

1-1-2010

# Jordanian Adolescent Cannabis Use: Patterns, Risks, And Protective Factors

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**JORDANIAN ADOLESCENT CANNABIS USE:  
PATTERNS, RISKS, AND PROTECTIVE FACTORS**

**by**

**SUKAINA ABD AL-RHMMAN ALZYLOUD**

**DISSERTATION**

**Submitted to the Graduate School**

**of Wayne State University,**

**Detroit, Michigan**

**in partial fulfillment of the requirements**

**for the degree of**

**DOCTOR OF PHILOSOPHY**

2010

MAJOR: NURSING

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Advisor

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Date

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## DEDICATION

إذا بلغت القمة فوجه نظرك إلى السفح لترى من عاونك في الصعود إليها  
وانظر إلى السماء ليثبت الله أقدامك عليها.

*I Dedicate This Work to My Loving Parents, Brothers (Amjad, Ahmad, Osama, and Abd  
ALah), Sisters (Majeda, Fatema, and Rwan), and my dearest friend for their continuous Love,  
Support, and Encouragement.*

## AKNOWLEDGMENT

I would like to express my gratitude to my Advisors *Dr. Stephanie Schim, Dr. Hussain Yurandi, Dr. Linda Weglicki, , and Dr. Gail Fahoom* for their professional guidance, support, and patience. I'm also appreciative to all of my friends' and family.

I wish to acknowledge the Graduate School and the College of Nursing at Wayne State University for the Thomas C. Rumble University Graduate Fellowship financial scholarship that supported part of my doctoral study. I wish to acknowledge the Graduate School at Wayne State University for funding this project. I finally would like to thank all my colleagues, and all the faculty staff the College of Nursing at Wayne State University.

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## CHAPTER 1

### INTRODUCTION

Cannabis is one of the most commonly used illicit drugs worldwide (United States Department of Health and Human Services [USDHHS], 2007; United Nations Office on Drugs and Crime [UNODC], 2007; World Health Organization [WHO], 2004). It was estimated that, across all nations, 160 to 162 million people used cannabis in the course of 2005, 4% of the total global populations (3.9% of those reported using cannabis at the age of 15 years and above) (UNODC, 2007; WHO, 2006). These numbers are far more than the number of people who reported using any other illicit drug (UNODC, 2007). According to the UNODC, the global number of people who used cannabis at least once in 2007 is estimated to be between 143 and 190 million persons (UNODC, 2009). Cannabis use is more prevalent among adolescent males (USDHHS, 2009; WHO, 2005). For example, it was reported that more male adolescents use cannabis than females; 8.2% for male and 0.3% for female (Azaiza, Shoham, Bar-Hamburger, & Abu-Asbeh, 2008a). Studying adolescents cannabis use is important because the use of cannabis among adolescents is implicated in lifetime use and abuse patterns (USDHHS, 1999; WHO, 2000).

Cannabis use has expanded throughout the world, especially in developing countries (UNODC, 2009; WHO, 2005). It was reported that cannabis use demonstrated a decreasing trend over the past few years (UNODC, 2007; WHO, 2005); however, recent studies have reported that the decline has ended which could indicate resurgence (Room, Hall, Reuter, Fischer, & Lenton, 2008; Johnston, O'Malley, Bachman, & Schulenberg, 2009). According to the UNODC the number of cannabis users in 2005 worldwide was 10% higher than estimated global use in the mid 1990s (UNODC, 2007). Research in the use of cannabis among adolescents in



developing countries has been limited and is an area in need of study (WHO, 2003; East Mediterranean Regional Office [EMRO], 2004). Jordan, defined as a developing country according to the World Bank, is also affected by the current trend of increased cannabis use by its population. The percentages of cannabis use cases reported by the Jordanian Anti-Narcotic Squad [JANS] (2008) were 63% for 2007 and 95% for 2008 of the total illicit drug use cases. This study explores the patterns of cannabis use among high school-aged Jordanian adolescents and examines the risks and protective factors that are related to adolescent usage of cannabis. This study will help fill the gaps by providing useful information on cannabis use as well as the risk, and protective factors for cannabis use in Jordan.

The literature has indicated a number of risk factors for adolescent cannabis use that are related to both intrapersonal and environmental domains of adolescents' lives. Intrapersonal factors include: tolerant attitudes toward deviance or approval of cannabis use, affective disorders [e.g., depression, anxiety, stress] (Wittchen, Froehlich, & Behrendt et al., 2004), engaging in other problem behaviors, and weak bonding to conventional institutions such as schools (Hawkins & Wies, 1985; Hawkins, Catalano et al., 1992). Environmental factors include: parental monitoring of child behavior (Suldo, Mihalas, Powell, & French, 2008), educational performance (Clark, Belgrave, Nasim, 2008), and peer relationships (Svensson, 2000). These risk factors are commonly associated with adolescent cannabis initiation (Donovan et al., 2004; Korhonen et al., 2008; Mayhew & Flay, & Mott, 2000; Ohannessian & Hesselbrock, 2007; Sher & Grekin et al. 2005). Cannabis use has also been associated with parental cannabis use, parenting behavior, cannabis expectancies, affiliation with cannabis using peers, family dysfunction, stressful events, and emotional distress (Chong, Cheng, & Chen, 2007; Gibbons et al., 2004; Jessor et al., 1991; Ohannessian & Hesselbrock, 2007). The literature identifies a

number of protective factors against cannabis use. Protective factors include religious affiliation and religiosity (Azaiza, Shoham, Bar-Hamburger, & Abu-Asbeh, 2009), strong family relationships (Ledoux, Miller, Choquet, 2002), high academic performance, and engagement in extracurricular activities (Kliwer, Wade, & Worthington, 2003; Knight et al., 2007; Kliwer & Murrelle, 2007). To date, much of the research centered on adolescents substance use has been conducted in economically developed countries of the world [e.g., US, European countries] (Ledoux et al., 2002; Legleye, Karila, Beck, & Reynaud, 2007). Limited research has been reported from the still-developing countries and so there remain large gaps about adolescents' cannabis patterns of use, risk factors, and protective mechanisms in much of the world. As immigration brings increasing numbers of people from the countries of the middle east to live in the United States (U.S. Department of Homeland Security, 2009), considering that about 1/3 of new legal permanent residents are under the age of 24 (Monger & Rytina, 2009), and recognizing that babies born to Arab immigrants are counted as white American citizens, use of substances such as cannabis in the middle east are likely to become more relevant both there and in the growing young American Arab population. Developing deeper understanding of the experiences of adolescents and their cannabis use in such countries as the Hashemite Kingdom of Jordan may lead to the ability to make cross-cultural comparisons about the experiences of adolescents in other parts of the world. In addition, this may more clearly illuminate ways in which nurses practice more effective global prevention with adolescents at-risk for substance use.

## Background and Significance

In order to understand cannabis use in Jordan one needs to know background information of what is cannabis, Islamic religion, use in Jordan and the Middle East, and consequences of cannabis use.

### Cannabis.

According to the classic definitions, *cannabis* is a generic term used to denote the several psychoactive preparations of the plant *Cannabis sativa* (Rubin, 1975). The Mexican term *marijuana* is used in many countries when referring to cannabis leaves or other crude plant material. Un-pollinated female cannabis plants are called *hashish* (Rubin, 1975). The *Cannabis sativa* plant contains dozens of different cannabinoids (ElSohly, 2002; Iversen, 2007), but the primary psychoactive substance constituent in cannabis products is Delta-9-Tetra-Hydro-Cannabinol (THC) (Iversen, 2007; Pertwee, 2008). The plant part that contains the highest content of the THC is the flowering tops of the female cannabis plant (UNODC, 2006). The UNODC (2006) reported that marijuana which consists of the dried flowering tops and leaves of the plant contain a range of 2% to 20% of THC. Hashish which consists of dried cannabis resin and the compressed flowers contain a range of 2% to 20% of THC. Lastly, Hash oil is an oil based extract of hashish that contains between 15% and 50% THC. Cannabis is usually smoked in a “joint”, the size of a cigarette, or in a water pipe (Hookah, Nargila), with tobacco sometimes added to assist with burning (Hall & Solowij, 1998; Heustis, 2005; Iversen, 2007; USDHHS, 1999; WHO, 2008). A joint may contain between 0.25 and 0.75g of cannabis. The amount of THC transmitted to the lungs varies between 20% and 70%, and 5% to 24% reaches the brain (Hall & Solowij, 1998; Heustis, 2005; Iversen, 2007). Cannabis users usually inhale deeply and “hold” their breath to maximize the absorption of THC.

THC produces its effects by acting on specific cannabinoid (CB<sub>1</sub> and CB<sub>2</sub>) receptors on the surfaces of the brain and nervous system cells (Pertwee, 2008). The CB<sub>1</sub> receptor is widely distributed in the brain different regions that are involved in cognition, memory, reward, pain perception and motor coordination (Iversen, 2007; Murray et al., 2007). These receptors also respond to a naturally-occurring (or internal) cannabinoid called “anandamide”. Anandamide belongs to a group of chemicals called cannabinoids. THC is also a cannabinoid chemical. THC mimics the actions of anandamide, meaning that THC binds with cannabinoid receptors and activates neurons, which causes adverse effects on the mind and body. High concentrations of cannabinoid receptors exist in the brain (hippocampus, cerebellum and basal ganglia). The hippocampus is located within the temporal lobe and is important for short-term memory (Tortora and Grabowski, 2002). When the THC binds with the cannabinoid receptors inside the hippocampus, it interferes with the recollection of recent events. THC also affects coordination, which is controlled by the cerebellum (Chang & Chronicle, 2007). The basal ganglia control unconscious muscle movements, which is another reason why motor coordination is impaired when under the influence of Cannabis (Iversen, 2007). Use of cannabis produces a mild sense of euphoria, as well as impairments in judgment and lengthened response time (Leshner & Koob, 1999).

Cannabis is considered to be the most widely used psychoactive substances worldwide. *Psychoactive Substances*, more commonly known as psychoactive drugs, are substances that, when taken, have the ability to change an individual’s consciousness, mood or thinking processes (WHO, 2004). The use of these substances is very common among adolescents and it is increasing in the developing countries (WHO, 2005; USDHHS, 2007). The use of cannabis among adolescents has been linked to unintentional injuries, physical fights, academic and

occupational problems, and illegal behaviors (Hall & Pacula, 2003; Iversen, 2007; WHO, 2004; Substance Abuse and Mental Health Services Administration [SAMHSA], 1999). Research on cannabis use, risks, and protective factors among Jordanian adolescents is needed.

### **Cannabis Use and the Islamic Religion.**

Important to the study of cannabis use in Jordan, the strong cultural, religious, and social assets found in the region. Islam is the religion of 90% of the people in the ME and 92% of the population of Jordan (Central Intelligence Agency [CIA], 2008). Christianity is the second most-prevalent religion with conservative Roman Catholicism being the dominant church. Both these religious traditions promote strong family ties, helping those in need, and moral and spiritual codes that promote healthy lifestyles (CIA, 2008). Islam in particular takes a strong stand against use of alcohol (known as *khamr* in the Arabic language). According to many authentic Islamic narrators, *khamr* refers not only to alcohol but to any substance that clouds or veils the mind and consciousness such as cannabis. In the classic Islamic text called the Hadith Sharif (Prophet Mohammad ﷺ sayings), Cannabis is therefore included as a form of *khamr*. The Prophet ﷺ said: “Everything that intoxicates is wine and all kinds of wine are prohibited,” (Imam Bukhari, p.150). The Prophet ﷺ also said: “Every intoxicant is forbidden and every narcotic is forbidden and anything that causes drunkenness when taken in quantity is completely forbidden, as is anything that dims reason” (Imam Bukhari, p. 152). *Allah* (God) has prohibited sins which are defined as activities which cause harm for the individual and for society. Cannabis use is a sins by this definition (Imam Bukhari, p.150).

Islamic teachings also emphasize the development of the human personality. When a person resorts to *khamr*, their actions are in conflict with the Islamic view that endorses active responses and facing challenges rather than escaping them (Ibn Taymiyyah, p. 262). Islam urges

individuals to act positively and try to change the bad reality. A Muslim is a responsible human being who always urges decency and opposes what is detestable (Ibn Taymiyyah, p. 262). The strength of the person's personality is based on two strong characteristics that Islam encourages: patience and belief in predestination: *Surely we will try you with fear and hunger, and loss of property, lives and crops; but [prophet], give good news to those who are steadfast, those who, when afflicted with a calamity say: "surely we belong to God, and to Him we shall return". These will be given blessings and mercy from their Lord, and it is they who are rightly guided.* (Qura'an, Sura Al-Baqara: passages 155-157, p. 24).

Although cannabis is not explicitly prohibited in Islamic laws, it falls under the Islamic Law of mind protection (Al-Qaradawi, 2007). The objectives of Islamic divine laws are the protection of faith (belief in one God), promotion of life (avoidance of abortion, suicide, and homicide), property ownership, and clarity of the mind (non-use of intoxicants) (Al-Qaradawi, 2007). Normally in the brain there is an inhibitory control which advises the conscience not to engage in shameful or wrongful acts (Al-Qaradawi, 2007). Any substance which may suppress this nerve pathway, take away restraint, impair the person's ability to make judgment, and to reduce the drive to protect the body and/or honor is prohibited for observant Muslims. As indicated in the literature, cannabis use affects the human brain, impairs the judgment, and impairs cognitive abilities (Iversen, 2007, UNODC, 2006).

In spite of the clear prohibitions against the use of *khamr* in the conservative Islamic and Christian communities in countries such as Jordan, more adolescents are observed to be engaging in these behaviors (Alzyoud, 2005; WHO, 2007). Drinking and using cannabis is done by youth at significant risk of parental disapproval, social isolation, and social stigmatization as well as major health risks (Haddad, Shoter, Umlaf, and Alzyoud, 2010, Alzyoud, 2005). Because

cannabis use is socially unacceptable, there is difficulty in assessing the true extent of usage. Most measures used to determine use percentages rely on self report. Since both cannabis is considered gateway drug that often lead to more extensive use of other harmful substances such as cocaine (SAMHSA, 1997, WHO, 2006).

### **Jordanian Civil Law and Cannabis Use.**

Under Jordanian civil laws the use of cannabis is illegal for people of all ages. Cannabis use, growing, and selling are also illegal in Jordan (Jordanian Laws, 1988, Section #: 11).

### **Cannabis Use in Jordan and the Middle East.**

Despite an increase in attention to cannabis use in developing countries, the patterns of use, risks, and protective factors of cannabis use in the Middle East and worldwide is far from clear (Al-Badah, 2001; WHO, 1999). A very limited number of studies regarding cannabis use among adolescents in the ME were reported. A study conducted by the United Nations Drug Control Program (UNDCP, 1999) found that 17% of Egyptian adolescents 15 years and older reported using cannabis. A more recent study conducted by the Egypt's National Council for Fighting and Treating Addiction NCFTA reported that 12% of Egypt's adolescents 15 years and older are dependent on cannabis (NCFTA, 2007). Other studies from ME countries have reported varying percentages of cannabis use among adolescents. For example, 6% of Israeli adolescents, 15 years and older, reported using cannabis (Azaiza et al., 2008a).

The Global School Health Survey GSHS was used to determine substance use in Jordan; 42.7% of male students and 23% of female students reported “ever having used” a substance. Report of ever having used a substance other than alcohol was 2.5% among both males and females (WHO, 2005). Although the age at which adolescents begin experimenting with cannabis has been declining (WHO, 2002; Okasha, 2004), no studies conducted in Jordan were

found that studied adolescents younger than 15 years of age. In addition, the patterns, risks, and protective factors of cannabis use across the age groups among Jordanian adolescents have not yet been identified.

According to report from the Jordanian Anti Narcotic Squad [JANS] (2007), numbers of cannabis users are increasing sharply in Jordan. Almost sixty-three percent of the recorded cases of substance use were cannabis-related (61.5% for males and 1.6% for females). In 2009 cannabis use accounted for about 65% (64% for males and 0.2% females) of substance use overall (JANS, 2010). In a study conducted by Alzyoud (2005) a sample of 400 Jordanian school students, 11.4% of 14 to 19 year old had used an illicit substance in their life time. Research at the local and national levels in Jordan have shown that a substantial number of adolescents participate in the use of cannabis (Alzyoud, 2005; WHO, 2007).

#### **Consequences of Cannabis use.**

The physical and psychological effects of cannabis use have been recognized for nearly thirty years (Institute of Medicine of the National Academy of Sciences, 1982; WHO, 1982), and recent studies have confirmed and extended earlier findings (Iversen, 2007; UNODC, 2007; WHO, 2005). The negative health effects include: impaired cognitive development (capabilities of learning), including associative processes; free recall of previously learned items is often impaired when cannabis has been used during learning and recall periods (Pope, Gruber, Hudson, Huestis, & Yurgelun-Todd, 2001); impaired psychomotor performance in a wide variety of tasks (e.g., motor coordination, divided attention, and operative tasks) (Hall & Pacula, 2003; Iversen, 2007, UNODC, 2009); and impaired ability to perform activities requiring complex functioning (Hall & Pacula, 2003). As a result of impaired cognitive and psychometric performance, people who use cannabis are at risk for motor vehicle accidents following cannabis



use (CDC, 1995; Johnston, O'Malley, & Bachman, 2005; National Highway Traffic Safety Administration NHTSA, 2000; SAMHSA, 2004).

### **Significance to Nursing**

Adolescent cannabis use is a health and social problem on the increase among young people in the Middle East, in Jordan, and worldwide (CDC, 2001; USDHHS, 2007; WHO, 2004). Cannabis use is considered one of the risk behaviors common to adolescents of all ages (Room, et al, 2009; UNODC, 2007), and all indications are that the problem will continue to increase (WHO, 2008). More than ever, due to the increase of cannabis use in Jordan (JANS, 2007, 2008), Jordanian nurses in all practice areas are likely to come in contact with persons who use cannabis. Therefore, there is a pressing need for nurse to conduct research with Jordanian adolescents in order to describe the pattern of use and to begin to explore possible protective mechanisms to enhance primary prevention. Understanding the patterns of cannabis use among adolescents in countries such as Jordan will enable nurses and other health care professionals to be able to better plan for treatment, target health promotion efforts, and address primary prevention for the lifetime problems associated with cannabis use among adolescents.

Furthermore, understanding the patterns, risk factors, and preventive factors in the Jordanian Arab population will make an important contribution to understanding adolescent use behavior in a more global context. For example, there is a large and growing population of young American Arabs who are demonstrating tobacco use patterns suggestive of movement away from some of the traditional cultural values on abstinence (WHO, 2004). Cross-over of behaviors such as use of the *narghile* (water pipe) to non-Arab adolescent (Weglicki et al., 2007) communities has also been noted (Primack, Aronson, & Agarwal, 2006). Comparison and contrasts of

substance use initiation and factors across culturally-diverse populations of youth is innovative and has the potential to suggest additional culturally-congruent ways of addressing prevention.

### **Study Variables and Definitions**

Adolescents who use *cannabis* are described by this researcher at the broadest level as either ‘user’ or ‘non user.’ In addition, *pattern* of cannabis use is defined as the distribution of use according to age, gender, and intensity of use. Intensity of use is classified in terms of ‘ever used’ (has had smoked cannabis, even once during the last 12 months); ‘current use’ (has had smoked cannabis at least once in the past month); or ‘regular use’ (has had smoke cannabis within the past week). Cannabis use is defined as either using marijuana or hashish. It is also, defined as consuming a substance that cloud or veils the mind and consciousness (Al-Qaradawi, 2007). The World Health Organization (1998) defines adolescents as “*those aged 10-19 years, while young population includes those aged 15-24 years*”. This study use the WHO definition however the sample will only includes adolescents aged 13 to 18 years, who are in the eighth, tenth, and twelfth grades.

*Protective factors for cannabis use* are factors that may decrease the likelihood of adolescent to engage in cannabis use. These factors include the social environmental factors of religiosity, strong relationship with parents and family, involvement in societal institutions in the community, and have no problems in educational status. Intrapersonal protective factors include negative attitudes and beliefs toward cannabis use, and knowledge about harms of cannabis use.

*Risk factors of cannabis use* are factors that may increase the likelihood of adolescent to use cannabis. These factors include socio-demographic factors including gender, age, parents’ occupations, parents’ levels of education, and family home structure (living with both parents, or one parent). Risk factors also include the intrapersonal factors of mental health status (e.g.,

stress, anxiety, and depressed), social skills (e.g., shy, impolite), and cognitive-perceptual factors (e.g., positive attitudes and beliefs toward cannabis use, and intentions to use cannabis).

The social environment is important when studying cannabis use by adolescents (Catalano & Hawkins, 1996; Knight et al., 2007). For this study, social environmental factors consist of the adolescent's family members, friends and peers, parental cannabis use, and rural versus urban community residence.

### **Summary**

Jordanian adolescents, like their counterparts in the rest of the ME and in the more developed countries like the U.S., are using cannabis. There has been a limited amount of studies to describe this problem in Jordan and the Middle East in general. In order to guide nursing effort of prevention we need to understand the patterns, risks and protective factors of cannabis use. Therefore, The purpose of this study is to explore the patterns of cannabis use among high school-aged Jordanian adolescents and to examine the risks and protective factors that are related to their cannabis use. This study is significant because, it is the first known study to assess Jordanian adolescents' patterns' of cannabis use, risks and protective factors of cannabis use. In order to address the study questions, for this growing problem Jordan was the cite for data collection as it provided a "natural environment" for the researcher and study population. Study variables are: patterns of cannabis use, risks for using cannabis (e.g., demographic variables, family structure, peers), and protective factors from using cannabis (e.g., religiosity, family relations, educational status).

### **Study Aims, Hypothesis, and Questions**

The following aims, hypotheses, and research questions guided this study:

**Aim #1:** Determine the patterns of cannabis use among Jordanian adolescents.

**H1a:** The prevalence of cannabis use is higher among male than female Jordanian adolescents 13 to 18 years of age.

**H1b:** The prevalence of cannabis use varies by age.

**Aim #2:** Determine the associations between known risk factors and cannabis use among Jordanian adolescents.

**H2:** Risk factors for using cannabis (socio-demographic, intrapersonal, and socio-environmental) are associated with cannabis use by Jordanian adolescent.

**Aim #3:** Investigate the moderating and mediating effects of protective factors on the relationships between risk factors and cannabis use.

**RQ3:** To what extent can adolescent cannabis use be predicted by the risk and protective factors?

**RQ4:** To what extent can cognitive-perceptual factors (knowledge, attitudes, and beliefs) predict adolescents' use of cannabis?

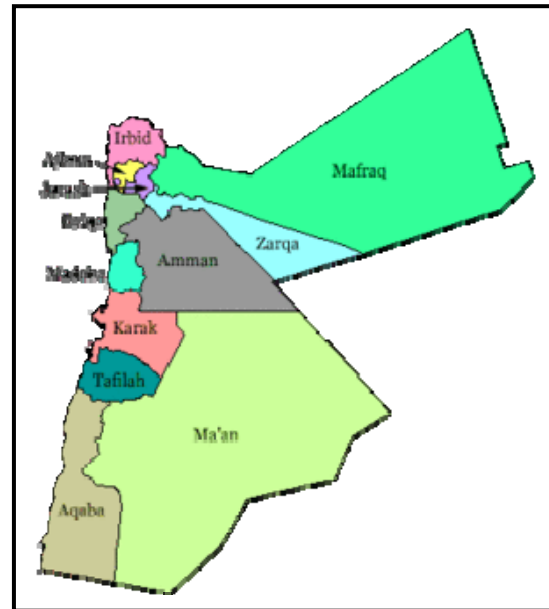
## CHAPTER 2

### REVIEW OF THE LITERATURE

The literature was reviewed in the following areas: overview about the Hashemite Kingdom of Jordan, patterns of adolescents' cannabis use, adolescents' socio-demographic, intrapersonal, and environmental factors associated with cannabis use. The literature review incorporates a computer database systems search (e.g., PubMed, PsychInfo, Since Direct, Google Scholar, Eric, and Ovid).

#### The Hashemite Kingdom of Jordan

The Hashemite Kingdom of Jordan is an Arab country in the Middle East spanning the southern part of the Syrian Desert down to the Gulf of Aqaba. It shares borders with Syria to the north, Iraq to the north-east, Israel and the Palestinian territories to the west, and Saudi Arabia to the east and south. It shares control of the Dead Sea with Israel, and the coastline of the Gulf of Aqaba with Israel, Saudi Arabia, and Egypt. Much of Jordan is covered by desert, particularly the Arabian Desert; however the north-western area, with the sacred Jordan River, is regarded as part of the Fertile Crescent. The capital city of Amman is in the north-west.



Jordan is divided into 3 regions (Central, North, and South) and 12 *governorates* (provinces). The Central region includes the governorates of Amman, Balqa, Zarqa, and Madaba; the North includes Irbid, Mafraq, Ajlun, and Jarash governorates; and the South is comprised of Karak, Tafilah, Maan, and Aqaba governorates (See map above, Governorates of Jordan). The

Jordan National Census for the year 2004 indicated that Jordan had a population of 5,100,981. However, during the years 2004-2007, Jordan witnessed a rapid increase in its population due to the heavy migration of Iraqi refugees. An independent census conducted by the Jordanian Department of Statistics in 2007, estimated that there are 700,000 Iraqis residing in Jordan. Most estimates put the population of Jordan slightly over 6,000,000 as of the year 2007 (Jordanian Department of Statistics, 2007). Ninety-five to 98% of Jordan's population are Arabs, the remaining non-Arabs are Circassians, Chechens, Armenians, and Kurds, but they have been integrated into the Jordanian and Arab cultures in the country (Central Intelligence Agency [CIA], 2008). These non-Arab groups have adapted and assimilated both Arab cultural characteristics and values. The majority of Jordanians are Muslims (92% Sunni Muslims) with a small proportion of Christians (6%) (CIA, 2008). There are three ethnic groups where Jordanians come from: Arab 98%, Circassian 1%, and Armenian 1%. Arabic is the official language of Jordan and English is considered the second language in the country. The age distribution of the population is: 32.2% are 0-14 years of age; 63.7% are 15-64 years of age, and 4.1% are 65 years and over (CIA, 2008).

Approximately 1.5 million Jordanians, nearly one-third of the entire population, are students. There are 2787 government schools and 1493 private schools in Jordan. The researcher will draw the sample from government schools in Jordan because they contain the vast majority of adolescents, readily accessible, and represent the largest school system in Jordan. The average class size in both basic and secondary education schools is 27.5 (Jordan's Department of Statistics, 2005).

## **Patterns of Use, Socio-Demographic Factors and Cannabis Use**

### **Age.**

The relationship between age and cannabis use has been well established in the literature. Several researchers have reported early initiation of cannabis use initiation may lead to other substances use (Gfroerer, Wu, & Penne, 2002; Lynskey, Vink, & Boomsma, 2006). Kokkevi, Gabhainn, and Spyropoulou (2006) reported initiation of cannabis before the ages of 15 or 13 years was associated with using other substance later on. In addition, several studies have reported the role of cannabis early initiation as a “gateway” to other drugs (Hall & Lynskey, 2005; Fergusson & Horwood, 2000; Kandel, 2002). These studies have suggested that adolescents has reported using cannabis before trying cocaine and heroin (Kandel, 2002); using cannabis regularly was associated with later use of heroin and cocaine (Kadnel, 2002; Lynskey et al., 2006); and the earlier the age of first cannabis use, the more likely the use of other illicit substances (Fergusson & Horwood, 2000; Kokkevi et al., 2006). Age of cannabis use initiation was also liked with developing mental health problems (Fergusson, Horwood, Swain-Campbell, 2003; Hall & Degenhardt, 2008). McGrath and colleges (2010) conducted a cohort study that followed a sample of people over 21 years. They reported that individuals who started using cannabis before the age of 15 years were more likely to develop symptoms of psychosis by the age of 21.

### **Gender.**

Patterns of cannabis use differ significantly between males and females. With cannabis, being the most common illicit substance used worldwide (UNODC, 2009; WHO, 2005), it has been reported that use is more prevalent among adolescent males (CDC, 2008; WHO, 2005). This pattern is consistent for cannabis use in the US: 10.1% of male and 9.0% of female

adolescents 12 to 17 years of age reported using cannabis (SAMHSA, 2005). Recently 7.6% of male adolescent in the twelfth grade reported using cannabis versus 3.0% of females in the U.S (Johnston et al., 2009). However, there is growing evidence that female adolescents are catching up and closing the gap with male adolescents in terms of usage of cannabis. For example, Johnston and colleges (2009) reported that in the U.S. there is a slight difference in cannabis use between male and female adolescents in the 8<sup>th</sup> and 10<sup>th</sup> grade. While male use is higher, females are more likely to start using cannabis at earlier ages than males (USDHHS, 2004). In a study among Arab adolescents in Israel Azaiza and colleges (2009), reported that cannabis use was 9.9 % for male and 2.6% for females. In another study by Azaiza and college (2008a) the use of legal and illegal psychoactive substance use among Druze (Arab) secondary school students, was 8.2% for male and 0.3% for females. They reported that use of cannabis among Arab adolescents in Israel was reported among males (11.2%) and females (2.3%) (Azaiza et al., 2008b).

There are also gender differences in settings where females and males use cannabis (Glassner & Loughlin, 1987), with females more likely to smoke cannabis in private as opposed to public places (Wiess et al., 2006). This contributes to the invisibility of females' cannabis use making it less likely for them to report or seek help for their cannabis use-related problems (WHO, 2004). The situation in developing countries is similar, though differences in consumption between males and females are greater (Madu & Matla, 2003). This means that females are less likely to engage in aggressive, sensation-seeking and antisocial behaviors which may result from cannabis use (Myers et al., 2003; NSDUH, 2004). Even when females abstain, they are still likely to be directly affected by cannabis user males (Graham & Wells, 2003; Hunt & Laidler, 21001).



