic diseases by putting a good strategy to modify these risk factors.

## **1.4 Objectives**

### **1.4.1 Main aim of study**

To assess health risk behaviors and their determinants among students of Al-Quds University.

### **1.4.2 Specific Objectives**

- 1- To estimate the percentage of smoking among students aged (18-24) years at Al-Quds University.
- 2- To estimate the percentage of overweight and obesity among students aged (18-24) years at Al-Quds University.
- 3- To estimate the percentage of physical inactivity among students aged (18-24) years at Al-Quds University.
- 4- To investigate the association between some socio-demographic variables of the students and these risk factors.
- 5- To assess the level of knowledge of the students about the health consequences of these risk factors/behaviors.

## **1.5 Research questions**

1. What is frequency of selected risk factors (smoking, obesity, physical inactivity) among university students?
2. What are the possible determinants (social, demographic, economical) of the aforementioned risk factors?
3. Do students have the right knowledge about the consequences of these risk factors/ behaviors?

## **1.6 Overview on the thesis chapters**

This study includes five main chapters; Introduction, literature review, methodology, results, and finally discussion, conclusion and recommendations. The Introduction chapter starts with background information followed by justification of the study, statement of the problem and ends with the study objectives and questions. The literature review chapter included conceptualization, included some theories and definitions for the studied risk factors. Contextualization included a description of previous studies related to this current study, also each risk factor and its possible determinants were discussed separately and in details. Operationalization included operational definition of demographic variables and risk factors. Finally, framework for analysis, included developed figure of framework for analysis depending on the aforementioned literature review .The methodology chapter included a description of the study design, data collection methods, and statistical analysis methods. The fifth chapter included the results of the study. Finally, the discussion chapter included the discussion of the main results and possible interpretations of the study findings. This chapter ended with conclusions and recommendations for decision makers and for further research.

## **Chapter.2 Literature Review**

### **2.1 Conceptualization**

- 2.1.1 Overview on chronic non-communicable diseases –Globally& Palestine
- 2.1.2 Overview on smoking
- 2.1.3 Determinants of smoking
  - 2.1.3.1 Pharmacological processes and conditioning
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## **2.1 Conceptualization**

### **2.1.1 Overview on chronic non-communicable diseases –Globally& Palestine**

The improvement which has occurred in the health situation led to an increase in average life expectancy at birth by almost 20 years from a global average of 46 years in 1950-1955 to 66.0 years in 2000-2005 in the total population in the whole world [WHO 2003(a); UNPD, 2002] .In developing countries, the average life expectancy is 65 years in the total population in 2000-2005, which is lower than the average life expectancy 75 years in the total population in developed countries in 2000-2005[Sustainable Development, 2005].

In Palestine, according to the MOH, health status report 2004, the average life expectancy was increased from 71.8 years in 2000 to 72.3 years in 2003 in the total population [MOH, 2004].

The changes which have occurred in the health and diseases profile in the last decades were due to the improvement and development in the demographic, and economic status, as well as in the social organization, and industrial revolution. In addition to that, it is also related to the improvements in education, urbanization, and medical technology especially in more advanced societies [WHO, 2002(a)].

As a result of these changes the causes of death and disability from a variety of diseases have changed and shifted from a predominance of nutritional deficiencies and infectious diseases to chronic diseases such as cancer, cardiovascular diseases, diabetes, chronic lung diseases, this shift is called epidemiologic transition [Yusuf et al, 2001].

According to the WHO, facts sheet 2005, the total deaths world wide for all ages was 58million deaths .30% of the total deaths were attributed to cardiovascular diseases, and cancers accounted for 13% of the total deaths .Chronic respiratory diseases were responsible for 7% of the total deaths, while diabetes mellitus formed 2% of the total deaths .Other chronic diseases such as mental disorders, vision and hearing impairment, oral diseases, bone and joint disorders, and genetic disorders were responsible for 9% of the total deaths[WHO, 2005(b)] . 80% of chronic disease deaths occurred in low and middle income countries and half were in women. [WHO, 2004; WHO, 2005(b)].

According to the MOH, Palestine is going through an epidemiologic transition [MOH, 2004]. Chronic diseases present important public health problems in Palestine .Of the eight leading causes of death (heart diseases, cerebrovascular diseases, perinatal conditions, cancer, accidents, hypertension, diabetes mellitus, and renal failure) six are chronic diseases [WHO 2005(a)]. Chronic diseases are the main causes of death, 38% of the total deaths were attributed to cardiovascular diseases, while cancer formed 9% of the total deaths, and diabetes mellitus constituted 4.1% of the total deaths [MOH, 2004].

Risk factors such as smoking, physical inactivity, and obesity are responsible for most of the main chronic diseases .These risk factors are considered as modifiable risk factors [Yach, Hawkes, Gould, and Hofman, 2004].

### **2.1.2 Overview on smoking**

Smoking of tobacco is considered the most important modifiable risk factor for a number of chronic diseases such as lung cancer, chronic respiratory diseases, and cardiovascular diseases [WHO, 2003(b)]. According to the tobacco atlas, smoking is responsible for 90% of all lung cancer, 75% of chronic bronchitis and emphysema, and 25% of cases of ischemic heart disease [WHO, 2002(b)].

Smoking of tobacco is still the main avoidable cause of premature death and disability worldwide [WHO, 2003(b)]. According to the tobacco atlas, of every one alive today, 5 million people will sooner or later be dead each year from smoking-related cause's mainly chronic diseases. According to the tobacco atlas, the total deaths from smoking worldwide in 2000 was 4.2 million person (3.4 million men, 0.8 million women), and it was evenly divided between the developed countries and developing countries [WHO, 2002(c)].

As reported by the American Cancer Society, in their report "tobacco control country profiles, second edition 2003". It has been estimated that about 1.3 billion people in the world are current smokers. The report also mentioned that tobacco use is increasing in developing countries, while it is decreasing in many developed countries. In 1995, more smokers lived in low- and middle-income countries (933 million) than in high-income countries (209 million). In fact, approximately 50% of men in developing countries smoke, compared with almost 35% of men in developed countries [Shafey, Dolwick, and Guindon, 2003].



A few data are available on the prevalence of smoking and their determinants among educated Palestinian young generation [PCBS,1997;PCBS, 2005].According to Palestine Central Bureau of Statistics(PCBS) , the percentage of smokers aged 20-29 in Palestine was 24.5% of the total smokers (19.6%) in 2004 [PCBS, 2005]. This result, however, does not give a clear picture about the prevalence of smoking among the educated people at the same age (20-29) who are supposed to be more aware of health consequences of this risk factor.

Narghile also called, shisha and goza, is a water pipe. Water pipes are popular throughout the South-East Asia and Middle East regions and have been used for many centuries under the illusion that they were a safe way to smoke tobacco. There is a myth that nargila smoking is safer than smoking cigarettes. This illusion goes back at least to the 16th century, when physician Abul Fath suggested that the “smoke should be first passed through a small receptacle of water so that it would be rendered harmless” .A typical session of nargila smoking lasts 45 to 50 minutes, whereas smoking one cigarette only takes about five minutes . Because of the greater amount of time and the fact that the tobacco is usually flavored, a person tends to inhale anywhere from 100 to 200 times as much smoke than he/she would when smoking a single cigarette. Even after passing through the water, the tobacco smoke produced still contains high levels of toxic compounds, including carbon monoxide, heavy metals and cancer-causing chemicals (carcinogens) [WHO, 2006].

### **2.1.3 Determinants of smoking**

The continuum of smoking behavior can be viewed as occurring in three different stages which are the initiation of smoking behavior, maintenance of regular smoking, and cessation. Within each stage framework, there are three general domains, which are considered a useful way to organize the determinants of smoking [US DHHS, 1989].

The first domain is composed of pharmacologic processes and conditioning, the basic factors that interact to support smoking. The combining of these into one domain reflects present awareness that pharmacologic processes and conditioning interact to produce addiction. The second domain includes cognition and decision-making; the stages of smoking reflect appraisals of oneself, of social experiences, and of information, such as that presented in campaigns to deter smoking. The ways in which individuals process such information and make choices about smoking have been the foci of substantial research.

The third domain includes personal characteristics (e.g., personality and demographic factors) and social context, which includes the important influences of the social, cultural, and economic environment [US DHHS, 1989].

### **2.1.3.1 Pharmacological processes and conditioning**

Once a smoker starts to inhale, however, it is possible that the pharmacologic properties of nicotine contribute to continue smoking. Reactions to initial cigarettes and the interpretation of these reactions may predispose individuals to continuing or not continuing smoking [USDHHS,1989]. Pharmacologic processes and conditioning play complementary and major roles in maintaining regular smoking .The Surgeon General's Report 1988, mentioned that the nicotine had influential pharmacologic effects on the central nervous system (CNS) in the development and maintenance of regular smoking. Conditioning links the biological effects of nicotine to the many behaviors that make up smoking [US DHHS 1989].

Prolonged use of nicotine leads to compulsive use, tolerance, development of withdrawal symptoms and tendency to relapse after stopping .Nicotine is a weak base, and thus its absorption across cell membranes depends on the pH [Luty, 2002].

Nicotine is distributed quickly throughout the body; it takes about 10-16 seconds to reach the brain [Jarvis, 2004]. Rapid delivery of nicotine to the brain allows the smoker to manipulate and titrate the dose of nicotine from a cigarette to achieve a desired effect depending on the type of tobacco and rate and depth of puffing [Luty, 2002; Benowitz, 1992].

Tolerance to the toxic effects of nicotine such as nausea, increase in blood pressure and heart rate rapidly develops and persists, while the reinforcing effects of nicotine are renewed with each cigarette [Luty, 2002; Jarvis, 2004].

Smoking people appears to have symptoms of withdrawal syndrome such as irritability, anxiety, feeling miserable, impaired concentration, and increased appetite, as well as from cravings for cigarettes. Symptoms develop within 12 hours and can persist for 3 weeks; although appetite is increased for over 10 weeks [Luty, 2002].

### **2.1.3.2 Cognition and decision-making**

Knowledge for some teenagers of the health effects of smoking such as on health, attractiveness, or sporty performance is likely to influence initiation of smoking [US DHHS, 1989].

Friedman, Lichtenstein, and Biglan study in 1985, attempted to identify factors associated with smoking onset among teens .They were hypothesized that initial cigarette smoking is largely prompted by peers, and that these prompts and subsequent social reinforcement may account for smoking participation. They found that persistent experimental smokers (who smoked more than 10 cigarettes) when compared with minimal experimenters (who smoked less than 10 cigarettes), were exposed to significantly more influence to smoke. These influences included modeling and social encouragement. Additional data suggested that persistent experimenters were more ready to smoke than minimal experimenters. For example, accepted offers to smoke with less uncertainty, and inhaled more frequently. Also, pleasant emotional and physiological effects distinguished continuers from quitters. Nonsmokers appeared to possess more effective response strategies to refuse cigarettes [Friedman, Lichtenstein, and Biglan, 1985].

Another study was done and examined the beliefs that adolescents' hold regarding smoking and weight, examined the relationship between smoking status and self-perceptions of body weight, and in addition examined gender and age differences in adolescent male and female smokers' beliefs about smoking and weight control .They found there was gender and age differences in perceptions of body weight .Female smokers were more likely than male smokers to adhere to the belief that smoking controlled weight. No relationship was observed between males' perceived weight and their smoking status; females who perceived themselves to be either overweight or underweight were more likely to smoke [Boles and Johnson, 2001].

Smoking behavior can change when knowledge of the health consequences of smoking is applied to their own behavior .For instance, many smokers accept the association between smoking cigarettes and disease, but do not always believe themselves to be personally at risk, this thing lead to cognitive dissonance between their awareness of the health risks of smoking and practices of smoking, but smokers may deal with this state by denying the dangers of smoking [Lee, 1989; McKenna, Warburton , and Winwood , 1993].

### **2.1.3.3 Personal characteristics and social context**

The influences of peers and parents were considered a major current issue which has influence on the beginning of smoking. It recognized that imitation may play a role in inducing some, and perhaps many children to take up smoking [US DHHS, 1989].

Bewley and Bland found that children who did not smoke were academically better than smokers. Children who smoked were more likely than non-smokers to have a parent and siblings of the same sex who smoked. Smokers were more likely to have friends who smoked. Most children did not think smoking was enjoyable or desirable and many thought it bad for health, irrespective of their own smoking habits [Bewley and Bland, 1977].

Chassin, Presson, and Sherman study in 1984 was done to investigate the roles of smoking-related beliefs, and parent and peers psychosocial factors as antecedents and consequences of adolescent smoking cessation. The results showed that the young were mainly influenced by their parents in deciding to quit (e.g., parental support and attitudes towards smoking). Whereas, older adolescents responded primarily to peer influences in choosing to quit. They concluded that the process of smoking or smoking cessation among adolescents may be bidirectional, it means the process depend on the peer itself if they tend to initiate smoking or to stop it [Chassin, Presson, and Sherman, 1984].

In addition, marketing of cigarettes is considered an important social context determinant for the onset of smoking [US DHHS, 1989].

A previous study was done in 1993, and the purpose of this study was to explore the relationship between the exposure of adolescents in the seventh and eighth grades to cigarette advertising and their smoking status. The results showed that exposure to cigarette advertising and having friends who smoked were predictive of current smoking status. Adolescents with high exposure to cigarette advertising were significantly more likely to be smokers, than were those with low exposure to cigarette advertising [Botvin, Goldberg, and Dusenbury, 1993].

Silvan Tomkins' theory on psychological model for smoking behavior try to answer some questions such as what do people use the cigarettes for, and how do they use the cigarettes to manage their feelings . On the basis of this theory, he distinguished four general types of smoking behavior: first, habitual smoking, second positive affect smoking, third negative

affect smoking, and fourth addictive smoking. In habitual smoking the individual at first may have smoked to reduce his negative affect or to knowledge positive affect. He smokes as if it made him feel good, or feel better, but in fact it does neither. Tomkins mentioned examples, such as everyone daily crosses the street as if he were afraid. He looks up and down the street to make sure it is safe to cross. Yet he in fact knowledge no actual fear. The act has become so automatic and habitual. The same for smoking may be he excited about smoking at first time as a symbol of his coming of age, but no more in habitual smoking [Tomkins, 1966].

The second type is positive affect smoking behavior. In this type we have two subtypes; one is smoking as a stimulant, to experience the positive affect of excitement, and another one smoking as a relaxant, to experience the positive affect of enjoyment. The stimulant type of smoking occurs whenever smoking is used to give the person a lift from the positive affect of excitement, such as when a youngster smokes to create his masculinity or his coming of age, or to defy his parents, or when an adult smokes for the excitement of something to do. The relaxant type such as feeling of relaxing after a good meal with a cup of coffee and a cigarette .At least some of the time, most smokers use the cigarette to enhance an already existing sense of well-being .The third type is negative affect smoking behavior which we have labeled sedative smoking. In this type the individual smokes primarily to reduce his feelings of distress, fear, shame, angry, upset, or any combination of these, they light a cigarette. He is trying to sedate himself rather than to stimulate or relax himself. The fourth type is addictive, both smoking for positive affect and for the reduction of negative affect, which is can called psychological addiction. The psychologically addicted smoker feels the need for the next cigarette build up from the time he puts out the cigarette he has been smoking. Such example, the smoker who cannot accept that there is no cigarette in his house, he will go out in the middle of the night to get them because he fears a situation in which a cigarette will not be available the minute he wants one [Tomkins , 1966].

The entrances at regular use roughly communicate to the period of transition from adolescence to adulthood. The social changes that relate to this passage, entering a university, the military, or the workforce have been associated with a marked change in the acceptability of smoking. For high school students, smoking is often ban on school community, even if the ban is poorly enforced, while for adulthood community like university, military, or the workforce, the smoking has been accepted [USDHHS,1989].

#### **2.1.3.4 Cessation and relapse**

Prochaska and Diclemente applied an integrative model for changing smoking habits of smokers. The subjects represented five stages of change which were the precontemplation, contemplation, action, maintenance and relapse [Prochaska and DiClemente, 1983].

Precontemplation is the stage in which the smoker is neither take in his mind stopping nor actively processing smoking health information. During the contemplation stage, smokers are thinking about stopping and are processing information about the effects of smoking and ways to stop. In the action or cessation stage, the smoker is no longer smoking and has been without cigarettes for less than 6 months. The maintenance of action involves establishment of long-term abstinence, while relapse is the resumption of smoking. When relapse occurs, the smoker recycles to any one of the four previous stages [USDHHS, 1989].

Health care provider's interventions should go with the patient's stage of change. Before intervention, the pharmacist needs to know the stage which the patient's behavior reached to it by asking him questions that will identify the stage [Suchanek and Bruce, 1995].

If smokers in the precontemplation stage may be they are receiving medications for chronic diseases, and pharmacists can make them aware of the negative effects of smoking on their specific conditions. People in the contemplation stage, they are open to education about smoking and health, and those in the preparation stage are ready to set goals and choose methods for cessation. Smokers in the action stage are attempting to quit. Pharmacists can offer support, reinforcement, and guidance to people in the action and maintenance stages [Suchanek and Bruce, 1995].

As cited in article Carmody, he describes in his article the dynamic phenomenon of smoking relapse within the context of cyclical episodes of smoking and quitting during an individual's lifetime .Smoking relapse is discussed in terms of three aspects of tobacco addiction: (1) biological-addiction mechanisms, (2) conditioning processes, and (3) cognitive-social learning factors. The major determinants of smoking relapse are including nicotine withdrawal syndrome, stress, weight gain, social influences, conditioning factors, causal attributions, and environmental variables [Carmody, 1990].

### **2.1.4 Health consequences of smoking**

Smoking cigarettes is associated with some of chronic diseases and responsible for mortality from some of chronic diseases [Sherman, 1991].

A cohort study was done in Norway among 24,505 women and 25,034 men of middle age 40 to 70 years of age who were born between 1925 and 1941. The purpose of this study was to study smoking and deaths and causes of death in women and men. They found that during follow-up, 2333 women and 4680 men died in middle age. Among women and men, 9% and 14% of never smokers, respectively, and 26% and 41% of continuing heavy smokers (> or =20 cigarettes per day), respectively, died in middle age. Years of life lost among heavy smokers between 40 and 70 years of age were 1.4 years in women and 2.7 years in men, compared with never smokers. Rates of smoking-associated lung cancer were similar in women and men, while lower cardiovascular mortality rates in women than men [Vollset , Tverdal , and Gjessing , 2006].

Smoking is related to different chronic diseases. Many organs and body systems are adversely affected by tobacco smoke .All smokers are at risk for development many kinds of cancer with higher rate than non-smokers such as cancer lung, for example men who smoke are about 23 times more likely to develop lung cancer than non-smokers, and women who smoke are about 13 times more likely to develop lung cancer than non-smokers. Smoking causes about 90 percent of lung cancer deaths in men and about 80 percent in women [CDC, 2004].Another types of cancer such as cancer of mouth, throat, pancreas, kidney, liver, and urinary bladder [CDC, 2004; Sherman , 1991].

Smoking causes injury to the airways and air sacs of lungs, which can lead to chronic obstructive pulmonary disease (COPD), which includes emphysema .Smoking may cause asthma to children and adolescents .Asthma is a disease that causes inflammation of the airways, and then the airways become thin, and hinder airflow in and out of the lungs[CDC, 2004].

Smokers are at great risk for cardiovascular diseases (CVD), such as coronary heart disease (e.g., heart attacks), cerebrovascular disease, and atherosclerotic peripheral vascular disease [CDC, 2004; Sherman, 1991].

The risk of cardiovascular diseases death increases with increasing exposure to cigarettes smoking, depending on the number of cigarettes consumption daily, duration of smoking, the degree of inhalation, and the age of initiation. The relative risk for cardiovascular diseases is substantially greater in early adult life than in old age, and is associated more strongly with cigarettes than with other types of tobacco [Chen and Boreham, 2002].

Other effects of smoking included cataracts, smokers have a two to three time's greater risk of developing cataracts than non-smokers [CDC, 2004].

Smoking has a direct effect on the growth of the fetus. Nicotine in cigarettes may cause the blood vessels to tighten in the umbilical cord and uterus, decreasing the amount of oxygen the unborn baby receives. Nicotine may also reduce the amount of blood in the baby's bloodstream, which can contribute to low birth weight, leading to cause of infant deaths [Sherman, 1991; CDC, 2004].

### **2.1.5 Benefits of smoking cessation**

Smoking cessation has immediate in addition to long-term benefits, by reducing risks for diseases caused by smoking and improving health status in general [CDC, 2004]. Smoking cessation can improves longevity .Smoking cessation has major and immediate health benefits for men and women of all ages [CDC, 1990].