### **Patterns.**

Definitions of cannabis use patterns show a discrepancy in the literature. It is mostly defined in terms of the intensity of use (Chabrol et al., 2006; Chassin et al., 2010; Gfroerer, Wu, & Penne, 2002; Johnston et al., 2009). Frequency of use is the most often used metric for cannabis use in the literature. For example, Sneed, Morisky, Rotheram-Borus, Ebin, and Malotte (2008), in a study designed to assess adolescents patterns of alcohol, cigarette, and marijuana use referred to cannabis use as the frequency of use measured as (1) never, (2) less than once a month, (3) once a month, (4) two to three times a month, (5) once a week, (6) two to six times a week, or (7) daily use. Similarly, Farhadinasab, Allahverdipour, Bashirian, and Mahjoub, (2008) referred to the patterns of cannabis use as frequency of use and designed it as 1) once a month, 2) once a week, 3) two to three times a week, 4) four times or more a week. *Substance use* and *illicit substance use* are other terms used to describe cannabis use (Bauman and Phongsavan, 1999; Sneed, 2001). *Monitor the Future* studies usually define cannabis use according to the frequency of use over time. According to *Monitor the Future* adolescents pattern of cannabis use usually characterized as the frequency of: (1) *daily use*, defined as use on 20 or more occasions in the last 30 days, (2) *lifetime*, (3) *past 12 months*, and (4) *past 30 days*, (Johnston et al., 2009). On the other hand, patterns of use have been characterized as *abuse* and *dependence* (American Psychiatric Association [APA], 2000; WHO, 1990). According to the American Psychiatric Association *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)* cannabis use patterns are defined as: (a) *abuse*, defined as maladaptive pattern (i.e., harmful consequences of repeated use) of cannabis use manifested by recurrent and significant adverse consequences that have occurred repeatedly during the same 12-month period or been persistent, (b) *dependence*,

defined as a cluster of three or more of the tolerance, withdrawal, and compulsive cannabis-taking behavior symptoms occurring at any time in the same 12-month period (APA, 2000).

Despite the evident body of literature on the age, patterns, and gender and cannabis use by adolescents, most of the research was conducted in developed countries. The number of reported studies about the patterns and gender differences among Jordanian and other Arab adolescents is very limited.

### **Family structure.**

As the direct social environment and source of attachments (McArdle, Wiegersma, Gilvarry, et al., 2001), it is expected that the family applies a considerable influence on adolescents' cannabis use. Nevertheless, it is not clear which aspects of families most affect adolescents cannabis use. Hoffmann (1998) emphasized family structure, as he reported that loss of a parent was linked with adolescent cannabis use. Barrett and Turner (2006) reported that adolescents of single-parent families reported a significantly higher level of problematic substance use than those from mother-father families. Others have reported links between parental separation and the most severe cannabis use (Nurco et al., 1996a, 1996b). On the other hand, Hess (1995) reported that parental separation may promote earlier maturation and independence for some adolescents, which may indicate a protective factor against cannabis use.

There are a limited number of studies that examine the effects of family structure in relation to cannabis use. An example is Miller (1997) in which the researcher reported that family structure was not a statistically independent influence on adolescent cannabis use. Another issue that is associated with adolescents cannabis use is the role of fathers (McArdle, Wiegersma, Gilvarry, et al., 2001). For example, Farrell and White (1998) reported that substance use by adolescents is more likely in the absence of a father or a father figure.

Furthermore, family structure was reported as a variable that has an influence on the pattern of parental monitoring and attachment (Hoffman, 1995). Additionally, Hoffman (1995) reported that in non-standard families (families that do not consist of a mother, father, and the children living together) the relationships with the absent parent (more often the father) might be weak or non-existent, and single parent families may be more or less supportive than two-parent families.

Others have emphasized the importance of other aspects of family relationships such as monitoring and communication (Bahr, Marcos & Maughan 1995; Farrell & White 1998). For example, Ledoux, Miller, Choquet, Plant, (2002) reported that perceived monitoring, communication and joint activities', are associated negatively with cannabis use.

In addition, it is possible that family factors impact male and female adolescents differently. Bahr, Marcos, and Maughan (1995) reported negative correlations between family attachments and cannabis use were stronger for females than males, a similar finding were reported by other researchers such as Brook, Brook, De la Rosa, et al. (1998) and Farrell and White (1998). These findings indicate a slight interaction between family variables and gender on rates of cannabis use (Parker Aldridge, & Measham, 1998), gender maintains an important influence on adolescent cannabis use (Tildesley & Andrews, 2008). Notably, most of the work on family role in substance use has been done in countries of the west where family structure is culturally very different from that found in the Arab world.

### **Arabic and Jordanian Family Structure.**

For many years scientists have emphasized the role of the family as being the fundamental social institution of any society. Family structure varies in different parts of the world. In the Middle East (ME), the structure of the family tends to be stricter and highly regarded in comparison to the Western countries. The family unit in the ME has different types

and levels (Al-Sabt, 2006). The nuclear unit is the most familiar structure; this structure consists of the father, mother, and children (Hammad, Kysia, Rhbah, Hossoun, & Connelly, 1999). The extended family *'aila* or *usra* is the second type of the Arabic family unit is the (Barakat, 1993). The *'aila* consists of the married couple, unmarried children, married male children and their wives and children, and unmarried paternal aunts and uncles (Barakat, 1993; Hammad et al., 1999). In other word, this unit is represents blood relatives and the females who became a family member as a result of marrying into the family. The *'alia* represent an economic and social unit in the society and is usually governed by eldest male in the family (e.g., Grandfather, or eldest paternal uncle) (Barakat, 1993; Hammad et al., 1999). The *'hammula*" (clan) is the third type of family units in the Arabic society. The *hammula* usually consists of all individuals who descended from the same paternal ancestor (Hammad et al., 1999).

Arab individuals usually identify themselves in name and social status with other members of their *'aila* and *hammula* (Barakat, 1993; Lerner, Jacobs, & Wertlieb, 2002). Typically when the first child is born to a married couple, people in their family and social circle start to call them after the name of their child, for example, *Abu* Amjad (father of Amjad) and *Umm* Amjad (mother of Amjad) (Barakat, 1993).

According to Al-Sabt (2006) description of the Arabic family structure gender and age plays a major role in identifying responsibilities in the family (Al-Sabt, 2006). Usually the father is considered the head of the family and the provider for its needs, while the mother role includes raising children and taking care of the house. However, this structure is no longer the norm; since it was reported that both the father and the mother participate in providing for family needs. The household chores are usually taken care of by both parents and their children (Al-Sabt, 2006). In the past, the father maintained the role of making the major decisions in the family. However,

recently the mother participated in making these. Children in the family are usually taught to follow the inherited traditions and are given responsibilities that correspond with their age and gender (Al-Sabt, 2006). Naturally in the Arabic family male children are taught to be protectors of their female siblings and relatives. They are also expected to be protectors of the family and to help the father duties. Females are usually raised and taught to be the source of love, provide emotional support, and help the mother with household chores (Al-Sabt, 2006).

***Jordanian family.*** Jordan as one of the ME countries has the same family structure characteristics as the other ME countries. Jordanian society as an Arabic society has the same familial dynamics and structure as the whole Arabic society. The Jordanian family also pertains the same structure and dynamics of the Jordanian society. The Jordanian family can be described as authoritarian, hierarchical, dominated by males, and oriented to the group (Al-Krenawi 1998a, 2000).

***Shame and Honor.*** Arabs usually have strong feelings toward their nuclear family, '*aila*, and *hammula*, so when someone of their family members is being insulted they feel as if they were insulted too (Hammad et al., 1999; Lerner et al., 2000). As a result one person's bad actions or behaviors leads to dishonor for him and his entire family unit (Hammad et al., 1999). Generally, the Arabic social norms are considered conservative, disapproving of out-of-wedlock relationships, homosexual relationships, and illicit drug use (Hammad et al., 1999).

Studies of the relationship between the Jordanian family structure and adolescents' cannabis use have not been reported in the literature. However, there are a limited number of studies conducted in some neighboring countries in the ME region. For example, studies conducted among adolescents in the ME (Jewish and Arab) showed a decreasing probability of cannabis use among adolescents who evaluated their families as cohesive (Azaiza et al.,

2008a/2008b; Rahav, Teichman, Gil, Rosenblum, and Bar-Hamburger, 1995, 1998, 2001). Because the family in Arab societies has a significant role in shaping the identity of children (Al-Haj, 1987), and children are expected to show obedience and respect toward elders in the family (Sharabi, 1997), the role that the Arab and Jordanian family in particular play in adolescents' cannabis use was not fully explored in existing studies. Studies of the relationship between family structure and adolescent cannabis use in Jordan were not found. The evidenced lack of studies in Jordan that examine the relationship between family structure and adolescents' cannabis use can be attributed to a number of reasons. First, it is still a cultural sensitive topic to discuss outside family boundaries. Second, admitting of their adolescent substance (e.g., cannabis) use could cause the family fear of being stigmatized by society (Isralowitz, Afifi, & Rawson, 2002).

### **Intrapersonal Factors**

#### **Mental distress.**

Transitioning from adolescence to adulthood is a time when the individual assume new social roles and form new identities that provide the foundations for later life (NSDUH, 2006). It is also a time of great risk for cannabis use and mental health problems. Research has shown that cannabis use and mental health problems tend to be highest among persons in their late adolescence. Mental distresses that are commonly associated with cannabis use are depression, anxiety, and stress (NSDUH, 2006).

Research suggests that depression is a factor that is important when studying adolescents' cannabis use. Cross-sectional studies of adolescents showed that depression was related to cannabis use (Hawkins, Hawkins, Seeley, 1992; Kelder et al., 2001; Oler, 1994). Fergusson Horwood, and Swain-Campbell (2002) found that major depression was associated with cannabis

use. In another study Kelder, and colleges (2001) reported that symptoms of depression were strongly and positively associated with cannabis use by adolescents. Kaplan (1987) reported that among adolescents, cannabis initiation was associated with lowered self-esteem, which then produced an improvement in self-esteem. This would suggest that symptoms of depressive preceded cannabis use. Similarly, Brook, Brook, Zhang, Cohen, and Whiteman (2002) reported that cannabis and other illicit drug use predicted major depression symptoms. On the other hand, Kandel reported that depressive mood was a weak predictor of cannabis initiation among non-cannabis users, but an important factor in predicting the first use of other illicit drugs among adolescents who were already cannabis users (Kaplan, 1977). Wu and colleges (2006) found that childhood depressive symptoms were positively associated with subsequent substance use initiation. Lynskey, Glowinski, Todorov et al. (2004), reported that twins who were cannabis users were more likely to have had a major depressive disorder than their non-cannabis-users co-twins. When studying gender differences in depression and cannabis use among adolescents, Wittchen, Frohlich, and Behrendt et al., (2004) reported increased rates of depressive disorder among cannabis users during adolescence or young adulthood using a longitudinal data. They also indicated that anxiety and mood disorders among cannabis user's adolescents might increase the probability of developing severe substance use disorders. Anxiety is another mental distress disorder that was found to be connected with adolescents cannabis use. This disorder is discussed in more detail in the following section.

In contrast to studies regarding depression and cannabis use, the literature regarding the relationship between anxiety and cannabis use in adolescence is very limited, and available studies have produced discrepant results. In general, studies of adolescents in clinical treatment settings tend to find that anxiety disorders, considered a risk for cannabis use (Clark, Bukstein,

Smith, Kaczynski, Mezzich, & Donovan, 1995; Deas-Nesmith, Brady, & Campbell, 1998; Mezzich, Tarter, Kirisci, & Clark, 1993). However, studies that included samples of adolescent from community settings have provided contradictory findings. In a longitudinal study, Shedler and Block (1990) found that adolescents who had never tried cannabis were more likely to be anxious, and socially uncomfortable at age 18 than those who reported using cannabis. Myers, Aarons, Tomlinson, and Murray (2003), reported that social anxiety acted as a protective factor with respect to adolescent cannabis use in a sample of school students 13 to 29 years of age. Fergusson and Horwood (1999) found that children who are highly anxious at age 10 were less likely to associate with peers who used cannabis at age 15 compared with less anxious children. In contrast, a study by Essau, Conradt, and Petermann, (1999) among a sample of adolescents found that 24% of those diagnosed with social phobia met the criteria for cannabis use disorder. When linking gender with cannabis use and anxiety studies indicated that females generally demonstrate higher levels of anxiety (La Greca & Lopez, 1998; Myers, Miller, Smith, & Tonigan, 2002) and lower rates of involvement with cannabis (Johnston, O'Malley, & Bachman, 2002) than males.

Although the relationship between mental distress disorders has been established in developed countries, a number of gaps still exist in the literature. First, most of the existing studies are about alcohol and other substances use only. Second, very limited number of these studies reported gender differences in relation to cannabis use and mental distress disorders. Third, no studies have been reported about Arab or Jordanian adolescents' mental distress disorders and cannabis use.



**Social skills.**

*Social skills* are the abilities learned by adolescents during the development and maturation processes. These skills include communication and problem solving. *Personality* has been described as a psychological structure underlying a relatively enduring behavioral disposition, i.e., a tendency to react in a certain way under certain circumstances (Jaffee & D'Zurilla, 2009; Tellegen, 1988). According to Jaffee and D'Zurilla (2009) personality is relatively stable throughout the individual lifespan. Personality has been conceptualized and studied in many ways, and there is a wide range of literature supporting the relationship between cannabis use and personality (Eysenck, 1997; Flory, Lynam, Milich, Leukefield, & Clayton, 2002; Sher, Batholow, & Wood, 2000; Trull & Sher, 1994). Conrod, Pihl, Stewart, and Dongier (2000) have developed a system to classify substance users using the Substance Use Risk Profile Scale (SURPS) based on four different personality traits: Sensation Seeking Hopelessness, Impulsivity, and Anxiety Sensitivity. According to this system those with high levels of Hopelessness are characterized by expecting that negative events will take place and are more likely to use cannabis and experience depressive disorders (Bolland, 2003; Joiner, 2001). According to Zuckerman and Kuhlman (2000) impulsivity is illustrated by the individual rapid response to signs for reward, and intolerance for negative emotion. Conrod, Pihl, Stewart, and Dongier (2000) hypothesized that individuals sensitive to anxiety are at risk of using illicit substances, in order to escape from anxiety and anxiety provoking situations. Perry and Carroll (2008), reported that increased adolescent impulsivity leads to obtaining and using cannabis, and subsequently an escalation of cannabis use. Lastly sensation seeking is characterized by the individual response to signs for reward. It was reported that adolescents sensation seeking predicted association with peers who use cannabis (Hampson, Andrews, & Barckley, 2008).

Although a relationship between personality and adolescent cannabis use is well documented, the specific mechanisms by which personality might influence Jordanian adolescents' cannabis use has not been studied before.

### **Cognitive-Perceptual Factors.**

Research indicates that cognitive perceptual factors (i.e., attitudes, beliefs, and knowledge) are robust predictors of cannabis use. Several theories have guided explanations of adolescents' cannabis use. These include the Theory of Planned Behavior [TPB] and the Theory of Reasoned Action [TRA] (Ajzen & Fishbein, 1980; Ajzen, 1991; Fishbein, 1980) which have been used to explain link between cognitive-perceptual factors and adolescents cannabis use (e.g., Armitage, Conner, Loach, & Willets, 1999; Marcoux and Shope, 1997; McMillan & Conner, 2003). Both theories stress that the intention toward using cannabis is a central variable and immediate determinant of cannabis use. In TRA, this intention is viewed as a function of attitudes and subjective norms; in TPB, perceived control over the behavior is added as a third determinant (Ajzen & Fishbein, 1980; Ajzen, 1991; Fishbein, 1980). Drapela and Mosher (2007), reported that adolescent who are in households where parents frequently use drugs are more likely to use both licit and illicit drugs than adolescents with non drug-using parents. Other variables may influence cannabis use intentions through their influence on one of these determinants. Cognitive variables can therefore be expected to be stronger predictors of cannabis use.

Beliefs toward using cannabis are considered a strongest predictor of cannabis use (Azaiza et al. 2008a). In particular, studies suggest that adolescents are more likely to engage in cannabis use after (a) forming impressions about the benefits of cannabis use, (b) developing positive attitudes, (c) coming to believe that other people (e.g., family and peers) support use, (d)

doubting their ability to refuse pressures, and (e) forming some intentions to use cannabis in the future (Olds, Thombs, & Tomasek, 2005; Dishion & Owen, 2002, Olds & Thombs, 2001; Ellickson, Bird, & Orlando, 2003; Poelen, Scholte, Willemsen, Boomsma, & Engels, 2007). Chabrol, Ducongé, Casas, Roura, Carey. (2006) reported that adolescents' positive expectations about cannabis were a risk factor for cannabis use whereas negative expectations appeared to be a protective factor. Also, a low level of negative expectancies appeared to be linked to cannabis use whereas a high level of negative expectancies was associated with non-use. Chabrol, Roura, & Kallmeyer (2004), reported that adolescents who use cannabis have more positive beliefs about cannabis than non-users.

Adolescent attitudes toward cannabis use have been significantly correlated with their cannabis use behaviors (Best and Barrie, 1997; SAMHSA, 1996). In the *Monitoring the Future* data for the years 1976 to 1996 adolescent approval of cannabis use accounted for over 50% of the variance in cannabis use (Bachman, Johnston, & O'Malley, 1998). A longitudinal study by Graham (1996) involving 1,247 adolescents found that approval of cannabis use by adolescents was a significant predictor of cannabis use. Wallace and Fisher, (2007), reported that adolescent disapproval of cannabis use was positively associated with higher perceived levels of peer and parental disapproval of high-risk behaviors, and parental supervision. Azaiza et al, (2008a, 2008b) showed that positive attitudes and behavioral intentions predicted higher rates of adolescents' cannabis use and higher perceptions of risk predicted lower rates of use.

According to Chabrol, Mabila, Chauchard, Mantoulan, & Rousseau, (2008) findings indicate that parental attitudes toward cannabis use and mother's present or past cannabis use were not significant predictors of use. However, Father's present or past cannabis use and adolescents' positive expectations of cannabis use were risk factors for use; parental attitudes

toward use did not appear to influence adolescents' cannabis use (Chabrol et al., 2008). In contrast, Chabrol, Chauchard, Mabila, Mantoulan, Adèle, and Rousseau, (2006) found that parental attitudes towards cannabis use were not a significant independent predictor of use.

### **Environmental Factors**

The majority of the work on the relationship between parenting, educational status, peers and religion, and adolescent cannabis use has been mainly conducted in developed countries.

#### **Parenting.**

Parenting considered one of the strongest predictors of cannabis use in adolescence (Jacob & Johnson, 1997). Specifically inadequate parenting was reported to be a strong predictor of adolescents cannabis use. It is characterized by inconsistent discipline practices and lack of involvement (Jacob & Johnson, 1997). A number of researchers have reported that parenting style seems to have a significant effect on adolescent cannabis use. For example, adolescents who perceive parents as authoritative tend to experiment less with cannabis and also use them less frequently (Adamczyk-Robinette, Fletcher, & Wright, 2002; Cleveland, Gibbons, Gerrard, Pomery, & Brody, 2005). In addition, Suldo, Mihalas, Powell, and French (2008), reported that adolescents who perceived higher levels of parental monitoring were less likely to associate with cannabis using peers, and, in turn, less likely to use cannabis. Rudatsikira Maposa, Mukandavire, Muula, Siziya (2009) found that male adolescents had higher initial levels of cannabis use, as a function of comparatively lower parental monitoring as compared with female adolescents. Wang, Simons-Morton, Farhart, Luk, (2009), reported that female adolescents who reported more maternal monitoring, are more susceptible to substance use.

Researchers over the years have suggested those parents influences are very important factors for adolescent's behaviors. The influence of parent's cannabis use and parenting

behaviors have been shown to be risk factors for the development of cannabis use in adolescence (Andrews, Hops, & Duncan, 1997; Jacob & Johnson, 1997; White, Johnson, & Buyske, 2000). Costello, Erkanli, Federman, & Angold, (1999) reported that parent cannabis use problems were predictors of early initiation of cannabis use for both male and female adolescents. Cannabis use in adolescents is linked to many factors, including physical, social, and psychological factors. Gruber and Pope (2002) suggested that parental and peer cannabis use and their approval of such use considered to be the main social antecedent of cannabis use. Suldo, Mihalas, Powell, and French, (2008) found that parent monitoring explained the relation between parental substance use and adolescent's intentions of substance use.

Suldo and colleagues (2008) studied the bivariate associations between relationships with adults central to adolescents' lives (e.g., parents, close relatives, and teachers) and adolescents' cannabis use, and they found that high levels of parental monitoring decreased the risk of adolescent cannabis use. Consistently, other studies showed that adolescents' high perception of parental monitoring predicted low rates of cannabis use over time (Cleveland, Gibbons, Gerrard, Pomery, & Brody, 2005).

Ozer and Fernald, (2008) reported that adolescents who used substances were more likely to have mothers who reported current use of substance. However, father presence, household income, and maternal psychosocial functioning (depressive symptoms, perceived stress) were not associated with adolescents' substance use. Specifically, there was no association between the risk for substance use and fathers' presence for females; however, male adolescents with father at home reported less use of substance than those without a father present (Ozer and Fernald, 2008). Another factor to predict adolescents' cannabis use is father or head of the family employment. Azaiza et al, (2008a) found that Arab adolescents reported a higher likelihood of

alcohol and other substances use among participants whose fathers were employed in high-status professions, and father's education being a positive predictor of alcohol use. In addition, father's occupation was found directly related to the use of cannabis. Conversely, Rahav, Teichman, Gil, and Rosenblum, and Bar-Hamburger (1998) also studies Arab adolescents and reported that cannabis use was reported to be highest among adolescents with an unemployed father. Parent level of education was also found to have an association with adolescents illicit substance use among Arab adolescents (Azazia et al., 2008a). According to Azaiza and colleagues (2008a) Arab adolescent, substance use was higher among those whose parents had a postsecondary education. No reports of studies were found that examined the relationship between Jordanian adolescents' cannabis use and parenting.

#### **Educational Status.**

Cannabis use was found to be negatively associated with attitudes and beliefs that are predictive of academic success, including interest in school, motivation to achieve, effort expended at school, and feelings of bonding with school (Bryant, Schulenberg, O'Malley, Bachman, & Johnston, 2003; Zimmerman & Schmeelk-Cone, 2003; Suldo et al., 2008). Scott and Friedli (2002) reported that substance use was associated with reduced exposure to academic opportunities as a result of attendance problems. They reported that the most common disciplinary actions for using cannabis at school included short-term suspension (Scott & Friedli, 2002). In addition, Hser, Grella, Hubbard, Hsieh, Fletcher, and Brown (2001) suggested that adolescents are at risk of missing school as a result of treatment of cannabis use disorders which may require residential treatment programs or short-term hospitalizations. It was also reported that cannabis use was associated with low academic achievement, as indicated by poor grades (Henry, 2009, Luthar & Ansary, 2005), less intentions to seek higher education (Ellickson,

Tucker, Klein, & Saner, 2004), and failure to finish high school (Zimmerman & Schmeelk-Cone, 2003). In contrast, researchers have found that academic achievement can be protective factor for adolescent against cannabis use (Diego, Field, & Sanders, 2003; Henry, 2009). Henry, (2009) found that commitment to academic achievement by adolescents was a protective factor against cannabis use. Consistently, Stronski, Ireland, Michaud, Narring, and Resnick, (2000), reported that adolescents risk for cannabis use was associated with their academic achievement. Belgrave and Nasim, (2008) found that adolescents academic achievement and peer substance use were significant predictors of adolescents cannabis. Involvement in extra-curricular activities such as physical activity has been found to be associated with lower use of different substances (Forman, Dekker, Javors, Davison, 1995).

In a longitudinal study Ellickson Tucker, and Klein, (2001) reported that starting cannabis use early at the 6<sup>th</sup> or 7<sup>th</sup> grade was associated with low academic achievement at the 12<sup>th</sup> grade. Diego Field, and Sanders, (2003) found an opposite relationship between cannabis use and academic achievement, they reported that poor academic achievement predict later cannabis and other drugs use. In contrast, several researchers reported that high engagement with school found to be a protective factor against cannabis use (Aunola, Stattin, & Nurmi, 2000, Henry, 2009; Suldo et al, 2008). Although, there is a body of literature on adolescent academic achievement and cannabis use in the developed countries, research studies that assess the relationship between adolescents' academic achievement and Arab and Jordanian adolescents are very limited. This lack of studies can be attributed to a number of reasons; first, this problem is newly discovered among Jordanian adolescents (WHO, 2005). Second, the majority of the conducted studies were only aimed to indicate the prevalence of cannabis use among adolescents (Alzyoud, 2005; WHO, 2005). Additional research is needed to assess the relationship between

adolescent risk of using cannabis and academic achievement, school attendance, parent relationship with the school, presence of other adults (teachers).

### **Peers.**

Peer factors were reported to be associated with adolescent cannabis use. According to Hawkins et al. (1992), adolescents who have peers who use alcohol and other substances are more likely to use these substances than those whose peers do not use substances. Reinherz Giaconia, ad Hauf et al., (2000) reported that peers affect adolescents' first use of cannabis with peers, model cannabis-using behaviors, and influence attitudes toward cannabis. Also, association with cannabis using friends was a strong predictor of adolescent cannabis use.

Association with cannabis user's peer was found to be directly associated to adolescent cannabis abuse (Kuntsche & Jordan, 2006). Peer socialization theories suggest that adolescents who associate with substance user's peers and reinforce substance use are likely to start using substances early (Piko, 2006). Peer selection theories argue that adolescents will seek out peer groups consistent with their beliefs and practices related to cannabis use (Martino, Collins, Ellickson, Schell, & McCaffrey, 2006). As a result, peer socialization theory identifies peers as the main reason for adolescent cannabis use, whereby in a selection theory cannabis use dictates the selection of peers. Regardless of the mechanism by which adolescents associate with peers, peer cannabis use has been shown as a risk factors for cannabis use (Creemers, Dijkstra, Vollebergh et al., 2010, Kuntsche & Jordan, 2006; Svensson, 2000; van den Bree & Pickworth, 2005). Chabrol et al, (2006) found that peer using cannabis and adolescents' positive expectations of cannabis use were risk factors for use, while the number of peers opposed to cannabis use and adolescents' negative expectations of use have been shown to be protective



factors against cannabis use. Additionally, when a large number of peers are opposed to cannabis use it acts as a protective factor against cannabis use among adolescents.

Chabrol, Mabila, Chauchard, Mantoulan, and Rousseau (2008), reported that, adolescent cannabis users were characterized by having a large number of peers using cannabis, a lower number of peers opposed to use, a higher level of positive expectancies, and a lower level of negative expectancies. The reviewed studies indicated that associating with peers using cannabis and having positive expectations, may leads to the risk of cannabis use by adolescents. Additionally, associating with cannabis use opposing peers and having negative expectations tends to be a protective factor against cannabis use among adolescents.

### **Religion.**

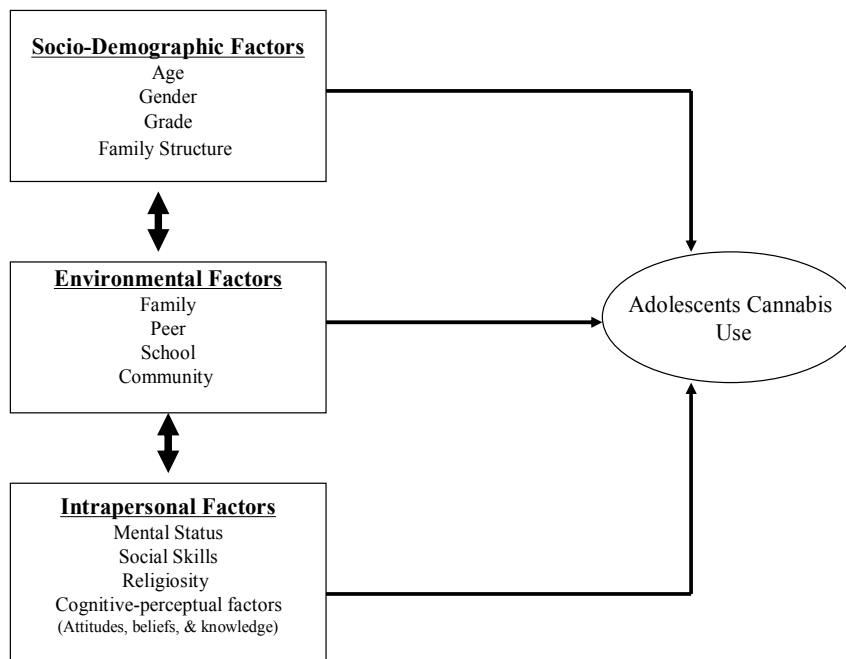
Although the relationship between demographic variables and cannabis use has been the subject of much research, only a few studies address the relationship between religion variables and use patterns (e.g. Azaiza et al., 2009; Clark & Hilton, 1991). There is a variety of ways in which different religions view and prohibit or endorse cannabis and other substances. For example, some denominations (e.g. Mormons, Seventh Day Adventists, and Muslims) prohibit the use of alcohol — Islam prohibits Muslims from using both alcohol and cannabis — while others (e.g. Jews, Catholics, Lutherans, and Episcopalians) ritually incorporate alcohol in the form of wine, and have no clear position on cannabis use. Although the Islamic religion, which is the religion of 92% of the Jordanian population, prohibits cannabis, there is increasing evidence of cannabis use in Jordan and the Arab world in general (JANS, 2008; Aziiza et al., 2009). Therefore, the mechanisms of association between the Islamic religion and cannabis use are still not very well understood.

Little research has been conducted on the effects of religion on adolescents' cannabis use even though a majority of adolescents consider themselves at least mildly religious (Wallace & Williams, 1997). When reviewing the existing literature of adolescent substance use risk factors Wallace and Muroff (2002) found that American adolescents' attendance at religious activities and the importance of religion in the person's life were significant predictors of adolescent substance avoidance. Specifically, adolescents who reported attending religious activities frequently were less likely to use substances, and a similar finding was found for adolescents who reported that religion was important in their life. These findings are consistent for Arab adolescents as reported by Azaiza and colleagues (2008a), where they found that religious faith among Arab adolescents in Israel appears to suppress the use of cannabis. Likewise, in a study of Arab adolescents in Israel, Azaiza, et al., (2009), found that cannabis use tended to be high among adolescents with low religiosity, but low among those with medium and high religiosity. These results were consistent with a previous study among Arab adolescents in Israel where the low-religiosity group had consistently higher rates of cannabis use (Azaiza et al, 2008a, 2008b).

### **Theoretical Framework**

The developing middle-range Alzyoud Theory of Adolescent Substance Use [ATASU] was the theoretical framework to guide this study. The Alzyoud theory was initially developed by the researcher from a synthesis of several of the theories that have been used in previous studies of adolescent alcohol and other drug use. Using Walker and Avant's (2005) theory derivation procedure the theory is derived from theories from the social, nursing, and psychological sciences such as the Theory of Planned Behavior (Ajzen, 1985, 1988), Bandura's (1986) Social Cognitive/Learning Theory, and Problem Behavior Theory PBT (Jessor & Jessor, 1977, 1990). The mid-range theory is based on the assumptions that the primary causes of

adolescent decisions to use or avoid cannabis lie in (a) cannabis-specific expectations and perceptions held by the adolescent and (b) the effects of all other factors including, adolescent personality traits or involvement with peers who use cannabis are either directly affecting adolescent cannabis use, or mediated through their effects cannabis-specific cognitions, evaluations, and decisions, (c) cannabis use originates from adolescent's claim of independence from parents and societal influence (d) cannabis use occurs as a result of a deficiency in adolescent maturation (physical, social, psychological) processes.



**Figure 1.** Alzyoud Theory of Adolescent Substance Use (ATASU)

The theory points toward an extensive and diverse list of factors that theoretically contribute to adolescents cannabis use, ranging from factors that are intrinsically tied to cannabis use (e.g., attitudes and beliefs about the consequences of cannabis use) to factors that on the surface may be thought to have a small effect on cannabis use (e.g., family structure and school).

The range of concepts the theory encompasses aims to cover the majority of factors that are thought to contribute to adolescents cannabis use. Major concepts in the theory are:

(a) *socio-demographic factors*: these factors include adolescent various background variables (i.e., gender, age, father's occupation, parental education, and family structure (living in a father-mother family or a single-parent family)).

(b) *environmental factors*: These factors consist of environmental factors that play a major role in adolescent cannabis use. Environmental factors focus on the characteristics and behaviors of the people who make up adolescent's surrounding environmental system. Among these factors are, peers such as associating with cannabis using friends, school (i.e., school performance, involvement in extra-curricular activities), and community (i.e., involvement in organizations in the community, and rural vs. urban community).

(c) *intrapersonal factors*: these factors cover adolescent cognitive-perceptual factors (attitudes, beliefs, and knowledge toward cannabis use), adolescent mental status, and social skills. For example, an adolescent might be encouraged to use cannabis if they hold tolerant or positive attitudes toward cannabis use, or other deviant or risky behaviors.

### **Theoretical Concept Definitions.**

Adolescent *mental status* is the total emotional and intellectual response of the adolescent to internal and external reality. It is a state of health in which persons realizes their own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and are able to make a contribution to their community. In this positive sense, mental status is the foundation for well-being and effective functioning for the person. *Social skills* are defined as the dimensions of a person's health that concern how the adolescent interact with other people, how other people react to them, and how they interact with social institutions and societal traditions.

*Cognitive- perceptual factors*, this concept includes the person cognition and perception and these are defined as follows. Cognition is defined as the process of knowing and, more precisely, the process of being aware, knowing, thinking, learning and judging (Merriam Webster dictionary, 2000). Perceptual is defined as relating to, or involving perception especially in relation to immediate sensory experience (Merriam Webster Dictionary, 2000). In this mid range theory the cognitive-perceptual factors concept is defined as the primary stimulants the person is affected by and adopt for the acquisition and maintenance of their health. These factors include knowledge, attitudes, and beliefs. Knowledge is defined as the fact or condition of knowing something with familiarity gained through experience or association. In addition, it is defined as the fact or condition of being aware of something (Merriam Webster, 2000) in this case cannabis use. Attitude is the person's positive or negative feelings about performing a specific behavior (Fishbein & Ajzen, 1975). For the purpose of this mid-range theory, attitude is defined as the person's positive or negative feelings toward cannabis use. According to Fishbein and Ajzen (1975) beliefs are defined as the person's beliefs about whether key individuals and groups (e.g., parents, friends, and peers), approve or disapprove of the behavior.

*Cannabis use*, is defined as either 'user' or 'non user.' In addition, an adolescent who is described as a 'user' is classified by the researcher for this study in terms of someone who has 'ever used' (has smoked cannabis, even one in their life-time); 'current use' (has had smoked cannabis at least once in the past month); or 'regular use' (has had smoke cannabis within the past week).

### **Conceptual Relationships.**

Conceptual relationships represent how the various concepts and types of influence that underlies adolescent cannabis use. The proposed model hypothesized that there is a direct

relationship between adolescent's socio-demographic, environmental, and intrapersonal factors and adolescent cannabis use. First, the model hypothesize that there is a direct association between the socio-demographic factors (e.g., age, gender, and family structure) and adolescents cannabis use. Second, there is a direct association between the environmental factors (i.e., school, community, and family and peer relationships) and adolescent's use of cannabis. Additionally, there is a direct association between the intrapersonal factors (i.e., mental status, social skills, religiosity, and cognitive-perceptual factors) and adolescent cannabis use. The model also, hypothesize that there is an interaction between the socio-demographic, environmental, and intrapersonal factors.

### **Summary**

Based on the reviewed literature, many researchers have studied adolescent cannabis use. These authors examined the differences in adolescents' use of cannabis according to gender, and socio-environmental factors. In addition, a satisfactory body of literature discussed factors considered to be risk or protective factors for adolescents to use cannabis. For example, parental monitoring was associated with less cannabis use by adolescents. Association with cannabis using peers increased the risk of cannabis use among adolescents. On the other hand, having negative attitudes and beliefs toward cannabis was found to be a protective factor against cannabis use. Attending religious activities was also reported as a protective factor of cannabis use. Other factors were also found to be associated with adolescent cannabis use. These factors include family structure, parenting style, parent use of cannabis, and parental attitudes toward cannabis use. Adolescents who live in a father-mother family were less likely to report cannabis use than those with a single-parent family. Another aspect of the reviewed literature examined risk factors related to adolescent school. It was reported that academic achievement was associated with

cannabis use. Also, studies have reported that academic achievement predicted cannabis use by adolescents. Cognitive-perceptual factors (attitudes, beliefs) were also considered as risk and protective factors of adolescents' cannabis use. A vast majority of the literature found that there is an association between positive attitudes and beliefs and adolescent cannabis use. Only few studies were found about cannabis use among Arab and Jordanian adolescents. Finally, this chapter provided an overview of Alzyoud Theory of Adolescent Substance Use [ATASU] which guided for this study.

## CHAPTER 3

### METHODOLOGY

#### Design

A cross-sectional descriptive correlational survey design was used to assess the patterns, risks, and protective factors of cannabis use in a Jordanian adolescent population. A sample of 384 Jordanian school students ages 13 to 18 years was recruited from a large central region of Jordan.

#### Setting

This study was conducted in the Zarka Governorate located in the central part of Jordan east of Amman, the capital of Jordan. Zarka Governorate has 15% (852,700) of Jordan's population. The majority of residents of this area are Muslims or Christians residing with a small proportion (1%) of Iraqi refugees. It is considered the second largest industrial governorate in the country. Zarka Governorate was chosen because it represents adolescents from urban, suburban, and rural population densities. It is also geographically accessible to the researcher who has first-hand knowledge of the geographic area, expertise in the community culture, and access to the school system. The Zarka districts contain a total of 75 basic (i.e., grades 1 – 10) and high schools (i.e., grades 11-12) which are distributed across the governorate's three districts. Students in Zarka schools are segregated in schools based on gender (boys and girls schools). The total number of students enrolled in these schools is 203,433; 104,489 enrolled in boys' schools and 98,944.00 enrolled in girls' schools (Jordanian Department of Statistics [JDS], 2004).



## Sample

The sample was drawn from Zarka Governorate's three school districts. Schools were randomly selected using simple random methods (full description is provided in the *Human Subjects* section). The study sample was recruited according to the proportion of students in each school district to reflect the number of students in each district. Assuming that 50% of the adolescents in Jordan use cannabis, approximately 384 subjects are required if the estimate is to fall within 5 percentage points of the true proportion with 95% confidence. The 50% estimate was used because it is conservative and provides the highest estimated sample size. If the estimates of cannabis use are at 30% or 20%, the required sample size will be 323 and 245 adolescent participants, respectively. The Gpower computer software (Version 3.0.10) was used to calculate the required sample size (Faul, et al., 2007).

Based on the 2004 Jordanian Census data, there are about 72,050 Jordanian adolescents 13 to 18 years of age in the target population (JDS, 2004). The accessible population was 51, 0135 students, 13 to 18 years of age, attending governmental (public) schools in the three school districts of Zarka Governorate (JDS, 2004). Eligibility criteria for students included: (1) between 13<sup>th</sup> and 19<sup>th</sup> birthdays, (2) enrolled in grades 8<sup>th</sup> through 12<sup>th</sup> in a governmental (public) school in the Zarka Governorate, (3) willing to participate (give assent), and have (4) parental consent for those before the 18<sup>th</sup> birthday. Students who passed their 18<sup>th</sup> birthday do not need parental consent. Return of the survey was considered consent. Students were asked to complete a survey about their personal, social, health, and cannabis use histories.

## Study Measures

The following section describes the proposed study measures including details about each measure's development, purpose and target substance, number of items, scoring, and available reliability and validity information (Table 1.1).

The **Socio-Demographic Information (SDI) tool** was adapted from the Arab Youth Tobacco Use Composite Measure [AYTUCM] (Wglicki, 2010) for this study by the researcher and is a 34-item measure used to obtain demographic, background, and risk factor information (e.g., personal background information including, age, gender, family socioeconomic status, participation in extra-curricular activities, family member cannabis use. [Appendix C]

The **Problem Oriented Screening Instrument for Teenagers (POSIT)**, was developed by the U.S. National Institute on Drug Abuse (Rahdert, 1991) as a self-report measure designed to be a multi-problem screening instrument composed of 139 “yes/no” questions for youth aged 12 through 19 years. The POSIT is composed of 10 subscales to screen for potential problems in the following functional domains: (a) Substance Use and Abuse (17 items), (b) Physical Health Status (10 items), (c) Mental Health Status (22 items), (d) Family Relations (11 items), (e) Peer Relations (10 items), (f) Educational Status (26 items), (g) Vocational Status (17 items), (h) Social Skills (11 items), (i) Leisure and Recreation (9 items), and (j) Aggressive Behavior and Delinquency (16 items). Individual survey items include: general-purpose items, age-related items, and red-flag items (Rahdert, 1991). Any positive score, a scale total score (e.g., 1 of 17 on the substance use scale), indicates that a potential problem exists and that further assessment in that area is recommended. The psychometric properties of the POSIT have been previously measured in a number of adolescent populations. In general, previous studies have reported internal consistency alpha scores from 0.43 to 0.93 (Knight, Goodman, Pulerwitz, & DuRant,

2001; Melchior, Rahdert, & Huba, 1994), test–retest reliability and validity of the 10 scales have also been assessed (Dembo et al., 1996; McLaney et al. 1994). The POSIT 10 subscales were used in this study, however only the scales that measure study variables (i.e., Cannabis Use and Abuse, Mental Health Status, Family Relations, Peer Relations, Educational Status, and Social Skills) were included in the analysis and the results section of this study. The scale was translated into Arabic by a bilingual nurse. Pre-testing of the Arabic version of the POSIT instrument was done as a part of the pilot of this study. [Appendix C]

The **Cannabis Abuse Screening Test (CAST)**, is a twelve-item scale that screens for different aspects of harmful cannabis use by assessing the frequency of selected events (yes, no, never, rarely, sometimes, fairly often, and very often) throughout an individual's lifetime: pattern of use within the “last 7 days” to “12 months”, seemingly non-recreational use (smoking alone or before midday), memory disorders, being encouraged to reduce or stop using cannabis, unsuccessful attempts to quit, and problems linked to cannabis consumption (Legleye, Karila, Beck, & Reynaud, 2007). The scale was modified by this researcher to include question concerning the frequency of cannabis use within a period of time (last 48 hours to last 12 months). The CAST was reported to be a uni-dimensional scale and to have high internal consistency (Cronbach's alpha = 0.81) (Legleye et al, 2007). Positive response thresholds vary from question to question. The threshold is set at “yes” for the first two questions, as they do not screen problems but frequencies of use in some contexts; and at "rarely" for the others. An individual's final score can therefore be from 0 to 6. A score of four or above indicates problematic cannabis use. The scale has been translated into Arabic by a bilingual nurse. Pre-testing of the Arabic version of the CAST instrument was done a part of the pilot of this study. [Appendix C]

### **Adolescent Knowledge, Attitude, and Beliefs about Substance Use Questionnaire**

(AKABSU), is a 42-item measure that was adapted by the researcher from the knowledge, attitude, beliefs, and practices about substance use questionnaire developed by the National Agency for the Treatment and Rehabilitation of Substance Abusers (NATReSA, 2003) (Alzyoud, 2005). The researcher only used questions that measure adolescents' knowledge, attitudes, and beliefs toward substance use from the original measure developed by NATReSA, (2003). The current adapted measure assesses: 1) knowledge about cannabis use (10 items); 2) attitudes toward cannabis use (12 items); 3) beliefs toward cannabis use (9 items); and 4) socioeconomic and socio-cultural problems associated with cannabis use (11 items). The questionnaire consists of multiple-choice items which represent adolescents' knowledge attitudes, and beliefs toward cannabis use. Adolescents' awareness as a part of their knowledge regarding cannabis use is measured using a "Yes/No" response scale. In addition, a Likert-type response scale is used to measure adolescent attitudes toward cannabis use. This measure was developed in Arabic and it has been previously used by the researcher with Jordanian adolescents 14 to 19 years old. Additional psychometrics of reliability and validity of this measure were confirmed as a part of this study. [Appendix C]

Table 1.1:

*Study Measures and Constructs*

<b>Measure</b>	<b>Constructs of Interest</b>	<b>#Items/time</b>
Socio-Demographic Information (SDI)	Age, Birth Date, Gender, Family Use, Activities.	34 / 5 min
The Cannabis Abuse Screening Test (CAST)	Cannabis Use, Patterns of Use, problems linked to cannabis use, Desire to Quit.	12 / 5 min
The Problem Oriented Screening Instrument for Teenagers (POSIT) [Yes/No items)	Screen for potential problems in the following functional domains: (a) Substance Use and Abuse, (b) Physical Health Status, (c) Mental Health Status, (d) Family Relations, (e) Peer Relations, (f) Educational Status, (g) Vocational Status, (h) Social Skills, (i) Leisure and Recreation, and (j) Aggressive Behavior and Delinquency.	139 / 20 min
Adolescent Knowledge, Attitude, and Beliefs about Substance Use Questionnaire (AKABSU)	1) Knowledge about substance use; 2) Attitudes toward substance use; 3) Beliefs toward substance use; 4) Awareness of health; and 5) Socioeconomic and socio-cultural problems associated with substance use.	42 / 30 min

**Procedure for Data Collection**

Access to all Zarka Governorate public schools was secured through the Jordanian Ministry of Education (MOE) [Appendix A]. The MOE was provided with a full updated description of the study and the study procedure. In addition, each Headmaster or Headmistress of the various Governorate participating schools in Zarka was provide a description of the study, the study purpose and design, and support for the study in a formal letter. Number of schools and students that were included from each district were determined according to the percentage proportion of students in the district to the total number of students in all three districts. In the

second stage, schools were randomly selected using simple random selecting method from a random list from each of these school districts. The researcher randomly selected schools using a list of all the school in the governorate three districts, where every 5<sup>th</sup> school was selected for inclusion. In the third stage, classrooms were randomly selected and drawn until the determined sample was satisfied. This was achieved by selecting classrooms from a list (which did not include students information) of all classrooms in the selected schools (every 5<sup>th</sup> classroom was included). If teachers of one of the selected classes refused participation in the study another class was selected instead. Only one teacher refused participation because they were behind schedule of their subject material. Each Headmaster/Headmistress of the selected schools was visited by the researcher who answered questions and established the timeline and points-of-contact for data collection in each of the schools. Each headmaster/headmistress was given copies of the information sheet sealed in envelopes to be distributed to student participants. Information letters describing the study was sent home to parents with the students [Appendix B]. The MOE indicated that they routinely send information home to parents in this way. Parents were instructed to contact the researcher directly if they did not want their child (even those who were between their 18<sup>th</sup> and 19<sup>th</sup> birthday) to participate in the study. The information letter included a direct contact phone number for the researcher. The researcher did not receive any call from parents to indicate their wishes not to have their child to participate in the study. Classroom sizes were expected to range from 30 to 45 students (there are 2-4 classes in each of the grades, 8th-12th) in each of the public secondary and high schools. Ten schools were visited by the researcher; the first visit was designated for introduction between the researcher and school administration and to establish the time line for data collection. Parents' information letters were also provided during this visit. Each school was visited between 2 to 4 times. On the

days of data collection, surveys were administered by the researcher who was available in each of the participating school classrooms to assess eligibility according to the inclusion criteria, provide and review the information sheet, protect the privacy of student participants, clarify and answer questions, and collect the completed surveys. Students were provided with an information sheet prior to data collection [Appendix B]. All students in the class room were provided with a copy of the survey. The researcher instructed all students in the classroom to feel free not to fill out or return the survey if they choose not to participate in the study. The average time for study participation by each student ranged from 45 to 60 minutes. At the time of data collection, students were informed of the study purpose and given an option to decline to participate. All students were given the option of not completing the survey if they or their parents did not approve of their participation. This protocol was used to protect the non-participants from being singled out by their peers. Students were provided with an envelope to place the study survey when done. Teachers were not present in the classrooms during data collection in order to enhance confidentiality of information. Adolescent participants received a small gift in the form of school supplies which were presented for the class as a whole (approximate value \$5 USD/ student) for their participation and time.

Asking adolescents about their cannabis use puts them at risk for being identified with illegal and socially undesirable behaviors. The researcher overcame this limitation by insuring the anonymity of participants. Demographic questions used were not sufficient to identify individual subjects. Classrooms lists provided by school districts did not include students information. In addition, all students were asked to place surveys in the envelope provided to them before returning it to the researcher whether they participated or not.

### **Procedure for Study Measures and Materials Translation**

All study measures, consents, information sheets, and correspondence materials had already been translated from English to Classic Arabic using Brislin techniques of instrument cross-cultural translation (Brislin, 1970 & 1976; Brislin, Lonner, & Thorndike 1973, Maneesriwongul and Dixon, 2004). Forward translation was conducted by a bilingual native Arabic registered nurse. Back translation was conducted by another bilingual Arab nurse who has extensive experience in translation - back translation processes. The back-translator was unfamiliar with measures' original English versions. Finally, the researcher compared the translated versions to ensure that items were equivalent. All measures and materials were evaluated for clarity of meaning, cultural appropriateness, and consistency with the original items. The purpose of the translation and evaluation processes was to produce Arabic versions of the measures that are equivalent in meaning to the original English versions. Internal consistency was evaluated for all translated versions of the measures.

### **Pilot Assessment**

A pilot study was conducted to assess study measures before embarking on the full study. The pilot included 30 students (i.e., 10 students from each designated grade included eighth, tenth, and twelfth). Students were asked to assess: (1) understandability, (2) ease of use in selecting response options/choices, (3) appropriateness of response options/choices, (4) time to complete, (5) appropriateness of language, and (3) difficulties in any meanings of words or phrases. The researcher timed how long it took to complete the survey, and evaluated whether any questions were unclear or confusing. This was done by asking students to write their evaluation on a blank paper that was provided by the researcher or by the notes obtained by the



researcher observation during the pilot. No changes for the language used were made as a result of the pilot study. However, few typos were reported by students which were fixed.

### **Data Analysis**

The Statistical Package for the Social Science (SPSS) version 17 was used to assist with data analysis. Data analysis began with preparatory activities such as the treatment of missing data, identification of outliers, and other such data cleaning tasks. To address H1a, *“The prevalence of cannabis use is higher among male than female Jordanian adolescents 13 to 18 years of age”* analysis of frequency (chi square) was used to compare the prevalence for males and females. Analysis of frequency (chi square) was utilized for Hypothesis H1b *“The prevalence of cannabis use vary by age”* to determine the difference in patterns of cannabis use by age (13-15 and 16-18 age groups). To address Hypothesis H2, *“Risk factors for using cannabis (socio-demographic, intrapersonal, and socio-environmental), are associated with cannabis use by Jordanian adolescent”* analysis of frequency (chi-square test) was used to determine the relationship between the categorical variables. When parametric assumptions were met, Pearson correlation coefficient was utilized to determine the relationship between variables measured on ratio or interval scales. A detailed descriptive analysis of all quantitative data regarding risks/protective factors (Hypothesis H2) was performed, involving the summarization of data and the use of inferential data analytic techniques. The first phase of the analysis was a detailed descriptive statistics to characterize the distributions including measures of central tendency (mean, median, and mode) and dispersion (range, variance including, means, and standard deviation) for continuous variables deviations, percentages, and frequency distributions of the categorical variables. Psychometric analysis was conducted for study constructs that are based on multi-item self-report scales to ensure that items and scales are performing as intended.

Internal consistency reliability was examined. To address Research Question 3, “*To what extent can adolescent cannabis use be predicted by the risk and protective factors?*” and Research Question 4, “*To what extent can cognitive-perceptual factors (knowledge, attitudes, and beliefs) predict adolescents’ use of cannabis?*” multiple regression equations was calculated to evaluate the potential impact of risk and protective factors on the patterns of adolescent cannabis use. Crude (unadjusted) regression coefficients were estimated as well as adjusted regression coefficients based on multivariate modeling of multiple factors. A sensitivity analysis was performed to discern the impact of influential cases on the results. Higher order effects for the continuous factors and interaction effects among factors were considered. In predicting the patterns of adolescent cannabis use, step-type regression analysis was used to obtain the optimal model.

### **Limitations**

The study had a few limitations that need to be acknowledged and addressed. The schools from which the youth sample was recruited represented only one of Jordan’s seven governorates (Zarka Governorate). Thus, the findings largely reflect the use of cannabis by adolescents within this governorate, and may not necessarily be reflective of the country as a whole. As the research methods and instruments were implemented in this first limited study, they can then be refined and applied to a larger-scale study of adolescents’ substance use in the rest of Jordan, other developing countries of the Middle East, and globally wherever Arabic youth reside.

Additionally, many of the proposed measurement tools had not been previously used with a young Arabic-speaking population. However, the mechanisms for both cultural and linguistic translations and interpretations were well designed using established techniques and the original

versions of the tools had received appropriate psychometric testing. Use of the tools in Arabic translation with a Jordanian youth population represents a significant innovation in this project.

Another initial concern was that the doctoral candidate who conducted the study on-site in Jordan was physically remote from faculty research mentors. This concern was addressed using the following techniques for maintaining appropriate direction and scholarly supervision: 1) the researcher was well-prepared for dissertation research through coursework, qualifying examination, and proposal defense mechanisms, 2) the researcher and the faculty mentor maintained telephone and e-mail communication as needed to discuss the research experience, problems that were encountered, and ongoing operational decisions that may become necessary in such a project.

### **Human Subjects**

The study was approved by the Human Investigation Committee (HIC) at Wayne State University (Appendix B). This research study involved the recruitment of human participants, boys and girls in the 8<sup>th</sup> to the 12<sup>th</sup> grades, to provide survey information about their cannabis use patterns as well as the moderating factors that may influence their cannabis use behavior (e.g., attitudes, beliefs, family, and peer). Adolescent participants come from Muslim and Christian, middle class, and conservative families living in Zarka Governorate, located in the central region, in Jordan. The following provides a description of efforts for the protection of human participants. All adolescents attending 8<sup>th</sup> through 12<sup>th</sup> grade classes in Zarka government (public schools) were the accessible population. Zarka governorate three schools district were categorized by relative population density into urban, suburban, and rural areas. Whereas the school administrators gave permission to conduct the study in classrooms this did not result in

coercion for students. Teachers and school administrators did not have access to study information or knowledge of who participated or those who did not.

On the days of data collection, surveys were administered under the direction of the researcher who was available in each of the school classrooms to assess eligibility, review the information sheet, protect the privacy of student participants, clarify and answer questions, and collect the completed survey (purpose and procedure are described fully in Study Measures section of the proposal above).

**Potential risks.** Whenever a research subject is asked about socially or legally sensitive topics – such as the use of illegal substances – there are significant concerns about self-incrimination. To address this potential risk, participants remained anonymous. Demographic information collected were insufficient to identify any particular adolescent or make any connection to their usage history. Resources to address substance use concerns in the community were identified before the study started and made available in every package. This was achieved through including a brochure [Appendix D] that provided information of available treatment and counseling resources in the governorate and the country in general in every survey package.

**Potential benefits.** If adolescents are exposed to cannabis use, they will be aware that adults (e.g., parents, teachers, relatives) can be resources to prevent cannabis initiation and continued use. Adolescents may have questions about the known predictors of alcohol and cannabis use since the study measure is based on well-established predictors. As a result they may be better prepared to confront these predictors as they are exposed to various forms of cannabis use by peers, the media, and through role modeling.

**Procedures for Protection.** Participating in this study should have no risks as described above. If adolescents are exposed to cannabis, they will be aware that adults (e.g., parents,

teachers, relatives) can be resources to prevent cannabis initiation and continued use. As this study is being completed in Jordan, all completed study materials will be safely locked file cabinet in the PI office in Jordan (at the Hashemite University) in accordance with WSU HIC requirements. As there are no signed consents and no behavior data completed using study measures, participants cannot be identified with any data.

*Procedures for record management.* As this study was completed in Jordan, all completed study materials were kept in sealed box in the researcher office in Jordan. Ongoing communication between the researcher and the faculty advisor were done via secure phone and internet connections.

## CHAPTER 4

### RESULTS

The purpose of this study was to explore the patterns of cannabis use among high school-aged Jordanian adolescents and to examine the risks and protective factors that are related to adolescent usage. This chapter provides study findings.

#### Sample

Using a random sample of Jordanian school students, the researcher distributed 400 questionnaires. Three hundred and ninety three questionnaires were returned by students resulted in a 98.2% response rate. Nine questionnaires were excluded due to missing data. Three hundred and eighty four students were included in the analysis (N =384). It should be noted that total values may not add up to the exact percentages due to missing values. Students' age ranged from 13-18 years of age; the mean age was 15.53 years (SD = 1.324); about 44.0% (n = 169) were between the ages of 13 to 15 while 56.0% (n = 215) were between 16 to 18 years of age. Male and female students were almost equally distributed (male = 50.3%, n = 193, female = 49.7%, n = 191). According to the data provided by the three educational districts in Zarka governorate students' distribution for the eighth, tenth, and twelfth grades were 27%, 22%, and 16% respectively. The results of this study indicate that students were divided into three grades; 43.8% (n = 168) were in the Eighth grade, 37.5% (n = 144) were in the Tenth grade, while 18.8% (n = 72) were in Twelfth grade. These percentages were consistent with the proportions of students in each grade according to the data obtained from the educational districts. Almost 94.0% (n = 245) students reported that they live with their parents. Sixty four percent 64.0% (n = 137) of the students' families were composed of more than six members. No further questions were included in the survey for students to report on their exact family members. Students

reported that 47.9%, (n = 184) of parents had a secondary school level of education, as for the parent profession an open-ended question was provided in the survey for students to provide their parent profession, then the researcher classified these professions into three categories (i.e., blue collar such as construction worker, white collar such as teacher and lawyer, and unemployed). Accordingly 40.6% (n = 156) of parents worked in white collar jobs. Muslims comprised 97.1% (n = 373) of the sample, 2.9% (n = 11) were Christians. See Table 2.1 for shows demographical characteristics of the study sample.

Table 2.1:  
*Sample Demographic Characteristics (N=384)*

	%	Range	Mean	Std. Deviation
Age in years		13 – 18	15.53	1.324
Gender				
Male	50.3			
Female	49.7			
Grade				
8 <sup>th</sup>	43.8			
10 <sup>th</sup>	37.5			
12 <sup>th</sup>	18.8			
Religion				
Muslim	97.1			
Christian	2.9			
Home Structure				
Father-mother family	94.0			
Single-parent family	6.0			
Father Job				
Blue collar	33.9			
White collar	40.6			
Unemployed	25.0			
Parents Level of Education				
Illiterate	3.6			
Elementary	16.9			
Secondary	47.9			
Diploma	16.7			
BA	9.6			
Graduated	5.2			
Number of Family Members		0 – 16	6.18	2.484
Family <=6	35.7			
family >6	63.8			

*Note:* Total values may not add up to the exact % due to missing values.

## Descriptive Statistics

### Adolescent Knowledge, Attitude, and Beliefs toward Cannabis Use.

*Adolescent Knowledge, Attitude, and Beliefs toward Substance Use Questionnaire (AKABSU)*, was used to assess students knowledge, attitudes, and beliefs toward cannabis use.



Seven items were used to assess students knowledge of cannabis use. Knowledge data indicated that 77.1% (n = 296) of the students have heard of cannabis use. Only 31.8% (n = 122) of students knew what cannabis use is and identify it as smoking cannabis. On the other hand, 30.8% (n = 118) of students reported their knowledge of the consequences of using cannabis as developing a habit or addiction of cannabis; while 25.5% (n = 98) reported their lack of knowledge regarding cannabis use. When students were asked to evaluate their knowledge of cannabis use 27.3% (n = 105) report it as “Nothing” and 27.6% (n = 106) as “not much”. The majority of students 61.2% (n = 235) were unaware of problems associated with cannabis use.

Adolescent attitudes toward cannabis use was measured with two types of questions. Three questions used multiple choice format, where students were asked to chose the answer that reflected how they feel about cannabis use. Accordingly, findings related to student’s attitudes towards cannabis use reflected that 75.5% (n = 290) indicated that they would not participate in cannabis use with a group of cannabis using friends. Similarly, 70.3% (n = 270) reported they would not participate in cannabis use with one of their best friends who used cannabis. The majority of students 69.8% (n = 69.8) view cannabis use as a problem see Table 3.1. Thirty percent (n = 115) of participants indicated that nothing will happen to a person’s health when using cannabis. Almost 80.0% (n = 307) of students indicated that cannabis use is against society norms and cannabis users are despised see Table 3.2.