A study conducted by the American Cancer Society, and published in the American Journal of Public Health in 2002; found that life expectancy among smokers who quit at age 35 exceeded that of continuing smokers by 6.9 to 8.5 years for men and 6.1 to 7.7 years for women. Smokers who quit at younger ages realized greater life extensions. However, even those who quit much later in life gained some benefits, among smokers who quit at age 65 years, men gained 1.4 to 2.0 years of life, and women gained 2.7 to 3.7 years [Taylor et al, 2002].

Smoking cessation is recognized to decrease cancer risk, although there is a large interval before reduces in cancer incidence are seen [Godtfredsen et al, 2002].

According to a study that was done at Oxford University, it has been estimated that quitting smoking before 35 years of age is associated with a greater than 90 percent reduction in tobacco-attributable cancer risk [Peto et al, 2000].



The center for chronic disease prevention and health promotion in Washington, D.C. emphasize that smoking cessation reduces the risk of both stroke and brain hemorrhage [CDC, 1990].

According to Kawachi et al. study, the risk of suffering a stroke among female cigarette smoker's declines soon after cessation, and the benefits are independent of the age at starting and the number of cigarettes smoked per day [Kawachi et al, 1993].

The Framingham study, involving both men and women, suggests that most of the benefit of quitting occurs within 5 years following cessation [Wolf et al, 1988].

Rosenberg et al. study, established that the risk of developing coronary artery disease could be reduced by one-half after one year of abstinence from smoking. After two years, the risk of CAD equals that of people who have never smoked [Rosenberg, Kaufman, Helmrich, and Shapiro, 1985].

Among men who have quit smoking for at least five years, mortality from CAD decreases to almost the level of subjects who have never smoked [Tverdal et al, 1993].

Godtfredsen, et al. (2002) study, reported that subjects who smoked in the past had a 24% reduction in cardiovascular disease mortality after two years of smoking cessation. Furthermore, after ten to fourteen years of smoking cessation, the adverse effects on mortality from CAD resolve completely[Godtfredsen et al.,2002].

A previous lung health study was done in USA, in1999, to evaluate the effects of randomly assigning smokers who have early chronic obstructive pulmonary disease (COPD) to a smoking-cessation intervention on the symptoms of chronic cough, chronic phlegm production, wheezing and shortness of breath, and to determine the effects of quitting smoking on these symptoms .A study was done for both male and female smokers (n=5,887) of age 35 to 60 years with early COPD .All the participants were enrolled in 5 years clinic trials. Two-thirds of participants were randomly assigned to smoking-intervention groups and one-third to a usual-care group. One intervention group was treated with Ipratropium bromide by inhaler; the other intervention group received placebo inhalers. The usual-care group was advised to stop smoking. The results showed that the prevalence of each of the four symptoms in the two intervention groups was significantly less than in the usual-care group. Sustained quitters had the lowest prevalence of all four

symptoms, whereas continuous smokers had the greatest prevalence of these symptoms. Changes in symptoms occurred within the first year after smoking stopping [Kanner, Connett, Williams, and Buist, 1999].

### **2.1.6 Overview on obesity and overweight**

Obesity has reached epidemic proportions globally, with more than 1 billion adults overweight, and at least 300 million of them clinically obese. The obesity epidemic is not restricted to industrialized societies; this increase is often faster in developing countries than in the developed world [WHO, 2003(c)].

Obesity is a chronic condition that develops as a result of an interaction between a person's genetic makeup, behavioral, and environment factors, causing an imbalance between energy intake and energy expenditure [WHO, 2003(c); Tanner, 2002].

Obesity and overweight is influenced by behavioral factors such as eating too many calories, while not getting enough physical activity to burn the extra calories [Crawford and Ball, 2002].

Body Mass Index (BMI) increases amongst middle-aged elderly people, who are at the greatest risk of health complications [WHO, 2003(c)]. Obesity and overweight considered as a major risk factor for developing chronic diseases such as heart disease, diabetes mellitus type 2, and osteoarthritis [WHO, 2005 (c)] .

In a recent study done in Palestine, among women and men aged 30-65 years old, the prevalence of obesity among adults was relatively high; 36.8% and 18.1% in rural women and men, respectively, compared with 49.1% and 30.6% in urban women and men, respectively, also the result of this study does not represent the prevalence of obesity among the young generation. [Abdul-Rahim et al., 2003].

Prevalence of overweight and obesity can be determined by using body mass index (BMI). Body mass index (BMI) defined as the weight in kilograms divided by the square of the height in meters ( $\text{kg}/\text{m}^2$ ). According to the National Institutes of Health (NIH) and World Health Organization (WHO) guidelines, overweight defined as a Body Mass Index (BMI) of 25-29.9  $\text{kg}/\text{m}^2$ , and obesity defined as BMI equal or over 30  $\text{kg}/\text{m}^2$  [WHO, 2005 (c)].

### **2.1.7 Determinants of obesity and overweight**

The determinants of overweight and obesity can be divided into genetic, environmental, and regulatory determinants.

#### **2.1.7.1 Genetic determinants**

Obesity tends to run in families, suggesting a genetic link. Furthermore, Family members may share common habits and similar lifestyle in term of diet and other factors like socioeconomics status, environmental factors, and physical activity pattern that may lead to obesity and separating all these factors from genetic factors is difficult [CDC, 2005].

A family history of obesity increases your chances of becoming obese by about 25 to 30 percent [St.Vincent, 2005]. Unfortunately, we do not know how genes make us fat or thin, Some genes could affect parts of the brain that control appetite and the feeling of having eaten enough; others may determine how the body conserves or burns up Calories[Collins, 2005(a)].

In certain cases, mainly cases of very severe obesity with childhood onset, a single gene would play a lenient role allowing environmental factors to have major influence. Rare mutations of the leptin gene and its receptor are evidence of the existence of an obesity gene [Froguel, Guy-Grand, and Clement, 2000].

Leptin is produced in adipose tissue cells and acts to control body fat. The existence of leptin supports the idea that body weight is regulated, because leptin serves as a signal between adipose tissue and the areas of the brain that control energy metabolism, which influences body weight[MRL, 2005]. Inactivity of this gene would be sufficient to produce early onset abnormal eating habits [Froguel, Guy-Grand, and Clement, 2000].

#### **2.1.7.2 Environmental determinants**

The environmental factors affect the people lifestyle behaviors such as socioeconomic status, eating pattern, and level of physical activity [health-cares.net, 2005(a)].

##### **Socioeconomic status**

Socioeconomic factors are major influences on obesity, especially among women, and both energy intake and energy expenditure [MRL, 2005].

In developed societies, socioeconomic status is strongly negatively correlated with the prevalence of obesity, the lower social class had a powerful risk factor for obesity .While in developing societies, there was a strong positive relationship between socioeconomic status and obesity, and the higher social class had a powerful risk factor for obesity [Stunkard, 1996].

Socio-demographic factors also have influence on prevalence of obesity. Unlike in Europe and North America, obesity in the Eastern Mediterranean Region is more prevalent in urban areas and among unemployed than employed women. In Jordan, for example the prevalence of obesity was 56% in urban areas compared with 44% in rural areas. Similar trends were found in Egypt, the Islamic Republic of Iran, Morocco, Oman, Tunisia and Turkey. Lebanon was an exception as obesity was more prevalent among rural than urban women. In Kuwait, the rate of obesity in unemployed women was 47% compared to 34% in employed women, Saudi Arabia, the rate of obesity in unemployed women was 79% compared to 53% in employed women, and in Tunisia, the rate of obesity in unemployed women was 24% compared to 15% in employed women[Musaiger , 2004].

### **Eating pattern & level of physical activity**

Many people have sedentary behaviors such as long periods watching television and using the internet and then consumption food with high sugars and fat, this behaviors lead to low calories burn off and extra calories stored in their body, result weight gain can occur [Collins , 2005(a)].

Lowry et al study was done to examine associations of physical activity and food choice with weight management goals and practices among US undergraduate college students. The results showed that 35% of students were overweight or obese (body mass index  $\geq 25.0$ ). Nearly half (46%) of all students reported they were trying to lose weight. Female students were less likely than male students to be overweight, but more likely to be trying to lose weight. Among female and male students, using logistic regression to control for demographics, trying to lose weight was associated with participation in vigorous physical activity and strengthening exercises, and consumption of  $\leq 2$  servings/ day of high-fat foods. Female and male students who reported using exercise to lose weight or to keep from gaining weight were more likely than those who did not to participate in vigorous, strengthening, and moderate physical activity, and were more likely to eat  $\geq 5$

servings/day of fruits and vegetables and  $\leq 2$  servings/day of high-fat foods. Among students who were trying to lose weight, only 54% of females and 41% of males used both exercise and diet for weight control [Lowry et al., 2000].

Fruits and vegetables consumption within diet daily could help in prevent some of non-communicable diseases such as cardiovascular diseases and certain type's cancer .Eating a variety of vegetables and fruits clearly ensure an adequate intake of most micronutrients, dietary fibers and a host of essential non-nutrient substances. As well, increased fruit and vegetable consumption can help displace foods high in saturated fats, sugar or salt. They also stated that there is convincing evidence that fruits and vegetables decrease the risk for obesity, and evidence that they probably decrease the risk of diabetes [WHO(c), 2003].

### **2.1.7.3 Regulatory determinants**

#### **Psychological factors**

Negative emotions such as boredom, sadness, or anger or positive emotions like happiness influence eating habits [Collins, 2005(a)].

During a binge-eating episode, people eat large amounts of food while feeling they can't control how much they are eating. Those with the most severe binge-eating problems are considered to have what is called binge-eating disorder [The Cleveland Clinic, 2006].

10 to 20% of people who are mildly obese and even more who are severely obese and entering weight reduction programs have binge eating disorder [MRL, 2005]. Those with the most severe binge eating problems are also likely to have symptoms of depression and low self-esteem [health-cares.net, 2005(a)].

#### **Endocrine factors**

Some illnesses can lead to obesity or a tendency to gain weight. These include hyperinsulinism from pancreatic neoplasm's, hypothyroidism, hypercortisolism from Cushing's syndrome, depression, and certain neurological problems that can lead to over eating [The Cleveland Clinic, 2006].

## **Drugs**

Such as steroids hormones and some antidepressants (tricyclics, tetracyclics, and monoamine oxidase inhibitors), and antipsychotic drugs, may cause weight gain [The Cleveland Clinic, 2006].

## **Pregnancy**

Pregnancy consider as a major determinant of obesity in some women. Even though most women weigh only a little bit more a year after delivery, about 15% weigh 20 lb more with each pregnancy[MRL, 2005].

### **2.1.8 Health consequences of obesity and overweight**

A person who is obese is more likely to develop some form of chronic diseases. For example, any person who is 40 percent overweight is twice more likely to die prematurely than person with average-weight [health-cares.net, 2005 (b)]. This effect is seen after 10 to 30 years of being obese [Collins, 2005(b)]. According to wellness international network Ltd, obesity statistic related diseases, they found 80% of type 2 diabetes mellitus related to obesity ,70% of Cardiovascular disease related to obesity ,42% breast and colon cancer diagnosed among obese individuals 30% of gall bladder surgery related to obesity ,and 26% of obese people having high blood pressure[Collins , 2005(c)].

There is a strong relationship between obesity and type2 diabetes mellitus (D.M), the risk of type 2 D.M increases with the degree and duration of obesity[health-cares.net, 2005 (b)]. Type 2 D.M considered an independent risk factor for coronary heart disease (CHD), and obesity exacerbates and predisposes to both of them [Aronne ,2001].Most of people with Type 2 D.M are overweight or obese[Collins Anne, 2005(b)]. Type 2 D.M also influence on life expectancy of people and decrease life expectancy by about 35% [Aronne, 2001]. Loosing weight and increase levels of physical activity may prevent the onset of type2 diabetes mellitus [NIDDK, 2004].

Obesity and overweight are strongly associated physiologically to increase arterial blood pressure (BP), this lead to in general high blood pressure in human's bodies [Pastorek, 2000]. Obesity may be elevate BP from optimal level approximately120/80 mmHg to

140/90 mmHg [Krupa, 2004]. A loss weight is not the same effect as work of antihypertensive drug therapy, but weight loss can help for treatment [Pastorek, 2000].

Morbidity and mortality from heart diseases like heart attack, congestive heart failure, sudden cardiac death, angina (chest pain), or abnormal heart rhythm and stroke are increased in person who are overweight or obese[Collins , 2005(b)]. The results from overweight and obesity are in high blood pressure, increases triglyceride levels , decreases levels of high-density lipoprotein cholesterol (HDL-C), increases levels of low-density lipoprotein cholesterol (LDL-C), which are considered risk factors for heart diseases and stroke[Aronne , 2001].

A reduction by 5% to 15% body weight and especially when a accompanied with exercise may has beneficial effects on certain heart diseases and stroke risk factors by decreases triglyceride levels, increases levels of high-density lipoprotein cholesterol (HDL-C) , decreases levels of low-density lipoprotein cholesterol (LDL-C), improve blood pressure[NIDDK,2004].

Cancer develops from a single cell that has undergone mutations in its deoxyribonucleic acid (DNA) the genetic material which carries the body's hereditary instructions. Instead of maturing normally and dying, cancerous cells reproduce without self-control. It's not that they divide faster, but that they never stop dividing, and they fail to mature [Hoag Cancer Center, 2006].Overweight and obesity may increase the risk of developing many types of cancer, including colon, esophagus, and kidney cancer .Overweight is also associated with uterus and postmenopausal breast cancer in women. Being overweight or obese throughout adult life increases the risk of develop numerous of these cancers; it also may increase the risk of dying from some cancers [NCI, 2004].

The process in which being overweight increase the risk of developing cancer is not known exactly .It may be that fat cells make hormones that affect cell growth and lead to cancer. Also, eating habits or physical activity levels that may lead to being overweight may also contribute to cancer risk [NIDDK, 2004].

Osteoarthritis is a common joint condition that most often affects the knee, hip, and lower back joints. Carrying extra weight places extra pressure on these joints and erodes the cartilage (tissue that cushions the joints) that normally protects them [health-cares.net,

2005 (b)]. Loosing Weight can decrease stress on the knees, hips, and lower back, may improve the symptoms of osteoarthritis, and reduce inflammation in the body [NIDDK, 2004].

Sleep apnea is a serious breathing condition that is associated with being overweight. Sleep apnea can cause a person to snore heavily and to stop breathing for short periods during sleep. Sleep apnea may cause daytime sleepiness and even heart failure. The risk for sleep apnea increases as body weight increases [health-cares.net, 2005 (b)].

Extra fat may be stored around the neck of a person who is overweight. This may create the airway lesser size than in person who have normal weight, which may lead to difficulty in breathing, loud (snoring), or stop altogether .In addition, as a result from fat stored in the neck and throughout the body, this fat can produce higher blood levels of substances that cause inflammation. Inflammation in the neck may be a risk factor for sleep apnea. Sleep apnea risk may be improved by weight loss which decrease the fat stored in neck and body, and reduce inflammation [NIDDK, 2004].

### **2.1.9 Weight loss –control**

The interact between biological and environmental factors are considered responsible for causing overweight and obesity .Not only the genetic factors can increase the incidence of being overweight and obesity but also the environment which we live in can effect our behaviors like eating habit, levels of physical activity, and others sedentary behaviors, so may be we can prevent our body of being overweight and obese by doing some changes in our behaviors such as eating low fat diet, high complex carbohydrate diet, regular self-monitoring of body weight and food intake, and high levels of physical activity[Crawford and Ball, 2002].

If you are overweight or obese and try to loosing weight, you have to follow these changes in your behaviors, because the more important thing in loosing weight is how to keep the weight that you lost from being regained, and these certain behaviors are considered common successful maintenance of weight loss. In addition to the previous behaviors, eating breakfast on a regular basis may be considered as another factor in maintenance of weight loss .In a cross-sectional study was done in American in which 2959 subjects involved in this study were selected from the National Weight Control Registry (NWCR),



and the Objective of this study was to examine breakfast consumption in subjects maintaining a weight loss in the NWCR. All subjects maintained a weight loss of at least 13.6 kg for at least one year, the average weight lost was 32 kg maintained for 6 years. Eating breakfast every day of the week was reported by 78 % of the people in the study, and only 4 % reported never eating breakfast. Of the breakfast eaters, cereal was the breakfast of choice, with 60 per cent of those studied saying they 'always' or 'usually' ate a bowl of cereal. There was no difference in reported energy intake between breakfast eaters and people who did not eat breakfast, but breakfast eaters reported slightly more physical activity than non-breakfast eaters. Researchers involved with the NWCR say that there are several possible reasons that regular breakfast eating may be an essential behavior for weight loss maintenance. First, eating breakfast may reduce hunger later in the day that leads to overeating. Second, Breakfast eaters are able to better resist fatty and high calorie-containing foods throughout the day. Finally, nutrients consumed at breakfast may give people a better ability to be more physically active [Wyatt et al, 2002].

#### **2.1.10 Benefits of weight loss**

Weight loss has been considered an important factor in the control and prevention of several chronic diseases like coronary heart disease, hypertension, type 2 diabetes, hyperlipidaemia, cardio-respiratory failure and other chronic degenerative diseases, so the wellness improves and health benefits increase as weight loss moves from modest to substantial .Weight loss 5% of original body weight which is considered as a modest weight loss can reduce, eliminate or prevent some of chronic diseases in a large proportion of overweight patients, and keeping a modest weight loss is more important than reaching a large weight loss that will be regained .Weight loss of 10% or less of original body weight can improve the complications most commonly associated with overweight and obesity . Weight reduction has been shown to improve glycemic control by in reducing insulin resistance in obese patients with type 2 diabetes, reduce blood pressure in obese patients with hypertension, and improve lipid levels such as increased HDL-and decreased LDL-cholesterol and VLDL triglycerides in obese patients with dyslipidemia [Aronne , 2001; Pasanisi , Contaldo ,de Simone , and Mancini , 2001].

### **2.1.11 Overview on physical activity**

Physical activity is defined as ‘any bodily movement produced by skeletal muscles that result in energy expenditure’ [Aranio, 2003].

At least 60% of the global population fails to achieve the minimum recommendation of 30 minutes moderate intensity physical activity daily. The global estimate for the prevalence of physical inactivity among adults was 17%, but insufficient activity which is less than 2.5 hours per week of moderate activity ranged from 31% to 51%, with a global average 41% across sub-regions [WHO, 2003(c)].

Physical inactivity is recognized as an important modifiable risk factor for the reduction of mortality and morbidity from chronic diseases such as cardiovascular disease, type 2 diabetes, some forms of cancer, and morbidity from some injuries, and mental health conditions [US DHHS, 1996; WHO 2003(c);Aranio, 2003].

The risk of having CVD increases by 1.5 times in people who do not follow minimum physical activity recommendations. Physical activity declines continuously as age increases, falling off from adolescence. Men are more likely than women to engage in regular activity. Opportunities for people to be physically active exist in the four major domains of their day, at work, for transport, during domestic duties, and in leisure time. Some examples of physical activity are walking, walking up stairs, gardening, playing sport and work-related activity [WHO, 2003(c)].

Physical activity has specific objectives of improving fitness, performance and health, and providing a means of social interaction[WHO, 2003(c); US DHHS, 1996].Physical activity include duration, frequency, intensity, and type [US DHHS, 1996].

### **2.1.12 Determinants of physical inactivity**

Many environmental, cultural and social factors have contributed to the decline in population activity levels [CFLRI1996; US DHHS, 2006].

Such environmental factors sidewalks, street design, density of housing, and availability of public transit may play an important role in promoting or discouraging an individual or family's level of physical activity [US DHHS, 2006].

Individual's level of physical activity could be affected by social environmental barriers such as work, school, and family and friends. The commitments of work, home and family

can create a time load, lead to lack of time to do physical activity [CFLRI 1996; US DHHS, 2006].

Lack of time and interest were the most important reason for not engaging in physical activity [Abdullah, Wong, Yam, and Fielding 2005; CFLRI, 1996].

Salmon et al study found that those reporting high enjoyment and preference for physical activity were more likely to report high levels of activity, while those reporting cost, the weather, and personal barriers to physical activity were less likely to be physically active [Salmon et al., 2003].

Lack of suitable facilities, skill or appropriate equipment, lack of encouragement and support from family and friends, lack of self-management skills such as the ability to set personal goals, monitor progress were lead to physical inactivity [CFLRI, 1996; US DHHS, 2006].

### **2.1.13 Benefits of physical activity**

People can improve the quality of their lives through a lifetime of regular physical activity ranging from moderate to vigorous intensity. Physically active lifestyle has a wide set of health benefits [USDHHS, 1996].

Among adults, higher levels of physical activity have been associated with reduced incidences of cardiovascular disease [Harold, 2001].

The physical activity can lower incidence of cardiovascular disease by lower the buildup of plaques in arteries by fat oxidation (increasing of high-density lipoprotein (HDL) level which is good cholesterol and decreasing of low-density lipoprotein (LDL) level which is bad cholesterol) in the blood, improved cardiac efficiency, strengthens the lungs (increase the ventilation), Lowers blood pressure or prevent the onset of high blood pressure [MFMER, 2005; Vuori, 2001].

Regular moderate physical activity as well as good physical fitness can prevent the onset of hypertension in mild to moderate degree; also can lowers high blood pressure in male and female patients of various ages having mild to severe hypertension. Physical activity can play role in increased cellular insulin sensitivity and decreased level of circulating insulin, decreased peripheral resistance, and reduction in body fat that may lead to hypertension [Vuori, 2001].

Regular physical activity may decrease the risk of certain types of cancer such as colon, prostate, and breast. For example physical activity may help in increasing intestinal mobility, and decreasing gastrointestinal transit time resulting in shorter contact time between the colon mucosa and potential carcinogens .Regular physical activity can also play an important role in manage and prevent type 2 diabetes mellitus [MFMER, 2005; Vuori, 2001].

Kelley and Goodpaster study said that the prospective studies indicate that higher levels of physical activity are clearly associated with a lower incidence of type 2 DM [Kelley and Goodpaster, 2001].

When people do any regular exercise they need energy to do it, they use glucose, so the sugar is decreasing in the blood during and after the exercise, then lead to lower blood sugar level. Regular exercise also increased cellular insulin sensitivity and decreased need of insulin, and lower blood insulin levels and peaks in blood sugar level [MFMER 2005; Vuori, 2001].

## **2.2 Contextualization**

### **2.2.1 Introduction**

In this chapter, I will present some of the studies related to the topic under study. This includes studies about the prevalence of health risk behaviors and their determinants. Special emphasis was on studies conducted among young university students.

### **2.2.2 Earlier studies**

#### **2.2.2.1 Smoking behavior**

A Cross-sectional study was done by Faculty of Health Sciences at American University of Beirut in 2001. The aim of this study was to determine the prevalence of smoking (cigarettes and/or narghile) among university students. They found that the overall prevalence of smoking was 40% (21.1% of the students were smoking only narghile, 7.6% of the students were smoking only cigarettes and 11.3% of the students were smoking both cigarettes and narghile [Tamim et al, 2003].

In 2003, a cross-sectional survey was done at Aleppo University in Syria to document the Characteristics of cigarette smoking and quitting among 587 students (278 males, 309 females) with mean age (21.8 +/- 2.1 years) at Aleppo university in Syria. They found the Current cigarette smoking was 30.9% of male and 7.4% of female students and daily smoking 24.8% of male and 5.2% of female students. Narghile smoking was 25.5% among males and 4.9% of females, mostly on an occasional basis. More than half of current smokers (56%) believed they could quit cigarettes, 75.2% were interested in quitting, and 78% of those had made a quit attempt in the past year. Important correlates of cigarette smoking among students were being older, male, and smoking narghile, while being older and from a poorer family were associated with increased interest in quitting [Maziak et al, 2004].

A previous study was done in 2002 in a New Zealand at University of Otago. The aims of the study were to estimate the prevalence of smoking in the University of Otago, and to compare estimates with those for university students in other countries, and with other similarly aged youth in New Zealand. They found the daily smoking was 10% of both males and females. A further 10% of females and 9% of males reported occasional smoking. They concluded daily smoking was uncommon among University of Otago students relative to the general New Zealand population aged 15-24 years. Furthermore, rates were lower than those recorded for students in other developed countries and appear to have decreased over the last decade [Kypri and Baxter, 2004].

A previous study was done among students (n = 1896) from 12 universities in three cities in China, comparing medical students with college students in non-medical majors to determine whether a medical education has a preventive effect on smoking uptake. They found no significant differences between medical and non-medical students in smoking prevalence (40.7% versus 45.1% for males, 4.4% versus 6.0% for females), in 'ever smoked 100 cigarettes' groups or in years of smoking. For both student groups, smoking prevalence increased with age and with years of college. However, one significant difference was found among the smokers: medical students were more likely to be occasional smokers than were non-medical students (75.3% occasional smokers among medical students who smoked versus 60.6% among non-medical students) [Zhu et al, 2004].

At Adana University, in Turkey, a study was done to assess the prevalence of smoking and socio-demographic factors related to smoking behavior of first year university students (n=640). They found the prevalence of daily smoking among the first year students was 21.4%, with the predominance of males (25.0%) over females (12.9%). Most students (89.1%) had positive expectations about quitting smoking in the next 5 years. The smoking behavior was significantly related to student's sex ( $p=0.026$ , Pearson's chi-square test), mother's education ( $p=0.029$ , Pearson's chi-square test), number of failed grades ( $p=0.011$ , ANOVA), student's monthly income ( $p<0.001$ , Pearson's chi-square test), and having friends who smoke ( $p<0.0001$ , Pearson's chi-square test) [Saatci et al, 2004].

A cross-sectional study was done at the Jordan University of Science and Technology in northern Jordan. The purpose of this study was to identify college students' knowledge and perceptions of lung cancer and smoking. The results showed that the prevalence of current smoking was 16.5% and that the prevalence of former smoking was 10.0%. Most (75.3%) of the respondents were aware of the prevalence of lung cancer. Most disagreed that lung cancer could be easily cured. Former smokers were more knowledgeable than current smokers about the health hazards of smoking, and those who never smoked were more knowledgeable than both. Engineering students were more likely to agree with the benefits of quitting smoking than were medical or science students. Addiction and friends were the reasons most frequently given for not quitting smoking [Kofahi and Haddad, 2005].

A previous study was done at Kuwait University to determine the Prevalence of cigarette smoking among male Kuwait University undergraduate students. They found that 42.2% of students reported themselves to be cigarette smokers, and 56.5% reported themselves nonsmokers [Alansari, 2005].

At Jordan University of Science and Technology, in 2002, a study was done to estimate the prevalence of smoking and to describe the habits, attitudes, and practices related to smoking among 650 students. They found the prevalence of smoking was 28.6% (50.2% among males and 6.5% among females). The main source of the first smoking were friends, not family, and this most often occurred after 15 years of age (82.3%). Males preferred smoking in the cafeteria, females in the bathroom. The main advantage of

smoking for males was calming down, while for females it was independence. Non-smokers chose not to smoke because of health and hatred of the habit. The non-smokers had more positive attitudes against smoking and were more aware of the adverse effects of smoking. The reasons smokers gave for starting smoking were pleasure, followed by stress and curiosity. Two-thirds of smokers intended to quit smoking in the future. Some smokers disagreed with some criticisms against smoking, and reasons why they did not want to quit included social attitudes, addiction, and not knowing how to quit [Haddad and Malak, 2002].

A previous study was done at Poland University, and the purpose of this study was to evaluation of social aspects of tobacco smoking among Polish students (n=671) of Medical University and University in the age between 19 and 25 .The results showed that 53.8% of the students tried to smoke at least once. 23.09% of the students smoked regularly (10.73%) or occasionally (12.36%). University students smoked significantly more often than medical students, 32.79% and 18.64% respectively. Males smoked more frequently than females. Most smokers (80%) were aware of tobacco-dependent health disturbances [Kuznar, Batura, and Mlynarczyk, 2002].

A cross-sectional and prospective follow-up study was done at Northern Sweden to explore the effect of smoking and cessation on body weight. They found that smokers who quit tobacco during the follow-up period gained significantly more weight than smokers who switched to snuff (annual gain 0.96% vs. 0.51%,  $P < 0.05$ ). At entry, ex-smokers had higher prevalence of overweight than non-smokers [prevalence ratio (PR) = 1.24, 95% confidence interval (CI) = 1.10-1.40]. Snuff users had slightly higher prevalence of overweight at entry (PR = 1.20, CI = 1.01-1.42). Snuff users who quit gained more weight than nonusers (0.70% vs. 0.44%,  $P < 0.05$ ) or those who continued to use Snuff (0.42%).They concluded that cessation of tobacco, either cigarettes or Snuff, leads to significantly increased weight gain[Rodu et al, 2004].

A study was done at the state of Minnesota in 1998 among 81,247 9th and 12th grade public school students. The aim was to describe gender and racial/ethnic differences in the prevalence of cigarette smoking for weight loss or control in an adolescent population, and relationships among heavy smoking, weight concerns and smoking to lose or control weight. They found that female smokers of different racial/ethnic groups were smoke for weight loss or control. The same result was found related to male smokers of different

racial/ethnic groups. Heavy smokers, smokers who perceived themselves as overweight or were weight-concerned were significantly more likely to report smoking as a weight control method [Fulkerson and French, 2003].

A Cross-sectional study was done at Zaragoza University in Spain. The aim of this study was to determine the prevalence of tobacco use among university students who participate in sports activities. Data based on a self-administered questionnaire completed by students who participated in activities at a university sports center. The variables studied were age, sex, tobacco use, cigarettes/day, prior history of physical exercise, awareness of the regulations concerning tobacco use in force on the university campus, opinion on the relationship between smoking and reduced physical performance, and desire to quit smoking. The results showed that the mean age was (22+ 3.6) years, and the prevalence of smoking was 30.3%. The mean number of cigarettes smoked per day was (10.5+ 6.7) for the sample as a whole, (9.3+ 6.1) for women, and (14.7+ 7.4) for men; the differences were statistically significant. No significant differences were found with respect to the relationship between exercise and tobacco use. A total of 98.8% of the subjects were of the opinion that smoking reduced physical performance, and 46.3% expressed a desire to quit [Nerin et al, 2004].

#### **2.2.2.2 Overweight & Obesity**

An explorative study was done at Kuwait University in 1999 among 842 students were randomly selected. The purpose of this study was to explore dietary and socioeconomic factors associated with obesity. Obesity was classified into grade 1 and 2 (BMI > 25 and > 30 kg/m<sup>2</sup>). The associated factors studied and obtained through questionnaires included gender, age, marital status, parental obesity, education and occupation, dieting, last dental and health check-up, year of study, number of siblings (total, brothers and sisters), eating in between meals, high school and college GPA and major, exercising, number of regular meals eaten, obese relatives, those living at home, and servants, highest desired degree, birth order, having a chronic disease, countries prefer visiting, family income, governorate, and socioeconomic status (SES). The results showed that Grade 1 and 2 obesity were found to be 32.0 and 8.9%, respectively. Factors that were found to be significantly associated with obesity included gender, age, marital status, obesity among parents, dieting, last



physical check-up, year of study, number of brothers, sisters, and regular meals eaten and high school GPA. Logistic regression analysis revealed that the same factors significantly contributed to the development of obesity except the last four [Al-Isa, 1999].

Another previous study was done at both Medical College in Beijing University (135 male and 150 female) in Northern China and Medical College in Kunming University (95 male and 160 female) in southern China. The objective of this study was to examine the nutritional knowledge and food habits of Chinese university students and compared them with those of other Asian population. The study design was a cross-sectional, data was conducted by self reported questionnaire, and the age of students was ranging from 19-24 years. The results showed that 80.5% of students had a normal weight and 16.6 % of students were underweight but the prevalence of over weight was 2.5% and obesity being very low 0.4% in this study sample. Young Chinese female students had a greater desire to be thinner 62.0% than males 47.4%. The high percentage of students 83.6 % reported taking meals regularly, with 79.0% eating meals 3 times per day, there were no gender differences. But a significant gender difference was found in the reply linking to breakfast intake, which were 66.8% of males and 82.3% of females reporting eating breakfast regularly. The frequency of snacking rate was significantly higher in females (31.1%) than in males (11.5%). The present sample confirmed high consumption of vegetable and fruits. A total of 47.9% of students reported the consumption of colored vegetables such as spinach and carrots, and 32.5% of subjects reported eating fruit daily. Female students tend to eat more fruit than males [Sakamaki et al, 2005(a)].

A comparative study was done at Korea University and Japan University. The aim of this study was to compare the food habits and body shape preferences of female university students in South Korea and Japan to explore body shape perceptions in those populations. The results showed normal weight was the highest value for both Korea University females student (70.7%) and Japan University females student (78.1%), also the obesity was take the lowest value for both Korea and Japan University females student (0.8% and 1.8% respectively). There is Significant differences in eating patterns like, eating breakfast daily which Japanese students showed high percentage (79%) than Korean students (36.2%). A difference was also observed in frequency of meals, where Korean students reported eating meals two times per day (59%) and the majority of Japanese students reported eating meals three times per day (81%) [Sakamaki et al, 2005(b)].

A study was done at American University of Beirut, and the aim of this study was to investigate patterns and gender differences in perception of body image as compared with actual body mass index among 954 eligible respondents aged 16–20 years completed the questionnaire over three consecutive days. In addition, the survey included two items on self reported weight in kg and height in meters to construct a conventional measure of BMI. The results showed that overall, 6.1% of female and 23.8% of male respondents were identified as overweight. However, significantly more women (52.9%) than men (24.5%) wanted to lose weight and this held true across the actual body weight categories. Among the overweight, most men (62%, 95%CI: 0.53 to 0.71) and almost all women (96%, 95%CI: 0.80 to 0.99) expressed a desire to lose weight. The gender gap was even more noticeable for those in the “normal” weight category, in which 61% (95%CI: 0.56 to 0.67) of women compared with only 16% (95%CI: 0.11 to 0.18) of men, wanted to lose weight. The findings from logistic regression showed that men were surprisingly 4.9 times more likely to be overweight than women ( $p, 0.0000$ ), controlling for age, father’s education, and mother’s employment status, mother’s education, pocket money, and ever lived outside Lebanon. Other significant predictors of overweight were father’s education and age of respondent. However, women were 10.8 times significantly more likely to perceive themselves as overweight than men ( $p, 0.0000$ ), controlling for their BMI, and the same other covariates. Age, actual BMI, and having lived outside Lebanon were significantly associated with trying to lose weight as would be expected. Among the socioeconomic status variables, only pocket money was positively associated with trying to lose weight, suggesting that the desire for thin bodies is slowly becoming a mass phenomenon [ Khawaja and Afifi-Soweid, 2004].

In United Arab Emirates University, a cross-sectional study was done by Department of Food Sciences and Nutrition, Faculty of Agricultural Sciences on 215 university female students aged 18-30 years in 1993. The purpose of this study was to examine some factors associated with obesity among this group of females. They found that 19% of females were overweight and 9.8% were obese. The proportion of obesity was the highest in females aged 18 years (31%) compared to those aged 19 years (23.8%) and 20 years and above (27.6%). Although there was no significant association between obesity and social factors studied and the prevalence of obesity was higher in non-national, those with educated mothers, having no housemaid, and having a family history of obesity. There was no

significant association between Skipping meals and snacks and obesity, on the other hand, obesity was more prevalent among females who did not skip lunch. In contrast, females who ate afternoon snacks and dinner were more likely to be obese than females who skipped these events [Musaiger and Radwan, 1995].

Another study which was done in Lebanon, the objective of this study was to estimate the prevalence of overweight and obesity and examine associated covariates in the Lebanese population aged 3 years and older .The results showed that children 3 to 19 years of age, prevalence rates of overweight and obesity were higher overall for boys than girls (22.5% vs. 16.1% and 7.5% vs. 3.2%, respectively). For adult men and women (age  $\geq$  20 years), the prevalence of overweight was 57.7% and 49.4%, respectively. In contrast, obesity was higher overall among women (18.8%) than men (14.3%). The lack of exercise associated significantly with obesity among children, obesity in older adults was more prevalent among the least educated, nonsmokers, and those reporting a family history of obesity [Sibai, Hwalla , Adra ,and Rahal , 2003].

A survey study was done among 16,486 university students in 21 European countries, to assess a wide range of health-related behaviors, beliefs and knowledge in educated young adults. They found that Body Mass Index (BMI) was slightly different between countries and rather low overall, 20.5 in women and 22.0 in men. Very few were overweight (8%) and less than 1% were obese. In spite of the low BMI, many perceived themselves as overweight, especially among women. Trying to lose weight (44% of women, 17% of men) and dieting (14% in women and 3% in men) were not uncommon, although large differences existed between countries. Dieting affected snack and meal patterns: dieters reported fewer snacks and female dieters also reported fewer meals than non-dieters. Breakfast was skipped by almost twice as many dieters as non-dieters. Some evidence of anorexia nervosa (dieting in very underweight individuals) appeared [Bellisle, Monneuse, Steptoe, and Wardle, 1995].

A previous cohort study was done in British of all births in 1 week in March 1958 includes information on physical activity frequency and BMI for several ages, 11-45 years .The objective of this study was to assess whether frequency of adolescent physical activity affected subsequent body mass index (BMI) gain through to mid-adulthood. They found that Physical activity at 11 years had no effect on the BMI trajectories, in males or females.

More active females at 16 years gained BMI more slowly than others, by 0.007 kg/m<sup>2</sup>/year per activity category over the period 16-45 years, whereas the most active males gained BMI faster than others, by 0.005 kg/m<sup>2</sup>/year per activity category. This effect in males was not evident on the BMI trajectory from 23 to 45 years. Consistent with these analyses, change in activity was associated with change in BMI in females, e.g. females active at 16 and 42 years gained less BMI than inactive females (2.1 vs. 2.5 kg/m<sup>2</sup>/10 years). Results for males were inconsistent over the time periods examined [Parsons, Manor, and Power, 2006].

A previous study was done in 15 member of European Union (EU) of adult population aged 15 years and above, and the main objective of this study was to explore the influence of socio-demographic factors as well as some attitudes (smoking and exercise) on the prevalence of obesity in the adult population of all 15 member of EU .The average results from EU population within normal weight range was about half (48%) of them, while the obesity prevalence was about 10% in the EU ,and the overweight prevalence was 36.6% and 25.6% among men and women, respectively .UK subjects had the highest prevalence of obesity (12%), while Italians, French and Swedes had the lowest levels of obesity (about 7%) .The results showed that high social class and younger individuals in all groups had a lower odds ratio for obesity prevalence. People with a higher level of education are less likely to be obese. A low participation in various leisure-time physical activities, the lack of interest in being involved in exercise/physical activity and the increasing number of hours sitting down at work appear to be predictors of obesity. Single individuals were less prone to become obese than couples or widowed/divorced people. Finally, smoking status was statistically linked to the prevalence of obesity, since non-smokers or ex-smokers for more than 1 year presented a higher tendency for a BMI >30[Martinez et al., 1999].

A previous study was done at the University of Vienna among 246 students of medicine in the third (clinical) stage of their studies . The purpose of this study was to examine the relationship between actual body weight, characterization of one's weight, and satisfaction with it. Data was collected by a questionnaire including questions about their weight and attitudes regarding their personal body weight. The results showed that many young women and men are either unable to characterize their weight (as normal, underweight, overweight, or obese) or guess incorrectly. The results point to the fact that a lot of women and men do not estimate their body weight in correspondence to the valid definition of the

BMI. Women in particular seem to model themselves more on the current beauty ideal than men. Women seem to be more influenced by the current ideal of slenderness than their male counterparts. Women are more frequently dissatisfied with their weight, and see themselves as considerably heavier than they actually are. Because of this perception, women attempt to reduce weight more often than men. This type of dissatisfaction with one's body weight and excessive attention paid to body image, particularly weight, are considered as risk factors for the development of eating disorders. Not surprisingly, women are significantly more fixated to these conditions than are men [Kiefer, Leitner, Bauer, and Rieder, 2000].

### **2.2.2.3 Physical inactivity**

A cross-sectional study was done among students of Hong Kong University of year 1 and year 3 Chinese undergraduate students in 1997. The purpose of this study was to assess the prevalence and predictors of physical inactivity among students in a Hong Kong university. Data was collected by questionnaires, and the respondent rate was 64%. They found that 31% of the respondents did not participate in physical activity. Being female, not a university resident, studying in the Faculty of Arts and rating current health status as poor or very poor were predictors of physical inactivity. No time and no interest were the most common reasons for non-participation in physical activity among the students. This study showed that about one-third of Chinese university students are physically inactive [Abdullah, Wong, Yam, and Fielding, 2005].