Table 3.1:

*Adolescents Attitudes toward Cannabis Use*

Students Cannabis use Attitudes	(n)	%
If one of your best friends offered you smoke cannabis, would you take it?		
Definitely not	290	75.5
Probably not	74	19.3
Probably Yes	14	3.6
Definitely Yes	6	1.6
If you were with a friend or a group of friends who were smoking cannabis, would you smoke with them?		
Definitely not	270	70.3
Probably not	38	9.9
Probably Yes	68	17.7
Definitely Yes	8	2.1
How do you feel about marijuana/hashish use?		
A problem	268	69.8
Not a problem	49	12.8
No response	67	17.4

*Note:* Total values may not add up to the exact % due to missing values.

Table 3.2:

*Students Attitudes Subscale*

Cannabis use Attitudes Subscale	(n)	% of yes
Nothing happens to the health of a marijuana/hashish user	115	29.9
Marijuana/hashish use is against the norms of society	307	79.9
The marijuana/hashish user and his family is despised by society	303	78.9
People do not like the company of marijuana/hashish users	318	82.8

*Note:* Total values may not add up to the exact % due to missing values.

Student beliefs toward cannabis use were assessed 8 items, 4 items were a multiple choice questions, 2 likert-type scale, and 2 “yes, no” items. The majority of students 81.3% (n = 312) believed that using cannabis by adolescents is a problem. Also, 81.3% (n = 337) of students do not believe that cannabis use helps them to make friends. To assess students beliefs about their beliefs of how harmful cannabis is when used over a period of time use a two likert type scale questions were included in the survey. Findings for these questions indicated that 58.8% (n = 224) of the students believe that occasional cannabis use is extremely harmful, while 76.6% (n = 294) believe that frequent cannabis use is extremely harmful see Table 3.3. Nearly one third 35.4% (n = 136) of students believed that cannabis use will leads to Death. One third 35.7% (n = 137) of the students believe that cannabis user will become aggressive if they get deprived of cannabis. While 55.5% (n = 211) of students believed that a cannabis user can not quit cannabis use, 30.5% (n = 117) believed that a plan of medical treatment and advice is the best method to quit cannabis use.

Table 3.3:

*Beliefs of Occasional and Frequent Cannabis Use*

	Extremely Harmful %, (n/N)	Harmful %, (n/N)	Somewhat harmful %, (n/N)	Not too harmful %, (n/N)	Not harmful %, (n/N)
How harmful do you think it is to use cannabis <b>occasionally?</b>	58.3 (224)	25.0 (96)	9.9 (38)	3.1 (12)	2.9 (11)
How harmful do you think it is to use cannabis <b>Frequently?</b>	76.6 (294)	14.1 (54)	4.2 (16)	0.8 (3)	2.3 (9)

Note: Total values may not add up to the exact % due to missing values. N= 384

## Problem Areas

The *Problem Oriented Screening Instrument for Teenagers [POSIT]* (Rahdert, 1991), was used in this study to screen for potential problems in the following functional domains: (a) Cannabis Use and Abuse, (b) Mental Health Status, (c) Family Relations, (d) Peer Relations, (e) Educational Status, and (f) Social Skills. The POSIT is, composed of 136 “yes/no” questions for youth aged 12 through 19 years. Scoring as described by the original author (Rahdert, 1991) can be calculated by assigning one point for each item in the different subscales mentioned above. The total score for each functional area subscale resulted from the sum of student’s response to the items of that subscale. For example, if the student has a total of 3 point from the 11 items of the Social Skills subscale, then his score will be 3. Also, the scoring schema provided the cut-off point for each subscale. Each cut-off score (e.g., 4 points for Family Relationships) refers to the number of points assigned to a student from responses to the related function area subscale items. The cut-off points were determined by the original other (Rahdert, 1991). For the different POSIT subscales some of the items overlap in one or more subscales. For example item “2. Are you good at talking your way out of trouble?” counts for both Educational Status and Social Skills Scales (see Appendix E). Additionally, subscales included a number of reversed items (see Appendix E) which were re-coded in the SPSS program. Reversed items re-coding for the responses was used so that high “scores” on the item indicate high levels of the attribute being measured (and so that low scores indicate low levels of the attribute). For example, if a student responded “1” (Yes) to item “5. Are you a good speller?”, then it was recorded to a 0. According to the scoring system there is a cut-off point for each scale and if the student score was at the cut-off point or higher it is considered a high risk score/response. See Tables 4.1 for the assigned cut-off score for each functional area.

Table 4.1:  
*Cut-off Scores for Functional Areas Subscales*

Subscale	Number of Items	Cut-off Score
Cannabis Use	17	1
Mental Health Status	22	4
Family Relations	11	4
Peer Relations	10	1
Educational Status	26	6
Social Skills	11	3

The first subscale is *Cannabis Use Subscale (CUS)* which includes 17 items, for this subscale if the student answered “yes” for any item of the CUS items his score will be 1 which indicate a high-risk score. Seventy seven students (20.1% scored above the cut-off point for the CUS. The most frequent items for students who used cannabis were forgetting things they did while using cannabis 13.3% (n = 51) get into trouble at school because of cannabis use 11.7% (n = 45) do things they normally do not do 11.5% (n = 44) and inability to control cannabis use 10.7% see Table 4.2 for summary of CUS subscale items. Second, *Mental Health Status Subscale (MHSS)* includes 22 items see Table 4.3 for a full summary; the cut-off score for this subscale was 4 points. For the mental health subscale 69.3% (n = 266) students scored above the MHSS cut-off point. The highest percentages for the MHSS items among the students were having so much energy not knowing what to do with it 60.4% (n = 232), often feeling tired 58.6% (n = 225), and 58.3% (n = 224) for feeling nervous most of the time.

Table 4.2:  
*Students Percentages for Cannabis Use Subscale (CUS).*

	% of Yes	n
Cannabis Use Subscale (CUS)	20.1	77
<i>Subscale Items:</i>		
Do you get into trouble because you use cannabis at school?	11.7	45
Do you miss out on activities because you spend too much money on cannabis?	6.5	25
Have you accidentally hurt yourself or someone else while high cannabis?	5.7	22
Do you ever feel you are addicted to cannabis?	6.3	24
Do you have a constant desire for cannabis?	5.7	22
Have you started using more and more cannabis to get the effect you want?	3.6	14
Do you ever leave a party because there is no cannabis?	3.9	15
Have you ever had a car accident while high on cannabis?	5.2	20
Do you forget things you did while using cannabis?	13.3	51
Do your parents or guardians have a pretty good idea of your interests?	5.5	21
Does cannabis use cause your moods to change quickly like from happy to sad or vice versa?	4.4	17
Do you miss school or arrive late for school because of your cannabis use?	4.4	17
Do your family or friends ever tell you that you should cut down on cannabis use?	5.2	20
Do you have serious arguments with friends or family members because of your cannabis use?	5.5	21
Do you ever feel you can't control your cannabis use?	10.7	41
Does your cannabis use ever make you do something you would not normally do - like breaking rules, missing curfew, breaking the law or having sex with someone?	11.5	44
Do you have trouble getting along with any of your friends because of your cannabis use?	6.5	25

*Note:* cut-off point = 1. Total values may not add up to the exact N, % due to missing values.

Table 4.3:  
*Students Percentages for Mental Health Status Subscale (MHSS).*

	% of Yes	n
Mental Health Status Subscale (MHSS)	69.3	266
<i>Subscale Items:</i>		
Do you have so much energy you don't know what to do with it?	60.4	232
Do you often feel tired?	58.6	225
Do you get frustrated easily?	30.5	117
Do you get easily frightened?	27.1	104
Do you feel alone most of the time?	25.5	98
Do you rush into things without thinking about what could happen?	27.6	106
Do you feel nervous most of the time?	58.3	224
Have you ever been told you are hyperactive?	37.8	145
Do you often act on the spur of the moment?	49.7	191
Do you hear things no else around you hear?	21.9	84
Do you have trouble concentrating?	30.7	118
Do you have trouble getting your mind off things?	23.7	91
Do you worry a lot?	35.4	136
Have you cut school at least five days in the past year?	28.4	109
Do you feel sad most of the time?	31.3	120
Do you have trouble sleeping?	22.4	86
Do you have a hard time following directions?	16.1	62
Do you feel you lose control and get into fights?	22.9	88
Are you afraid to be around people?	20.8	80
Do you often feel like you want to cry?	40.6	156
Are you restless and can't sit still?	21.9	84
Do you feel people are against you?	19.5	75

*Note:* cut-off point = 4. Total values may not add up to the exact N, % due to missing values.

*Family Relations Subscale (FRS)* includes 11 items; the cut-off score for this subscale was 4 points Table 4.4. Almost half 46.9% (n = 108) of the students scored above the cut-off point of the FRS. Slightly less than half 45.1% (n = 173) of the students reported that their parents did not know what they really think or feel. In addition, 40.6% (n = 173) of students reported that their parents do not have a good idea of their interests or how to handle them. Fourth, *Peer Relations Subscale (PRS)* includes 10 items; the cut-off score for this subscale was 1 points. Thirty four percent (n = 166) of the students scored above the cut-off point of the PRS. The highest percentages for the PRS items were reported for feeling alone most of the time with 25.5% (n = 98) and 21.1% (n = 81) for students parents not approving of their friends see Table 4.5. Fifth, *Educational Status Subscale (ESS)* includes 26 items; the cut-off score for this subscale was 6 points. For the ESS 48.2% (n = 185) of the students were above the cut-off point for this scale, Table 4.6 provide a summary for the ESS results. Almost one third of students 38.0% (n = 146) reported having a problem with math. Almost half of students 52.3% (n = 201) reported that they have ever read a book cover to cover for enjoyment, and 33.1% (n = 127) of the students think they study longer than their classmates and get poorer grades. Although 64.3% (n = 247) of students considered themselves good speller, 35.4% (n = 136) reported that they are not. Lastly, *Social Skills Subscale (SSS)* includes 11 items; the cut-off score for this subscale was 3 points. For the SSS more than half 56.3% (n = 216) of the students scored above the cut-off score see Table 4.7. Approximately two third of students 64.8% (n = 249) reported that they are pleased with how well they do in activities with their friends. On the other hand, 62.5% (n = 240) of the students reported that they are liked and respected by people their age, and 60.4% (n = 232) enjoyed doing things with people their age. Nearly half 47.9% (n = 184) of the students do not think about how their actions will affect others.



Table 4.4:  
*Students Percentages for Family Relations Subscale (FRS).*

	% of Yes	n
Family Relations Subscale (FRS)	46.9	108
<i>Subscale Items:</i>		
Do your parents or guardians pay attention when you talk with them?	66.4*	255
Do your parents or guardians argue a lot?	28.9	111
Do your parents or guardians refuse to talk with you when they are mad at you?	38.5	148
Do your parents or guardians and you do lots of things together?	46.4	178
Do your Parents or guardians usually know where you are and what you are doing?	32.6	125
Do your parents or guardians have rules about what you can and cannot do?	53.1*	204
Do your parents or guardians know what you really think or feel?	45.1*	173
Have you ever intentionally damaged someone else's property?	38.0	146
Do you and your parents or guardians have frequent arguments which involve yelling and screaming?	21.6	83
Do your parents or guardians have a pretty good idea of your interests?	44.8	172
Do your parents or guardians usually agree about how to handle you?	40.6	156

*Note:* cut-off point = 4. , \*Reverse item. Total values may not add up to the exact N, % due to missing values.

Table 4.5:  
*Students Percentages for Peer Relations Subscale (PRS).*

	% of Yes	n
Peer Relations Subscale (PRS)	43.2	166
<i>Subscale Items:</i>		
Do you feel alone most of the time?	25.5	98
Do your friends get bored at parties when there is no cannabis served?	14.1	54
Are most of your friends older than you are?	17.7	68
Do your parents or guardians approve of your friends?	21.1	81
Do you have friends who damage or destroy things on purpose?	16.1	62
Do your friends bring cannabis to parties?	15.4	59
Are most of your friends younger than you are?	20.1	77
Do you have friends who have hit or threatened to hit someone without any real reason?	18.2	70
Do your friends cut school a lot?	19.5	75
Do you have friends who have stolen things?	18.5	71

*Note:* cut-off point = 1. Total values may not add up to the exact N, % due to missing values.

Table 4.6:

*Students Percentages for Educational Status Subscale (ESS).*

	% of Yes	n
Educational Status Subscale (ESS)	48.2	185
<i>Subscale Items:</i>		
Do you have so much energy don't know what to do with it	60.4	232
Are you good at talking his way out of trouble	66.9*	257
Are you a good speller	64.3*	247
Did you ever read a book cover to cover for your own enjoyment	52.3*	201
Do you get frustrated easily	30.5	117
Do you have less energy than you think you should	29.7	114
Are you good listener	67.2*	258
Do you rush into things without thinking about what could happen	27.6	106
Are you good reader	74.7*	287
Do you get A's and B's in some classes and fail others	11.5	44
Have you been told you are hyperactive	37.8	145
Do you often act on the spur of the moment	49.7	191
Does people tell you that you are careless	17.4	67
Do you have trouble getting your mind off things	23.7	91
Does your mind wander a lot	22.7	87
Do you have a good memory	59.9	154
Do you have trouble with written work	24.2	93
Do you have a hard time following directions	16.1	62
Do you have trouble with math	38.0	146
Do you have a hard time planning and organizing	23.7	91
Does school sometimes make you feel stupid	20.8	80
Do you study longer than your classmates and still get poorer grades	33.1	127
Are you restless and can't sit still	21.9	84
Is school hard for you	24.7	95
Do you have trouble finding the right words to express what you are thinking	24.7	95
Is it easy to learn new things	62.8	143

*Note:* cut-off point = 6. \*Reverse item. Total values may not add up to the exact N, % due to missing values.

Table 4.7:  
*Students Percentages for Social Skills Subscale (SSS).*

	% of Yes	n
Social Skills Subscale (SSS)	56.3	216
Subscale Items:		
Are you good at talking your way out of trouble?	66.9*	257
Do you rush into things without thinking about what could happen?	27.6	106
Is it hard for you to ask for help from others?	24.7	95
Are you usually pleased with how well you do in activities with your friends?	64.8*	249
Do you often act on the spur of the moment?	49.7	191
Do you usually think about how your actions will affect others?	47.9*	184
Are most of your friends older than you are?	17.7	68
Do people your own age like and respect you?	62.5*	240
Are you able to make friends easily in a new group?	53.1*	204
Do you think it's a bad idea to trust other people?	24.7	95
Do you enjoy doing things with people your own age?	60.4*	232

*Note:* cut-off point = 3. \*Reverse item. Total values may not add up to the exact N, % due to missing values.

### Adolescents Cannabis Use Patterns

The *Cannabis Abuse Screening Test (CAST)* was used to assess students' patterns of cannabis use. This tool is a twelve-item scale that screens for different aspects of harmful cannabis use by assessing the frequency of selected events (yes, no, never, rarely, sometimes, fairly often, and very often) throughout an individual's lifetime: pattern of use within the “last 7 days” to “12 months”, seemingly non-recreational use (smoking alone or before midday), memory disorders, being encouraged to reduce or stop using cannabis, unsuccessful attempts to quit, and problems linked to cannabis consumption (Legleye, Karila, Beck, & Reynaud, 2007). Patterns according to intensity (i.e., ever use, current use, regular use) of use was also assessed.

Forty five students (11.7%) have answered the CAST. Nineteen student (4.9%) reported using cannabis at the age 16 years, nine students 2.3% at the age 14 years, and (17.4%) at the age of 17 see Table 5.1. The prevalence of cannabis use according to gender indicated that 9.6% (n = 37) of cannabis users were males and females only represented 2.1% (n = 8). The youngest age to start using cannabis use reported by students was 13 years of age (0.5% of students).

Table 5.1:

#### *Ages of Cannabis Use*

Age in Years	Number of Students	% of users
13	2	0.5
14	9	2.3
15	7	1.8
16	19	4.9
17	8	2.1
18	1	0.3
Total	n= 46	12.0 (N= 384)

*Note:* Total values may not add up to the exact N, % due to missing values.

In regard to the last time they have used cannabis 4.8% (n = 17) of the students reported using cannabis in less than a week period, 2.08% (n = 12) used cannabis in less than a month see Table 5.2. Students' pattern of use within the "last 7 days" was reported as follow: 3.1% (n = 12) reported using cannabis for three days, 2.9% (n = 11) for two days, 2.1% (n = 8) for four days, and 1.3% (n= 5) have used cannabis for five or seven days. Patterns of cannabis use in the past month were: 2.9% (n= 11) used cannabis for five days, 2.3% (n = 9) reported using for ten days, 1.6%, (n = 6) for nine days, 0.3% (n = 1) for fifteen days, 0.8% (n = 3) for twenty days, and 1.0% (n = 4) for twenty two days. Finally, the patterns during the "last 12 months" were: 2.6% (n = 6) used cannabis for ten days, 2.1% (n = 8) for twenty days, and an equal percentage 1.3% (n = 5) of students used cannabis for fifteen and thirty days.

Table 5.2:

*Patterns of Students Cannabis Use*

	% of Yes (n)	Less than 48 hours %, (n)	Less than a week %, (n)	Within the last 30 days %, (n)	More than a month but < 12 months %, (n)	More than 12 months %, (n)
Gender						
Male	9.6 (37)	1.8 (7)	3.6 (14)	2.3 (9)	1.8 (7)	0.2 (1)
Female	2.1 (8)	0.0 (0)	0.78 (3)	0.78 (3)	0.5 (2)	0.0 (0)
Total % (n)	11.7 (45)	1.8 (7)	4.38 (17)	3.08 (12)	2.3 (9)	0.2 (1)

Note: Total values may not add up to the exact N, % due to missing values.

According to the CAST, 3.6% (n = 14) of students who smoke cannabis smoked it before midday, 5.7% (n = 22) smoked cannabis alone, and 7.0% (n = 27) reported having encountered memory problems due to their cannabis use and 3.6% (n = 14) reported being told to reduce cannabis use by friends or family; 7.3% (n = 28) reported that they had had a problem because of

cannabis use, and 4.9% (n = 19) reported that they unsuccessfully tried to reduce or stop cannabis use. Only 1.3% (n = 5) of the students obtained a score of zero indicating no problematic cannabis use, 7.0% (n = 17) scored equal or lower than 3, and 3.0% (n = 14) scored equal or higher than 4 which indicate a problematic cannabis use.

The researcher has identified three patterns of use according to intensity (ever use, current use, and regular use). The results indicated that 4.4% (n = 17) students were “regular users” which means that they had used cannabis within the past week, 3.1% (n = 12) were ‘current users’ they had used cannabis at least once in the past month, and 2.3% (n = 9) were ‘ever used’ they had used cannabis, even once during the last 12 months.

## **Relationships among Study Variables**

### **Results of Research Questions.**

The first aim of this study was to determine the patterns of cannabis use among Jordanian adolescents.

*Research Hypothesis 1a:* the *prevalence* of cannabis use is higher among male than female Jordanian adolescents 13 to 18 years of age.

Analysis of frequency (chi-square) was used to compare the prevalence for males and females students. Based on the Pearson Chi-Square results ( $\chi^2 = 20.690$ ,  $p \sim 0.0001$ ), there was a significant relationship between student gender and cannabis use. In other words, Male students were 5.40 times more likely to use cannabis than female students.

*Research Hypothesis 2b:* The prevalence of cannabis use varies by age.

Analysis of frequency (chi-square) was used to determine the difference in patterns of students cannabis use by age (13-15 and 16-18 age groups). The dependent variable for cannabis use was categorical “yes” “no” variable (Have you ever, even once, used cannabis?). Based on

the Pearson Chi-Square results ( $\chi^2 = 3.476$ ,  $p \sim 0.062$ ), there was no significant relationship between student age and cannabis use.

The second aim of this study was to determine the associations between known risk factors and cannabis use among Jordanian adolescents.

*Research Hypothesis 2:* Risk factors for using cannabis (socio-demographic, intrapersonal, and socio-environmental) are associated cannabis use by Jordanian adolescent.

Analysis of frequency (chi-square) was used to determine the relationship between cannabis use and the risk factors: socio-demographics, social-environmental, cognitive-perceptual factors (attitudes, beliefs, and knowledge toward cannabis use), and the total score for the educational status subscale, peer relationships subscale, family relationships subscale, mental health status subscale, and social skills subscale. The bivariate correlations (Pearson's product moment correlation) analysis was used to test the relationships between students' cannabis use and the risk-factors (see Table 6.1 below for significant variables associated with cannabis use). The findings for the relationships between socio-demographic factors (gender, age, parents' occupation, parents' levels of education, family home structure) and students' cannabis use are following. As discussed above students gender was significantly associated with cannabis use. The Pearson Chi-Square results ( $\chi^2 = 6.815$ ,  $p \sim 0.235$ ), indicate that there was no significant relationship between student age and cannabis use. However, the frequency crosstabulation tables indicated that as children get older the higher percentage the risk for cannabis use. According to the Pearson Chi-Square results ( $\chi^2 = 2.118$ ,  $p \sim 0.347$ ), there was no significant relationship between parent occupation and student cannabis use. The results for the relationship between parents' levels of education and students cannabis use indicated a significant relationship ( $\chi^2 = 13.526$ ,  $p \sim 0.019$ ) between parents level of education and student cannabis



use. However, there is no significant correlation between parent level of education and students cannabis use ( $r = 0.090$ ;  $p \sim 0.080$ ). The Pearson Chi-Square results indicated that, there was a significant relationship between number of siblings and student cannabis use ( $\chi^2 = 37.771$ ,  $p \sim 0.002$ ). However, there was no significant relationship between the number of family members living at home and students cannabis use ( $\chi^2 = 23.229$ ,  $p \sim 0.142$ ). Living with both parents and the use of cannabis results indicated that there was a significant relationship between living with both parents and cannabis use ( $\chi^2 = 23.375$ ,  $p \sim 0.0001$ ), also, there was a significant negative relationship between family structure and students cannabis use ( $r = 0.248$ ;  $p \sim 0.0001$ ). This meant that students who were living with both parents are less likely to use. The last factor in the socio-demographic factors is family relationships and the results indicated that there was a significant relationship between having problems in family relationships and students cannabis use ( $\chi^2 = 25.087$ ,  $p \sim 0.0001$ ). Additionally, Bivariate correlations analysis indicated a positive relationships between family relationships and the students' cannabis use ( $r = 0.257$ ;  $p \sim 0.0001$ ). This indicated that students with problematic score ( $\Rightarrow$  4 point cut-off score) of the family relationships subscale are more likely to be using cannabis.

Social-environmental factors are considered risk factors for cannabis use. Based on the Pearson Chi-Square results ( $\chi^2 = 5.616$ ,  $p \sim 0.020$ ), there was a significant relationship between parents (father) use of cannabis and students cannabis use. Additionally, a significant relationship was found between friend's cannabis use and students' cannabis use ( $\chi^2 = 138.454$ ,  $p \sim 0.0001$ ). A positive significant relationship was found between parents and friends use and students cannabis use (parents:  $r = 0.660$ ;  $p \sim 0.0001$ , friends:  $r = 0.604$ ;  $p \sim 0.0001$ ). These results indicate that students with cannabis use father or friends tend to be cannabis users. The results of peer relationships problems and cannabis use ( $\chi^2 = 48.205$ ,  $p \sim 0.0001$ ) indicated a

significant relationship between peer relationships and cannabis use; also, the correlation coefficient indicated a positive significant relationship ( $r = 0.357$ ,  $p \sim 0.0001$ ) between students who has a high-risk ( $\Rightarrow$  1 point cut-off score) peer relationships (e.g., having friends with cannabis use and/or deviant behavior problems) subscale score and cannabis use. In the other hand, there was no significant relationship between place of residence (urban vs. rural) and students cannabis use ( $\chi^2 = 2.480$ ,  $p \sim 0.289$ ). The analysis of frequency for the relationship between students' cannabis use and their mental status (such as, feeling that people are against him/her, feeling sad most of the time) indicated that there was a significant relationship between students who scored a high-risk mental status problems on the mental health subscale ( $\Rightarrow$  4 points cut-off score) and cannabis use ( $\chi^2 = 22.522$ ,  $p \sim 0.0001$ ). Similarly, the correlation coefficient indicated a significant positive relationship between the student mental status and cannabis use ( $r = 0.244$ ,  $p \sim 0.0001$ ). Likewise, Pearson Chi-Square results ( $\chi^2 = 35.052$ ,  $p \sim 0.0001$ ), indicated that there is a significant relationship between students social skills and cannabis use. The correlation between social skills and students cannabis use is also positively significant ( $r = 0.304$ ,  $p \sim 0.0001$ ), students with poor social skills are more likely to be using cannabis. Both the Pearson Chi-Square results ( $\chi^2 = 49.542$ ,  $p \sim 0.0001$ ) and correlation coefficient ( $r = 0.362$ ,  $p \sim 0.0001$ ) indicated a significant relationship positive between problematic educational status subscale score ( $\Rightarrow$  6 points cut-off score) and cannabis use. Students who have problems with their educational status are more likely to use cannabis. Lastly, both the Pearson Chi-Square results ( $\chi^2 = 37.758$ ,  $p \sim 0.0001$ ) and correlation coefficient ( $r = 0.206$ ,  $p \sim 0.0001$ ) indicated a positive significant relationship between the frequency of religious activities and cannabis use. This indicated that the less frequent (never, rarely, and monthly) student attend religious activities the less likely they will be using cannabis.

Cognitive-perceptual factors included students' positive attitudes and beliefs, and knowledge toward cannabis use. The crosstabulation procedure results indicated that there was no significant relationship between student knowledge of the hazards or the resulting problems of using cannabis and cannabis use ( $\chi^2 = 9.278$ ,  $p \sim 0.233$ ). Also, there was no significant relationship between students level of cannabis knowledge and cannabis use ( $\chi^2 = 6.152$ ,  $p \sim 0.188$ ). According to the Pearson Chi-Square analysis results ( $\chi^2 = 0.190$ ,  $p \sim 0.663$ ) no significant relationship was found between students knowledge of problems related to using cannabis and cannabis use. Nonetheless, when testing for students attitudes toward cannabis use several significant relationships were found. First, a significant relationship was indicated between students attitude of cannabis use if presented to them by a friend ( $\chi^2 = 161.005$ ,  $p \sim 0.0001$ ). Bivariate correlations (Pearson's product moment correlation) analysis was used to test the relationships between students' attitudes toward using cannabis if presented by a friend. A significant positive relationship was found between students attitudes and cannabis use ( $r = 0.637$ ;  $p \sim 0.0001$ ). This indicated that students will have positive attitude toward using cannabis if presented by a friend and will be using or at risk of using cannabis. The Pearson Chi-Square results ( $\chi^2 = 94.558$ ,  $p \sim 0.0001$ ) indicate that there is a significant relationship between how students thinks about using cannabis and cannabis use. The Pearson's correlation result ( $r = 0.220$ ;  $p \sim 0.0001$ ) indicated that students who had positive attitudes (thought that cannabis use is not a problem) tend to use cannabis. In addition, students who felt that nothing happens to the person health when using cannabis had a positive attitude toward cannabis use and have a tendency to use cannabis ( $r = 0.400$ ;  $p \sim 0.0001$ ). On the other hand, there was a significant negative relationship between society norms and students attitudes toward cannabis use ( $r =$

0.370;  $p \sim 0.0001$ ). This meant that students who were using cannabis felt that cannabis use is not against society norms.

Both Pearson Chi-Square analysis and correlation analysis was used to determine the relationship between students beliefs and cannabis use. Students' beliefs toward using cannabis had a significant relationship with cannabis use as follows: A significant relationship was found between students' belief that it is not a problem for adolescents to use cannabis and cannabis use ( $\chi^2 = 25.404$ ,  $p \sim 0.0001$ ). The correlation coefficient indicated that there is a positive relationship between students perceiving no problem for using cannabis and their cannabis use ( $r = 0.259$ ;  $p \sim 0.0001$ ). Moreover, a significant relationship ( $\chi^2 = 64.675$ ,  $p \sim 0.0001$ ) was found between student beliefs of cannabis use helping them to make friends and cannabis use. This relationship was positively significant ( $r = 0.413$ ;  $p \sim 0.0001$ ) which indicate that students who believed that using cannabis will help them to make friends tend to be using cannabis.

Table 6.1:

*Variables with Significant Association between Cannabis Use and Risk-Factors*

	Pearson Chi-Square $\chi^2$	$\chi^2$ df	Correlation r	P value
<b>Socio-demographic factors</b>				
Gender	20.690	1	-0.234	0.000**
Number of siblings	37.771	3		0.000**
Father-mother family	23.375	6	0.248	0.000**
Family relationships	25.087	1	0.257	0.000**
<b>Social-environmental factors</b>				
Fathers cannabis use	5.616	1	0.660	0.000**
Friend's cannabis use	138.454	1	0.604	0.000**
Peer relationships	48.205	1	0.357	0.000**
Religious Activities	37.758	4	0.206	0.000**
Mental health status	22.522	1	0.244	0.000**
Social skills	35.052	1	0.304	0.000**
<b>Cognitive-Perceptual factors</b>				
Positive Attitudes	94.558	2	0.220	0.000**
Positive beliefs	25.404	1	0.259	0.000**
Educational Status	49.542	1	0.362	0.000**

Note\*\*: Correlation is significant at the 0.01 level (2-tailed).

\*. Correlation is significant at the 0.05 level (2-tailed).

The third aim for the study was to investigate the moderating and mediating effects of protective factors on the relationships between risk factors and cannabis use.

*Research Question 3:* To what extent can adolescent cannabis use be predicted by the risk and protective factors?

*Research Question 4:* To what extent can cognitive-perceptual factors (knowledge, attitudes, and beliefs) predict adolescents' use of cannabis?