Another previous study was done among 19,298 university students from 23 countries varying in culture and level of economic development. The objectives of this study were to determine the prevalence of leisure-time physical activity and to assess health beliefs and knowledge of the risks of inactivity. They found that the prevalence of physical inactivity in leisure time varied with cultural and economic developmental factors, averaging 23% (North-Western Europe and the United States), 30% (Central and Eastern Europe), 39% (Mediterranean), 42% (Pacific Asian), and 44% (developing countries). The possibility of leisure-time physical activity was positively associated with the strength of beliefs in the health benefits of activity and with national economic development. Knowledge about activity and health was unsatisfactory, with only 40-60% being aware that physical activity was relevant to risk of heart disease [Haase, Steptoe, Sallis, and Wardle, 2004].

In Florida State University, Tallahassee, a study was done to examine current exercise habits and perceived benefits and barriers to exercise in a sample of 147 university students. They found a significant relationship between perceived benefits and barriers to exercise and current exercise habits. Benefits most often associated with regular exercise habits relate to physical performance and appearance. Barriers most often associated with irregular or unreal exercise habits relate to physical hard work and time constraints [Grubbs and Carter, 2002].

At Southeastern Louisiana University, a study was done to compare motivations for sport participation versus exercise among college students. Results indicate that participants were more likely to report intrinsic motives, such as enjoyment and challenge, for engaging in sport, whereas motivations for exercise were more extrinsic and focused on appearance and weight and stress management. The findings suggest that motives for sport participation are more desirable than those for exercise and may facilitate improved adherence to physical activity recommendations [Kilpatrick, Hebert, and Bartholomew, 2005].

In Faculty of Health Sciences, at University of Western Ontario, a study was done to review and analyze the prevalence of university students' participation in physical activity at the level necessary to acquire health benefits. From 19 primary studies (published 1985-2001) representing a total of 35,747 students (20,179 women and 15,568 men) from a total of 27 countries (Australia, Canada, China, Germany, Nigeria, United States, and 21 European countries) are described and the amount of activity identified within each study is analyzed in accordance with the American College of Sports Medicine (ACSM) guidelines for physical activity. With respect to these guidelines, more than one-half of university students in the United States and Canada are not active enough to gain health benefits. Internationally, the same is true. Australian students appear to have the highest level of sufficient activity (at 60%). Women, and especially African-American women, are among the least active students, and students living off-campus are more active than those on-campus [Irwin, 2004].

A study was done among students of faculty of health sciences at Baskent University in Ankara in Turkey. The aim of this study was to assess the perceived barriers to physical

activity .303 of 352 students attending the undergraduate program of the faculty agreed to participate in this study, and all of them were Caucasian. There were 222 females (%73.3) and 81 males (%26.7) aged 17-27 years of age, and the mean age was (20.50) years. The study was conducted between March and June 2005. Participants, who perform physical activity 3 or more sessions per week at moderate to vigorous intensity for 20 min or above, were classified as active. Remained participants were classified as inactive, and perceived barriers to physical activity of them were evaluated by written questionnaire. The perceived barriers were divided into 2 categories, internal barriers and external barriers. The internal barriers were grouped to 3 categories, lack of energy, lack of motivation and lack of self-efficacy. Also external barriers were grouped to 3 categories, lack of resource, lack of social support and lack of time. The results showed that the 44.44% of males were inactive, while 78.40% of females were inactive. The external barriers were significantly higher than the score of the internal barriers. Lack of time was the most important external barrier. Lack of energy was the most important internal barrier. The highest value was observed in the question which indicated lack of time due to a busy class schedule. Other important items were my parents give academic success priority over exercise, lack of time due to responsibilities related to the family and social environment, and I have never any energy to able to do any exercise. Only one item associated to lack of self efficacy [Daskapan , Tuzun , Eker , 2006].

### **2.3 Summary**

In this chapter, I have reviewed some studies that are related to the current study. In summary, there was a difference between the prevalence of smoking behavior, overweight and obesity, and physical inactivity among university students between various countries. Gender, age, family members and friends, monthly income, year of college, type of study in university, parental education level, addiction, and weight control were found to be the strongest determinants of smoking behavior. Gender, age, marital status, eating habits, obesity among parents, last physical check-up, lack of exercise, and smoking behavior were found to be the most significant determinants of the high BMI. Gender, time constraints, lack of interest, students living on-campus, lack of energy, family and environmental factors were found to be the strongest determinants of physical inactivity.

## **2.3 Operationalization**

### **2.3.1 Operational definition of demographic variables**

Demographic variables included different variable such as

- 1- Age: defined as students 18-24 years of age studying at Al-Quds University.
  - 2- Sex: male and female.
  - 3- Resident place: place where the student originally came from before starting University and it was classified as city, village, camp.
  - 4- Marital status: Indicates the civil status of students, and was classified into single, married, engaged, divorced and widowed.
  - 5- Colleges: Science, medicine, art, engineering, law, dawa and foundation of religion, medical technology, pharmacy, qur`an islamic studies, sciences of management and economics
  - 6- Family monthly income: total income of the family and this was classified into 4 groups; less than 1500 NIS, 1500-2000 NIS, 2000-4000 NIS, more than 4000NIS
  - 7- Educational level of student: 1<sup>st</sup> year, 2<sup>nd</sup> year, 3<sup>rd</sup> year, 4<sup>th</sup> year, 5<sup>th</sup> year, 6<sup>th</sup> year this refers to academic years, this does not indicate the actual time the student spent at the university.
  - 8- Educational level of parent: uneducated, elementary, preparatory, secondary, university
- These variables are found in the questionnaire. See appendix (1).

### **2.3.2 Operational definition of risk factors**

Risk factors included three risk factors smoking, overweight and obesity, and physical inactivity.

#### **Smoking**

Cigarettes smoking status was classified into smokers and non smokers. Smokers were defined as those who are smoking at the time of the data collection. Smokers were furtherly classified into either occasional or regular smokers. Those who report "everyday" are classified as daily/regular smokers and those who report "some days" are classified as



occasional smokers. Daily smokers smoke 10 cigarettes or more per day, while occasional smokers smoke about less than 10 cigarettes per day when they do smoke. Non smokers are those who were not smoking at the time of the data collection.

### **Overweight and Obesity**

Overweight and obesity were determined by calculating the body mass index (BMI) ( $\text{Kg}/\text{m}^2$ ). BMI was classified into four categories, underweight (BMI <20), normal weight (BMI 20-24.9), overweight (BMI 25-29.9), and obese (BMI  $\geq$ 30). Those with BMI less than 25  $\text{Kg}/\text{m}^2$  were considered as non-high BMI, and those with BMI higher than or equal to 25  $\text{Kg}/\text{m}^2$  were considered as having a high BMI.

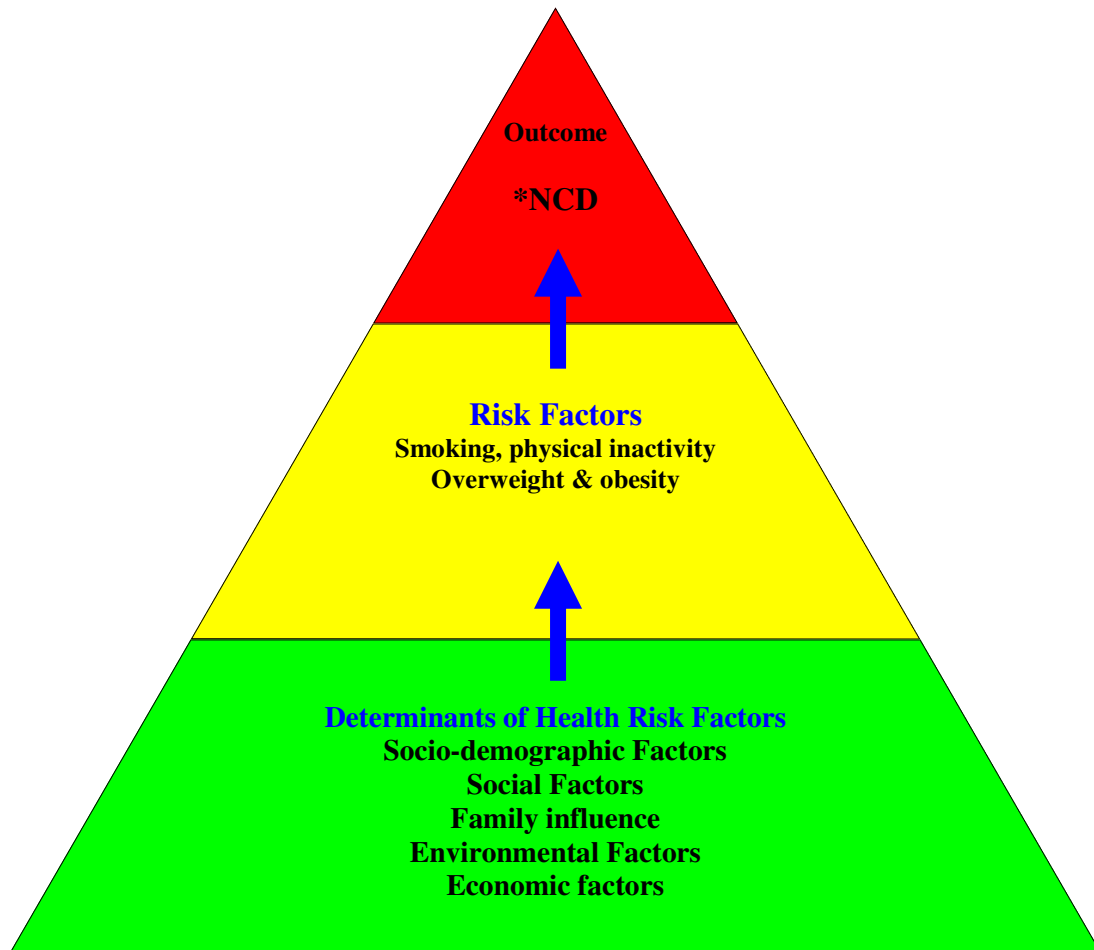
### **3. Physical activity**

Physical activity was classified into two groups; active and inactive person.

Active person who engaged in vigorous or moderate activities 2-3 times per week or more for at least 20 minutes per occasion.

Inactive person who not engaged in vigorous or moderate activities 2-3 times per week or more for at least 20 minutes per occasion.

## 2.4 Framework for analysis



\* NCD: Non-Communicable Diseases

**Figure (2.1): Framework for analysis**

Depending on the aforementioned literature review, we developed this figure of framework for analysis. The determinants of risk factors such as socio-demographic, economic, and environmental factors can influence on the selected risk factors (smoking, overweight and obesity, and physical inactivity) positively or negatively. These selected risk factors were associated with many of chronic non-communicable diseases such as cardiovascular disease, cancers, and type2 diabetes mellitus.

Now we are going to talk about some of potential determinants of selected risk factors in some details as we depending in our study analysis:

#### **2.4.1 Smoking**

The potential determinants of smoking in this study were:

**Socio-demographic factors:** included gender, place of residency, and paternal and maternal educational level.

**Economic factors:** family monthly income.

**Social factors:** included the family and friends smoke status, and society acceptable of smoking behavior. See appendix (1).

#### **2.4.2 Overweight and obesity**

The potential determinants of overweight and obesity in this study were:

**Socio-demographic factors:** included gender, place of residency, paternal maternal education level.

**Economic factors:** family monthly income.

**Family influence:** included the family with high BMI condition.

**Environmental Factors:** including eating pattern such as eating snack, main reason to eating snack, assiduity on breakfast daily, and nature of snack. See appendix (1).

#### **2.4.3 Physical inactivity**

The potential determinants of vigorous and moderate physical inactivity in this study were:

**Socio-demographic factors:** included gender, place of residency, and paternal maternal education level.

**Economic factors:** family monthly income.

**Environmental and social factors:** included time constraints, availability of sporting facilities, skills for performing different physical activities, thought physical activity is socially unacceptable. See appendix (1).

## **Chapter.3 Methodology**

3.1 Introduction

3.2 Study design

3.3 Study setting and sample selection

3.4 Informed consent

3.5 List of instruments

3.6 Data collection method

3.7 Pilot study

3.8 Data analysis

3.9 Limitations of the study

3.10 Summary

### **3.1 Introduction**

The objective of this study was to determine the prevalence of selected risk factors, namely; smoking, overweight and obesity, and physical inactivity and their determinants among students of Al- Quds University. In this chapter the methodology used to conduct this study is presented, including the study design, data collection methods, data analyses procedures, operational definitions, an overview of the pilot study and the limitations.

### **3.2 Study design**

A cross-sectional study was used to determine the percentage and determinants of selected health risk factors (smoking, obesity, and physical inactivity) among undergraduate students (males and females) of Al-Quds University. The age of the students ranged from 18-24 year and students studying at different colleges. The study was conducted in the time period between April and July 2005.

### **3.3 Study setting and sample selection**

The study was done at Al-Quds University which is located in the southeast of the city of Jerusalem, in the town of Abu-Dis. Students studied belonged to 10 different colleges which are Science and Technology, Medicine, Arts, Engineering, Law, Dawa and Foundation of Religion, Medical Technology, Pharmacy, Qur`an Islamic studies, and Sciences of management & Economics.. According to the registration department at the university, the total number of undergraduate students which are considered regular students were 6203, 3048 males and 3155 females. A non-random convenience sample was used to select study participants, both males and females were included in the study. 400 questionnaire were distributed to students, and the number of respondents was 330 students with a response rate of 82.5%.

### **3.4 Informed consent**

Informed consent was taken from each study participant. The purpose and importance of the study was explained to each participating individual. In addition confidentiality of all given information was guaranteed.

### **3.5 List of instruments**

Data for this study were collected by questionnaire and physical examinations. Questionnaire was used to collect information about risk factors and their determinants. Questionnaire was also included some questions about the knowledge of the health consequences of risk factors and perceptions. These questions as follow:-

#### **Knowledge and perceptions of smoking**

*1. Do you think smoking is bad for health? 2. From where did you learn about the unhealthy consequences of smoking? 3. Which is the most probable health problem caused by smoking? 4. Do you think smoking is a kind of addiction? 5. Does your society consider smoking as an acceptable social habit? 6. Which is more harmful for health, cigarettes or Nargela?. See appendix (1).*

#### **Knowledge and perceptions of Overweight and Obesity**

*1. Do you think you have a weight problem? 2. What is the main reason behind your overweight? 3. Does overweight or obesity cause health problems for an individual? 4. What is the most probable health problem caused by overweight and obesity?. See appendix (1).*

#### **Knowledge and perceptions of physical inactivity**

*1. Do you think physical inactivity is bad for health? 2. What is the most probable health problem caused by physical inactivity? 3. Do you think physical activity is good for health? 4. What is the most probable health benefit caused by physical activity?. See appendix (1).*

Physical examination included a weighting machine to measure the weight of the students, and a meter was used for measuring height.

In addition a computer was used to process the data. Books, journals, and the internet were used for getting information.

### **3.6 Data collection methods**

Data about students demographic information, and smoking habits, physical activity, and obesity and their possible determinants were collected by a questionnaire(see appendix1). Information regarding the students' knowledge and perceptions about the different risk factors studied and their consequences was also collected by the questionnaire(see appendix1). In addition to that physical examinations to the measure the height and weight were performed on each student.

Data were collected by a group of volunteer students (5 males, 4 females) chosen from different colleges. Data collectors (volunteer students) were trained to collect data and were aware of the general aim of this study, and they understood that we are care about the opinions of the students about the risk factors whether these students had these risk factors or not.

Questionnaires were administered to students on the entrance of the University , at the main gate, by volunteers. The main idea behind the study was explained to each participating student by the volunteers, before handing them the questionnaire. After filling the questionnaire by him or herself, the student was asked to go to the university clinic to hand in the questionnaire to the nurse working there. At the clinic, the nurse took the questionnaire from the student and in a specific file she recorded the number of questionnaire and took the participant's weight and height barefooted and recorded the weight and height in the same file. Questionnaires were coded and data was entered into the SPSS program for analysis.

### **3.7 Pilot study**

A pilot study was done to evaluate the questionnaire used in the actual study. A total of 20 questionnaires were distributed to students who were non-randomly selected to take part in the pilot study. Eighteen questionnaire were returned . Some questions were modified as seen appropriate, and some questions were added.

The stability of questionnaire was done by Cronbach's Alpha test for all questions.

The value of Cronbach's Alpha was (0.747) which is higher than (0.70). This means that the stability of questionnaire was good and the questions were suitable for the research.

### **3.8 Data analysis**

Variables were defined and coded, and the analyses of data were done in different stages.

The Statistical package for social sciences (SPSS version 11.5) was used to analyze the data. And a P value  $\leq 0.05$  was considered significant for all analysis.

Stage one was done by calculating the frequency and percentage tables of all independent variables such as demographic data. Frequency distributions were reported for all dependent variables such as smoking, BMI classifications, and physical inactivity and by gender.

Stage two was a bivariate statistics; cross-tabulations were reported for all potential determinants with smoking, high BMI, and physical inactivity. In addition, the relationships between different risk factors were evaluated by cross-tabulations. For all these analysis the statistical significance was determined by chi-square test.

In stage three, simultaneous multivariate analysis was done. All statistically significant independent variables from the bivariate distributions were then entered as indicator variables into a binary logistic regression model. The outcome variable in each of the models was being a smoker, or having a high BMI or being physically inactive. First the analysis was done for each independent factor separately, later all variables were entered simultaneously to the model for adjustment. Based on this logistic regression model, the relationship between the independent and outcome variables was determined by the odds' ratio (with 95% Confidence Interval).

### **3.9 Limitations of the study**

Within the study process, we faced some problems which might be considered as limitations of the study, and here is a list some of them:-

- 1- Methodological limitation access to literature.
- 2- Some participants refused to go to the clinic at the university, therefore some students did not participate in the study and this might cause selection bias.

### **3.10 Summary**

This chapter explain all the steps of the research method, begging from study design which was a cross-sectional data analyzes ,that let us assessment of health risk behaviors(smoking, overweight and obesity, and physical inactivity) and their determinants among convenience sample of students aged from18-24 years from different colleges at



Al-Quds University. Data was collected by questionnaire, and physical examination that was taken in the clinic of Al-Quds University.

Data analyzed by Statistical package for social sciences (SPSS version 11.5). Calculation of the frequency and percentage tables of all independent variables such as demographics data, and univariate statistics frequency distributions were reported for all dependents variables such as smoking, BMI classifications, and physical inactivity by gender.

A bivariate statistics was done to determine the relationship between independent variables and health risk behaviors. Simultaneous multivariate statistics was done to determine the strength of association between the independent variables and outcome variables by the odds' ratio (with 95% Confidence Interval).

## **Chapter.4 Result**

### 4.1 Introduction

### 4.2 The results

#### 4.2.1 Demographic data and background information

#### 4.2.2 Tobacco consumption: frequencies & knowledge and perceptions& determinants

#### 4.2.3 Overweight and obesity: frequencies & knowledge and perceptions &determinants

#### 4.2.4 Physical activity behavior: frequencies & knowledge and perceptions& determinants

### 4.3 The relationship between the risk factors

#### 4.3.1 Smoking behavior and BMI classifications

#### 4.3.2 Smoking behavior and physical activity status

#### 4.3.3 BMI classifications and physical activity status

### 4.4 Summary

## 4.1 Introduction

This chapter includes the results of this study. Starting with a brief description of the data analysis methods. The results are then presented, starting with a description of the demographic data and population characteristics, followed by results on the frequencies of the selected risk factors studied. The association between each risk factor and its determinants are also presented in separate tables.

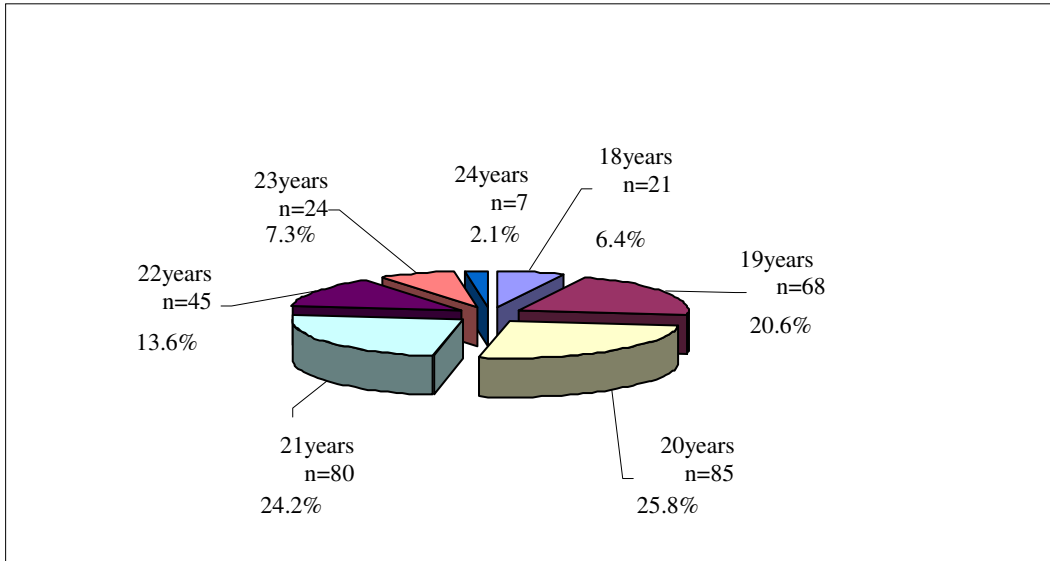
## 4.2 The results

### 4.2.1 Demographic data and background information

Of the 330 respondents, more than half (56.1%) of study sample were males and 43.9% were females. 52.1% of students were living in villages, and most of the participants (93.9%) were single. 35.2% (about one third) of students had a family income ranging "1500-2000 NIS" (table 4.1). Most of the participants (77%) were 21 years or younger, and the mean age was 20.50+1.41 (Mean+S.D) in the total study sample (figure 4.1).

**Table (4.1): Distribution of study sample by demographic variables**

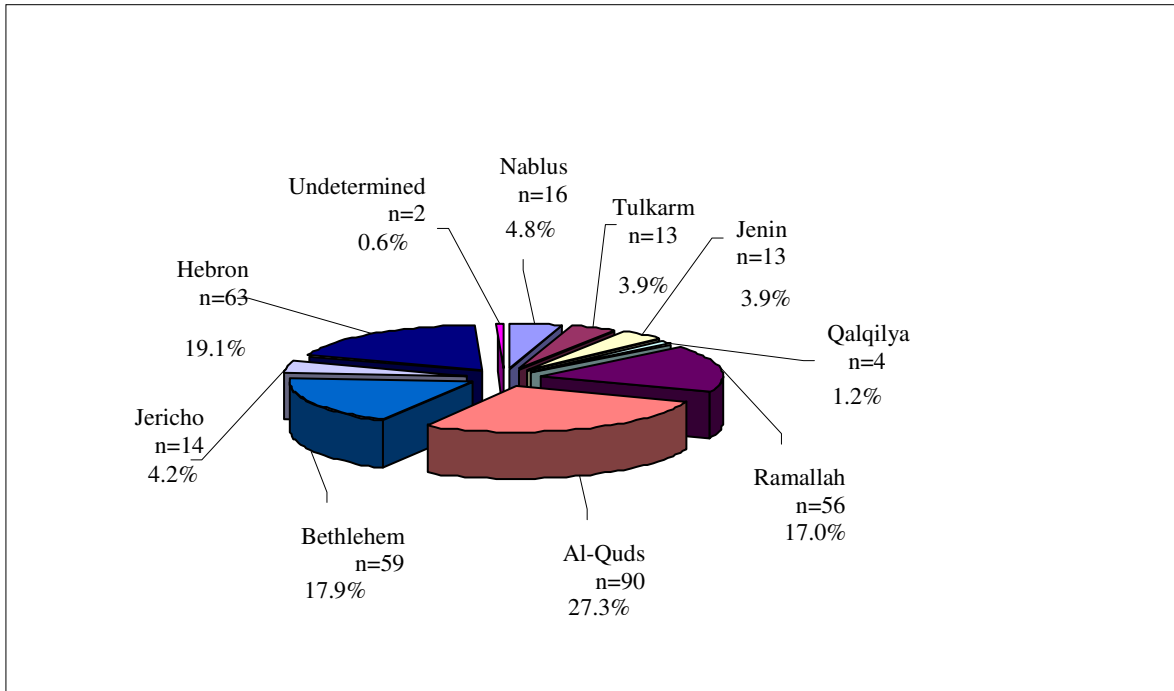
<b>Demographic Variables</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Sex</b>		
Male	185	56.1%
Female	145	43.9%
<b>Place of residency</b>		
City	139	42.1%
Village	172	52.1%
Camp	16	4.9%
Undetermined	3	0.9%
<b>Marital status</b>		
Single	310	93.9%
Married	8	2.4%
Engaged	12	3.6%
<b>Family monthly income</b>		
Less than 1500 NIS	55	16.7%
1500-2000 NIS	116	35.2%
2000-4000 NIS	112	33.9%
More than 4000NIS	47	14.2%



**Figure (4.1): Distribution of study sample by age**

From our data we observed more than one fourth (27.3%) of students were from Al-Quds district, whereas 7.8% of the students came from Tulkarm and Jenin.

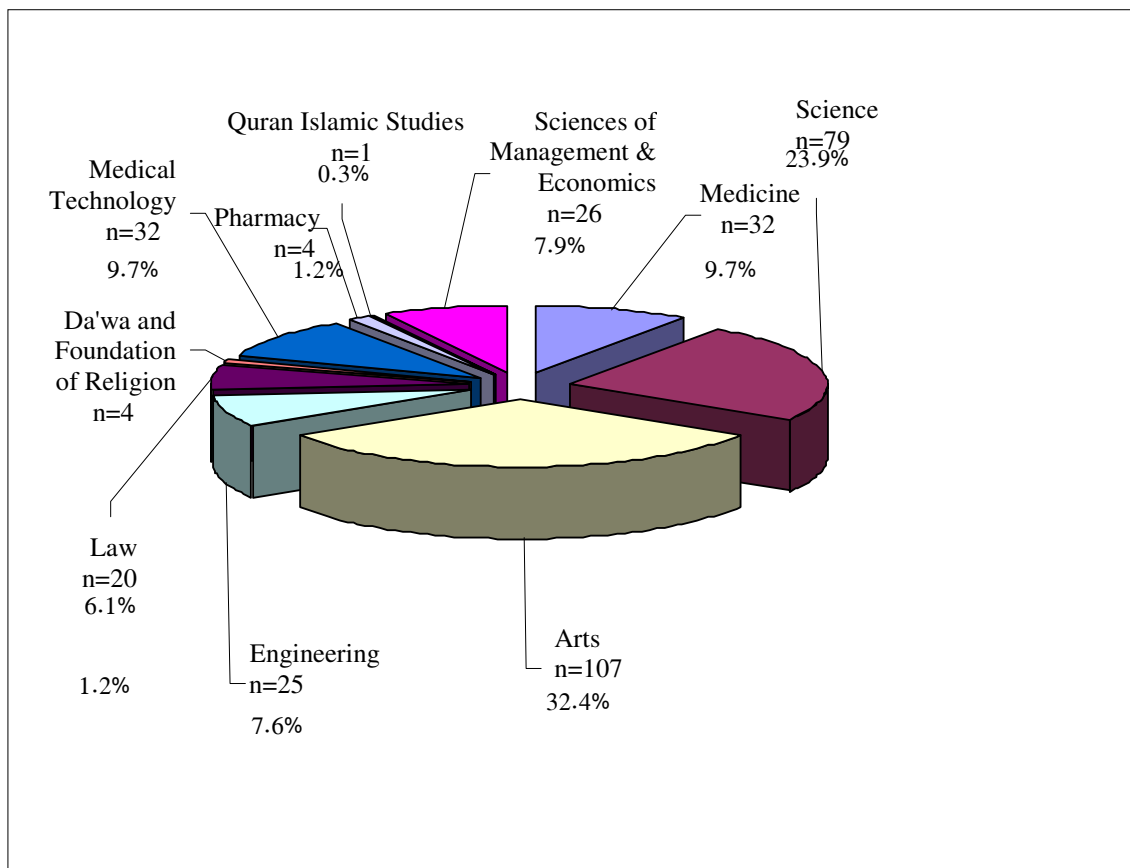
Figure (4.2) showed the distribution of students by district.



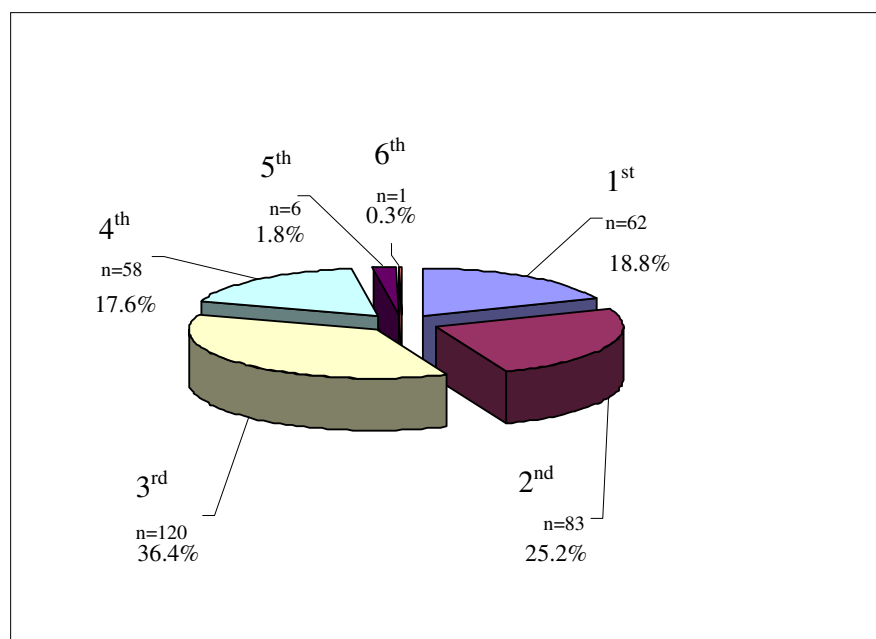
**Figure (4.2): Distribution of study sample by district**

32.4% of students were studying in art college, 9.7% were from medicine and 9.7% were from the medical technology college. Da'wa and foundation of religion and pharmacy college had the same percentage (1.2%). The distribution of students by college is presented in figure (4.3). 36.4% of students were third year students, and the smallest percentage (0.3%) was six year students. The distribution of students by year at university is presented in figure (4.4).

42.4% of the students' fathers had university education compared to 18.5 % of the mothers. Whereas, 2.1% of the fathers were uneducated compared to 7.6% of the mothers. The distribution of students by paternal and maternal education level is presented in table (4.2).



**Figure (4.3): Distribution of study sample by college**



**Figure (4.4): Distribution of study sample by year at university**

**Table (4.2): Distribution of study sample by paternal and maternal education level**

<b>Education Level</b>	<b>Maternal N (%)</b>	<b>Paternal N (%)</b>
Uneducated	25(7.6%)	7(2.1%)
Elementary	55(16.7%)	29(8.8%)
Preparatory	93(28.2%)	49(14.8%)
Secondary	96(29.1%)	104(31.5%)
University	61(18.5%)	140(42.4%)
Undetermined	0(0.0%)	1(0.3%)
<b>Total</b>	<b>330(100%)</b>	<b>330(100%)</b>

#### 4.2.2 Tobacco consumption: frequencies & knowledge and perceptions& determinants

110 (33.3%) of the respondents were smokers (20% daily smoker and 13.3% occasional), and 220 (66.7%) of the respondents were non- smokers. Table (4.3) shows the distribution of smoking status by gender.

**Table (4.3): Distribution of the smoke status by gender**

Smoking status \ Sex	Regular Smoker	Occasional Smoker	Non- Smoker
	N (%)	N (%)	N (%)
Male	66(20.0%)	30(9.1%)	89(27.0%)
Female	0(0.0%)	14(4.2%)	131(39.7%)
<b>Total</b>	<b>66(20.0%)</b>	<b>44(13.3%)</b>	<b>220(66.7%)</b>

26.2% of smokers were smoking 20 or more cigarettes per day, and 39.4% of them were smoking for more than 3 years. In addition, more than half of the smokers (63.6%) were smoking nargela. Table (4.4) shows some of the characteristics of smokers.

**Table (4.4): Characteristics of smokers\***

characteristics of smokers	Frequency	Percentage
<b>Number of cigarettes consumption per day</b>		
10 or fewer cigarettes	47	43.0%
10-20 cigarettes	34	30.8%
20 or more cigarettes	29	26.2%
<b>Duration of smoking</b>		
less than 6 months	14	12.7%
6-12 months	15	13.6%
1-2 years	21	19.1%
2-3 years	17	15.5%
more than 3 years	43	39.4%
<b>Desire to stop smoking</b>		
Yes	81	74%
No	29	26%
<b>Tried to stop smoking</b>		
Yes	81	74%
No	29	26%
<b>Relapse after cessation</b>		
Yes	78	70.6%
Never cessation smoking	32	29.4%
<b>Thought that it was hard to stop smoking</b>		
Yes	62	56.7%
No	48	43.3%
<b>Smoking nargela</b>		
Yes	70	63.6%
No	40	36.4%

\* Total number of smokers n=110.

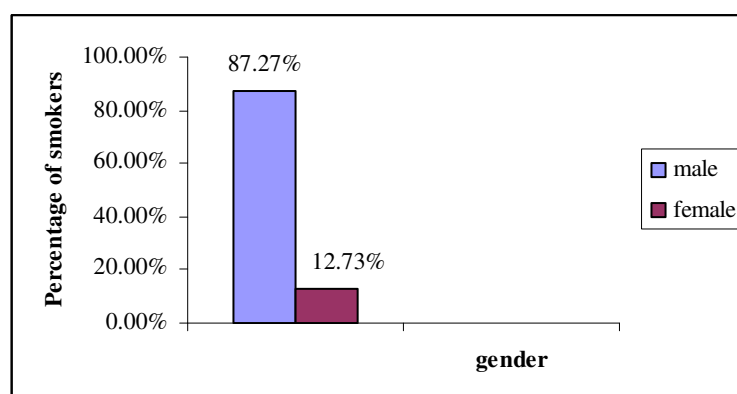
## Knowledge and perceptions about smoking

98.2% of the smokers thought cigarettes were bad for health, and more than one third (46.4%) thought that the most probable health problem caused by smoking was different types of cancer. Most of the smokers (72.7%) knew about the bad effects of smoking from media (TV, Radio). Almost all of the smokers reported that they have tried to stop smoking and 71.2% reported that the main reason which was motivating them to quit was to stay healthy. 76.9% of the smokers reported receiving help or advice from a doctor, a family member, or a friend to help them quit smoking. And finally, 81.7% of the smokers thought that smoking is a type of addiction. As for the perception of students regarding the societal acceptance of smoking, more than half (55.8%) of the participants thought that their society considers smoking as an acceptable social habit.

Regarding knowledge about other types of tobacco, 55.5% of the smokers thought nargela was more harmful to health than cigarettes, and only 13.6% of the smokers thought cigarettes were more harmful to health than nargela. 10% of the smokers thought that nargela and cigarettes had the same effect on health.

## Determinants

Demographic, economic, and social factors were evaluated in this study as potential determinants of smoking. 87.3% of smokers were males, whereas only 12.7% were females and all were occasional smokers. Results of the chi –square test indicated that smoking was significantly higher in males than females ( $P= 0.000$ ) (Figure 4.5 and table 4.5).



**Figure (4.5): Distribution the percentage of smokers by gender**



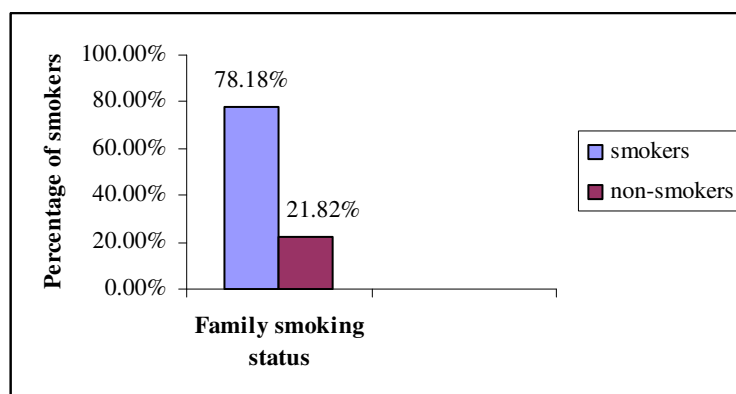
**Table (4.5): Summary of the determinants of smoking status**

Smoking status Determinants	Smokers N (%)	Non-Smokers N (%)	P-value
<b>Gender</b>			
Male	96 (51.9%)	89(48.1%)	<b>0.00*</b>
Female	14 (9.7%)	131(90.3%)	
<b>Place of residency</b>			
City	39(28.0%)	100(72.0%)	<b>0.20</b>
Village	66(38.4%)	106(61.6%)	
Camp	5(31.25%)	11(68.75%)	
<b>Paternal education</b>			
Uneducated	3(42.9%)	4(57.1%)	<b>0.32</b>
Elementary	9(31.0%)	20(69.0%)	
Preparatory	10(20.4%)	39(79.6%)	
Secondary	36(34.6%)	68(65.4%)	
University	51(36.4%)	89(63.6%)	
<b>Maternal education</b>			
Uneducated	12(48.0%)	13(52.0%)	<b>0.25</b>
Elementary	22(40.0%)	33(60.0%)	
Preparatory	25(26.9%)	68(73.1%)	
Secondary	32(33.3%)	64(66.7%)	
University	19(31.1%)	42(68.9%)	
<b>Family monthly income</b>			
Less than 1500 NIS	23(41.8%)	32(58.2%)	<b>0.08</b>
1500-2000 NIS	35(30.2%)	81(69.8%)	
2000-4000NIS	31(27.7%)	81(72.3%)	
More than 4000 NIS	21(44.7%)	26(55.3%)	
<b>Family smoke status</b>			
Smokers	86(37.6%)	143(62.4%)	<b>0.01*</b>
Non-smokers	24(23.8%)	77(76.2%)	
<b>Friend smoke status</b>			
Smokers	109(44.3%)	137(55.7%)	<b>0.00*</b>
Non-smokers	1(1.2%)	83(98.8%)	
<b>society acceptable of smoking behavior</b>			
Yes	55(29.9%)	129(70.1%)	<b>0.14</b>
No	55(37.7%)	91(62.3%)	

\* P value significant at ( $\alpha < 0.05$ ).

There was no significant relationship between smoking behavior and either the father's or the mother's educational level ( $P = 0.316, 0.249$ ) respectively. In addition, place of residence was not significantly associated with smoking status ( $P = 0.194$ ). Regarding economic factors, monthly income of the family was not significantly associated with smoking ( $P = 0.084$ ).

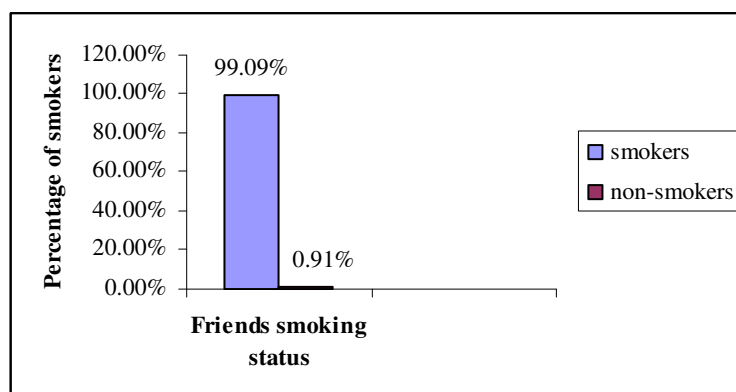
Regarding social influence on smoking behavior, namely family smoking status; the results showed that 69.4% of the participants had at least one of their family members smoking, 43.0% of the participants reported that their father was smoking, and 46.4% reported that at least one of their brothers was smoking. The association between smoking and family smoking status was statistically significant ( $P = 0.014$ ) (Figure 4.6).



**Figure (4.6): Distribution of the percentage family smoking status of smokers**

As for the influence of friends, the results showed that 66.1% of the smokers reported that some of their friends were smoking.

There was a statistically significant relationship between smoking and friends smoking status ( $P=0.000$ ) (Figure 4.7).



**Figure (4.7): Distribution of the percentage friends smoking status of smokers**

More than half (53.8%) of the smokers reported that the main reason which made them start smoking was the desire to smoke without a reason. most of the smokers (81.7%) considered that smoking relaxes them and makes life easier.

Logistic regression analysis showed that the variables significantly associated with smoking behavior were gender, family smoking status, and friends smoking status. Students who were at increased odds of being smokers were males (OR = 10.1, 95% CI = 5.42-18.80), have family smokers (OR = 1.9, 95% CI = 1.14-3.28), and have friends

smokers (OR = 66.0, 95% CI = 9.05-481.99) as shown in table (4.6). After adjusting for all factors in the table the Odds ratios were altered slightly, but remained statistically significant. See table (4.6).