To answer these two questions logistic regression analyses were used to examine the use of cannabis (as dependent variable) with the risk and protective factors (i.e., socio-demographics,

social-environmental, educational status, peer relationship, family relationship, mental health, cognitive-perceptual, and social skills) as independent variables. In predicting the risk and protective factors of adolescent cannabis use, step-type regression analysis was used to obtain the optimal model. The forward selection method - Forward Stepwise (Wald) was used to obtain the best fitting model. The logistic regression analysis was conducted to estimate associations between relevant predictor variables and cannabis use. The adjusted odds ratios (ORs) for selected predictor variables are reported while considering cannabis use as the outcome variable. The following variables were entered in the regression equation age, gender, grade, family structure, religious activities, cannabis use, educational status subscale, family relationships subscale, social skills subscale, peer relationships subscale, social skills subscale, mental health status subscale, knowledge, attitudes, and beliefs toward cannabis use.

According to the logistic regression findings (see Table 7.1 below for significant findings), none of the variables in the socio-demographics were significant except for student gender, living with both parents, and family relationships. Student gender was a significant predictor of cannabis use, the estimated odds ratio (OR) for gender (1: male) is 5.117 for male students versus female students. Males were 5.117 times more likely to have used the substances than females. Living with both parents was a part of students' family structure. Students who report living with both parents were significantly less likely to report use of cannabis (OR = 0.159) than students who do not. In addition, students who had problems in their family relationships were 19.396 times more likely to use cannabis (OR = 19.396). Therefore, student gender, family relationships, and living with both parents were significant predictor of students cannabis use. The logistic regression analysis indicated that only the following variables of the social-environmental factors were significant predictors of cannabis use: (a) Having a cannabis

user father or friend who lives in the same house (OR = 48.524), (OR = 40.347) respectively. Students who had cannabis user parent were 46.810 times more likely to use cannabis. Likewise, a father or friend who use cannabis but does not live at the same house is a significant predictor of student cannabis use (OR = 46.810), (OR = 22.363) respectively, this indicate that students who have a cannabis user father or friend are 46.810 or 22.363 times more likely to use cannabis even though they do not live at the same house; (b) Students who attend religious activities daily or weekly are less likely to use cannabis (OR = 0.033); and (c) Students peer relationships (OR = 22.596). This indicates that students who have problems with their peers or associate with cannabis using peers are 22.596 times more likely to use cannabis. Although, involvement in extracurricular activities or social activities was not a significant predictor of students cannabis use, student social skills were a significant predictor. Students who have problems in social skills were 25.906 times more likely to use cannabis. Moreover, student's educational status is a significant predictor of cannabis use. Students having problems with their education were 143.946 times more likely to use cannabis. However, Student's mental health status was not a significant predictor.

Knowledge of cannabis use associated problems and/or consequences were not a significant predictor of students cannabis use. In contrast, attitudes toward cannabis use are significant predictors of cannabis use. Students who have negative attitudes toward cannabis use were less likely to use cannabis. Students who felt that cannabis use is a problem were significantly less likely to use cannabis (OR = 0.091). Additionally, students who thought that cannabis use is against society norms were significantly (OR = 0.045) less likely to use cannabis use. Beliefs were also a significant predictor of student cannabis use. For instance, students who

think that cannabis use could help them in making friends were 12.933 times more likely to use cannabis (OR = 12.933).

Table 7.1:

*Logistic Regression for Significant Variables entered as Predictors of Adolescents Cannabis use*

Variables	OR	CI
Gender (male)	5.117	2.884 - 141.904
Father-mother family	0.159	0.057 – 0.410
Fathers cannabis use	46.810	20.381 - 37069.971
Religious activities	0.033	0.002 - .802
Social Skills	25.906	1.966 - 1613.879
Peer relationships	22.596	1.793 - 284.786
Educational Status	143.946	3.474 - 5964.543
Negative attitudes	0.045	0.005 - 0.398
Positive beliefs	12.933	1.410 - 118.629

*Note:* 95% confidence interval.

P < 0.05.

### **Psychometrics of Measures**

*Problem Oriented Screening Instrument for Teenagers [POSIT]* (Rahdert, 1991), was used in this study to screen for potential problems in the following functional domains: (a) Cannabis Use and Abuse, (b) Mental Health Status, (c) Family Relationships, (d) Peer Relationships, (e) Educational Status, and (f) Social Skills. Previous studies have reported alpha scores from 0.43 to 0.93 for the POSIT internal consistency (Knight, Goodman, Pulerwitz, & DuRant, 2001; Melchior, Rahdert, & Huba, 1994), test–retest reliability and validity of the 10 scales have also been assessed (Dembo et al., 1996; McLaney et al. 1994). This measure is used for the first time in the Arabic language with an Arabic speaking sample. The POSIT was translated into Arabic by a bilingual speaking nurse. Cronbach’s alpha of the POSIT measure in



this study was (0.91), and item to total correlations ranged from (0.47 to 0.83). Therefore, this measure was found to be valid and sufficiently reliable in its Arabic version.

*Cannabis Abuse Screening Test (CAST)* was used to assess students' patterns of cannabis use. This scale is a twelve-item scale modified scale from its original six items scale that was used to screens for different aspects of harmful cannabis use in a European adolescents sample. The original scale have high internal consistency (Cronbach's alpha = 0.81) (Legleye et al, 2007). This scale was used for the first time in the Arabic language with an Arabic speaking sample. The scale was translated into Arabic by a bilingual speaking nurse. The Cronbach's alpha of the scale in this study was (0.64) which indicate a good reliability and item to total correlations ranged from (0.51 to 0.65).

## CHAPTER 5

### DISCUSSION

The purpose of this study was to explore the patterns of cannabis use among high school-aged Jordanian adolescents and to examine the risks and protective factors that are related to adolescent usage. This study is considered the first reported study to explore adolescent cannabis use in Jordan. It is very important to explore the problem of cannabis use since signs of substance use and especially cannabis have been reported among Jordanians in recent years. The researcher recruited a random sample of Jordanian school students. Three hundred and eighty four students participated in the study. Students' average age in this study was 15.53 years of age. The sample comprised almost equal numbers of male and female adolescents. Almost all adolescents (94.0%) were living with their parents and all were Muslims. Two thirds of adolescents had families composed of more than six members. This is consistent with the traditional Arabian and Jordanian structure (Al-Krenawi, 2000; Abu-Lughod, 1986).

#### **Patterns of Cannabis Use**

The prevalence rate of cannabis use among school-aged adolescents in Jordan was 11.7%. Males had higher prevalence (9.6%) than females (2.1%). Previous studies had only reported "ever having used" a substance (Alzyoud, 2005; WHO, 2005). The prevalence of cannabis use found in this study exceeded what was reported for any substance used by Jordanian adolescents in general (e.g., alcohol). In fact, this indicates an increase in the use of substances by Jordanian adolescents. Nevertheless, these findings are also consistent with the Jordanian Anti-Narcotic squad reports that cannabis use is increasing rapidly in Jordan. Moreover, these findings are consistent with prevalence rates reported by neighboring countries in the Middle East region (such as, Israel) (Azaiza et al., 2008; NCFTA, 2007). The prevalence

was reported to be 12% among Egyptian adolescents, and 6% among Israeli adolescents (Azaiza et al, 2008; NCFTA, 2007). In addition, studies on cannabis use from countries in the region have reported higher prevalence of cannabis use among males compared to females (Azaiza et al., 2008a, 2008b). Global data have indicated that cannabis is the most widely used illicit substance in the world (UNODC, 2009; WHO, 2005 & 2006). These findings indicate that Jordanian adolescents are no exception to the raising trend of cannabis use among adolescents in the developing countries and world wide (WHO, 2006, Johnson et al, 2009). Also, the earliest cannabis use initiation was found to be at 13 years of age. This is congruent with reports from countries in the region and world wide (WHO, 2002; Okasha, 2004; Monshouwer, Smit, Graaf, van Os, & Vollebergh, 2005). These findings could be related to the fact that this is the first time Jordanian adolescents were asked specifically about cannabis use. A second, reason could be that adolescents nowadays are more open and not afraid of being judged to report their cannabis use. The majority of adolescents in this study were Muslims. Islamic teachings prohibit the use of cannabis by Muslims. However, the past few decades have witnessed many changes in the lifestyle and socioeconomic circumstances of people in the Middle East (Al Naser, 1996; Hourani, Khoury, & Wilson, 2004; Weiner-Levy, 2006). In addition, adolescents' exposure to western culture, through the media, leads to the perception that behaviors typical of western culture are modern and desirable (Weiss, Sawa, Abdeen, & Yanai, 1999). The current study findings provide valuable information for Jordanian nurses and health care providers in general. These findings could be used to guide prevention efforts. Gender differences should be taken in consideration when developing prevention programs targeting Jordanian adolescents. The findings provided a base line data for future studies. For example, study findings indicated that some adolescents started using cannabis at the age of 13 years; therefore, future studies might

consider including a sample of adolescents of younger age. These findings may present an alarming sign; because, there is an increasing number of studies that suggest association between early initiation of cannabis use and mental health problems (Hall & Degenhardt, 2008; McGrath et al., 2010) and the use of hard drugs such as heroin and cocaine (Kadnel, 2002; Lynskey et al., 2006). According to these findings prevention programs should also be provided for children at an early age. These findings also, provide essential data for future studies of cannabis use among Jordanian adolescents in other governorate especially Amman. According to the latest Jordanian Anti-Narcotic Squad statistics 32% percent of the recorded cases in 2009 of substance use among adolescent were reported in the governorate of Amman (JANS, 2010). According to the findings the prevalent pattern of cannabis use tend to be “current use” (3.1% used cannabis at least once in the past month) and “regular use” (4.4% used cannabis at least once in the week). Since self report measurement was used to assess the pattern of adolescent’s cannabis use the results should be taken with caution. Although this study adds new data to the reported literature of Jordanian adolescent’s cannabis use and substance use in general, it does not explore other aspects of the pattern such as recreational and daily use. As a result there is a need for future studies to explore other patterns of use such as experimental, heavy, and recreational.

### **Association between Risk Factors and Cannabis**

Findings highlight the link between risk factors and cannabis use, providing support to the research second hypothesis. Specifically, a number of adolescents’ socio-demographics were significantly associated with cannabis use. For example, family relationship was significantly related to cannabis use. These findings support previous literature suggesting that adolescents who live in a single-parent family reported illicit substances use more often than those from mother-father families (Azaiza et al. 2008b; Barrett and Turner, 2006; Guxens, Nebot, Ariza,

2007). These findings may indicate that more Jordanian adult in the adolescent social environment use cannabis, this is congruent with the Jordanian Anti-Narcotic Squad reports (JANS, 2010). According to the Squad report 60% of the 5450 reported cases of cannabis use were among individuals at the age 18 to 39 years. This also, indicate that living in a single parent family leads to less parental monitoring and supervision which may lead to cannabis use or association with using peers. Additionally, it was reported that familial relationships are associated negatively with cannabis use (Bahr et al. 1995; Ledouxet al., 2002; Sneed et al., 2001) indicating that poor family relationships leads to more cannabis use by adolescents. These findings can be useful for nurses and the educational system officials to involve parents when developing and providing prevention programs for Jordanian adolescents. Additionally, school health assigned personnel can target adolescents with a single parent family for more prevention program. Future studies can also, be designed to target adolescents with single or parent family to explore this issue in more details. Future studies could also focus on the relationship between adolescent's cannabis use and the relationship inside the family such as family cohesion, parenting style, and child-parent relationship. Although age was not a significant risk factor in this study, the findings indicated that, as adolescents get older, they are more likely to use cannabis. These findings are consistent with previous studies that indicate adolescents in the 12<sup>th</sup> grade use cannabis more than those in the 10<sup>th</sup> grade who in turn use cannabis more that 8<sup>th</sup> graders (Johnston et al., 2009). These findings may indicate that older adolescents are more susceptible to the risk of using cannabis. Many reasons could be attributed to these findings. For example, older adolescents may consider them selves as more mature individuals and associate with adult who maybe using cannabis, which in turn may lead them to imitate those actions. These findings provide an important data for nurses, school officials, and health care providers in

Jordan to consider when developing and administering prevention programs to Jordanian adolescents. Adolescents at their last year of school should be subjected to an intensive prevention programs since it was indicated in pervious studies that using cannabis during adolescence may lead to either increase cannabis use or use other substances (e.g., cocaine) later on life (Gfroerer et al., 2002; Lynskey et al., 2006). Also, conducting future studies targeting adolescents at their last year of high school to assess the risk and protective factors of cannabis use. Adolescent gender as discussed above was significantly associated with cannabis use.

There was a significant association between cannabis use and social-environmental factors in this study, there were significant associations between parents' use of cannabis and adolescents' cannabis use. Additionally, a significant relationship was found between friend's cannabis use and adolescent cannabis use. These results are consistent with prior research indicating that parents' use of cannabis is a risk factor for adolescents' use of cannabis (Chabrol et al., 2008; Brook, Zhang, Koppel, & Brook, 2008). Furthermore, Bahr, Hoffman, & Yang, (2005) found that peers influence is significantly associated with the risk of adolescent cannabis use. These findings provide a guide for future studies to explore the association between parent's cannabis use and adolescent cannabis use such as contributing factors, effect of parents cannabis use on adolescent decision of cannabis use. Also, these findings help nurses in clinical settings (especially in treatment facilities) to identify parents and peers effect on adolescents cannabis use. This study reported a significant relationship between adolescents mental health status and cannabis use. These results were congruent with findings reported by other researchers, who reported that adolescents with depressive mood, symptoms of anxiety, and being anxious used cannabis or other substances (Clark et al., 1995; Kaplow et al., 2001). However, other studies had reported that adolescents who reported social anxiety, being shy, and being anxious were

less likely to use cannabis or being associated with cannabis using peers (Myers et al., 2003). The current study also found a strong association between poor social skills and cannabis use. Adolescents with problematic social skills were more likely to be using cannabis. These findings are consistent with prior research (Coffey, Lynskey, Wolfe, Patton, 2000; Perry and Carroll, 2008). These findings are significant to both nurses and school personal in terms of prevention programs. Prevention programs could be targeted at adolescents who show signs of violent behaviors, associate with violent peers, and show signs of depression. Also, these findings provide critical data for future studies to fully assess the relationship between mental health status specifically depression and anxiety and cannabis use among Jordanian adolescents.

The results indicated that the majority of adolescents were not knowledgeable about cannabis use. Furthermore, there was no strong association between cannabis use and knowledge of cannabis use meaning, consequences, or problems. A possible explanation for this is that there is not enough information available or provided to adolescents in Jordan about cannabis use. Additionally, there are no effective health education programs concerning cannabis use in either the media or the school system in Jordan (e.g., there are no school nurses in the educational system in Jordan). These findings provide a foundation for nurses, health care professionals, and school officials to focus on addressing the health consequences of cannabis use when developing prevention programs. Also, these findings provide guidance to nurses when come in contact with adolescents in clinical settings. Nurses can provide adolescents with information regarding the health problems associated with cannabis use which subsequently increase their awareness of use health consequences. Study findings regarding the association between attitude toward cannabis use and adolescents' cannabis use are in accordance with other studies in the literature (Bachman et al., 1998). Adolescents showed positive attitudes toward cannabis use if they had cannabis

using peers. Also, adolescents who thought that cannabis use was not a problem tended to be using cannabis. Martins, Storr, Alexandre, & Chilcoat (2008) reported that adolescents' perceptions that friends had positive attitudes towards cannabis use were related to cannabis use. Similarly, Chabrol et al., (2004), suggested that adolescents who use cannabis have more positive beliefs and less negative beliefs about cannabis than non-users. Moreover, it was reported that adolescents' positive expectations were a risk factor for cannabis use (Chabrol et al., 2006). This study has found a strong association between perceiving cannabis use as not a problem and engaging in cannabis use. These findings provide an important data for prevention effort targeting adolescents in Jordan. An emphasis on reinforcing negative attitudes and beliefs toward cannabis use could be included in prevention programs. Nurses could also, identify adolescent attitudes and beliefs toward cannabis use in clinical setting.

Study findings indicated that there was a strong association between students' educational status and cannabis use. Adolescents who used cannabis were found to have problems with their educational status. This indicates that a decline in the adolescent's educational status may indicate that he/she is at risk for cannabis use. However, these results should be taken with caution because the data that was used in this study is cross-sectional; it is not possible to determine whether cannabis use led to problems in adolescents' educational status or vice-versa. Previous studies that have focused on cannabis and other illicit substances use and low academic achievement have argued that illicit substance use can lead to low academic achievement, and vice-versa, or both can occur due to another underlying vulnerability (Sanders, Field, Diego, 2001; Lynskey & Hall, 2000; Jeynes, 2002; Cox Zhang, Johnson, Bender, 2007; Martins and Alexandre, 2009). Therefore, future longitudinal studies are needed in order to be able to better explain the relationship of cannabis use with educational status. These findings



offer essential data for school staff to further assess students with low academic achievements. Additionally, prevention programs should take into consideration students with low academic achievement such as provide more intensive information, periodical follow assessment for involvement in cannabis use or other risk behaviors. Also, school staff (especially teachers and social/psychological councilor) can monitor adolescent educational status and detect any decline and target them and their families with prevention programs.

### **Predictors of Adolescents Cannabis use**

With regard to socio-demographic factors, this study was consistent with others studies, and found that male gender predicted cannabis use, as well as, living in a single-parent family also predicted adolescent cannabis use (Kosterman et al., 2000; Hammer and Vaglum, 1990; von Sydow et al., 2002; Poikolainen et al., 2001; Pedersen et al., 2001). Studies in the Middle East region (Azaiza et al., 2008a, 2008b, & 2009) have also reported that single-parents household was a risk factor that predicted Arab adolescents cannabis use. In addition these studies had reported the significance of gender as a strong predictor of cannabis use among Arab adolescents. Cannabis use was not predicted by the other socio-demographic variables included in the study.

As in numerous previous studies (Coffey et al., 2000; Newcomb and Bentler, 1986; Kandel and Andrews, 1987; Kosterman et al., 2000; Von Sydow, Lieb, Pfister, Hofler, Wittchen, 2002), the key role of cannabis users' family members and peers influence, was confirmed. The availability of family members' (specifically the father) and peers' cannabis users predicted adolescents' cannabis use. Adolescents' attitude and beliefs toward cannabis use were predictors for cannabis use, as has been found in other studies (Kosterman et al., 2000; Von Sydow, 2002). Negative attitude toward cannabis had a protective effect with regard to cannabis use. These

findings were consistent with studies of Arab adolescents in the ME Azaiza et al., (2008a, 2008b) found that adolescent who has negative perception of cannabis use are less likely to use cannabis. As this study reported the role of adolescent attitudes and beliefs toward cannabis use in predicting the use, future studies might be conducted to assess the effect of parent's attitudes and beliefs in predicting cannabis use. Other factors were found to predict adolescent cannabis use, poor educational status (Bailey and Hubbard, 1990; Diego et al., 2003), problematic social skills (Bailey & Hubbard 1990), mental health problems (Diego et al., 2003; McGrath et al., 2010). Although these findings are consistent with studies in the developed countries, there were no reported studies regarding adolescents' mental health status, educational status, and social skills as predictors of Arab adolescents cannabis use. Therefore, this study could be the first that provide data in this regards. The findings indicated that practicing religious activities daily or weekly had a positive protective effect with regard to adolescents cannabis use. These findings are consistent with previous studies in neighboring countries; Azaiza et al., (2008a, 2008b) reported that Arab adolescents with low-religiosity reported using cannabis and other substances than adolescents with high religiosity. These findings may emphasis the role of being compliant with religion teachings and attending religious activities as a protective factor against cannabis use.

### **Conclusion**

In conclusion, this is the first study to explore the prevalence of cannabis use among Jordanian adolescents. Cannabis use prevalence among Jordanian adolescents is consistent with data from other countries in the ME as well as world wide. Gender and family structure were significantly associated with adolescent cannabis use and served as risk factors to predict cannabis use. Study findings indicated that family relationships, social skills, peer relationships,

and educational status were also risk factors that predicted cannabis use. Additionally, adolescent negative attitudes and beliefs toward cannabis use was a protective factor against using cannabis. Measurement tools used in this study demonstrated good reliability when used with adolescent Arabic-speaking sample. The interpretation and generalization of study findings should be taken with caution, since this study only includes a sample from one governorate in Jordan.

### **Strengths and Limitations**

This research makes several important contributions to the substance use and nursing literature. This research is among the first to identify the patterns, risks, and protective factors of cannabis use among Jordanian adolescents. Most prior studies of substance use among Jordanian adolescents have focused on cigarettes smoking, alcohol, and other substances (WHO, 2005; Alzyoud, 2005). A major strength of this study is being the first to report the prevalence of cannabis use among Jordanian adolescents. Moreover, this is the first study to explore risk and protective factors of cannabis use among adolescents in Jordan. Considered together with results of this study and studies from other countries in the region, this study can inform substance use interventions targeting Jordanian and Arab adolescents.

While there were several strengths of the current study, there also are limitations that warrant mention. The community sample examined in this study is a significant strength. However, results can only be generalized to adolescents from similar socioeconomic, racial, ethnic, and geographic backgrounds. Additional prospective studies of Jordanian adolescents are necessary to better understand the relationship of risks and protective factors of cannabis use for Jordanian adolescents of other backgrounds and in different contexts.

Importantly, this study focused on some adolescent characteristics (i.e., peer relationships, educational status) as risk factors for cannabis use. Other characteristics, such as

physical health and neighborhood characteristics that also have relevance for adolescent cannabis use were not examined. In future research it will be important to integrate risks across multiple domains, including individual, family, and neighborhood contexts, to gain a more comprehensive understanding of the ecology of risk for substance use among adolescents. Additionally, this study used a cross-sectional research design which limit the interpretation of the findings in relation to the correlations or associations, rather than causal or predictive relationships. With longitudinal research designs, causal or predictive path coefficients can be estimated with SEM, providing the researcher with a more powerful test. In addition, despite the evidences that prior research has provided to support the use of cross-sectional designs, longitudinal studies provide data that enables the researcher to investigate more sophisticated mediation/moderation models.

### **Implications**

According to Meleis (1997), scholarship in nursing is evident when there is a synthesis of knowledge, theory, research, philosophy, and practice. Findings underscore the importance of evaluating patterns, risks, and protective factors of adolescents cannabis use. This is particularly important for nurses in all areas theory, research, and practice.

#### **Nursing Theory.**

This study utilized the developing middle-range Alzyoud Theory of Adolescent Substance Use [ATASU] as the theoretical framework. The Alzyoud theory was initially developed by the researcher from a synthesis of several of the theories that have been used in previous studies of adolescent alcohol and other drug use. The theory is designed to point toward an extensive and diverse list of factors that theoretically contribute to adolescents cannabis use, ranging from factors that are intrinsically tied to cannabis use (e.g., attitudes and beliefs about the consequences of cannabis use) to factors that on the surface have a small effect on cannabis

use (e.g., parenting styles and school). The range of concepts the theory encompasses aims to cover all factors that might contribute to cannabis use since cannabis use, like almost any behavior, has a complex etiology. Major concepts in the theory are: (a) *environmental factors*: These factors consist of environmental factors that play a major role in adolescents and cannabis use. These factors focus on the characteristics and behaviors of the people who make up adolescent's support system. Among these factors is inadequate parental supervision, control, and reinforcement; negative evaluations from parents; home strain; and parental divorce or separation. (b) *intrapersonal factors*: these factors cover adolescents cognitive-perceptual influences (knowledge, attitudes, beliefs, and intentions toward cannabis use), adolescents mental status, coping skills, and social skills. For example, adolescents might be encouraged to use cannabis if they hold tolerant or positive attitudes toward cannabis use, or other deviant or risk behaviors. (c) *socio-demographic factors*: these factors includes adolescent various background variables (i.e., gender, age, father's occupation, parental education, family status (living with both parents/another arrangement), family structure, and rural versus urban community). Although, testing the theory was not a purpose of this study, findings have indicated that the relationships between study variables were congruent with the ATASU. For example, adolescents' socio-demographic factors were significantly associated with cannabis use (adolescents living in a single-parent family were more likely to use cannabis). Additionally, cognitive-perceptual factors were significantly associated with adolescents cannabis use (e.g., adolescents who had positive attitudes toward cannabis use were more likely to be using cannabis). Given these findings it is clear that the ATASU can be used as a middle-range nursing theory to guide research in the area of adolescents substance use. However, the ATASU is still under development and future longitudinal studies are recommended. With longitudinal research

design, a causal or predictive path coefficient can be estimated with SEM, which provides researchers with a more powerful test.

### **Nursing Research.**

The findings of this study provide important baseline data for Jordanian and Arab nursing researchers. Future research should focus in assessing the patterns, risks, and protective factors of cannabis use among Jordanian adolescents with larger and more heterogeneous samples. Additionally, future studies need to be conducted in several cities to represent all adolescents in the Kingdom. The POSIT is a highly sensitive tool to screen adolescents in a number of functional areas. It is considered to be the first step in identifying the existence of problems among the adolescent population. Thus, results obtained by using the POSIT should be taken with caution keeping in mind that it indicates only that a problem may exist. Therefore, it does not allow the researcher to fully identify the problem. As a consequence, the researcher needs to conduct further studies and assessment in the identified functional areas. Also, as stated earlier future studies are needed and recommended to test causal relationships between the risk and protective factors and cannabis use.

### **Nursing Practice.**




Study findings emphasize the importance of assessing adolescents' cannabis use patterns, risks, and protective factors. This is important for planning assessments of early cannabis use risk, as well as interventions, for adolescents exhibiting antisocial behavior and low academic readiness; these risk factors can be targeted in preventive interventions designed to reduce and prevent cannabis and other substances use among Jordanian adolescents. For example, the findings indicated that adolescent who exhibit low academic performance are more likely to be

using cannabis. Diego et al., 2003 found that targeting an early low academic performing adolescent is an important predictive for cannabis and other substances use prevention strategy.

Based on the results of the present study, deviant peer affiliation in adolescence appears to be a risk for cannabis use. These findings reinforce the existing evidence that suggests that adolescents who socialize and form friendships with deviant peers are at increased risk for substance use (Dishion & Owen, 2002; Fergusson & Horwood, 1999). In addition to cannabis use, association with deviant peers also increases the risk for conduct problems (Vitaro et al., 1997), criminal offending (Fergusson & Horwood, 1996), school failure (Fergusson & Horwood, 1998), and teenage pregnancy (Woodward & Fergusson, 1999). Therefore, it is imperative to identify and develop strategies for reducing involvement with deviant peers and promoting pro-social peer relationships that can be implemented during early adolescence.

Although there are no school nurses in the Jordanian educational system, this study can provide vital data to nurses in other settings who have direct contact with adolescents. For example, nurses in primary health care settings have direct access to children and adolescents and thus have the potential for performing many helpful assessments and interventions to prevent or address problem behaviors in this case cannabis use. Assessing for risky behavior, such as cannabis use, is an essential starting point. It is important for nurses to ask adolescents direct questions about these issues. In addition, these findings can be utilized by nursing schools in Jordan (e.g., Hashemite University) that require students to perform a part of their clinical courses in middle and high schools. These schools can provide a venue for reaching adolescents in some parts of Jordan. Moreover, these findings provide nurses in community health care settings the basis for developing comprehensive prevention programs that are directed to adolescents, families, at-risk populations, and the public at large.

Appendix A - Wayne State Human Investigation Committee Approval (HIC), Jordanian Ministry of Education Approval

<p>THE HASHEMITE KINGDOM OF JORDAN MINISTRY OF EDUCATION</p>		<p>المملكة الأردنية الهاشمية وزارة التربية والتعليم</p>
<p>Ref. No. 3/10 / 64604 Date 16/12/2008</p>		<p>الرقم ..... التاريخ ..... الوافق .....</p>
<p>To Whom It May Concern</p>		
<p><b>Subject: Facilitation Letter</b></p>		
<p>The Ministry of Education agrees to facilitate the mission of the researcher Sukaina Alzyoud and Dr. Linda Weglicki from Wayne State University , College of Nursing , Detroit, to conduct their study titled: "Jordanian Youth Alcohol and Cannabis Use: Patterns , Risks and Protective Factors". The Ministry will offer them all necessary support and facilitate implementing the questionnaire related to the study on the target group including students aged 13 to 18 years at the schools of Zerqa I, Zerqa II and Rusaifah.</p>		
<p><b>Regards</b></p>		
<p>Minister of Education</p> 		
<p>cc: the Secretary General for Educational and Technical Affairs cc: The Managing Directorate of Educational Research and Development.</p>		
<p>هاتف: ٥٦٠٧١٥٩ / ١١ فاكس: ٥٦٦٦٠١٥ ص.ب: (١٦٤٦)</p>		
<p>رقم 948 2004</p>		





HUMAN INVESTIGATION COMMITTEE  
 101 East Alexandrine Building  
 Detroit, Michigan 48201  
 Phone: (313) 577-1628  
 FAX: (313) 993-7122  
<http://hic.wayne.edu>



## NOTICE OF EXPEDITED APPROVAL

**To:** Sukaina Alzyoud  
 College of Nursing

**From:** Ellen Barton, Ph.D. \_\_\_\_\_  
 Chairperson, Behavioral Institutional Review Board (B3)

**Date:** August 18, 2009

**RE:** HIC #: 075509B3E  
 Protocol Title: Jordanian Adolescent Cannabis Use: Patterns, Risks, and Protective Factors  
 Sponsor:  
 Protocol #: 0907007325

**Expiration Date:** August 17, 2010

**Risk Level / Category:** 45 CFR 46.404 - Research not involving greater than minimal risk

The above-referenced protocol and items listed below (if applicable) were **APPROVED** following *Expedited Review* (Category 7\*) by the Chairperson/designee for the Wayne State University Behavioral Institutional Review Board (B3) for the period of 08/18/2009 through 08/17/2010. This approval does not replace any departmental or other approvals that may be required.

- Brochures (4)
- Information Sheet (English and Arabic versions)
- Assent Form (English and Arabic versions)

- Federal regulations require that all research be reviewed at least annually. You *may* receive a "Continuation Renewal Reminder" approximately two months prior to the expiration date; however, it is the Principal Investigator's responsibility to obtain review and continued approval **before** the expiration date. Data collected during a period of lapsed approval is unapproved research and can **never** be reported or published as research data.
- All changes or amendments to the above-referenced protocol require review and approval by the HIC **BEFORE** implementation.
- Adverse Reactions/Unexpected Events (AR/UE) must be submitted on the appropriate form within the timeframe specified in the HIC Policy (<http://www.hic.wayne.edu/hicpol.html>).

**NOTE:**

1. Upon notification of an impending regulatory site visit, hold notification, and/or external audit the HIC office must be contacted immediately.
2. Forms should be downloaded from the HIC website at **each** use.

\*Based on the Expedited Review List, revised November 1998

## Appendix B - Information Sheets

**Research Information Sheet (Parents)**

Title of Study: **Jordanian Adolescent Cannabis Use: Patterns, Risks, and Protective Factors**

Principal Investigator (PI): Sukaina Alzyoud, Doctoral Student  
Wayne State University, College of Nursing  
5200 Anthony Wayne Dr., Apt 316  
Detroit, Michigan, USA 48202  
313-204-1580, or (+962 – 777-923-630)  
Email: ax8930@wayne.edu

**Purpose:**

Your child is being asked to be in a research study being conducted by Sukaina Alzyoud, a Doctoral Student and nurse at Wayne State University, with the purpose of exploring the patterns of cannabis use among high school-aged Jordanian adolescents and will examine the risks (i.e., factors that might leads adolescents to use cannabis such as, being friends with peers who use cannabis, attending social events where cannabis might be used) protective factors (i.e., factors which may help preventing adolescents from using cannabis such as, strong family relationships, high religiosity, and good academic achievements) that are related to adolescent usage. This study is the first step in assessing the problem of cannabis use among Jordanian school students. This study is being conducted in Zarka Governorate school districts, Jordan.

**Study Procedures:**

If your child takes part in the study, they will be asked give their use of cannabis if any, their knowledge, attitudes, and beliefs toward cannabis use, their social life (e.g., attending social events where cannabis might be used, and being around friends who may use cannabis), and coping skills (e.g., saying No to friends who encourage them to use cannabis, approach an adult when they have a problem and need help). Their participation is one time only. They will be asked to provide answers to the items/questions in the study survey. Their participation will be anonymous. Participation time will range between 45 to 60 minutes.

**Benefits:** As a participant in this research study, there *will* be no direct benefit for them; however, information from this study may benefit other people now or in the future.

**Risks:** There are no known risks at this time to participation in this study.

**Costs:** There will be no costs to them for participation in this research study.

**Compensation** For taking part in this research study, they will be compensated for their time and inconvenience. Compensation will be in the form of student school supplies such as pens/pencils, notebooks, etc. which they will receive after they complete study survey.

**Confidentiality:** All information collected about them during the course of this study will be kept without any identifiers.

**Voluntary Participation /Withdrawal:** Taking part in this study is voluntary. They are free to not answer any questions or withdraw at any time.

**Questions:**

If you or your child has any questions about this study now or in the future, you may contact Sukaina Alzyoud, Doctoral Student at Wayne State University at the following phone number (0777-923-630). If you have questions or concerns about their rights as a research participant, the Chair of the Human Investigation Committee at Wayne State University can be contacted at (313) 577-1628 or Jordanian Ministry of education at (+962) 5607181. If you are unable to contact the research staff, or if you want to talk to someone other than the researcher, you may also call (313) 577-1628 or (+962) 5607181 to ask questions or voice concerns or complaints.

**Participation:**

If you wish your child not to participate in the study please contact the researcher at (0777-923-630) or ax8930@wayne.edu. By not contacting the researcher you are allowing your child to complete the survey and you are agreeing to allow them to choose to participate in this study.

## Research Information Sheet (Adolescent)

Title of Study: **Jordanian Adolescent Cannabis Use: Patterns, Risks, and Protective Factors**

Principal Investigator (PI): Sukaina Alzyoud, Doctoral Student  
Wayne State University, College of Nursing  
5200 Anthony Wayne Dr., Apt 316  
Detroit, Michigan, USA 48202  
313-204-1580, or (+962 - 777-923-630)  
Email: ax8930@wayne.edu

### Purpose:

You are being asked to be in a research study being conducted by Sukaina Alzyoud, a doctoral student and nurse at Wayne State University, with the purpose of exploring the patterns of cannabis use among high school-aged Jordanian adolescents and will examine the risks (i.e., factors that might leads adolescents to use cannabis such as, being friends with peers who use cannabis, attending social events where cannabis might be used) protective factors (i.e., factors which may help preventing adolescents from using cannabis such as, strong family relationships, high religiosity, and good academic achievements) that are related to adolescent usage. This study is the first step in assessing the problem of cannabis use among Jordanian school students. This study is being conducted in Zarka Governorate school districts, Jordan.

### Study Procedures:

If you take part in the study, you will be asked to give your use of cannabis if any, your knowledge, attitudes, and beliefs toward cannabis use, your social life (e.g., attending social events where cannabis might be used, and being around friends who may use cannabis), and coping skills (e.g., saying No to friends who encourage them to use cannabis, approach an adult when they have a problem and need help). Their participation is one time only. You will be asked to provide answers to the items/questions in the study survey. Their participation will be anonymous. Participation time will range between 45 to 60 minutes.

**Benefits:** As a participant in this research study, there *will* be no direct benefit for you; however, information from this study may benefit other people now or in the future.

**Risks:** There are no known risks at this time to participation in this study.

**Costs:** There will be no costs to you for participation in this research study.

**Compensation** For taking part in this research study, you will be compensated for your time and inconvenience. Compensation will be in the form of student school supplies such as pens/pencils, notebooks, etc. which you will receive after completing study survey.

**Confidentiality:** All information collected about you during the course of this study will be kept without any identifiers.

**Voluntary Participation /Withdrawal:** Taking part in this study is voluntary. You are free to not answer any questions or withdraw at any time.

**Questions:**

If you have any questions about this study now or in the future, you may contact Sukaina Alzyoud, Doctoral Student at Wayne State University at the following phone number [0777-923-630]. If you have questions or concerns about your rights as a research participant, the Chair of the Human Investigation Committee at Wayne State University can be contacted at (313) 577-1628 or Jordanian Ministry of education at (+962) 5607181. If you are unable to contact the research staff, or if you want to talk to someone other than the researcher, you may also call (313) 577-1628 or (+962) 5607181 to ask questions or voice concerns or complaints.

**Participation:**

By completing the questionnaire you are agreeing to participate in this study.

## Appendix C - Questionnaires

**Socio- Demographic Information**

1. What is today's date? \_\_\_\_\_ 200 \_\_\_\_  
(Month) (Day) (Year)
2. Year you were born \_\_\_\_ ?
3. Where were you born? City: \_\_\_\_\_ State: \_\_\_\_\_  
Country: \_\_\_\_\_
4. What is your grade in school? \_\_\_\_\_
5. What is your age? \_\_\_\_\_ (in years).
6. Are you? Boy \_\_\_\_ Girl \_\_\_\_
7. Select your nationality, racial or ethnic identity from the list below:
  - a. Great Syria (Lebanon, Syria, Jordan, Palestine, Iraq)
  - b. Gulf countries and Yamani
  - c. North African (Egypt, Sudan, Libya, Algeria, Tones, Marco, Mauretania)
  - d. South East Asia (India, Pakistan, Bangladesh, SerLanka)
  - e. European or American
  - f. Other, specify \_\_\_\_\_
7. Where do you live: \_\_\_\_\_  
City/ Town
8. What is your Dad's usual job? \_\_\_\_\_
9. Is your Father working now? Yes [ ] No [ ]
10. What is your Mother's usual job? \_\_\_\_\_
11. Is your Mother working now? Yes [ ] No [ ]
12. How many of the persons who live in your home are smokers? (Put an "X" in the box for every one who smoke).
 

Mother/Stepmother	[ ]	Grandfather	[ ]
Father/Stepfather	[ ]	Brother(s)	[ ]
Sister(s)	[ ]	Grandmother	[ ]
Uncle(s)	[ ]	Aunt(s)	[ ]
Cousin(s)	[ ]	Friend(s)	[ ]
Other(s) _____	[ ]		
13. During the past year, how many extracurricular school activities did you participate in? (Such as sports, class committees, teams, clubs, etc.)
  - a. I did not participate in any extracurricular activities

- b. One
- c. Two
- d. Three
- e. More than Four

List each activity that you participated in: \_\_\_\_\_

14. During the last 30 days (month), how many activities outside of school, such as going to church or mosque, teen community meetings, parties, concerts, did you go?
- a. I did not participate in any extracurricular activities
  - b. One
  - c. Two
  - d. Three
  - e. More than Four

List each activity that you participated in: \_\_\_\_\_

15. What is your religion?
- 1. Hindu
  - 2. Muslim
  - 3. Catholic
  - 4. Others, specify-----

16. How often do you attend religious events?
- a. Daily
  - b. Weekly
  - c. Monthly
  - d. Rarely
  - e. Never

17. If you are Muslim, do you follow the required daily prayers for Muslims? Yes [ ] No [ ]

18. How many times do you pray each day?
- a. None
  - b. Once
  - c. Twice
  - d. Three
  - e. Four
  - f. Five
  - g. More than five

19. Do you think it is OK for kids your age to use marijuana/hashish? Yes [ ] No [ ]

20. Do you think smoking marijuana/hashish helps you to make friends? Yes [ ] No [ ]

21. Has anyone in your family discussed the dangers of marijuana/hashish use with you? Yes [ ] No [ ]

22. If one of your best friends offered you smoke marijuana/hashish, would you take it?
- a. Definitely not
  - b. Probably not
  - c. Probably yes
  - d. Definitely yes

23. If you were with a friend or a group of friends who were smoking marijuana/hashish, would you smoke with them?
- a. Definitely not
  - b. Probably not
  - c. Probably yes

- d. Definitely yes
24. Do you think you will use (smoke) marijuana/hashish in the future?
- Definitely not
  - Probably not
  - Probably yes
  - Definitely yes
25. How often, due to misconduct, have you been sent to see a counselor in school this past year?
- Never
  - Once
  - Twice
  - Three times
  - More than three times
26. How often, due to misconduct, have you been sent to see a school administrator (e.g., principal or vice principal) in the past year?
- Never
  - Once
  - Twice
  - Three times
  - More than three times
27. How often, due to misconduct, have you been sent home from school in the past year?
- Never
  - Once
  - Twice
  - Three times
  - More than three times
28. How often, due to misconduct, have your parents been called or notified to talk about your behavior?
- Never
  - Once
  - Twice
  - Three times
  - More than three times
29. How many of your relatives smoker marijuana/hashish? (Put an "X" in the box if they smoke marijuana/hashish).

	Marijuana/hashish		Marijuana/hashish
Mother/Stepmother	[ ]	Grandfather	[ ]
Father/Stepfather	[ ]	Brother(s)	[ ]
Sister(s)	[ ]	Grandmother	[ ]
Uncle(s)	[ ]	Aunt(s)	[ ]
Cousin(s)	[ ]	Friend(s)	[ ]
Other(s) _____	[ ]		

30. How many other people live in your home besides you? \_\_\_\_\_
31. Do you live with both of your parents? Yes [ ] No [ ]
32. How many of the persons who live in your home smoker marijuana/hashish? (Put an "X" in the box for marijuana/hashish).



	Marijuana/hashish
Mother/Stepmother	[ ]
Father/Stepfather	[ ]
Sister(s)	[ ]
Uncle(s)	[ ]
Cousin(s)	[ ]
Other(s) _____	[ ]

	Marijuana/hashish
Grandfather	[ ]
Brother(s)	[ ]
Grandmother	[ ]
Aunt(s)	[ ]
Friend(s)	[ ]

33. What is the level of education of the head of the family?

- None
- Primary
- Secondary
- School Certificate
- Higher School Certificate
- Others, specify
- Not applicable

34. What is the profession of the head of the family?

- Unemployed
- Sales, service worker
- Professional/Managerial/Administrative
- Homemaker
- Others, specify .....
- Not applicable

### Adolescents Knowledge, Attitudes, Beliefs Substance Use

1. Have you ever heard of marijuana/hashish abuse?
  1. Yes
  2. No
2. What is the meaning of Marijuana/Hashish use?
  1. Smoking Marijuana/Hashish
  2. Drinking alcohol
  3. Using pills, sniffing glue ....
  4. I do not know
3. What happens to someone after smoking marijuana/hashish?
  1. Nothing
  2. Feeling of weakness
  3. Feeling dizzy
  4. Develop habit of smoking marijuana/hashish
  5. A feeling of enjoyment
  6. Don't know
  7. Choking
  8. Legal problems
4. What is the result of illicit drug use?
  1. Nothing
  2. Feeling of weakness
  3. Feeling dizzy
  4. Loss of senses
  5. A feeling of enjoyment
  6. Develop addiction to drugs
  7. Death
  8. Don't know
  9. Legal problems
  10. Others, specify-----
5. How harmful do you think it is to use the following substances occasionally?
 

	Extremely Harmful	Harmful	Somewhat harmful	Not too at all	Not harmful
Marijuana/hashish		1.	2.	3.	4. 5.
Alcohol	1.	2.	3.	4.	5.
Cigarettes	1.	2.	3.	4.	5.
6. How harmful do you think it is to use the following substances Frequently?
 

	Extremely Harmful	Harmful	Somewhat harmful	Not too at all	Not harmful
--	----------------------	---------	---------------------	-------------------	-------------

Marijuana/hashish	1.	2.	3.	4.	5.
Alcohol	1.	2.	3.	4.	5.
Cigarettes	1.	2.	3.	4.	5.

7. Have you ever heard of marijuana/hashish addiction?
- Yes
  - No
8. What can be the consequences of addiction to marijuana/hashish?
- Lungs diseases
  - Heart problems
  - Paralysis
  - Mental problems
  - Epilepsy
  - School drop out
  - Loss job
  - Looked down upon the society
  - Fine/Imprisonment
  - In conflict with family members
  - Death
  - Don't know
  - Nothing
  - Others, specify -----
9. What happens if a person who is an addict on marijuana/hashish is deprived of cannabis?
- fits of convulsion
  - Fainting
  - Nausea and vomiting
  - Becomes aggressive
  - Nothing
  - Don't know
  - Others, specify -----
10. Can a person who use marijuana/hashish stop using it forever?
- Yes
  - No
11. How do you think marijuana/hashish using can be possibly stopped?

	<i>Marijuana</i>	<i>Alcohol</i>	<i>Cigarettes</i>
1. Through counseling			
2. Through medical treatment			
3. Just quit and forget			
4. Through prayers			
5. Don't know			

12. How do you rate your knowledge on marijuana/hashish use?
- Very high

2. High
  3. Not much
  4. A little
  5. None at all
13. How do you feel about marijuana/hashish use?
1. Is a problem
  2. Not a problem
  3. No response
14. Do you know any individual or organization assisting marijuana/hashish abusers to quit?
1. Yes
  2. No
15. Can you cite those individuals/organizations helping marijuana/hashish abusers to quit?
1. Medical Officers
  2. Health Care personnel
  3. Non-Governmental Organizations
  4. Religious organizations
  5. Teachers
  6. Youth leaders
  7. Social Workers
  8. Others, specify -----
16. Is there any social organizations which deals with adolescent problems?
1. None
  2. adolescents Centers
  3. Religious Centers
  4. NGO's
  5. Others, specify -----
17. Are these organizations easily accessible?
1. No
  2. Yes
  3. Stigmatized
  4. Do not know
18. Are these organizations helpful to adolescents?
1. Yes
  2. No
  3. Don't know
  4. Others, specify -----
19. Should youth be supported to resist marijuana/hashish use?
1. Yes
  2. No
20. In what form should the support be?
1. Education and information on cannabis use
  2. Dealing with youth problems in general
  3. Advocacy of a strong family tie
  4. Others, specify

5. Don't know
21. Who should inform adolescents on fits of marijuana/hashish use and its hazards?
1. Parents/relatives
  2. Friends/classmates
  3. Teachers
  4. Media (TV, Radio, Papers)
  5. Religious groups
  6. Others, specify -----
22. How should adolescents react to the support against marijuana/hashish consumption?
1. No reaction
  2. Resist, drug temptation
23. How should adolescents resist the urge for marijuana/hashish use?
1. Resist peer pressure
  2. Always think of drug as a killer
  3. Stay away from places where marijuana/hashish are sold/consumed
  4. Practice sports/indoor or outdoor activities
  5. Get involved in social work
  6. Look down upon drugs consumption
  7. Don't know
  8. Others, specify -----
24. Are you aware of problems associated with marijuana/hashish?
1. Yes
  2. No
25. Tick the appropriate box according to your preference for these statements pertaining to marijuana/hashish.

	Yes	No
26. Nothing happens to the health of a marijuana/hashish user		
27. A marijuana/hashish user always has an unsatisfactory health		
28. A marijuana/hashish user develops respiratory diseases		
29. A marijuana/hashish user develops heart diseases		
30. A marijuana/hashish user spends money for nothing		
31. A marijuana/hashish user finally drops out of school		
32. A marijuana/hashish user always runs short on money		
33. A marijuana/hashish user gets fired from employment through irresponsibility		
34. The family of a marijuana/hashish user as head always experiences Poverty		
35. Marijuana/hashish use is against the norms of society		
36. The marijuana/hashish user and his family is despised by society		
37. People do not like the company of marijuana/hashish users		
38. Marijuana/hashish users are considered as a burden to society		
39. People do not confide in marijuana/hashish users		

## Problem-Oriented Screening Instrument for Teenagers

	Yes	No
1. Do you have so much energy you don't know what to do with it?		
2. Are you good at talking your way out of trouble?		
3. Have you recently either lost or gained more than 10 pounds?		
4. Do you often feel tired?		
5. Are you a good speller?		
6. Have you ever read a book cover to cover for your own enjoyment?		
7. Do you get frustrated easily?		
8. Do you get into trouble because you use cannabis at school?		
9. Have you had trouble with stomach pain or nausea?		
10. Do you have a hot temper?		
11. Do your parents or guardians pay attention when you talk with them?		
12. Have you ever had sex with someone who uses cannabis?		
13. Do you get easily frightened?		
14. Do your parents or guardians argue a lot?		
15. Do you have less energy than you think you should?		
16. Do you miss out on activities because you spend too much money on cannabis?		
17. Do you threaten to hurt people?		
18. Do you feel alone most of the time?		
19. Do you sleep either too much or too little?		
20. Do you swear or use dirty language?		
21. Are you a good listener?		
22. Have you had any accidents or injuries that still bother you?		
23. Have you accidentally hurt yourself or someone else while high cannabis?		
24. Do you rush into things without thinking about what could happen?		
25. Have you lied to anyone in the past week?		
26. Do your parents or guardians refuse to talk with you when they are mad at you?		
27. Are you a good reader?		
28. Do you feel nervous most of the time?		
29. Do people pick on you because of the way you look?		
30. Have you stolen things?		
31. Do you ever feel you are addicted to cannabis?		
32. Do your parents or guardians and you do lots of things together?		
33. Do you get into fights a lot?		
34. Do you get A's and B's in some classes and fail others?		
35. Have the whites of your eyes ever turned yellow?		
36. Is it hard for you to ask for help from others?		
37. Are you usually pleased with how well you do in activities with your friends?		

38. Do your Parents or guardians usually know where you are and what you are doing?		
39. Have you ever been told you are hyperactive?		
40. Are you stubborn?		
41. Do you have trouble with your breathing or with coughing?		
42. Do you have a constant desire for cannabis?		
43. Do your parents or guardians have rules about what you can and cannot do?		
44. Do you often act on the spur of the moment?		
45. Have you ever threatened anyone with a weapon?		
46. Do you hear things no else around you hear?		
47. Have you started using more and more cannabis to get the effect you want?		
48. Do people tell you that you are careless?		
49. Do you have trouble concentrating?		
50. Do your parents or guardians know what you really think or feel?		
51. Do you ever leave a party because there is no cannabis?		
52. Are you suspicious of other people?		
53. Do you have trouble getting your mind off things?		
54. Have you ever had a car accident while high on cannabis?		
55. Have you ever intentionally damaged someone else's property?		
56. Do you forget things you did while using cannabis?		
57. Do your parents or guardians like talking with you and being with you?		
58. Does your mind wander a lot?		
59. Do you and your parents or guardians have frequent arguments which involve yelling and screaming?		
60. Do you worry a lot?		
61. Have you ever spent the night away from home when your parents didn't know where you were?		
62. Do you have a good memory?		
63. Do your parents or guardians have a pretty good idea of your interests?		
64. During the past month, have you driven a car while you were high?		
65. Are you louder than other kids?		
66. Does cannabis use cause your moods to change quickly like from happy to sad or vice versa?		
67. Have you cut school at least five days in the past year?		
68. Do you have trouble with written work?		
69. Do you feel sad most of the time?		
70. Do you miss school or arrive late for school because of your cannabis use?		
71. Do you tease others a lot?		
72. Do you have trouble sleeping?		
73. Do you have a hard time following directions?		
74. Do your family or friends ever tell you that you should cut down on cannabis use?		
75. Do you have trouble with math?		

76. During the past month, have you skipped school?		
77. Do you feel you lose control and get into fights?		
78. Do you have serious arguments with friends or family members because of your cannabis use?		
79. Do you ever feel you can't control your cannabis use?		
80. Do you have a hard time planning and organizing?		
81. Are you afraid to be around people?		
82. Does school sometimes make you feel stupid?		
83. Does your cannabis use ever make you do something you would not normally do - like breaking rules, missing curfew, breaking the law or having sex with someone?		
84. Do your parents or guardians usually agree about how to handle you?		
85. Do you often feel like you want to cry?		
86. Do you feel you study longer than your classmates and still get poorer grades?		
87. Have you ever had sexual intercourse without using a condom?		
88. Are you restless and can't sit still?		
89. Do you brag?		
90. Is school hard for you?		
91. Do you have trouble getting along with any of your friends because of your cannabis use?		
92. Do you scream a lot?		
93. Do you have trouble finding the right words to express what you are thinking?		
94. Do your friends get bored at parties when there is no cannabis served?		
95. Has there been adult supervision at the parties you have gone to recently?		
96. Do you usually think about how your actions will affect others?		
97. Do you have a skill, craft, trade or work experience?		
98. Are most of your friends older than you are?		
99. Do your parents or guardians approve of your friends?		
100. Did you have a paying job last summer?		
101. Is your free time spent just hanging out with friends?		
102. Do you have friends who damage or destroy things on purpose?		
103. Do you know how to get a job if you want one?		
104. Do you have a hobby you are really interested in?		
105. Do you plan to get a diploma (or already have one)?		
106. Have you been frequently absent or late for work?		
107. Do you feel people are against you?		
108. Do you participate in team sports which have regular practices?		
109. Do you have chores that you must regularly do at home?		
110. Do your friends bring cannabis to parties?		
111. Do any of your best friends go out on school nights without permission from their parents or guardians?		
112. Have you ever had or do you now have a job?		



113. Do you have a way to get to a job?		
114. Do you usually exercise for a half hour or more at least once a week?		
115. Is it easy to learn new things?		
116. Do people your own age like and respect you?		
117. Have you ever had a paying job that lasted at least one month?		
118. Are most of your friends younger than you are?		
119. Have you ever stopped working at a job because you just didn't care?		
120. Have any of your best friends participated in team sports which require regular practices?		
121. Are you already too busy with school and other adult supervised activities to be interested in a job?		
122. Is it important to you now to get or keep a satisfactory job?		
123. Have you ever been fired from a job?		
124. Do you have friends who have hit or threatened to hit someone without any real reason?		
125. Do your friends cut school a lot?		
126. Do you find it difficult to complete class projects or work tasks?		
127. Are you able to make friends easily in a new group?		
128. Do you have friends who have stolen things?		
129. Do you want to be a member of any organized group, team, or club?		
130. Does one of your parents or guardians have a steady job?		
131. Do you think it's a bad idea to trust other people?		
132. Do you enjoy doing things with people your own age?		
133. Have you ever failed a grade in school?		
134. Do you go out for fun on school nights without your parents' or guardians, permission?		
135. Do you have an idea about the type of job or career that you want to have?		
136. On a typical day, do you watch more than two hours of TV?		

### Cannabis Abuse Screening Test (CAST)

1. Have you ever, **even once**, used marijuana or hashish?  
Yes    No
2. How old were you the **first time** you used marijuana or hashish? .....
3. How long has it been since you **last** used marijuana or hashish?
  - a. Less than 48 hours
  - b. Less than a week
  - c. Within the last 30 days
  - d. More than a month (30 days) but less than 12 months
  - e. More than 12 months
4. On how many days in the past week (7 days) did you use marijuana or hashish?  
Number of days \_\_\_\_\_ day
5. On how many days in the past month (30 days) did you use marijuana or hashish?  
Number of days \_\_\_\_\_ day
6. On how many days in the past 12 months did you use marijuana or hashish?  
Number of days \_\_\_\_\_ day
7. Have you ever smoked cannabis before midday?  
never (0) – rarely (0) – from time to time (0) – fairly often (1) – very often (1)
8. Have you ever smoked cannabis when you were alone?  
never (0) – rarely (0) – from time to time (0) – fairly often (1) – very often (1)
9. Have you ever had memory problems when you smoked cannabis?  
never (0) – rarely (0) – from time to time (0) – fairly often (1) – very often (1)
10. Have friends or members of your family ever told you that you ought to reduce your cannabis use?  
never (0) – rarely (0) – from time to time (0) – fairly often (1) – very often (1)
11. Have you ever tried to reduce or stop your cannabis use without succeeding?  
never (0) – rarely (0) – from time to time (0) – fairly often (1) – very often (1)
12. Have you ever had problems because of your use of cannabis (argument, fight, accident, bad result at school, etc.)?  
never (0) – rarely (0) – from time to time (0) – fairly often (1) – very often

Appendix D - Supplemental Information

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ  
THE HASHEMITE KINGDOM OF JORDAN  
Public Security Directorate

Anti-Narcotics Department

**Some things, We should know about**

# DRUGS

**1 Why do people take drugs?**  
There are many reasons. People who live in poverty class or on the streets sometimes take drugs trying to escape from their problems. Others are feeling bored and looking for something to do or a way to express themselves, or they just want to feel good, pressure from friends and a desire to fit in with a crowd can lead people to make bad decisions. They may even think they want to rebel against something and that using drugs is a sure way to get attention.

**2 Can you get addicted to drugs?**  
Yes, you can, but different drugs have different effects. You can get addicted to some easier than to other and not everyone reacts the same way.

**3 Why do people sell drugs?**  
People sell drugs to make money, and some people do it to support their own drug habit.

**4 How do you protect yourself from drugs?**  
You can talk to your parents and friends, think ahead about how to avoid a situation where someone may offer you drugs and what you would say if you actually were in such a situation.

# DRUGS DON'T GET YOU HIGH





**5 What do drugs look like? Drugs are often Powder or Pills, But they can Also be Plants, Liquids, Oils or Drinks.**

**6 How do you take drugs? Drugs can be smoked, sniffed through the nose, inhaled, injected or swallowed**

**ANTI-NARCOTICS DEPARTMENT**  
Tel: 4206383 / 4206386 Fax: 4206385  
E-mail: narcotics.dept@psd.gov.jo

### Always remember that:-

- Drugs abuse is an obstacle for success
- We say NO when we are asked to do a wrong or dangerous deed
- We don't imitate bad behavior
- You should be frank and tell your parents if you get trapped in drugs
- Drugs transfer infection
- Bad companions drag to crime and stray
- Drugs are loss and illusion
- Drugs abuse is slow suicide
- No curiosity about drugs
- Drugs are money loss and health damage
- Drugs abuse is a main cause for committing crimes.
- Drugs abuse is a lost family and society.

Some people do it to express their personality others does it because they think it is their way to happiness.

Dealers sell drugs to get more money and to fulfill their desires. Not caring where takers are going to end.

The horrible thing about drugs, is that a takers become unable to do their daily activities without Drugs

### Drugs mean death

### Do you know that?

- Taking drugs decreases the utility production of workers and students which causes failure in exams.
- Bad mates are the first step to addiction

### More than one way to say No to drugs.

- No, I don't eat rubbish.
- No, I see that stupid.
- O, I prefer real life.
- No, do you have a pen? Write NO.
- No, this isn't the right time, never going to be.

### 7 How do drugs make you feel when you take them?

Depending on the drug, people feel different things. Some drugs make people temporarily happy, at peace or confident. Other drugs cause visual hallucinations, meaning you start to see illusive things. When those feelings and effects wear off, people can get depressed, anxious, nauseous and lonely. Trying to feel better again, they might want to take more drugs, and this continuing cycle can lead to addiction.

### 8 What are some of the side effects of drugs?

Different drugs have different side effects. Drugs can damage your brain, heart, lungs, liver, kidneys and muscles. They can cause nosebleeds, headaches, seizures, acne, blurred vision, vomiting and loss of memory and concentration.

### 9 Could drugs destroy your life?

Yes, drugs can take over and make you lose control of your life. They can make you sick or even kill you. You can go to jail for possessing drugs, which can destroy your chances of going to university or realizing your dreams. Maybe the scariest thing is that drugs can turn you into a completely different person, a person who can't function without drugs.