**Table (4.6): Determinants of smoking status: odds ratio OR and (95% CI)**

<b>Smoking status</b> <b>Variables</b>	<b>Non-smokers</b> <b>N (%)</b>	<b>Smokers</b> <b>N (%)</b>	<b>OR (95% C I)</b> <b>(unadjusted)</b>	<b>OR (95% CI)</b> <b>(Adjusted)*</b>
<b>Gender</b>				
Female	131(90.3%)	14(9.7%)	<b>1</b>	<b>1</b>
Male	89(48.1%)	96(51.9%)	<b>10.1 (5.42-18.80)</b>	<b>5.1(2.6-10.0)</b>
<b>Family smoke status</b>				
Non-smokers	77(76.2%)	24(23.8%)	<b>1</b>	<b>1</b>
Smokers	143(62.4%)	86(37.6%)	<b>1.9 (1.14-3.28)</b>	<b>2.0 (1.1-3.6)</b>
<b>Friend smoke status</b>				
Non-smokers	83(98.8%)	1(1.2%)	<b>1</b>	<b>1</b>
Smokers	137(55.7%)	109(44.3%)	<b>66.0 (9.05-481.99)</b>	<b>22.5 (2.9-172.0)</b>

**\* Adjusted for gender, family smoking status and friends smoking status.**

### 4.2.3 Overweight and obesity: frequencies & knowledge and perceptions & determinants

Body Mass Index (BMI) was calculated for each student. 58.2% of the participants had normal weight, 13.9% of the participants had underweight problem, and 25.5% of the participants had an overweight problem, while 2.4% of the participants were obese. Table (4.7) shows the classification of Body Mass Index (BMI) by gender.

Mean BMI (Mean  $\pm$  S.D) was  $23.3 \pm 3.373$  for all students (male  $23.7 \pm 3.58$ , female  $22.8 \pm 3.03$ ).

**Table (4.7): classification of body mass index (BMI) by gender**

BMI(Kg/m <sup>2</sup> )	BMI<20 under weight	BMI 20-24.99 normal weight	BMI 25-29.9 overweight	BMI $\geq$ 30 Obese
Sex	N (%)	N (%)	N (%)	N (%)
<b>Male</b>	20(6.0%)	107(32.4%)	53(16.1%)	5(1.5%)
<b>Female</b>	26(7.9%)	85(35.8%)	31(9.4%)	3(0.9%)
<b>Total</b>	<b>46(13.9%)</b>	<b>192(58.2%)</b>	<b>84(25.5%)</b>	<b>8(2.4%)</b>

According to the participants, most of them (70.6%) reported that no one in their family suffer from overweight or obesity problem. 75.0% of those with high BMI ate snacks between meals, whereas, 60.1 % of students with non-high BMI ate snacks between meals. 26.9% of the non-high BMI participants ate vegetables and fruits, 12.6 % ate nuts, and 21.4% ate sugars, compared with 29.3% of high BMI participants ate vegetables and fruits, 18.5% ate nuts, and 27.2% ate sugars. 33% of the participants reported that they ate snacks between meals to spend their spare time.

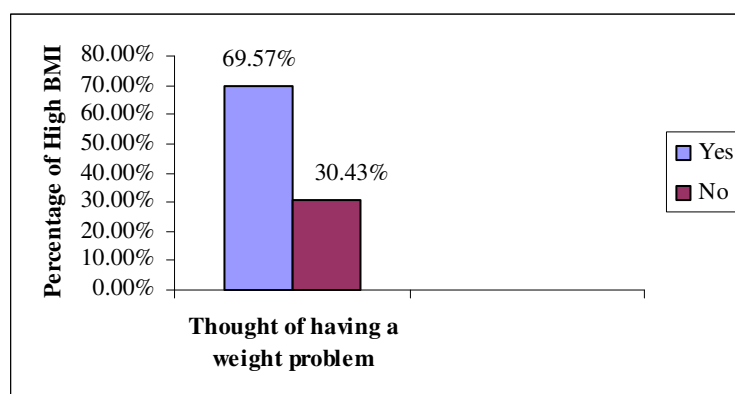
52.4% of the participants (28.5% male, 23.9% female) reported that they do not usually take their breakfast every day. Table (4.8) shows some characteristics of high body mass index participants.

**Table (4.8): Characteristics of high body mass index participants**

characteristics of high BMI	Frequency	Percentage
<b>Family suffer from high BMI</b>		
Yes	30	32.6%
No	62	67.4%
<b>Eating snack</b>		
Yes	69	75%
No	23	25%
<b>Nature of snack</b>		
Vegetable and fruit	27	39.1%
nuts	17	24.7%
sugars	25	36.2%
<b>Main reason to eating snack</b>		
Feeling hungry after main meal	28	40.6%
Sadness	8	11.6%
Spending spare time	33	47.8%
<b>Assiduity on breakfast daily</b>		
Yes	24	26.1%
No	40	43.5%
Some times	28	30.4%
<b>The last time weight themselves</b>		
Before few days	19	20.7%
Before few weeks	24	26.1%
Before few months	30	32.6%
Before few years	4	4.3%
Do not remember	15	16.3%

### **Perceptions and knowledge about overweight and obesity**

To find out whether the student's perception of weight was compatible with their actual weight, students were asked to report if they believe that they have any problem in their weight. These results were compared with actual BMI measurements. The results showed that 61.8% of the participants thought they do not have a problem in their weight. 62.2% of those who reported having a problem with their weight reported having an overweight problem, and 3.9% of them thought that they were obese. The results showed that 73.4% of those who reported having a problem with their weight tried to loose weight. On the other hand, 33.9% of students thought that they have an underweight problem. When comparing the student's perception of weight and their actual weight, the results showed that there was no compatibility between the perception of weight problem and actual body mass index. See figure (4.8).



**Figure (4.8): Distribution the percentage of high BMI according to student's perception of having a weight problem**

46.5% of the participants thought the main reason leading to overweight or obesity was lack of physical activity. Most of the participants (96.4%) thought that overweight and obesity were bad for health, and 70.9% of the participants thought that more health problems caused by overweight and obesity was different chronic diseases.

### **Determinants**

Students were classified into two groups according to their BMI values. Those with BMI less than 25 Kg/m<sup>2</sup> were considered as non-high BMI, and those with BMI higher than or equal to 25 Kg/m<sup>2</sup> were considered as having a high BMI. All further analysis are based on these classifications.

Socio-demographic, economic, eating habits and family situation were evaluated as potential determinants of high BMI. There was no significant relationship between BMI classifications and gender, paternal and maternal educational level, or place of residency. (Table 4.9) Family monthly income was also not associated with BMI (table 4.9). Regarding certain eating habits, the results indicated that eating snacks between meals and eating breakfast were both significantly associated with BMI ( $P=0.01$ ,  $P=0.03$ ) respectively. See table (4.9). Finally, having a family member with high BMI was not significantly associated with BMI. See table (4.9).

**Table (4.9): The relationship between body mass index classification and determinants**

<b>BMI classification</b> <b>Determinants</b>	<b>High BMI</b> <b>N (%)</b>	<b>Non-high BMI</b> <b>N (%)</b>	<b>P-value</b>
<b>Gender</b>			
Male	58(31.4%)	127(68.6%)	<b>0.11</b>
Female	34(23.4%)	111(76.6%)	
<b>Place of residency</b>			
City	39(28.0%)	100(72.0%)	<b>0.95</b>
Village	48(26.2%)	124(73.8%)	
Camp	5(31.25%)	11(68.75%)	
<b>Paternal education</b>			
Uneducated	1(14.3%)	6(85.7%)	<b>0.19</b>
Elementary	10(34.5%)	19(65.5%)	
Preparatory	10(20.4%)	39(79.6%)	
Secondary	24(23.0%)	80(77.0%)	
University	47(33.6%)	93(66.4%)	
<b>Maternal education</b>			
Uneducated	2(8.0%)	23(92.0%)	<b>0.18</b>
Elementary	16(29.1%)	39(70.9%)	
Preparatory	27(29.0%)	66(71.0%)	
Secondary	26(27.0%)	70(73.0%)	
University	21(34.4%)	40(65.6%)	
<b>Family monthly income</b>			
Less than 1500 NIS	13(23.6%)	42(76.4%)	<b>0.74</b>
1500-2000 NIS	32(27.6%)	84(72.4%)	
2000-4000NIS	35(31.25%)	77(68.75%)	
More than 4000 NIS	12(25.5%)	35(74.5%)	
<b>Family with high BMI condition</b>			
Yes	30(30.9%)	67(69.1%)	<b>0.43</b>
No	62(26.6%)	171(73.4%)	
<b>Eating snack</b>			
Yes	69(32.5%)	143(67.5%)	<b>0.01*</b>
No	23(19.5%)	95(80.5%)	
<b>Assiduity on breakfast daily</b>			
Yes	52(33.1%)	105(66.9%)	<b>0.03*</b>
No	40(23.1%)	133(76.9%)	
<b>Nature of snack</b>			
Vegetable and fruit nuts	27(29.7%)	64(70.3%)	<b>0.09</b>
sugars	17(36.2%)	30(63.8%)	
do not eat snack	25(32.9%)	51(67.1%)	
	23(19.8%)	93(80.2%)	

\* *P value significant at ( $\leq 0.05$ ).*

The results of logistic regression analysis showed that eating snacks between meals was the only significant factor that was associated with high BMI. Eating snacks increased the risk of high BMI by 2 folds OR (95% CI) 2.1 (1.2-3.6). Whereas other factors such as gender, assiduity on breakfast, and having family members who are overweight were not associated with high BMI. After adjusting for all factors in the table the odds ratios were altered slightly, but remained statistically significant. See table (4.10).

**Table (4.10): Determinants of BMI classifications: odds ratio OR and (95% CI)**

<b>BMI classifications</b> <b>Variables</b>	<b>High BMI</b> <b>N (%)</b>	<b>Non-high BMI</b> <b>N (%)</b>	<b>OR (95% C I)</b> <b>(unadjusted)</b>	<b>OR (95% CI)</b> <b>(Adjusted)*</b>
<b>Eating snack</b>				
No	23(19.5%)	95(80.5%)	<b>1</b>	<b>1</b>
Yes	69(32.5%)	143(67.5%)	<b>2.0(1.2-3.4)</b>	<b>2.1(1.2-3.6)</b>
<b>Assiduity on breakfast</b> <b>daily</b>				
Yes	52(33.1%)	105(66.9%)	<b>1</b>	<b>1</b>
No	40(23.1%)	133(76.9%)	<b>0.6(0.4-1)</b>	<b>0.7(0.4-1.1)</b>
<b>Gender</b>				
Female	34(23.4%)	111(76.6%)	<b>1</b>	<b>1</b>
Male	58(31.4%)	127(68.6%)	<b>1.5(0.9-2.4)</b>	<b>1.6(1-2.7)</b>
<b>Family with high BMI</b> <b>condition</b>				
No	62(26.6%)	171(73.4%)	<b>1</b>	<b>1</b>
Yes	30(30.9%)	67(69.1%)	<b>1.2(0.7-2.1)</b>	<b>1.2(0.7-2.1)</b>

**\*Adjusted for all factors in this table.**



#### 4.2.4 Physical activity behavior: frequencies & knowledge and perceptions & determinants

The level of physical activity was evaluated among students. The results indicate that most of the students 63 % ( 32.4% males and 30.6% females) were physically active, and 37 % (23.6%males and 13.4% females) were inactive. Students who were active were further classified as engaging in vigorous or moderate activities. See table (4.11).

**Table (4.11): Classification of physical activity**

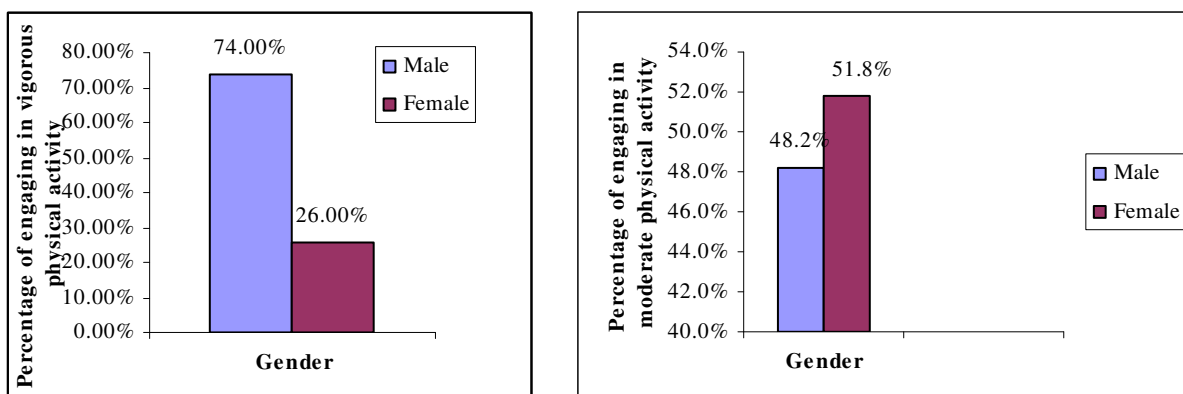
<b>Duration</b> <b>Intensity</b>	<b>Daily</b> <b>N (%)</b>	<b>4-5 times</b> <b>per week</b> <b>N (%)</b>	<b>2-3 times</b> <b>per week</b> <b>N (%)</b>	<b>Once per</b> <b>week</b> <b>N (%)</b>	<b>1-3 times</b> <b>per month</b> <b>N (%)</b>	<b>Never do it</b> <b>N (%)</b>
<b>Moderate</b>	56(16.8%)	54(16.4%)	85(25.8%)	62(18.8%)	22(6.7%)	51(15.5%)
<b>Vigorous</b>	14(4.1%)	18(5.5%)	26(7.9%)	51(15.5%)	65(19.7%)	156(47.3%)

#### **Knowledge and perceptions regarding physical activity**

The knowledge and perceptions of students regarding physical activity were evaluated. The results showed that almost all students (97.9%) thought that physical activity was good for their health, and 52.7% thought that physical inactivity affects their health negatively. And 47.9% thought that chronic diseases were the most probable consequences of not engaging in physical activity. 46.6% of the participants thought that physical activity will increase their fitness.

## Determinants

Engaging in vigorous physical activity was significantly higher in male than female ( $P=0.001$ ), while engaging in moderate physical activity was statistically significantly higher in female than male ( $P=0.001$ ). Shown figure (4.9).



**Figure (4.9): The percentage of engaging in vigorous and moderate physical activity by gender**

Gender ( $P=0.03$ ), time constraints ( $P=0.00$ ), unavailability of place ( $P=0.00$ ), lack of skills ( $P=0.01$ ), lack of money ( $P=0.00$ ), the belief that physical activity is not important ( $P=0.00$ ), were the main reasons for not engaging in physical activity. See table (4.12)

Unacceptable socially ( $P=0.556$ ), place of residency ( $P=0.99$ ), paternal education ( $P=0.09$ ), maternal education ( $p=0.16$ ), and family monthly income were not significant determinants of physical inactivity. See table (4.12)

**Table (4.12): The determinants of physical activity status**

<b>Physical activity status</b> <b>Determinants</b>	<b>active</b> <b>N (%)</b>	<b>Inactive</b> <b>N (%)</b>	<b>P-value</b>
<b>Gender</b>			
Male	107(57.8%)	78(42.2%)	<b>0.03*</b>
Female	101(69.7%)	44(30.3%)	
<b>Place of residency</b>			
City	87(62.6%)	52(37.4%)	<b>0.99</b>
Village	111(63.4%)	64(36.6%)	
Camp	10(62.5%)	6(37.5%)	
<b>Paternal education</b>			
Uneducated	5(71.4%)	2(28.6%)	<b>0.09</b>
Elementary	15(51.7%)	14(48.3%)	
Preparatory	27(55.1%)	22(44.9%)	
Secondary	76(73.1%)	28(26.9%)	
University	84(60.0%)	56(40.0%)	
<b>Maternal education</b>			
Uneducated	14(56.0%)	11(44.0%)	<b>0.16</b>
Elementary	37(67.3%)	18(32.7%)	
Preparatory	52(55.9%)	41(44.1%)	
Secondary	69(71.9%)	27(28.1%)	
University	36(59.0%)	25(41.0%)	
<b>Family monthly income</b>			
Less than 1500 NIS	31(56.4%)	24(43.6%)	<b>0.21</b>
1500-2000 NIS	71(61.2%)	45(38.8%)	
2000-4000NIS	79(70.5%)	33(29.5%)	
More than 4000 NIS	27(57.4%)	20(42.6%)	
<b>Time constraints</b>			
No	159(80.7%)	38(19.3%)	<b>0.00*</b>
Yes	49(36.8%)	84(63.2%)	
<b>Available of place to do it</b>			
No	190(66.4%)	96(33.6%)	<b>0.00*</b>
Yes	18(40.9%)	26(59.1%)	
<b>Available of money</b>			
No	201(65.9%)	104(34.1%)	<b>0.00*</b>
Yes	7(28.0%)	18(72.0%)	
<b>Unknowing how to do it</b>			
No	206(64.2%)	115(35.8%)	<b>0.01*</b>
Yes	2(22.2%)	7(77.8%)	
<b>Thought physical activity is not important</b>			
No	198(67.8%)	94(32.2%)	<b>0.00*</b>
Yes	10(26.3%)	28(73.7%)	
<b>Thought physical activity is unacceptable socially</b>			
No	185(62.5%)	111(37.5%)	<b>0.556</b>
Yes	23(67.6%)	11(32.4%)	

\* P value significant at ( $\alpha < 0.05$ ).

Logistic regression analysis showed that the variables significantly associated with physical inactivity were gender, time constraints, unavailability of place, lack of skills, lack of money, and the belief that physical activity is not important. Students who were at increased odds of being inactive were males (OR = 1.7, 95% CI = 1.1-2.6), no enough time to physical activity (OR = 7.2, 95% CI = 4.4-11.8), unavailability of place for doing physical activity (OR = 2.9, 95% CI = 1.5-5.5), lack of skills (OR = 6.3, 95% CI = 1.3-30.7), lack of money (OR=5.0, 95% CI= 2.0-12.3), the belief that physical activity is not important (OR=5.9, 95% CI=2.80-12.6). Table (4.13). After adjusting for all factors in the table, gender and availability of place were no longer statistically significant determinants of physical inactivity. However, the Odds ratios for the other factors were altered slightly, but this did not affect the statistical significance. See table (4.13).

**Table (4.13): Table of odds ratio (OR) of the physical activity status by variables**

<b>Physical activity status</b> <b>Variables</b>	<b>Active</b> <b>No (%)</b>	<b>Inactive</b> <b>N (%)</b>	<b>OR (95% C I)</b> <b>(Unadjusted)</b>	<b>OR (95% CI)</b> <b>(Adjusted)*</b>
<b>Gender</b>				
Female	101(69.7%)	44(30.3%)	<b>1</b>	<b>1</b>
Male	107(57.8%)	78(42.2%)	<b>1.7(1.1-2.6)</b>	<b>1.1(0.6-1.9)</b>
<b>Time constraints</b>				
No	159(80.7%)	38(19.3%)	<b>1</b>	<b>1</b>
Yes	49(36.8%)	84(63.2%)	<b>7.2(4.4-11.8)</b>	<b>7.2(4.1-12.5)</b>
<b>Available of place to do it</b>				
No	190(66.4%)	96(33.6%)	<b>1</b>	<b>1</b>
Yes	18(40.9%)	26(59.1%)	<b>2.9(1.5-5.5)</b>	<b>1.7(0.8-3.6)</b>
<b>Available of money</b>				
No	201(65.9%)	104(34.1%)	<b>1</b>	<b>1</b>
Yes	7(28.0%)	18(72.0%)	<b>5.0(2.0-12.3)</b>	<b>6.6(2.3-18.8)</b>
<b>Unknowing how to do it</b>				
No	206(64.2%)	115(35.8%)	<b>1</b>	<b>1</b>
Yes	2(22.2%)	7(77.8%)	<b>6.3(1.3-30.7)</b>	<b>9.2(1.6-53.8)</b>
<b>Thought physical activity is not important</b>				
No	198(67.8%)	94(32.2%)	<b>1</b>	<b>1</b>
Yes	10(26.3%)	28(73.7%)	<b>5.9(2.80-12.6)</b>	<b>5.9(2.5-13.8)</b>
<b>Thought physical activity is unacceptable socially</b>				
No	185(62.5%)	111(37.5%)	<b>1</b>	<b>1</b>
Yes	23(67.6%)	11(32.4%)	<b>0.8(0.4-1.7)</b>	<b>0.9(0.3-2.5)</b>

**\*Adjusted for all factors in the table**

### 4.3 The relationship between the risk factors

#### 4.3.1 Smoking behavior and BMI classifications

There was no significant relationship between smoking behavior and BMI classifications ( $P=0.140$ ). 22.7% were high BMI among those smokers, compared with 30.5% who were high BMI among those non-smokers. Table (4.14) showed the distribution of the BMI ( $\text{Kg}/\text{m}^2$ ) classifications by smoke status.

**Table (4.14): Distribution of the BMI ( $\text{Kg}/\text{m}^2$ ) classifications by smoke status**

<b>BMI classifications</b> <b>smoking status</b>	<b>High BMI</b> <b>N (%)</b>	<b>Non-high BMI</b> <b>N (%)</b>	<b>P-value</b>
<b>Smokers</b>	25(22.7%)	85(77.3%)	<b>0.140</b>
<b>Non-smokers</b>	67(30.5%)	153(69.5%)	

#### 4.3.2 Smoking behavior and physical activity status

There was a significant association between smoking behavior and engaging in physical activity ( $P=0.044$ ). 55.5% were active among those smokers, compared with 66.8% who were active among those non-smokers. Distribution of the percentage of physical activity according to smoking status is presented in table (4.15).

**Table (4.15): Distribution of the percentage of physical activity status by smoke status**

<b>physical activity status</b> <b>smoking status</b>	<b>Active</b> <b>N (%)</b>	<b>Inactive</b> <b>N (%)</b>	<b>P-value</b>
<b>Smokers</b>	61(55.5%)	49(44.5%)	<b>0.044*</b>
<b>Non-smokers</b>	147(66.8%)	73(33.2%)	

### 4.3.3 BMI classifications and physical activity status

There was no significant relationship between BMI classifications and engaging in physical activity ( $P=0.79$ ). 64.1% were active among those high BMI, compared with 62.6% who were active among those with no-high BMI. Distribution of the percentage of the physical activity according to BMI classifications is presented in table [4.16].

**Table (4.16): Distribution of the percentage of physical activity status by BMI (Kg/m<sup>2</sup>) classifications**

physical activity status BMI classifications	Active N (%)	Inactive N (%)	P-value
High BMI	59(64.1%)	33(35.9%)	<b>0.79</b>
Non-High BMI	149(62.6%)	89(37.4%)	

### 4.4 Summary

This chapter included the results of our study after the data processing. Frequencies and percentages of independent variables were presented. The health risk behaviors frequencies and percentages also were presented. The relationship between the health risk behaviors and their determinants was detected by chi-square test, In addition, the association between the health risk behaviors and their determinants was detected by odds ratio and were multivariate adjustment was performed.

## **Chapter.5 Discussion & Conclusions**

5.1 Introduction

5.2 Major finding

5.3 Methodological considerations

5.4 Implications of the study results related to literature review

5.4.1 Smoking behavior

5.4.2 High body mass index

5.4.3 Physical inactivity

5.5 Conclusion

5.6 Recommendations for decision makers

5.7 Recommendations for further research

## 5.1 Introduction

In this study we estimated the prevalence of selected risk factor (obesity) and behaviors (smoking, and physical activity) among Al-Quds University students (male and female) aged 18-24 years. We investigated some of the determinants such as socio-demographic factors, economic factors, and lifestyles and their relationship with these risk factors. Some The knowledge about health risk behaviors and consequences among students were evaluated. In addition, the relationships between risk factors were also evaluated.

## 5.2 Major findings

The percentage of current smokers was 33.3 %. Smoking was significantly higher in males than females ( $P=0.00$ ), having family smoking members ( $P=0.01$ ), having friends smoking ( $P=0.00$ ) were the main determinants of smoking.

The percentage of overweight and obesity were (25.5%, 2.4%) respectively. Eating snack ( $P=0.01$ ), and assiduity on the breakfast daily ( $P=0.03$ ), were significantly associated with high BMI. There was no compatibility between the perception of weight and actual body mass index ( $P=0.050$ ).

37% of the participants were considered inactive Engaging in vigorous physical activity was significantly higher in male than female ( $P=0.001$ ), while engaging in moderate physical activity was statistically significantly higher in female than male ( $P=0.001$ ).

Gender ( $P=0.03$ ), time constraints ( $P=0.00$ ), unavailability of place ( $P=0.00$ ), lack of skills ( $P=0.01$ ), lack of money ( $P=0.00$ ), the belief that physical activity is not important ( $P=0.00$ ), were the main reasons for not engaging in physical activity.

There was no significant relationship between smoking behavior and BMI classifications ( $P=0.140$ ). There was a significant association between smoking behavior and engaging in physical activity ( $P=0.044$ ). There was no significant relationship between BMI classifications and engaging in physical activity ( $P=0.79$ ).



### **5.3 Methodological consideration**

Because this was a cross-sectional study, the results cannot be considered as more than a snapshot providing us of the frequency and characteristics of risk factors and their determinants in a population at a particular point in time, and they do not allow any assessment of trends or cause and effect relationships. This type of data can be used to assess the prevalence of risk factors in a population, also the relationship between different variables at a point in time. For instance, the relationship between socio-demographic variables and risk factors. Other limitations may include reporting bias in relation to smoking status, especially among females, since females tend to underreport smoking behavior.

Convenience sampling was used to select the sample, in this technique the selection of units from the population is based on easy availability and/or accessibility. Therefore, the major disadvantage of this technique is that we have no idea how representative the information collected about the sample is to the population as a whole. But the information could still provide some fairly significant insights, and be a good source of data in exploratory research. We were going at different times of the day or week to reduce the bias in sample selection.

### **5.4 Implications of the study related to literature review**

#### **5.4.1 Smoking behavior**

The results showed that 33.3% of the participants were current smokers. We compared our results with published studies restricted to specific group such as university students. We found that the prevalence of smoking among Al-Quds University students was similar to the prevalence reported in universities located in neighboring countries such as Jordan and Syria (28.6%,38.3%)respectively[Haddad and Malak, 2002; Maziak et al, 2004].

This similarity is probably due to the fact that these countries share the same cultural, economics, and traditional values. On the other hand the prevalence of smoking was higher than in some universities located in developed countries such as New Zealand and Poland(10%,23.9%) respectively [Kypri and Baxter, 2004; Kuznar, Batura, and Mlynarczyk, 2002]. In line with this, the tobacco control country profiles, second edition

2003 have mentioned that the tobacco use is increasing in developing countries, while it is decreasing in many developed countries [Shafey , Dolwick , and Guindon , 2003]. These differences of smoking prevalence between universities in developed and developing countries may be related to different prevalence of smoking in developed and developing countries [Shafey , Dolwick , and Guindon , 2003].

More than half (57%) of the smokers smoked more than 10 cigarettes per day, and 43% of the smokers smoked less than 10 cigarettes per day. According to Friedman, Lichtenstein, and Biglan study, they found that persistent experimental smokers (who smoked more than 10 cigarettes) when compared with minimal experimenters (who smoked less than 10 cigarettes), were exposed to significantly more influence to smoke [Friedman, Lichtenstein, and Biglan, 1985]. These influences included social encouragement. They concluded that persistent experimenters were more ready to smoke than minimal experimenters [Friedman, Lichtenstein, and Biglan, 1985]. For example, accepted offers to smoke with less uncertainty, and inhaled more frequently [Friedman, Lichtenstein, and Biglan, 1985].

More than one third (39.40%) of the smokers smoked for more than 3 years. We can explain the result by the possible influence of pharmacologic effects of nicotine on the central nervous system (CNS) in the development and maintenance of regular smoking [US DHHS, 1988]. This result means prolonged use of nicotine leads to compulsive use, and to tolerance to the toxic effects of nicotine such as nausea, increase blood pressure and heart rate. These effects rapidly develop and persist, and therefore leading to withdrawal symptoms if smokers tried to stop smoking [Luty , 2002]. This might explain the prolonged use of the students in our sample to smoking although most have reported that they would like to stop and have also tried to stop but failed.

More than half of the smokers (63.64%) were also smoking nargela. The percentage was higher than among students at American University of Beirut [Tamim et al, 2003]. Since, only 11.30% of smoking students also smoked nargela. This trend among smokers in Palestine and among the general public may be because smoking nargela are popular throughout the South-East Asia and Middle East regions and have been used for many centuries under the illusion that they were a safe way to smoke tobacco [WHO, 2006].

In contrast, in our study 55.45% of the smokers thought nargela was more harmful to health than cigarettes, and only 13.64% of the smokers thought cigarettes were more harmful to health than nargela, and 10% of the smokers thought that the nargela and

cigarettes had the same effect on health. In fact a typical session of nargela smoking takes 45 to 50 minutes, whereas smoking one cigarette only takes about five minutes [WHO, 2006]. Because of the greater amount of time and the fact that the tobacco is usually flavored, a person tends to inhale anywhere from 100 to 200 times as much smoke than he/she would when smoking a single cigarette [WHO, 2006]. Even after passing through the water, the tobacco smoke produced still contains high levels of toxic compounds, including carbon monoxide, heavy metals and cancer-causing chemicals (carcinogens) [WHO, 2006].

Most of the smokers (98.2%) thought cigarettes were bad for health. In spite of the fact that they reported knowing that smoking was bad for their health they still smoked. Previous studies concluded that many smokers accept the association between smoking cigarettes and disease, but do not always believe themselves to be personally at risk, this thing lead to cognitive dissonance between their awareness of the health risks of smoking and practices of smoking, but smokers may deal with this state by denying the dangers of smoking [Lee, 1989; McKenna, Warburton, and Winwood, 1993].

Most of smokers (81.70%) thought that the smoking cigarette is a type of addiction. previous studies concluded that the nicotine is distributed quickly throughout the body; it takes about 10-16 seconds to reach the brain [Jarvis, 2004]. Rapid delivery of nicotine to the brain allows the smoker to manipulate and titrate the dose of nicotine from a cigarette to achieve a desired effect depending on the type of tobacco and rate and depth of puffing [Luty , 2002; Benowitz , 1992]. Tolerance to the toxic effects of nicotine rapidly develops and persists, while the reinforcing effects of nicotine are renewed with each cigarette [Luty, 2002; Jarvis, 2004].

More than half of the smokers in Al-Quds University reported that the main reason which made them start smoking was the desire to smoke without a reason, and it was different reason for the smokers in Jordan university, which is the main reason which made them start smoking was the pleasure [Haddad and Malak, 2002]. But most of smokers in Al-Quds University considered that smoking relaxes them and makes life easier. Silvan Tomkins theory on psychological model for smoking behavior mentioned that there is a subtype of positive affect smoking behavior which is smoking as a relaxant, to experience the positive affect of enjoyment [Tomkins, 1966]. The relaxant type such as feeling of

relaxing after a good meal with a cup of coffee and a cigarette [Tomkins , 1966].At least some of the time, most smokers use the cigarette to enhance an already existing sense of well-being[Tomkins , 1966].

Most of the smokers wished to quit smoking; the same trend was among smokers in others universities [Haddad and Malak, 2002; Maziak et al, 2004; Saatci et al, 2004]. Although most of them tried to quit smoking, more than half of them started again. This might be due to lack of specialists in health care that should follow up these individuals to know in which stage they reached and give support, reinforcement, and guidance to keep smoking cessation and prevent smoking relapse [Suchanek and Bruce, 1995]. More importantly, lack of skills to quit smoking and maintaining that, is more likely due to lack of social support from family and friends [Carmody , 1990], since most of them are also smokers. Another reason to the inability to stop, might be that smoking is a way to deal with different sources of stress, this is specially important in our population due to the difficult everyday life of the Palestinians because of the political situation. Addiction to nicotine, however, might also be an explanation [Carmody , 1990], since prolonged use of nicotine leads to compulsive use, tolerance, development of withdrawal symptoms and tendency to relapse after stopping[Luty ,2002].

The prevalence of smoking among males was higher than females' students. Similar results reported in universities located in neighboring countries such as Jordan, Syria, and Lebanon [Haddad and Malak, 2002; Maziak et al, 2004; Tamim et al, 2003].

Students who are males were almost ten times more likely to smoke than females.

Smoking was significantly related to having friends who smoke. The result is similar according to previous study that was done at Adana University, in Turkey, and Jordan University [Saatci et al, 2004; Kofahi and Haddad, 2005; Haddad and Malak; 2002]. In our study, the effect of gender on the risk of smoking was decreased after adjusting for family smoking status, and friends smoking status. This finding suggests that the gender effect is partly explained by the influence of family and friends smoking habits among males.

Students whose friend smoked were at extremely high risk to smoke themselves than those whose friends did not smoke, this result indicate the strength association between smoking behavior and friends. It could be the friends have influence on one another [USDHHS, 1989]. As aforementioned in a previous study, smokers were more likely to have friends who smoked [Bewley and Bland, 1977]. Also Friedman, Lichtenstein, and Biglan, in their

study aforementioned, they confirmed that peers pressure is characteristic of a large majority of smoking onset situations [Friedman, Lichtenstein, and Biglan, 1985].

Smoking was significantly related to having family member who smoke. Students whose had family members smoked were almost 2 times more likely to smoke themselves than those whose family members did not smoke, this results indicate to association between smoking behavior and family members.. It recognized that imitation may play a role in inducing some, and perhaps many children to take up smoking [USDHHS, 1989]. Previous study that was aforementioned in literature review, found that children who smoked were more likely than non-smokers to have a parent and siblings of the same sex who smoked [Bewley and Bland, 1977]. Chassin, Presson, and Sherman study, their results showed that the younger cessation was related mainly to parental influences in decision to quit or not, for example parental support and attitudes towards smoking, that means if families consider smoking behavior as acceptable behavior; it could encourage any one in family to smoke [Chassin, Presson, and Sherman, 1984].

#### **5.4.2 High Body Mass Index (High BMI)**

More than one fourth (27.9%) of the participants had a high BMI (25.5% had an overweight problem, and 2.4% had an obesity problem).

The prevalence of overweight and obesity among Al-Quds University students was less than that reported among Kuwait University students (32%) [Al-Isa, 1999]. However, it was high compared to overweight levels reported from different universities located in 21 European countries (8% were overweight and less than 1% were obese)[Bellisle , Monneuse , Steptoe, and Wardle ,1995], and different medical colleges located in China (2.5% were overweight and 0.4% were obese) [Sakamaki et al,2005(a)]. According to world health organization, the obesity epidemic is not restricted to industrialized societies; this increase is often faster in developing countries than in the developed world . It could be result of differences in eating habits, nature of food consumption, physical activity and socio-economics factors [WHO, 2003(c)].

Mean BMI was  $23.28 \pm 3.373$ (Mean  $\pm$  S.D) for all students (male  $23.66 \pm 3.58$ , female  $22.78 \pm 3.03$ ). According to the National Institutes of Health (NIH) and World Health Organization (WHO) guidelines, the results indicated that the most of the students were with range of normal weight (20-24.99 kg/m<sup>2</sup>) [ WHO,2005 (c) ] .

More than half (67.40%) of the students with high BMI reported that there was no one in their family suffering from high BMI, and therefore no significant relationship was detected. The same result was found in United Arab Emirates University [Musaiger and Radwan, 1995]. In contrast, a previous study among Kuwait University students, the results showed that obesity among parents was found to be significantly associated with obesity [Al-Isa , 1999]. Depending on the conceptual framework, they concluded that the obesity tends to run in families, suggesting a genetic link [CDC, 2005]. Furthermore, family members may share common habits and similar lifestyle in term of diet and other factors like socioeconomics status, environmental factors, and physical activity pattern that may led to obesity, and separating all these factors from genetic factors is difficult [CDC, 2005].

A family history of obesity increases your chances of becoming obese by about 25 to 30 percent [St.Vincent, 2005]. It could be due to information bias that the participants underreported their family weight condition, or there is no genetic factor in their family related to obesity, and may be overweight and obesity not results from genetic factor.

The results showed that there was no significant relationship between BMI classification and socio-demographic characteristics, socio-economic status such as paternal and maternal education level, monthly income, college, and hometown. But depending on literature review and conceptual framework, in developed societies, socioeconomic status is strongly negatively correlated with the prevalence of obesity, the lower social class had a powerful risk factor for obesity [Stunkard , 1996]. While in developing societies, there was a strong positive relationship between socioeconomic status and obesity, and the higher social class had a powerful risk factor for obesity [Stunkard , 1996]. In our sample study, may be information bias of family monthly income was reported by students, and the results showed us that most of the participants have the same range of monthly income less than 4000NIS. Unlike in Europe and North America, obesity in the Eastern Mediterranean Region is more prevalent in urban areas and among unemployed than employed women [Musaiger, 2004]. In Jordan, for example the prevalence of obesity was 56% in urban areas compared with 44% in rural areas [Musaiger, 2004]. Similar trends were found in Egypt, the Islamic Republic of Iran, Morocco, Oman, Tunisia and Turkey [Musaiger, 2004]. Lebanon was an exception as obesity was more prevalent among rural than urban women [Musaiger, 2004]. Our study did not include a question about paternal and maternal

occupation, so we can not determined the relationship. However, place of residency (urban vs. rural) had no significant relationship with obesity.

The results showed that eating snacks had a significant relationship with high BMI. Most of high BMI students (75%) ate snacks between main meals, and they ate snack to spend their spare time (47.82%). The nature of snack eaten among those with high BMI were sugar and nuts(61%) rather than vegetables and fruits(39%).World health organization , state that the eating a variety of vegetables and fruits clearly ensure an adequate intake of most micronutrients, dietary fibers and a host of essential non-nutrient substances [WHO(c), 2003]. As well, increased fruit and vegetable consumption can help displace foods high in saturated fats, sugar or salt [WHO(c), 2003]. They also states that there is convincing evidence that fruits and vegetables decrease the risk for obesity [WHO(c), 2003].

There was a positive association between not eating breakfast and high BMI, however logistic regression analysis showed that this was not statistically significant. 33.1% of those eating breakfast daily had high BMI compared with 23% among those who do not eat breakfast daily. In contrast, a study by Wyatt et al concluded that eating breakfast on a regular basis may be considered as another factor in maintenance of weight loss [Wyatt et al, 2002]. Researchers involved with the National Weight Control Registry (NWCR), say that there are several possible reasons that regular breakfast eating may be an essential behavior for weight loss maintenance; first, eating breakfast may reduce hunger later in the day that leads to overeating, Second, Breakfast eaters are able to better resist fatty and high calorie-containing foods throughout the day, and finally, nutrients consumed at breakfast may give people a better ability to be more physically active [Wyatt et al, 2002]. In contrast, our study showed that eating breakfast increases the risk of being overweight, this might be explained by the fact that this is a cross-sectional study and overweight students tend to eat breakfast as a consequence of their obesity and not vice versa.

Weight monitoring by period of the last time students with high BMI weight themselves was distributed with different percentages, only 20.70% of them were weighting themselves before few days when we asked them within the period of data collection, and the remainder percentages were distributed from before few weeks or more. This result indicated less regular self-monitoring of body weight, this may increase the incidence of being overweight and obese [Crawford and Ball, 2002].

The results showed that there was no statistically significant relationship between BMI classification and gender. However, males had a higher percentage of high BMI than females. The same result was showed in a previous study that was done at American University of Beirut and at Kuwait University [Khawaja and Afifi-Soweid, 2004; Al-Isa, 1999]. However, being overweight and obese was statistically relatively higher among males than female's students. The reason may be due to neglecting of males to shape of their body more than females, or the males do not care about the nature of food consumption, and may be they eat more calories than their body need.

There was no compatibility between the perception of weight and actual body mass index (BMI). 61.8% of the participants thought they do not have a problem in their weight, and 38.2% thought they have a problem in their weight. 62.2% of those who that reported having a problem with their weight reported thought have an overweight problem, while 3.9% of them thought that they have an obesity problem, whereas 33.9% thought that they have an underweight problem, and 73.4% of those who that reported having a problem with their weight tried to loose weight. For example, some females having the perception of an overweight problem, actually had normal BMI, and some females having the perception of normal weight, actually had an underweight BMI. On the other hand, some males having the perception an underweight problem actually had normal BMI, and some males having the perception of an overweight problem, actually had obese BMI. Almost the same result was found in previous study at the University of Vienna [Kiefer , Leitner , Bauer , and Rieder , 2000]. Women seem to be more influenced by the current ideal of slenderness than their male counterparts [Kiefer , Leitner , Bauer , and Rieder, 2000]. Women are more frequently dissatisfied with their weight, and see themselves as considerably heavier than they actually are [Kiefer, Leitner, Bauer, Rieder, 2000]. Because of this perception, women attempt to reduce weight more often than men [Kiefer , Leitner , Bauer , and Rieder , 2000]. These results showed us the differences between males and female's perception of having a weight problem, the females always would like to be thinner than males. [Sakamaki et al, 2005(a); Khawaja and Afifi-Soweid, 2004].