### 10 What should you do if your best friend offers you drugs?

Don't take them.. You might be afraid of what your friends would think if you don't go along with them, but a real friend wouldn't want you to get hurt or get into trouble. In fact, if you are in a situation like this, you should try to persuade your friend to find out a little bit more about drugs so you can warn their effects can be



designed by GHC

## Appendix E - Questionnaires Coding

**Problem-Oriented Screening Instrument for Teenagers (Coding)**

	Reversed	Sub-Scale	Yes	No
1. Do you have so much energy you don't know what to do with it?		C,F	■	
2. Are you good at talking your way out of trouble?	R	F,H		■
3. Have you recently either lost or gained more than 10 pounds?		B	■	
4. Do you often feel tired?		C	■	
5. Are you a good speller?	R	F		■
6. Have you ever read a book cover to cover for your own enjoyment?	R	F		■
7. Do you get frustrated easily?		C, F	■	
8. Do you get into trouble because you use cannabis at school?		A	■	
9. Have you had trouble with stomach pain or nausea?		B	■	
10. Do you have a hot temper?		J	■	
11. Do your parents or guardians pay attention when you talk with them?	R	D		■
12. Have you ever had sex with someone who uses cannabis?		B	■	
13. Do you get easily frightened?		C	■	
14. Do your parents or guardians argue a lot?		D	■	
15. Do you have less energy than you think you should?		B,F	■	
16. Do you miss out on activities because you spend too much money on cannabis?		A	■	
17. Do you threaten to hurt people?		J	■	
18. Do you feel alone most of the time?		C,E	■	
19. Do you sleep either too much or too little?		B	■	
20. Do you swear or use dirty language?		J	■	
21. Are you a good listener?	R	F		■
22. Have you had any accidents or injuries that still bother you?		B	■	
23. Have you accidentally hurt yourself or someone else while high cannabis?		A	■	
24. Do you rush into things without thinking about what could happen?		C,F,H	■	
25. Have you lied to anyone in the past week?		J	■	
26. Do your parents or guardians refuse to talk with you when they are mad at you?		D	■	
27. Are you a good reader?	R	F		■
28. Do you feel nervous most of the time?		B	■	
29. Do people pick on you because of the way you look?		B	■	
30. Have you stolen things?		J	■	
31. Do you ever feel you are addicted to cannabis?		A	■	
32. Do your parents or guardians and you do lots of things together?	R	D		■
33. Do you get into fights a lot?		J	■	
34. Do you get A's and B's in some classes and fail others?		F	■	
35. Have the whites of your eyes ever turned yellow?		B	■	

36.	Is it hard for you to ask for help from others?		H	■	
37.	Are you usually pleased with how well you do in activities with your friends?	R	F		■
38.	Do your Parents or guardians usually know where you are and what you are doing?	R	D		■
39.	Have you ever been told you are hyperactive?		C, F	■	
40.	Are you stubborn?		J	■	
41.	Do you have trouble with your breathing or with coughing?		B	■	
42.	Do you have a constant desire for cannabis?		A	■	
43.	Do your parents or guardians have rules about what you can and cannot do?	R	D		■
44.	Do you often act on the spur of the moment?		C, F, H	■	
45.	Have you ever threatened anyone with a weapon?		J	■	
46.	Do you hear things no else around you hear?		C	■	
47.	Have you started using more and more cannabis to get the effect you want?		A	■	
48.	Do people tell you that you are careless?		F	■	
49.	Do you have trouble concentrating?		C	■	
50.	Do your parents or guardians know what you really think or feel?	R	D		■
51.	Do you ever leave a party because there is no cannabis?		A	■	
52.	Are you suspicious of other people?		J	■	
53.	Do you have trouble getting your mind off things?		C, F	■	
54.	Have you ever had a car accident while high on cannabis?		A	■	
55.	Have you ever intentionally damaged someone else's property?		J	■	
56.	Do you forget things you did while using cannabis?		A	■	
57.	Do your parents or guardians like talking with you and being with you?	R	D		■
58.	Does your mind wander a lot?		F	■	
59.	Do you and your parents or guardians have frequent arguments which involve yelling and screaming?		D	■	
60.	Do you worry a lot?		C	■	
61.	Have you ever spent the night away from home when your parents didn't know where you were?		J	■	
62.	During the past month, have you driven a car while you were high?	R	F		■
63.	Do you have a good memory?	R	D		■
64.	Do your parents or guardians have a pretty good idea of your interests?		A	■	
65.	Are you louder than other kids?		J	■	
66.	Does cannabis use cause your moods to change quickly like from happy to sad or vice versa?		A	■	
67.	Have you cut school at least five days in the past year?		C	■	
68.	Do you have trouble with written work?		F	■	
69.	Do you feel sad most of the time?		C	■	
70.	Do you miss school or arrive late for school because of your cannabis use?		A	■	
71.	Do you tease others a lot?		J	■	

72. Do you have trouble sleeping?		C	■	
73. Do you have a hard time following directions?		C, F	■	
74. Do your family or friends ever tell you that you should cut down on cannabis use?		A	■	
75. Do you have trouble with math?		F	■	
76. During the past month, have you skipped school?		J	■	
77. Do you feel you lose control and get into fights?		C	■	
78. Do you have serious arguments with friends or family members because of your cannabis use?		A	■	
79. Do you ever feel you can't control your cannabis use?		A	■	
80. Do you have a hard time planning and organizing?		F	■	
81. Are you afraid to be around people?		C	■	
82. Does school sometimes make you feel stupid?		F	■	
83. Does your cannabis use ever make you do something you would not normally do - like breaking rules, missing curfew, breaking the law or having sex with someone?		A	■	
84. Do your parents or guardians usually agree about how to handle you?	R	D		■
85. Do you often feel like you want to cry?		C	■	
86. Do you feel you study longer than your classmates and still get poorer grades?		F	■	
87. Have you ever had sexual intercourse without using a condom?		B	■	
88. Are you restless and can't sit still?		C, F	■	
89. Do you brag?		J	■	
90. Is school hard for you?		F	■	
91. Do you have trouble getting along with any of your friends because of your cannabis use?		A	■	
92. Do you scream a lot?		J	■	
93. Do you have trouble finding the right words to express what you are thinking?		F	■	
94. Do your friends get bored at parties when there is no cannabis served?		E	■	
95. Has there been adult supervision at the parties you have gone to recently?	R	I		■
96. Do you usually think about how your actions will affect others?	R	H		■
97. Do you have a skill, craft, trade or work experience?	R	G		■
98. Are most of your friends older than you are?		E, H	■	
99. Do your parents or guardians approve of your friends?	R	E		■
100. Did you have a paying job last summer?	R	G		■
101. Is your free time spent just hanging out with friends?		I	■	
102. Do you have friends who damage or destroy things on purpose?		E	■	
103. Do you know how to get a job if you want one?	R	G		■
104. Do you have a hobby you are really interested in?	R	I		■
105. Do you plan to get a diploma (or already have one)?	R	G		■
106. Have you been frequently absent or late for work?		G	■	
107. Do you feel people are against you?		C	■	

108. Do you participate in team sports which have regular practices?	R	I		■
109. Do you have chores that you must regularly do at home?	R	G		■
110. Do your friends bring cannabis to parties?		E	■	
111. Do any of your best friends go out on school nights without permission from their parents or guardians?		I	■	
112. Have you ever had or do you now have a job?	R	G		■
113. Do you have a way to get to a job?	R	G		■
114. Do you usually exercise for a half hour or more at least once a week?	R	I		■
115. Is it easy to learn new things?	R	F		■
116. Do people your own age like and respect you?	R	H		■
117. Have you ever had a paying job that lasted at least one month?	R	G		■
118. Are most of your friends younger than you are?		E	■	
119. Have you ever stopped working at a job because you just didn't care?		G	■	
120. Have any of your best friends participated in team sports which require regular practices?	R	I		■
121. Are you already too busy with school and other adult supervised activities to be interested in a job?	R	G		■
122. Is it important to you now to get or keep a satisfactory job?	R	G		■
123. Have you ever been fired from a job?		G	■	
124. Do you have friends who have hit or threatened to hit someone without any real reason?		E	■	
125. Do your friends cut school a lot?		E	■	
126. Do you find it difficult to complete class projects or work tasks?		G	■	
127. Are you able to make friends easily in a new group?	R	H		■
128. Do you have friends who have stolen things?		E	■	
129. Do you want to be a member of any organized group, team, or club?	R	I		■
130. Does one of your parents or guardians have a steady job?	R	G		■
131. Do you think it's a bad idea to trust other people?		H	■	
132. Do you enjoy doing things with people your own age?	R	H		■
133. Have you ever failed a grade in school?		F	■	
134. Do you go out for fun on school nights without your parents' or guardians, permission?		I	■	
135. Do you have an idea about the type of job or career that you want to have?	R	G		■
136. On a typical day, do you watch more than two hours of TV?		I	■	

A: Cannabis Use (17 Items)  
B: Physical Health (10 Items)  
C: Mental Health (22 Items)

D: Family Relationships (11 Items)  
E: Peer Relationships (10 Items)  
F: Educational Status (27 Items)

G: Vocational Status (17 Items)  
H: Social Skills (11 Items)  
I: Leisure & Recreation (9 Items)  
J: Aggressive Behavior/ Delinquency (16 Items)



## REFERENCES

- Abdul-Rahman, Muhammad Saed (2003). *Islam: Questions and Answers - Pedagogy Education and Upbringing*. MSA Publication Limited. p. 123.
- Adamczyk-Robinette, S. L., Fletcher, A. C. & Wright, K. (2002). Understanding the authoritative parenting–early adolescent tobacco use link: The mediating role of peer tobacco use. *Journal of Youth and Adolescence*, 31, 311–318.
- Al Naser, F. (1996). Social Change & Marriage Norms-Values in the Middle East. A Case-Study of Kuwait. Paper presented at the Annual Meeting of the National Council on Family Relations (58th, Minneapolis, MN, November 14-18).
- Al-Qaradawi, Y. (2007). Islam Prohibits Alcohol and Drugs. Retrieved from [http://www.islamonline.net/servlet/Satellite?pagename=IslamOnline-English-Ask\\_Scholar/FatwaE/FatwaE&cid=1119503545310](http://www.islamonline.net/servlet/Satellite?pagename=IslamOnline-English-Ask_Scholar/FatwaE/FatwaE&cid=1119503545310)
- Al-Sabt, M. (2006). *Arabian Business and Cultural Guide*. International Export Connections, TradersCity.com.
- Al-Zyoud, S. (2005). *Knowledge, Attitude, and Beliefs of Irbid City District High School Students towards Substance Misuse*. Master thesis. Jordan University of Science and Technology. Irbid, Jordan.
- Ameerbeg, S. A. G., & Pottayya, D. M. (2003). A Study of Knowledge, Attitudes, Beliefs and Practice of Substance Abuse among Youth (12-24 years) in Mauritius. National Agency for the Treatment and Rehabilitation of Substance Abusers (NATReSA). Retrieved from: <http://ncb.intnet.mu>.

- Azaiza, F., Bar-Hamburger, R., & Moran, M. (2008a). Psychoactive substance use among Arab pupils in Israel. *Journal of Social Work Practice in the Addictions*, 8(1), 21 - 43.
- Azaiza, F., Shoham, M., Bar-Hamburger, R., & Abu-Asbeh, K. (2008b). Patterns of psychoactive substance use among Arab secondary school students in Israel. *Substance Use & Misuse*, 43(11), 1489-506.
- Azaiza, F., Shoham, M., Bar-Hamburger, R., Abu-Asbeh, K. (2009). Psychoactive substance use among Arab adolescent school dropouts in Israel: a phenomenon and its implications. *Health & Social Care in the Community*, 17(1), 27-35.
- Bachman, J. G., Johnston, L. D., & O'Malley, P. M. (1998). Explaining recent increases in students' marijuana use: impacts of perceived risks and disapproval, 1976 through 1996. *American Journal of Public Health*, 88(6), 887-892.
- Bahr, S. J., Hoffman, K. P., & Yang, X. (2005). Parental and peer influences on the risk of adolescent drug use. *Journal of Primary Prevention*, 26, 529–551.
- Bahr, S. J., Marcos, A. C. & Maughan, S. L. (1995). Family, educational and peer influences on the alcohol use of female and male adolescents. *Journal of Studies on Alcohol*, 56, 457-469.
- Bahr, S. J., Maughan, S. L., Marcos, A. C. & Li, B. (1998). Family, religiosity, and the risk of adolescent drug use. *Journal of Marriage and the Family*, 60(4), 979-992.
- Barakat, H. (1993). *The Arab world: society, culture, and state*. University of California Press.
- Barrett, A.E., & Turner, R.J. (2006). Family structure and substance use problems in adolescence and early adulthood: examining explanations for the relationship. *Addiction*; 101(1): 109-20.

- Bauman A., & Phongsavan P. (1999). Epidemiology of substance use in adolescence: Prevalence, trends and policy implications. *Drug and Alcohol Dependence*, 55 (3), pp. 187-207.
- Best, D., & Barrie, A. (1997) Impact of illicit substance activity on young people. *Journal of Substance Misuse*. 2:197–202.
- Bolland, J. M. (2003). Hopelessness and risk behavior among adolescents living in high-poverty inner-city neighborhoods. *Journal of Adolescence*, 26, 145–158.
- Botvin, G., Malgady, R., Griffin, K., Scheier, L., & Epstein, J. (1998). Alcohol and marijuana use among rural youth: Interaction of social and interpersonal influences. *Addictive Behaviors*, 23, 379–387.
- Breivik, K., Olweus, D. & Endresen, I. (2009). Does the Quality of Parent–Child Relationships Mediate the Increased Risk for Antisocial Behavior and Substance Use Among Adolescents in Single-Mother and Single-Father Families? *Journal of Divorce & Remarriage*, 50(6), 400-426.
- Brook, D.W., Brook, J.S., Zhang, C.S., Cohen, P., & Whiteman, M., (2002). Drug use and the risk of major depressive disorder, alcohol dependence, and substance use disorders. *Archive of General Psychiatry*; 59: 1039–1044.
- Brook, J. S., Brook, D. W., Gordon, A. S., Whiteman, M., & Cohen, P. (1990). The psychosocial etiology of adolescent drug use: A family interactional approach. *Genetic, Social, and General Psychology Monographs*, 116, 111-267.
- Brook, J. S., Rosen, Z., & Brook, D. W. (2001). The effect of early marijuana use on later anxiety and depressive symptoms. *NYS Psychologist*, January, 35-39.

- Brook, J. S., Whiteman, M., Balka, E. B., & Cohen, P. (1995). Parent drug use, parent personality, and parenting. *Journal of Genetic Psychology*, 156, 137-151.
- Brook, J. S., Zhang, C., Koppel, J. & Brook, D. W. (2008). Pathways from Earlier Marijuana Use in the Familial and Non-Familial Environments to Self-Marijuana Use in the Fourth Decade of Life. *American Journal on Addictions: The official Journal of the American Academy of Addiction Psychiatry*, 17(6): 497-503.
- Bryant, A. L., Schulenberg, J. E., O'Malley, P. M., Bachman, J. G., & Johnston, L. D. (2003). How academic achievement, attitudes, and behaviors relate to the course of substance use during adolescence: A 6-year, multi-wave national longitudinal study. *Journal of Research on Adolescence*; 13(3): 361-397.
- Bryant, A. L., Schulenberg, J., Bachman, J.G., O'Malley, P.M., & Johnston, L.D. (2000). Understanding the links among school misbehavior, academic achievement, and cigarette use: A national panel study of adolescents. *Prevention Science*, 1(2): 71–87.
- Catalano, R. F., & Hawkins, J. D. (1996). *The Social Development Model: A theory of antisocial behavior*. In JD Hawkins (Ed.) *Delinquency & Crime: Current Theories* (pp149-197). New York: Cambridge University Press.
- CDC (2001). Youth risk behavior surveillance high school questionnaire. Available at: <http://www.cdc.gov/nccdphp/dash/yrbs/2003/questionnaire.htm>
- Centers for Disease Control and Prevention (CDC) (1991). Alcohol and other drug use among high school students United States, 1990. *Morbidity and Mortality Weekly Report*, 40, 776-777, 783-784.

- Chabrol, H., Chauchard, E., Mabila, J.D., Mantoulan, R., Adèle, A., & Rousseau, A. (2006). Contributions of social influences and expectations of use to cannabis use in high-school students. *Addictive Behavior*, 31(11), 2116-9.
- Chabrol, H., Duconge, E., Roura, C., & Casas, C. (2004). Relations between anxious, depressive and borderline symptomatology and frequency of cannabis use and dependence. *Encephale*, 30(2), 141-6.
- Chabrol, H., Duconge, E., Casas, C., Roura, C., & Carey, K. (2005). Relations between cannabis use and dependence, motives for cannabis use and anxious, depressive and borderline symptomatology. *Addictive Behaviors*, 30, 829–840.
- Chabrol, H., Mabila, J.D., Chauchard, E., Mantoulan, R., & Rousseau, A. (2008). Contributions of parental and social influences to cannabis use in a non-clinical sample of adolescents. *Encephale*, 34(1), 8-16
- Chabrol, H., Massot, E., & Mullet, E. (2004). Factor structure of cannabis-related beliefs in adolescents. *Addictive Behaviors*, 29, 929–933
- Chabrol, H., Roura, C., & Kallmeyer, A. (2004). Perceptions of cannabis effects a qualitative study among adolescents. *Encephale*, 30(3), 259-65.
- Chang, J., Shrake, E., & Rhee, S. (2008). Patterns of alcohol use and attitudes toward drinking among Chinese and Korean American college students. *Journal Ethnicity in Substance Abuse*; 7(3), 341-56.

- Chassin L, Dmitrieva J, Modecki K, Steinberg L, Cauffman E, Piquero AR, Knight GP, Losoya SH. (2010). Does adolescent alcohol and marijuana use predict suppressed growth in psychosocial maturity among male juvenile offenders? *Psychology of Addictive Behaviors*; 24(1): 48-60.
- Chassin, L., Pitts, S.C., DeLucia, C., & Todd, M. (1999). A longitudinal study of children of alcoholics: predicting young adult substance use disorders, anxiety, and depression. *Journal of Abnormal Psychology*, 108, 106–19.
- Chilcoat, Howard D. C., & James C. A. (1996). Impact of Parent Monitoring on Initiation of Drug Use through Late Childhood. *Journal of Amer Academy of Child & Adolescent Psychiatry*.
- Clark, D.B., Bukstein, O.G., Smith, M.G., Kaczynski, N.A., Mezzich, A.C., & Donovan, J.E. (1995). Identifying anxiety disorders in adolescents hospitalized for alcohol abuse or dependence. *Psychiatric Services*; 46(6): 618-20.
- Clark, T. T., Belgrave, F.Z., & Nasim, A. (2008). Risk and protective factors for substance use among urban African American adolescents considered high-risk. *Journal of ethnicity in substance abuse*, 7(3), 292-303.
- Cleveland, M. J., Gibbons, F. X., Gerrard, M., Pomery, E. A. & Brody, G. H. (2005). The impact of parenting on risk cognitions and risk behavior: A study of mediation and moderation in a panel of African American adolescents. *Child Development*; 74: 900-916.
- Coffey, C., Lynskey, M., Wolfe, R., Patton, G.C., (2000). Initiation and progression of cannabis use in a population-based Australian adolescent longitudinal study. *Addiction* 95, 1679–1690.

- Conrod, P.J., Peterson, J.B., & Pihl, R.O. (1997). Disinhibited personality and sensitivity to alcohol reinforcement: Independent correlates of drinking behavior in sons of alcoholics. *Alcoholism: Clinical & Experimental Research*, 21(7), 1320-1332.
- Conrod, P.J., Stewart, S.H., Pihl, R.O., Côté, S., Fontaine, V., & Dongier, M. (2000). Efficacy of Brief Coping Skills Interventions That Match Different Personality Profiles of Female Substance Abusers. *Psychology of Addictive Behavior*, 14(3), 231-42.
- Costa, P. T., & McCrae, R. R. (1992). *Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) professional manual*. Odessa, FL: Psychological Assessment Resources.
- Costa, P. T., & McCrae, R. R. (1997). Longitudinal stability of adult personality. In R. Hogan, J. A. Johnson, & S. R. Briggs (Eds.), *Handbook of personality psychology* (pp. 269–290). San Diego: Academic Press.
- Costello, E. J., Erkanli, A., Federman, E., & Angold, A. (1999). Development of psychiatric comorbidity with substance abuse in adolescents: Effects of timing and sex. *Journal of Clinical Child Psychology*, 28, 298–311.
- Cox, R.G., Zhang, L., Johnson, W.B., Bender, D.R. (2007). Academic performance and substance use: findings from a state survey of public high school students. *The Journal of School Health*; 77(3):109–115.
- Creemers, H.E., Dijkstra, J.K., Vollebergh, W.A.M., Ormel, J., Verhulst, F.C., & Huizink, A. (2010). Predicting life-time and regular cannabis use during adolescence; the roles of temperament and peer substance use: the TRAILS study. *Addiction*; 105(4): 699 – 708.

- Danielson, C. K., Overholser, J. C., & Butt, Z. A. (2003). Association of substance abuse and depression among adolescent psychiatric inpatients. *Canadian Journal of Psychiatry*, 48, 762–765.
- DiClemente, R. J., Wingood, G. M., Crosby, R., Sionean, C., Cobb, B. K., Harrington, K., Davies, S., Hook, E. W., & Oh, M. K. (2001). Parental monitoring: association with adolescents' risk behaviors. *Pediatrics*, 107(6), 1363-8.
- Diego, M. A., Field, T., & Sanders, C. E. (2003). Academic performance, popularity and depression predict adolescent substance use. *Adolescence*, 38, 35-42.
- Dishion, T. J., & Owen, L. D. (2002). A longitudinal analysis of friendships and substance use: bidirectional influence from adolescence to adulthood, *Developmental Psychology*; 38, 480–491.
- Donovan, J. E. (2004). Adolescent alcohol initiation: a review of psychosocial risk factors. *Journal of Adolescent Health*, 35, 7–18.
- Drapela, L. A. & Mosher, C. (2007). The Conditional Effect of Parental Drug Use on Parental Attachment and Adolescent Drug Use: Social Control and Social Development Model Perspectives. *Journal of Child & Adolescent Substance Abuse*; 16(3): 63-87.
- Ellickson, P. L., Bird, C. E., & Orlando, M. (2003). Social context and adolescent health behavior: does school-level smoking prevalence affect students' subsequent smoking behavior? *Journal of Health and Social Behavior*; 44: 525–535.
- Ellickson, P. L., Tucker, J. S., & Klein, D.J. (2001). High-risk behaviors associated with early smoking: Results from a 5-year follow-up. *Journal of Adolescent Health*; 28(6): 465–473.



- Ellickson, P.L., Tucker, J.S., Klein, D. J., & Saner, H. (2004). Antecedents and outcomes of marijuana use initiation during adolescence. *Preventive Medicine; 39(5): 976-984.*
- Eysenck, H. J. (1997). Addiction, personality and motivation. *Human Psychopharmacology, 12, S79–S87.*
- Farhadinasab, A., Allahverdipour, H., Bashirian, S., & Mahjoub, H. (2008). Lifetime pattern of substance abuse, parental support, religiosity, and locus of control in adolescent and young male users. *Iranian Journal of Public Health; 37 (4): 88-95*
- Farrell, A. D., & White, K. S. (1998). Peer influences and drug use among urban adolescents: family structure and parent-adolescent relationship as protective factors. *Journal Consulting and Clinical Psychology; 66(2): 248-58.*
- Fergusson, D. M., & Horwood, L. J. (1999). Prospective childhood predictors of deviant peer affiliations in adolescence. *Journal of Child Psychology and Psychiatry and Allied Disciplines; 40: 581–592.*
- Fergusson, D. M., Horwood, J. & Swain-Campbell, N. (2002) Cannabis use and psychosocial adjustment in adolescence and young adulthood. *Addiction; 97: 1123 –1135.*
- Fergusson, D.M. & Horwood, L.J. (2000). Does cannabis use encourage other forms of illicit drug use? *Addiction; 95: 505–520.*
- Fergusson, D.M., Horwood, L.J. & Swain-Campbell, N.R. (2003). Cannabis dependence and psychotic symptoms in young people. *Psychological Medicine; 33: 15-21.*
- Fergusson, D.M., Lynskey, M.T. & Horwood, L.J. (1996). The short-term consequences of early onset cannabis use. *Journal of Abnormal Child Psychology; 24: 499-512*

- Fiorino, D. F., & Phillips, A. G. (1999). Facilitation of sexual behavior in male rats following d-amphetamine-induced behavioral sensitization. *Psychopharmacology*; 142: 200–208.
- Fishbein, M. (1980). A theory of reasoned action: some applications and implications. In H. E. Howe Jr. (Ed.), *1979 Nebraska Symposium on Motivation* (pp. 65–116). Lincoln: University of Nebraska Press.
- Flory, K., Lynam, D., Milich, R., Leukefield, C., & Clayton, R. (2002). The relations among personality, symptoms of alcohol and marijuana abuse, and symptoms of co-morbid psychopathology: Results from a community sample. *Experimental and Clinical Psychopharmacology*; 10: 425–434.
- Forman, E. S., Dekker, A. H., Javors, J. R., & Davison, D. T. (1995). High-risk behaviors in teenage male athletes. *Clinical Journal of Sport Medicine*; 5 (1): 36-42.
- Gfroerer, J. C., Wu, L.-T., & Penne, M. A. (2002). *Initiation of Marijuana Use: Trends, Patterns, and Implications* (Analytic Series: A-17, DHHS Publication No. SMA 02-3711). Rockville, MD: Substance Abuse and Mental Health Services Administration, Office of Applied Studies.
- Gibbons, F. X., Gerrard, M., Lune, L. S. V., Wills, T. A., Brody, G., & Conger, R. D. (2004). Context and cognitions: Environmental risk, social influence, and adolescent substance use. *Personality and Social Psychology Bulletin*; 30: 1048-1061.
- Glassner, B., & Loughlin, J. (1987). *Drugs in adolescent worlds: Burnouts to straights*, The MacMillan Press, Houndmills.
- Gmel, G., Gaume, J., Willi, C., Michaud, P. A., Cornuz, J., Daeppen, J. B. (2010). Challenging the "inoffensiveness" of regular cannabis use by its associations with other current risky substance

use - A census of 20-year-old Swiss men. *International Journal of Environmental Research and Public Health*; 7 (1): 46-59

Gmel, G., Rehm, J., & Kuntsche, E. (2003). Binge drinking in Europe: Definitions, epidemiology, and consequences. *SUCHT*; 49(2): 105-116.

Graham, H. (1996). The influence of predictors on adolescent drug use: An examination of individual effects. *Youth and Society*; 28: 215–235.

Graham, K., West, P., & Wells, S. (2000). Evaluating theories of alcohol-related aggression using observations of young adults in bars. *Addiction*; 95: 847-863.

Gruber, A. J., & Pope, H. G. (2002). Marijuana use among adolescents. *Pediatric Clinics of North America*; 49: 389–413.

Guxens, M., Nebot, M., & Ariza, C. (2007). Age and sex differences in factors associated with the onset of cannabis use: a cohort study. *Drug and Alcohol Dependence*; 88 (2-3): 234-243.

Haddad, L., Shotar, A., Umlauf, M., Al-Zyoud, S. (2010). Knowledge of Substance Abuse Among High School Students in Jordan. *Journal of Transcultural Nursing*; 21: 143

Hall, W., & Degenhardt L. (2008). Cannabis use and the risk of developing a psychotic disorder. *World Psychiatry*. 2008; 7(2): 68-71.

Hall, W.D. & Pacula, R.L. (2003). *Cannabis Use and Dependence: Public Health and Public Policy*. Cambridge, UK: Cambridge University Press.

Hall, W.D. & Solowij, N. (1998). The adverse effects of cannabis use. *Lancet*, 352: 1611-1616.

- Hall, W.D., & Lynskey, M. (2005). Is cannabis a gateway drug? Testing hypotheses about the relationship between cannabis use and the use of other illicit drugs. *Drug Alcohol Review*; 24(1): 39-48.
- Hammad, A., Kysia, R., Rhabah, R., Hossoun, R., & Connelly, M. (1999). *Guide to Arab Culture: Health Care Delivery to the Arab American Community*. Arab Community Center for Economic and Social Services [ACCESS]. Dearborn, MI.
- Hampson, S. E., Andrews, J.A., & Barckley, M. (2008). Childhood Predictors of Adolescent Marijuana Use: Early Sensation Seeking, Deviant Peer Affiliation, and Social Images. *Addict Behavior*; 33(9): 1140–1147.
- Hawkins, J. D., Catalano, R. F. & Miller, I. Y. (1992). Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: Implications for substance abuse prevention. *Psychological Bulletin*; 112(1): 64-105.
- Hawkins, J.D., & Weis, J.G. (1985). The social development model: an integrated approach to delinquency prevention. *Journal of Primary Prevention*; 6(2): 73-97.
- Hawkins, W.E., Hawkins, M.J., & Seeley, J. (1992). Stress, health-related behavior and quality of life on depressive symptomatology in a sample of adolescents. *Psychological reports*; 71: 183–186.
- Henry, K. (2010). Academic Achievement and Adolescent Drug Use: An Examination of Reciprocal Effects and Correlated Growth Trajectories. *Journal of School Health*; 80(1): 38 – 43.
- Herkenham, M., Lynn, A., Little, M. D., Johnson, M. R., Melvin, L. S., de Costa, B.R., & Rice K.C. (1990). Cannabinoid receptor localization in the brain. *Proceedings of the National Academy of Sciences USA*; 87(5): 1932-1936.

- Hess, L. (1995). Changing family patterns. In: Rutter, M. and Smith, D., eds. *Western Europe: Opportunity and Risk Factors for Adolescent Development*. Psychosocial Disorders in Young People (pp. 104–193). Chichester: John Wiley and Sons.
- Hetherington, E., & Stanley-Hagan, M. (1999). The adjustment of children with divorced parents: a risk and resiliency perspective. *Journal of Child Psychology and Psychiatry*; 40: 129–140.
- Hill, E. M., & Chow, K. (2002). Life-history theory and risky drinking. *Addiction*; 97: 401-413.
- Hoffmann, J. P. (1995). The effects of *family structure* and *family* relations on adolescent marijuana use. *International Journal of the Addictions*; 30: 1207-1241.
- Hope, S., Power, C. & Rodgers, B. (1998). The relationship between parental separation in childhood and problem drinking in adulthood. *Addiction*; 93: 505–514.
- Hops, H., Davis, B., & Lewin, L. M. (1999). The development of alcohol and other substance use: A gender study of family and peer context, *Journal of Studies on Alcohol. Special Issue: Alcohol and the Family: Opportunities for Prevention, Supp*; 13: 22–31.
- Hops, H., Duncan, T. E., Duncan, S. C., & Stoolmiller, M. (1996). Parent substance use as a predictor of adolescent use: A six-year lagged analysis. *Annals of Behavioral Medicine*; 18: 157-164.
- Hourani, A., Khoury, P., & Wilson M.C. (2004). *The modern Middle East: a reader*. London; New York: I.B. Tauris, 2004. 2nd ed.
- Hser, Y., Grella, C. E., Hubbard, R. L., Hsieh, S. C., Fletcher, B. W., Brown, B. S., & Anglin, M. D. (2001). An evaluation of drug treatment for adolescents in four U.S. cities. *Archives of General Psychiatry*; 58(7): 689-695.