### 5.4.3 Physical Inactivity

More than one third (37.0%) of the participants were considered inactive at all. The prevalence of physical inactivity was higher than rates reported among Chinese university students (31%) [Abdullah, Wong, Yam, and Fielding, 2005]. Central and Eastern Europe (30%), but less than reported in Mediterranean (39%), Pacific Asian (42%), and developing countries (44%). [Haase, Steptoe, Sallis, and Wardle, 2004]. It could be results from differences in environmental, cultural and social factors that they contributed to the decline in population activity levels [CFLRI, 1996; US DHHS, 2006].

In spite off most of the participants (97.9%) thought that physical activity were good for their health, and more than half (52.7%) of the participants thought that the physical inactivity affects their health negatively. Also 47.9% thought that chronic diseases were the most probable consequences of not engaging in physical activity. The same was for university students from 23 countries [Haase, Steptoe, Sallis, and Wardle, 2004].

46.6% of the participants thought that engaging in physical activity will increase their fitness as a benefit of physical activity. The same result was found at Florida State University students [Grubbs and Carter, 2002]. World health organization and surgeon general report state that the physical activity has specific objectives of improving fitness, performance and health, and providing a means of social interaction [WHO, 2003(c); US DHHS, 1996].

Vigorous physical activity was more prevalent among male students, while moderate physical activity was more prevalent among female students. By world health organization (WHO) men are more likely than women to engage in regular activity [WHO, 2003(c)]. These results may be due to the nature of physical activity and difference perception of students which was more suitable for them. May be males students though the vigorous physical activity is suitable for them because it needs strength muscles and more effort to do it, and may be the available of more clubs for males than females, while for females students may be they though that moderate physical activity is not needs strength muscles or more efforts to do it, and may be there is no encourage from their parents or society to go to clubs if it available for females. Lack of suitable facilities, skill or appropriate

equipment, lack encouragement and support from family and friends, lack self-management skills were lead to physical inactivity [CFLRI,1996; US DHHS, 2006].

Gender, time constraints, unavailability of place, lack of skills, lack of money , the belief that physical activity is not important , were the main reasons for not engaging in physical activity. Logistic regression analysis showed that the variables significantly associated with physical inactivity were the same factors aforementioned. But after adjusting for all factors; gender and unavailability of place were no longer statistically significant determinants of physical inactivity. However, the Odds ratios for the other factors were altered slightly, but this did not affect the statistical significance.

Barrier most often associated with physical inactivity was time constraints. The same barriers was for Chinese University students [Abdullah, Wong, Yam, and Fielding, 2005], Florida State University [Grubbs and Carter, 2002], and Baskent University in Ankara [Daskapan, Tuzun, Eker, 2006]. It could be result of most of time day of students busy with lectures in the university and there is no time to do any thing, and after the end of day University they would be busy for their study [Daskapan, Tuzun, Eker, 2006]. Logistic regression analysis showed that the students whose have time constraints were almost 7 times more likely to being inactive. After adjusting for all factors, the odds of time constraints almost not changes, this mean that the others factors have no influence in decreased or increased the risk of time constraints and being inactive.

## 5.5 Conclusion

Based on the results of the study we can conclude some important points:

- 1- The smoking prevalence rate is high compared to some universities in developed countries.
- 2- Almost there is no difference in smoking prevalence between our sample from Al-Quds University (33.3%) aged 18-24 years and general population in Palestine (24.5%) aged 20-29 years.
- 3- Despite of the knowledge of smokers about health consequences of smoking on their health, they still smoke.
- 4- The social context such as family members and friends play effective role in encouragement or discouragement of the smoking behavior.
- 5- The attempts of smokers to quit smoking have failed may be because of the lack of effective programs to help them to keep quitting, and because that the community and surrounding environmental conditions may help either negatively or positively to quit smoking.
- 6- High BMI among Al-Quds University students still high compared to some universities in European countries.
- 7- Misperception in estimating weight was common between students, especially those with high body mass index.
- 8- Less regular self-monitoring of body weight was common among students with high BMI.
- 9- Eating habits, such as eating snacks between meals and eating breakfast were both associated with BMI.

10- The frequency of physical inactivity was less than rates reported in some developing countries.

11- The concerns of daily life and surrounding environmental conditions play an important role in the individual to be physically active or not.

12- A time constraint, lack of money, lack of skills, and thought that physical activity is not important were most common barrier in not engaging in physical activity.

13- And, finally the lack of awareness of physical inactivity on health leads to the failure to take the issue seriously.

## **5.6 Recommendations for decision makers**

According to the results of this study, the ways and measures that could aid in decreasing and preventing the increase of smoking prevalence, high BMI, and physical inactivity may be as follow:-

1- Increase awareness of the students on health effects of smoking by preparing bulletins on the issue and distribute them to all colleges of the Al-Quds University.

2- Ban smoking inside colleges of the University, and closed areas such as indoor cafeteria by imposing financial penalties for each student who violates the law.

3- Action symposia healthy in all colleges and invite all students to attend to explain the benefits of the practice of physical activity on health and negative effects of not to practice of physical activity.

4- Build modern sports halls and equipped with appropriate sport equipments that suite with all groups (males and females) to encourage the students to practice physical activities inside the University within the leisure time between lectures.

5- Action bulletins healthy about the dangers of weight gain and obesity, even if the rate of increase was simple, and the impact of these increases on health in the future as possible to begin to show some symptoms of chronic diseases.

6- Increase awareness of the health benefits of weight loss, and maintain normal body weight as much as you can, also some ways to prevent weight gain, such as sports and eating as the body needs energy without excess calories.

7- Course of public health should be included as a requirement compulsory for all colleges in various specializations.

## **5.7 Recommendations for further research**

Depending on our thesis, we suggesting some further research to create a good health profile on our university students, we suggest

- 1- Research on other determinants of smoking among university students, personal characteristics, stress and other psychological factors.
- 2- Study the prevalence and determinants of using nargela as another type of smoking.
- 3- Follow up research on the relationship between nutrition habits and body weight management.
- 4- Assessment of all risk factors and their determinants by using other study designs.
- 5- Create a surveillance system on smoking among youth with special emphasis on its economic consequences individually and nationally.
- 6- Undertake qualitative research on control of body weight for creating data as well as creating a monitoring.

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## Appendix 1: Questionnaire



### كلية الصحة العامة

### دراسة العوامل المؤثرة على الصحة سلبياً

### لطلاب جامعة القدس

أنا الموقع أدناه عامر يوسف عياد, طالب في الدراسات العليا, كلية الصحة العامة, جامعة القدس, أقوم بدراسة حول بعض العوامل المؤثرة على الصحة سلبياً لطلاب جامعة القدس و منها التدخين ,انعدام النشاط البدني, و زيادة الوزن(السمنة). تهدف هذه الدراسة إلى معرفة مدى انتشار هذه العوامل المؤثرة على الصحة بين طلاب جامعة القدس وتحديد العوامل التي تساعد في انتشارها. نتعهد لكل من يشارك في هذه الدراسة التحفظ والسرية التامة على كل المعلومات المعطاة في

الاستبانة و لن تستخدم إلا لغرض الدراسة فقط .

شاكرين لكم تعاونكم معنا لإنجاح هذه الدراسة.

ملاحظة مهمة جداً: - تسلم الاستبانة شخصياً باليد في عبادة الجامعة.

الباحث: عامر يوسف عياد

بسم الله الرحمن الرحيم

استبانة خاصة بدراسة العوامل المؤثرة على الصحة سلبياً

لطلاب جامعة القدس

اسم الباحث:- عامر يوسف محمد عياد

الكلية:- الصحة العامة

رقم الاستبانة:-

أولاً:- أسئلة عامة عن الطالب

1- جنس الطالب:- ذكر / أنثى 2- الرقم الجامعي:-

3- اسم الطالب(اختياري):- 4- عمر الطالب:-

5- مكان السكن الأصلي:- 6- المحافظة:-

7- الحالة الاجتماعية:-

(1) أعزب/عزباء (2) متزوج/ة (3) خاطب/ة (4) مطلق/ة (5) أرمل/ة

8- الكلية التي يدرس فيها الطالب:-

(1) الطب (2) العلوم (3) الآداب (4) الهندسة (5) الحقوق (6) الدعوة و اصول الدين

(7) المهن الصحية (8) الصيدلة (9) القرآن و الدراسات الاسلامية (10) العلوم الادارية و الاقتصادية

9- التخصص:-

10- مستوى الطالب الدراسي:-

(1) سنة أولى (2) سنة ثانية (3) سنة ثالثة (4) سنة رابعة (5) سنة خامسة (6) سنة سادسة

11- المستوى التعليمي لرب الأسرة:-

(1) أمي (2) ابتدائي (3) إعدادي (4) ثانوي (5) جامعي

12- المستوى التعليمي لربة الأسرة:-

(1) أمية (2) ابتدائية (3) إعدادية (4) ثانوية (5) جامعية

13- مستوى دخل الأسرة شهرياً:-

(1) اقل من 1500 شيكل (2) 1500-2000 شيكل (3) 2000 - 4000 شيكل (4) أكثر من 4000 شيكل

### ثانياً:- أسئلة حول مخاطر التدخين

1- هل تدخن/ي بشكل يومي و منتظم السجائر حالياً؟

(1) نعم (2) ادخن احياناً (3) لا ادخن ابداً

2- كم سيجارة تدخن/ي في اليوم تقريباً؟

(1) 10 فما دون (2) 10-20 سيجارة (3) 20 فما فوق (4) لا ادخن ابداً

3- كم تساوي الكلفة المادية التي تصرفها/تصرفينها على شراء السجائر يومياً في العادة؟ اذكر/ي المبلغ في

الفراغ \_\_\_\_\_ شيكل/يومياً.

4- منذ متى و أنت تدخن/ي بانتظام ؟ اذكر المدة في الفراغ

(1) يوم (2) اسبوع (3) شهر (4) سنة (5) لا ادخن ابداً

5- هل يمارس احد افراد عائلتك عادة التدخين؟

(1) نعم (2) لا

6- اذا كان الجواب بنعم, من يمارس عادة التدخين من عائلتك؟ (امكانية اكثر من اجابة)

(1) الاب (2) الام (3) احد الاخوة (4) احد الاخوات (5) لا احد

7- هل يمارس احد الاصدقاء / الصديقات عادة التدخين؟

(1) جميعهم/جميعهن (2) بعضهم/بعضهن (3) لا احد

8- برأيك , هل يتقبل المجتمع من حولك عادة التدخين كعادة اجتماعية مقبولة؟

(1) نعم (2) لا

9- هل استخدمت أي نوع آخر من منتجات التبغ غير السجائر؟امكانية اكثر من اجابة

(1) لا ادخن ابداً (2) لا ادخن سوى السجائر فقط (3) ارجيلة (4) غليون (5) سيجار

10- برأيك ,ايهما اكثر ضرر على الصحة السجائر ام الارجيلة؟

(1) السجائر (2) الارجيلة (3) الاثنان نفس الضرر (4) لا أعرف

11- هل تعتقد/ي بان التدخين ضار بالصحة؟

(1) نعم (2) لا

12- من أين تعرفت على مضار التدخين؟امكانية اكثر من اجابة

(1) من المدرسة خلال المنهاج (2) من الوالدين و اقربائي (3)من زملائي

(4) من وسائل الاعلام المختلفة (5) غير ذلك,اذكر \_\_\_\_\_

13- برايك ما هي اكثر مشكلة صحية تنتج عن التدخين؟ (1) اعتقد \_\_\_\_\_ (2) لا اعرف

### اسئلة خاصة بالمدخنين/المدخنات فقط

14- هل ترغب بالتوقف عن التدخين؟

(1) نعم (2) لا (2) توقفت عن التدخين

15- هل حاولت التوقف عن التدخين؟

(1) نعم (2) لا

16- متى توقفت عن التدخين؟

(1) ما زلت ادخن (2) توقفت قبل \_\_\_\_\_

17- ما هو السبب الرئيسي الذي يدفعك للتوقف عن التدخين؟ اجابة واحدة فقط

(1) لا ادخن ابداً (2) المحافظة على صحتي (3) المحافظة على المال و توفيره (4) لان التدخين غير

مقبول اجتماعيا (5) لا اريد التوقف

18- هل توقفت عن التدخين ثم رجعت اليه؟

(1) نعم (2) لا (3) لم اتوقف ابداً

19- هل برايك يصعب عليك التوقف عن التدخين؟

(1) نعم (2) لا

20- هل برايك بان التدخين نوع من انواع الادمان؟

(1) نعم (2) لا

21- هل تلقيت مساعدة او نصيحة من طبيب او افراد الاسرة او صديق تساعدك على التوقف عن التدخين؟

(1) نعم (2) لا

22- ما السبب الرئيسي الذي دفعك للتدخين؟ اجابة واحدة فقط

- (1) لا ادخن ابداً (2) الشعور برغبة التدخين فقط بدون سبب (3) تقليد الاخرين  
(4) مواكبة الزملاء (5) الدعاية و الاعلان (6) توفر المال للحصول على السجائر  
(7) الضغط النفسي و الاجتماعي (8) لان سعره زهيد نسبياً

23- ما هي الفوائد التي تحصل عليها من وراء التدخين؟ امكانية اكثر من اجابة

(1) تشعرك بالسعادة (2) تجعل لديك اصدقاء اكثر (3) تشعرك بالاستقلالية (4) تخفف عنك همومك

### ثالثاً: - اسئلة حول مخاطر زيادة الوزن

1- هل تعتقد/ي انه عندك مشاكل في وزنك؟

(1) نعم (2) لا

2- اذا كان الجواب بنعم, ما هي المشكلة في وزنك حسب رأيك؟

(1) الوزن اقل من الطبيعي (2) زيادة وزن (3) سمنة

3- اذا كان لديك زيادة وزن او سمنة, هل تحاول/ي تخفيف الوزن حالياً؟

(1) نعم (2) لا (3) لا يوجد عندي مشاكل في وزني

4- هل يعاني افراد عائلتك من زيادة الوزن او السمنة ؟

(1) نعم (2) لا

5- في المعتاد, هل تأكل بين الوجبات الرئيسية(الفطور, الغداء, العشاء)؟

(1) نعم (2) لا

6- اذا كان الجواب بنعم, ما هي طبيعة المواد الغذائية التي تتناولها بين الوجبات؟

(1) خضار و فواكه (2) مكسرات (3) سكريات (4) لا اتناول بين الوجبات شيئاً

7- ما هو السبب الرئيسي الذي يدفعك للاكل بين الوجبات؟ اجابة واحدة فقط

(1) لا اتناول بين الوجبات شيئاً (2) الشعور بالجوع بعد فترة قصيرة من الوجبات الرئيسية

(3) لتفريغ الضغط النفسي الذي اشعر به من حزن أو فرح (4) لاشغال وقت الفراغ و الملل الذي اشعر به

8- هل تواظب/ي على وجبة الافطار يومياً؟

(1) نعم (2) لا (3) احياناً

9- برايك, ما هو السبب الرئيسي الذي يؤدي إلى زيادة وزنك أو السمنة؟ إجابة واحدة فقط

(1) أكل المواد الدهنية (2) قلة النشاط الرياضي (3) عوامل وراثية (4) اكل الطعام بزيادة عن حاجة الجسم

10- متى كانت اخر مرة وزنت فيها نفسك؟

(1) قبل عدة ايام (2) قبل عدة اسابيع (3) قبل عدة اشهر (4) قبل عدة سنوات (5) لا انتذكر

11- كم تعتقد/ي ان يكون وزنك حالياً؟

(1) \_\_\_\_\_ كيلو غرام (2) لا اعرف

12- كم ترغب/ي في ان يكون وزنك؟

(1) \_\_\_\_\_ كيلو غرام (2) لا اعرف

13- برأيك هل زيادة الوزن او السمنة تتسبب بمشاكل صحية للشخص؟

(1) نعم (2) لا

14- إذا كان الجواب بنعم، برأيك ما هي اكثر مشكلة صحية تنتج عن زيادة الوزن او السمنة؟

(1) اعتقد \_\_\_\_\_ (2) لا اعرف

رابعاً:- أسئلة حول مخاطر قلة النشاط الرياضي

ملاحظة:- على المشارك ان يقرأ عن النشاطات البدنية قبل الاجابة.

أ- **الانشطة البدنية مرتفعة الشدة:-** فكر في الانشطة البدنية مرتفعة الشدة التي قمت بممارستها لمدة 20دقيقة

في كل مرة في الايام السبعة الماضية مثل رفع اشياء ثقيلة, حرث الارض, ركوب الدراجة بسرعة

عالية, الجري, ممارسة كرة القدم او السلة, السباحة او نط الحبل و التي تجعل تنفسك اعلى بكثير من المعتاد.

ب- **الانشطة البدنية معتدلة الشدة:-** فكر في الانشطة البدنية معتدلة الشدة التي قمت بممارستها لمدة 20دقيقة

في كل مرة في الايام السبعة الماضية على الأقل مثل رفع اشياء خفيفة, كنس المنزل, ركوب الدراجة بسرعة



عادية, ممارسة كرة الطائرة او تنس الطاولة او السلة, غسل الملابس يدوياً, غسل السيارة و التي تجعل تنفسك اعلى من المعتاد الى حد ما(ملاحظة:- المشي لا يحسب ضمن هذه الانشطة).

ج- **الانشطة البدنية منخفضة الشدة:-** فكر في الوقت الذي قضيته في المشي في الايام السبعة الماضية ويتضمن ذلك المشي الى الجامعة, المشي داخل الجامعة, في البيت, خلال انتقالك من مكان لآخر, او اي نوع من انواع المشي بغرض الترويح او الرياضة.

د- **انعدام الانشطة البدنية:-** فكر/ي في الوقت الذي تقضيه جالساً, احسب وقت الجلوس في الدراسة, في المنزل, في الترفيه, في الكفترية, العمل على الكمبيوتر, اثناء زيارة صديق, اثناء الاستلقاء لمشاهدة التلفزيون.

#### الأسئلة:-

1- في المعتاد, ما هو معدل ممارستك لكل من هذه الأنشطة البدنية؟ ضع إشارة x في المربع

لا أقوم بها	1-3 مرات في الشهر	مرة في الأسبوع	2-3 مرات في الأسبوع	4-5 مرات في الأسبوع	يوميًا	الأنشطة البدنية
						1. مرتفعة الشدة (لمدة 20 دقيقة على الأقل)
						2. متوسطة الشدة (لمدة 20 دقيقة على الأقل)
						3. منخفضة الشدة
						4. انعدام النشاط البدني

2- برأيك ما هي الاسباب التي تدفعك لعدم القيام بانشطة بدنية؟ (امكانية اكثر من اجابة)

(1) اقوم بها في العادة (2) عدم توفر الوقت (3) عدم توفر المكان (4) عدم توفر المال للاشتراك في النوادي الرياضية (5) عدم معرفة كيفية القيام بهذه الانشطة (6) عدم اهمية هذه الانشطة (7) غير مقبولة اجتماعياً

3- هل تعتقد بان الانشطة الرياضية تعود بالفائدة على الصحة؟

(1) نعم (2) لا (3) لا اعرف

4- برأيك, ما هي أكثر فائدة تعود عليك من ممارسة الأنشطة الرياضية؟اجابة واحدة فقط

(1)تعطيني لياقة بدنية (2) تحميني من الاصابة ببعض الامراض المزمنة(مثل امراض القلب و السكري)

(3)تساعد في المحافظة على الوزن الطبيعي للجسم (4) غير ذلك, اذكر \_\_\_\_\_

5- برأيك,هل عدم ممارسة أنشطة رياضية مرتفعة او متوسطة الشدة تؤثر على الصحة سلبياً؟

(1) نعم (2)لا (3) لا اعرف/غير متأكدة

6- برأيك,ما هي الآثار السلبية الناتجة من عدم ممارسة أنشطة رياضية مرتفعة او متوسطة الشدة على الصحة؟

(1) اعتقد \_\_\_\_\_ (2) لا اعرف/غير متأكدة