- Hunt, G. P., & Laidler, K. J. (2001). Alcohol and violence in the lives of gang members. *Alcohol Research & Health*; 25: 66-71.
- Ibn Taymiyya, *Majmu' Fatawa Ibn Taymiyya*. In: Abd al-Rahman b, Editor, *Qasim al-'Asimi*, Dar al-Arabiyya, Beirut (1977–78).
- Imam Bukhari. *Imam Bukhari's Book of Muslim Morals and Manners*. Al Saadawi Publications (May 1997).
- Isralowitz, R., Afifi, M., A. & Rawson, R. (2002). *Drug problems: cross-cultural policy and program development*. Westport, Conn.: Auburn House
- Iversen, L. (2007). *The Science of Marijuana*. Oxford: Oxford University Press.
- Jacob, T., & Johnson, S. (1997). Parenting influences on the development of alcohol abuse and dependence. *Alcohol Health & Research World*, 21, 204-209.
- Jaffee, W. B., & D'Zurilla, T. J. (2009). Personality, problem solving, and adolescent substance use. *Behavioral Therapy*; 40(1): 93-101.
- Jessor, R. (1996). New perspectives on adolescent risk behavior. In Jessor, R. (Eds.). (1998). *New Perspectives on Adolescent Risk Behavior*. New York: Cambridge University Press.
- Jessor, R., & Jessor, S. L. (1977). *Problem behavior and psychosocial development*. New York, Academic Press.
- Jessor, R., Turbin, M. S., & Costa, F. M. (1998). Protective factors in adolescent health behavior. *Journal of Personality and Social Psychology*; 75: 788–800.

- Jeynes, W.H. (2002). The relationship between the consumption of various drugs by adolescents and their academic achievement. *American Journal of Drug and Alcohol Abuse*; 28(1): 15–35.
- Johnston, L. D., O'Malley, P. M., & Bachman, J. G. (2002). *The Monitoring the Future national survey results on adolescent drug use: Overview of key findings, 2001* (NIH Publication No. 02-5105). Bethesda, MD: National Institute on Drug Abuse.
- Johnston, L. D., O'Malley, P. M., Bachman, J. G., & Schulenberg, J. E. (2009). *Monitoring the Future national results on adolescent drug use: Overview of key findings, 2008* (NIH Publication No. 09-7401). Bethesda, MD: National Institute on Drug Abuse, 73 pp.
- Joiner, T. E. (2001). Negative attributional style, hopelessness depression and endogenous depression. *Behavior Research and Therapy*; 39: 139–149.
- Jordanian Department of Statistics (2007). *Population and housing census (vol.2) general characteristics of persons*. Amman, Jordan.
- Kandel, D.B. (2002). *Stages and pathways of drug involvement: examining the gateway hypothesis*. New York: Cambridge University Press.
- Kandel, D.B., & Davies, M. (1996). High school students who use crack and other drugs. *Archive of General Psychiatry*; 53(1): 71–80.
- Kaplan, H. B. (1977). Antecedents of deviant responses: Predicting from a general theory of deviant behavior. *Journal of Youth and Adolescence*; 6: 89-101.
- Kaplan, H. B. (1987). Social sanctions, self-referent responses, and the continuation of substance abuse: A person-environment interaction perspective. *Drugs and Society*; 2: 31-55.

- Kaplow, J. B., Curran, P. J., Dodge, K. A., & the Conduct Problems Prevention Research Group. (2002). Child, parent, and peer predictors of early-onset substance use: A multisite longitudinal study. *Journal of Abnormal Child Psychology*; 30: 199-216.
- Kaplow, J. B., Curran, P.J., Angold, A., & Costello, E. (2001). The prospective relation between dimensions of anxiety and the initiation of adolescent alcohol use. *Journal Clinical Child Psychology*; 30: 316–326
- Kelder, S., Murray, N., Orpinas, P., Prokhorov, A., McCreynolds, L., Zhang, Q. & Roberts, R. (2001). Depression and substance use among minority middle-school students. *American Journal of Public Health*; 91: 761–766.
- Kellam, S. G., Stevenson, D. L., & Rubin, B. R. (1983). How specific are the early predictors of teenage drug use? In L. Harris (Ed.), *Problems of Drug Dependence*, 1982 (NIDA Research Monograph Series ed. ( pp. 329-334). Washington, D.C.: U.S. Government Printing Office.
- King, S. M., Iacono, W.G., & McGue, M. (2004). Childhood externalizing and internalizing psychopathology in the prediction of early substance use. *Addiction*; 99(12): 1548-59.
- Kokkevi A., Gabhainn S.N., & Spyropoulou M. (2006). Early Initiation of Cannabis Use: A Cross-national European Perspective. *Journal of Adolescent Health*; 39(5): 712-719.
- Korhonen, T., Huizink, A. C., Dick D. M., Pulkkinen L., Rose R. J., & Kaprio, J. (2008). Role of individual, peer and family factors in the use of cannabis and other illicit drugs: A longitudinal analysis among Finnish adolescent twins. *Drug and Alcohol Dependence*; 97: 33–43.
- Kuntsche E., & Jordan M.D. (2006). Adolescent alcohol and cannabis use in relation to peer and school factors. Results of multilevel analyses. *Drug and Alcohol Dependence*; 84 (2): 167-174



- La Greca, A. M., & Lopez, N. (1998). Social anxiety among adolescents: Linkages with peer relations and friendships. *Journal of Abnormal Child Psychology*; 26: 83-94.
- Ledoux S., Miller P., & Choquet M. *et al* . (2002) Family structure, parent-child relationships and alcohol and other drug use among teenagers in France and the United Kingdom. *Alcohol and Alcoholism*; 37: 52–60.
- Ledoux, S., Miller, P., Choquet, M., & Plant, M. (2002). Family structure, parent-child relationships, and alcohol and other drug use among teenagers in France and the United Kingdom. *Alcohol and Alcoholism*; 37(1): 52-60.
- Lerer, L. B. (1992). Women, homicide and alcohol in Cape Town, South Africa. *Forensic sciences international*; 55: 93-99.
- Lerner, R. M., Jacobs, F., & Wertlieb, D. (2002). *Handbook of Applied Developmental Science: Promoting Positive Child, Adolescent, and Family Development Through Research, Policies, and Programs*. Sage Publications, Inc; 1 edition
- Lifrak, P. D., McKay, J. R., Rostain, A., Alterman, A. I., & O'Brien, C. P. (1997). Relationship of perceived competencies, perceived social support, and gender to substance use in adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry*; 36: 933–940.
- Luthar, S. S., & Ansary, N. S. (2005). Dimensions of adolescent rebellion: Risks for academic failure among high- and low-income youth. *Development and Psychopathology*; 17: 231–250.
- Lynskey, M., & Hall, W. (2000). The effects of adolescent cannabis use on educational attainment: a review. *Addiction*; 95(11):1621–1630.

- Lynskey, M., Vink, J., & Boomsma, D. (2006). Early Onset Cannabis Use and Progression to other Drug Use in a Sample of Dutch Twins. *Behavior Genetics*; 36(2): 195-200.
- Madu, S. N. & Matla, M. P. (2003). Illicit drug use, cigarette smoking and alcohol drinking behavior among a sample of high school adolescents in the Pietersburg area of the Northern Province, South Africa. *Journal of Adolescence*; 26: 121-136.
- Maneesriwongul, W., & Dixon, J.K. (2004) Instrument translation process: a methods review. *Journal of Advanced Nursing*; 48: 175–186.
- Marsiglia, F. F., Kulis, S., Nieri, T., & Parsei, M. (2005). God Forbid! Substance Use among Religious and Nonreligious Youth. *American Journal of Orthopsychiatry*; 75: 585–598.
- Martino, S. C., Ellickson, P. L., & McCaffrey, D. F. (2008). "Developmental trajectories of substance use from early to late adolescence: a comparison of rural and urban youth." *Journal of studies on alcohol*; 69(3): 430.
- Martins, S.S., & Alexandre, P.K. (2009). The association of ecstasy use and academic achievement among adolescents in two U.S. national surveys. *Addictive Behaviors*; 34 (1): 9-16.
- Martins, S.S., Storr, C.L., Alexandre, P.K., & Chilcoat, H. D. (2008). Do adolescent ecstasy users have different attitudes towards drugs when compared to marijuana users? *Drug and Alcohol Dependence*; 94(1–3): 63–72.
- Mason, W. A., & Windle, M. (2001). Family, religious, school, and peer influences on adolescent alcohol use: A longitudinal study. *Journal of Studies on Alcohol*; 62: 44-53.
- Mayer, J. E., & Filstead, W. J. (1979). The adolescent alcohol involvement scale: An instrument for measuring adolescents' use and misuse of alcohol. *Journal of Studies on Alcohol*; 40: 291–300.

- Mayhew, K. P., Flay, B. R. & Mott, J. A. (2000) Stages in the development of adolescent smoking. *Drug and Alcohol Dependence*; 59: S61–S81.
- McArdle P, Wiegersma A, Gilvarry E, Kolte B, McCarthy S, Fitzgerald M, Brinkley A, Blom M, Stoeckel I, Pierolini A, Michels I, Johnson R, & Quensel S. (2002). European adolescent substance use: the roles of family structure, function, and gender. *Addiction*; 97(3): 329-36
- McCrae, R. R., Costa, P. T., Jr., Ostendorf, F., Angleitner, A., Hrebickova, M., & Avia, M. D., et al. (2000). Nature over nurture: Temperament, personality, and life span development. *Journal of Personality and Social Psychology*; 78: 173–186.
- McDermott, D. (1984). The relationship of parental drug use and parents' attitude concerning adolescent drug use to adolescent drug use. *Adolescence*; 19: 89–97.
- McGarvey, E. L., Canterbury, R. J., Cohn, W. F., & Clavet, G. J. (1996). Adolescent inhalant use and school problems. *School Counselor*; 43: 181–186.
- McGee, R., and Williams, S. (2000). Does low self-esteem predict health compromising behaviors among adolescents? *Journal of Adolescence*; 23(5): 569–582.
- McGrath J, Welham J, & Scott J, et al. (2010). Association between cannabis use and psychosis-related outcomes using sibling pair analysis in a cohort of young adults. *Archives of General Psychiatry*; 67(5).
- McLaney, M. A., Del-Boca, F., & Babor, T. (1994). A validation study of the Problem Oriented Screening Instrument for Teenagers (POSIT). *Journal of Mental Health*, 3: 363–376.

- Meyers, R. J., Miller, W.R., Smith, J.E., & Tonigan, J.S. (2002). A randomized trial of two methods for engaging treatment-refusing drug users through concerned significant others. *Journal of consulting and clinical psychology*; 70(5):1182–85.
- Mezzich, A., Tarter, R., Kirisci, L., Clark, D., Bukstein, O., & Martin, C. (1993). Subtypes of early age onset alcoholism. *Alcoholism: Clinical and Experimental Research*; 17: 767-770.
- Miller, D.S., & Miller, T. Q. (1997). A test of socioeconomic status as a predictor of initial marijuana use. *Addictive Behavior*; 22(4): 479-89.
- Miller, P. (1997) Family structure, personality, drinking, smoking and illicit drug use: a study of UK teenagers. *Drug and Alcohol Dependence*; 45: 121–129.
- Monshouwer, K., Smit, F., DE Graaf, R., va Os, J., & Vollebergh, W. (2005). First cannabis use: does onset shift to younger ages? Findings from 1988 to 2003 from the Dutch National School Survey on Substance Use. *Addiction*; 100: 963–970.
- Myers, M. G., Aarons, G. A., Tomlinson, K. S., & Murray, B. (2003). Social anxiety, negative affectivity, and substance use among high school students. *Psychology of Addictive Behaviors*; 17(4): 277-283
- Nasim, A., Belgrave, F. Z., Jagers, R. J., Wilson, K.D., Owens, K. (2007). The moderating effects of culture on peer deviance and alcohol use among high-risk African-American Adolescents. *Journal of Drug Education*; 37(3): 335-63.
- National Institute on Alcohol Abuse and Alcoholism [NIAAA] (2004). *Council Approves Definition of Binge Drinking*. NIAAA Newsletter, 3: 3.

- National Research Council of the National Academy of Science (1982). *An Analysis of Marijuana Policy*. National Research Council 2101 Constitution Avenue, N.W. Washington, D.C. 20418  
Retrieved from: <http://www.druglibrary.org/Schaffer/library/studies/nas/back.htm>
- Neumark, Y., Rahav, G., Teichman, M., Hassin, D. (2001). Alcohol Drinking Patterns among Jewish and Arab Men and Women in Israel. *Journal of Studies on Alcohol*; 62: 443–447.
- Nicholson, J., Fergusson, D., & Horwood, L. (1999) Effects on later adjustment of living in a stepfamily during childhood and adolescence. *Journal of Child Psychology and Psychiatry*; 40: 405–416.
- Nurco, D., Kinlock, T. O., Grady, K. & Hanlon, T. (1996a). Differential contribution of family and peer factors in the etiology of narcotic addiction. *Drug and Alcohol Dependence*; 51: 229–237.
- Nurco, D., Kinlock, T. O., Grady, K., & Hanlon, T. (1996b). Early family adversity as a precursor to narcotic addiction. *Drug and Alcohol Dependence*; 43: 103–113.
- O'Boyle, M., & Barratt, E. S. (1993). Impulsivity and DSM-III-R personality disorders. *Personality and Individual Differences*, 14, 609–611.
- O'Connor, T., Thorpe, K., Dunn, J., & Golding, J. (1999). Parental divorce and adjustment in adulthood: findings from a community sample. *Journal of Child Psychology and Psychiatry*; 40: 777–790.
- Ohannessian, C. M., & Hesselbrock, V. M. (2007). Do personality characteristics and risk taking mediate the relationship between paternal substance dependence and adolescent substance use? *Addictive Behaviors*; 32: 1852-1862.
- Olds, R. S., & Thombs, D. L. (2001). The relationship of adolescent perceptions of peer norms and parent involvement to cigarette and alcohol use. *Journal of School Health*; 71: 223– 8.

- Oler, M. J., Mainous, A. G., & Martin, C.A., et al. (1994). Depression, suicidal ideation, and substance use among adolescents: are athletes at less risk? *Archive of Family Medicine*; 3: 781–785.
- Ozer, E.J., & Fernald, L.C. (2008). Alcohol and tobacco use among rural Mexican adolescents: individual, familial, and community level factors. *Journal of adolescent health*; 43 (5): 498.
- Ozgür İlhan, I., Yildirim, F., Demirbaş, H., & Doğan, Y. B. (2008). Alcohol use prevalence and socio-demographic correlates of alcohol use in a university student sample in Turkey. *Social Psychiatry and Psychiatric Epidemiology*; 43(7): 575-83.
- Parker, H., Aldridge, J. & Measham, F. (1998). *Illegal Leisure: The normalisation of adolescent recreational drug use*. London: Routledge.
- Patterson, G. R., Reid, J. B., & Dishion, T. (1992). *Antisocial boys: A social interactional approach* (Vol. 4). Eugene, OR: Castalia Publishing Company.
- Pérez, A. (2010). "Cannabis consumption initiation among adolescents: A longitudinal study". *Addictive behaviors*; 35 (2): 129.
- Perry, J. L., & Carroll, M.E. (2008). The role of impulsive behavior in drug abuse. *Psychopharmacology*; 200(1): 1-26.
- Petratis, J., Flay, B., & Miller, T. Q. (1995). Reviewing theories of adolescent substance use: Organizing pieces in the puzzle. *Psychological Bulletin*; 117: 67-86.
- Piko, B. F. (2006). Adolescent smoking and drinking: The role of communal mastery and other social influences. *Addictive Behaviors*; 31: 102–114.

- Pilgrim, C. C., Schulenberg, J. E., O'Malley, P. M., Bachman, J. G., & Johnston, L. D. (2006). Mediators and moderators of parental involvement on substance use: A national study of adolescents. *Prevention Science; 7*(1):75–89.
- Pilgrim, C., Abbey, A., & Kershaw, T. (2004). The Direct and Indirect Effects of Mothers' and Adolescents' Family Cohesion on Young Adolescents' Attitudes Toward Substance Use. *The Journal of Primary Prevention; 24*(3): 341–361.
- Poelen, E. A., Scholte, R. H., Willemsen, G., Boomsma, D. I., & Engels, R. C. (2007). Drinking by parents, siblings, and friends as predictors of regular alcohol use in adolescents and young adults: a longitudinal twin-family study. *Alcohol and Alcoholism; 42*(4): 362-9.
- Rahav G., Teichman M., Gil R., Rosenblum Y. & Bar-Hamburger R. (1998). *The Use of Drugs and Alcohol Among the Residents of Israel 1998: An Epidemiological Study IV*. Israel Anti-Drug Authority, Jerusalem.
- Rahav, G., Teichman, M., Gil, R., Rosenblum, Y., & Bar-Hamburger, R. (1995). *The Use of Drugs and Alcohol Among the Residents of Israel 1995: An Epidemiological Study III*. Israel Anti-Drug Authority, Jerusalem.
- Rahav, G., Teichman, M., Gil, R., Rosenblum, Y., & Bar-Hamburger, R. (2001). *The Use of Drugs and Alcohol Among the Residents of Israel 2001: An Epidemiological Study V*. Israel Anti-Drug Authority, Jerusalem.
- Rahdert, E., (1991). *The Adolescent Assessment/ Referral System Manual*. DHHS Pub. No. (ADM) 91–1735. Rockville, MD: National Institute on Drug Abuse.

- Reinherz, H. Z., Giaconia, R.M., & Hauf, A.M., et al. (2000). General and specific childhood risk factors for depression and drug disorders by early adulthood. *Journal of the American Academy of Child & Adolescent Psychiatry*; 39: 223–231.
- Resnick, M. D., Bearman, P. S., & Blum, R.W., et al. (1997). Protecting adolescents from harm: Findings from the National Longitudinal Study of Adolescent Health. *Journal of American Medical Association*; 278: 823–32.
- Room, R., Hall, W., Reuter, P., Fischer, B., & Lenton S. (2008). *The Beckley Foundation Global Cannabis Commission Report*. Oxford: Beckley Foundation. Available from: [http://www.beckleyfoundation.org/policy/cannabis\\_commission.html](http://www.beckleyfoundation.org/policy/cannabis_commission.html)
- Room, R., Hall, W., Reuter, P., Fischer, B., & Lenton S. (2008). *The Beckley Foundation Global Cannabis Commission Report*. Oxford: Beckley Foundation. Available from: [http://www.beckleyfoundation.org/policy/cannabis\\_commission.html](http://www.beckleyfoundation.org/policy/cannabis_commission.html)
- Rosenblitt, J. C., Soler, H., Johnson, S. E., & Quadagno, D. M. (2001). Sensation seeking and hormones in men and women: Exploring the link. *Hormones and Behavior*; 40: 396–402.
- Rosenthal, T. L., Edwards, N. B., Ackerman, B. J., Knott, D. H., & Rosenthal, R. H. (1990). Substance abuse patterns reveal contrasting personality traits. *Journal of Substance Abuse*; 2: 255–263.
- Rounsaville, B. J., Kosten, T. R., Weissman, M. M., Prusoff, B., Pauls, D., & Merikangas, K. (1991). Psychiatric disorders in relatives of probands with opiate addiction. *Archives of General Psychiatry*; 48: 33–42.
- Sale, E., Springer, J. F., Sambrano, S., & Turner, C. (2003). Risk, protection, and substance use in adolescents: A multi-site model. *Journal of Drug Education*; 33(1): 91–105.



- Sanders, C.E, Field, T.M., & Diego, M.A. (2001). Adolescents' academic expectations and achievement. *Adolescence*; 36(144): 795–802.
- Scott, D. M., & Friedli, D. (2002). Attendance problems and disciplinary procedures in Nebraska schools. *Journal of Drug Education*; 32: 149–165.
- Sharabi, H. (1997). Impact of class and culture on social behavior: the feudal-bourgeois family in Arab society. In C. L. Brown N. Izkowitz (Eds.), *Developing cross-cultural competence*. Princeton, NJ: The Darwin.
- Shedler, J., & Block, J. (1990). Adolescent drug use and psychological health: A longitudinal inquiry. *American Psychologist*; 45: 612–630.
- Sher, K. J., & Grekin, E., et al. (2005). "The development of alcohol problems." *Annual Review of Clinical Psychology*; 1: 493-523.
- Sher, K. J., Batholow, B. D., & Wood, M. D. (2000). Personality and disinhibitory psychopathology: Alcoholism and antisocial personality disorder. *Journal of Abnormal Psychology*; 103: 92–102.
- Sneed C.D., Morisky D.E., Rotheram-Borus M.J., Ebin V.J., & Malotte C.K. (2001). Patterns of adolescent alcohol, cigarette, and marijuana use over a 6-month period. *Addictive Behaviors*; 26 (3): 415-423.
- Sneed, C. D., Morisky, D. E., Rotheram-Borus, M., Ebin, M., & Malotte, C. (2001). Patterns of adolescent alcohol, cigarette, and marijuana use over a 6-month period. *Addictive Behaviors*; 26: 415-423.

Sobeck, J., Abbey, A., Agius, E., Clinton, M., & Harrison, K. (2000). Predicting early adolescent substance use: Do risk factors differ depending on age of onset? *Journal of Substance Abuse*; 11(1): 89–102.

Stein, J. A., Newcomb, M. D., & Bentler, P. M. (1986). Stability and change in personality: A longitudinal study from early adolescence to young adulthood. *Journal of Research in Personality*; 20: 276-291.

Straus, R., & Bacon, S. D. (1953). *Drinking in College*, Yale University Press, New Haven.

Stronski, S. M., Ireland, M., Michaud, P., Narring, F., & Resnick, M. D. (2000). Protective correlates of stages in adolescent substance use: a Swiss National Study. *Journal of Adolescent Health*; 26(6): 420-7.

Substance Abuse & Mental Health Services Administration [SAMHSA] (2005). *Substance Abuse and Mental Health Services Administration [SAMHSA], Overview of findings from the 2004 National Survey on Drug Use and Health (Office of Applied Studies, NSDUH Series H-27)*. Accessed on-line at: [www.oas.samhsa.gov/nsduh/2k4nsduh/2k4overview.htm](http://www.oas.samhsa.gov/nsduh/2k4nsduh/2k4overview.htm) (2005).

Substance Abuse and Mental Health Services Administration (2005). *Drug Abuse Warning Network, 2005: National Estimates of Drug-Related Emergency Department Visits*. Rockville, MD: Substance Abuse and Mental Health Services Administration, Office of Applied Studies. DAWN Series D-29, DHHS Publication No. (SMA) 07-4256; 2007. Available at <http://dawninfo.samhsa.gov/pubs/edpubs/default.asp>.

Substance Abuse and Mental Health Services Administration SAMHSA (1996). *The relationship between family structure and adolescent substance use*. DHHS Publication No. (SMA) 96-3086, Rockville, MD.

Substance Abuse and Mental Health Services Administration, Office of Applied Sciences. Preliminary Results From the 1996 National Household Survey on Drug Abuse. DHHS No. (SMA) 97-3149. Rockville, MD: SAMHSA, July 1997.

Suldo, S. M., Hardesty, R. B., Mihalas, S. T., Powell, H. A., & Witte, R. B. (2005). *Environmental predictors of substance use in secondary students*. Paper presented at the annual convention of the American Psychological Association, Washington, DC.

Suldo, S. M., Mihalas, S. M., Powell, H., & French, R. (2008). Ecological Predictors of Substance Use in Middle School Students. *School Psychology Quarterly*; 23(3): 373–388

Suldo, S. M., Mihalas, S. T., Powell, H. A., & Witte, R. B. (2008). Ecological predictors of substance use in middle school students. *School Psychology Quarterly*; 23 (3): 373 – 388.

Sullivan, C. J. J (2006). "Early Adolescent Delinquency: Assessing the Role of Childhood Problems, Family Environment, and Peer Pressure". *Youth violence and juvenile justice*; 4 (4): 291.

Svensson, R. (2000). Risk factors for different dimensions of adolescent drug use. *Journal of Child and Adolescent Substance Abuse*; 9: 67–90.

Tashkin, D. P. (1990). "Pulmonary Complications of Smoked Substance Abuse". *Western Journal of Medicine*; 152(5): 525–30.

Tellegen, A. (1988). The analysis of consistency in personality assessment. *Journal of Personality*; 56: 621–663.

Terracciano, A., Costa, P. T., & McCrae, R. R. (2006). Personality plasticity after age 30. *Personality and Social Psychology Bulletin*; 32: 999–1009.

The National Survey on Drug Use and Health [NSDUH] (2005). *The National Survey on Drug Use and Health of 2002, 2003 and 2004*. U.S Department of Health and Human Services, Substance Abuse and Mental Health Services Administration.

Tildesley, E. A, & Andrews, J. A. (2008). The Development of Children's Intentions to Use Alcohol: Direct and Indirect Effects of Parent Alcohol Use and Parenting Behaviors. *Psychology of Addictive Behaviors*; 22(3): 326–339.

Tortora, G. J., & Grabowski, S.R. (2002). *Principles of Anatomy and Physiology*, 10th Edition. Wiley; 10th edition (June 15, 2002)

Trull, T. J., & Sher, K. J. (1994). Relationships between the five factor model of personality and axis-I disorders in a non-clinical sample. *Journal of Abnormal Psychology*; 103: 350–360.

U.S. Department of Health and Human Services [USDHHS] (1999). *Mental health: A report of the Surgeon General*. Rockville, MD: U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for Mental Health Services, National Institutes of Health, National Institute of Mental Health.

U.S. Department of Health and Human Services [USDHHS] (2007). *The Surgeon General's Call to Action to Prevent and Reduce Underage Drinking*. HHS, Office of the Surgeon General, 2007.

U.S. Department of Health and Human Services [USDHHS] (2007). *The Surgeon General's Call to Action to Prevent and Reduce Underage Drinking*. HHS, Office of the Surgeon General.

U.S. Department of Health and Human Services [USDHHS] (2009). *Health, United States, 2009*. HHS, Office of the Surgeon General.

United Nations Drug Control Program, [UNDCP] (1999). *Global illicit drug trends*. UN, New York.

United Nations Office on Drugs and Crime [UNDCP] (2006). "World Drug Report 2006, Volume 1: Analysis" (United Nations: Vienna, Austria, 2006), p. 23.

United Nations Office on Drugs and Crime [UNODC] (1999). *World drug report 1999*. Geneva: United Nations.

United Nations Office on Drugs and Crime [UNODC] (2009). "World Drug Report 2009" (United Nations: Vienna, Austria, 2009), p. 89.

United Nations Office on Drugs and Crime UNODC (2007). *World Drug Report 2007*. Volume 1: Analysis. Vienna: United Nations Office on Drugs and Crime.

Utech, D., & Hoving, K. L. (1969). Parents and peers as competing influences in the decision of children of different ages. *Journal of Social Psychology*; 78: 267–274.

Van den Bree, M. B., & Pickworth, W. B. (2005). Risk factors predicting changes in marijuana involvement in teenagers. *Archives General Psychiatry*; 62: 311–319.

Vitaro, F., Tremblay, R.E., Kerr, M., Pagani, L., & Bukowski, W.M., (1997). Disruptiveness, friends' characteristics, and delinquency in early adolescence: A test of two competing models of development. *Child Development*, 68, 676-689.

Von Sydow, K., Lieb, R., Pfister, H., Hofler, M., & Wittchen, H.-U. (2002). What predicts incident use of cannabis and progression to abuse and dependence? A 4-year prospective examination of risk

factors in a community sample of adolescents and young adults. *Drug and Alcohol Dependence*; 68 (1): 49-64.

Walker, L. O., & Avant, K. C. (2005). *Strategies for theory construction in nursing* (5th ed). Norwalk: Appleton and Lange.

Wallace, J. M. & Muroff, J. R. (2002). Preventing *substance* abuse among African American children and youth: Race differences in risk factor exposure and vulnerability. *Journal of Primary Prevention*; 22: 235-261.

Wallace, J. M., & Williams, D. R. (1997). Religion and *adolescent* health-compromising behavior. In J. Schulenberg, J. Maggs, & K. Hurrelmann (Eds.), *Health risks and developmental transitions during adolescence* (pp. 444-468). New York: Cambridge University Press.

Wallace, S. A. & Fisher, C. B. (2007). "Substance Use Attitudes among Urban Black Adolescents: The Role of Parent, Peer, and Cultural Factors". *Journal of youth and adolescence*; 36(4): 441.

Wang, J., Simons-Morton, B. G., Farhart, T., Luk, J. W. (2009). Socio-demographic variability in adolescent substance *use*: Mediation by parents and peers. *Prevention Science*; 10(4): 387-396

Webb, J. A., Bray, J. H., Getz, J. G., & Adams, G. (2002). Gender, perceived parental monitoring, and behavioral adjustment: Influences on adolescent alcohol use. *American Journal of Orthopsychiatry*; 72: 392-400.

Weglicki, L., Alzyoud, S. (2010). Pilot testing of the Arabic Youth Tobacco Composite Measure AYTCM. *Public Health Nursing*; (in press).

- Weglicki, L., Templin, T., Jamil, H., Abou-Mediene, Farroukh, M., Hammad, A., & Rice, V. (2007). Tobacco use patterns among high school students: Do Arab American youth differ? *Ethnicity & Disease*; 17(2): S3-22-24.
- Weiss, S., Sawa, G.H., Abdeen, Z., & Yanai, J. (1999). Substance abuse studies and prevention efforts among Arabs in the 1990s in Israel, Jordan and the Palestinian Authority: A literature review. *Addiction*; 94: 177-198.
- White, A. M., Ghia, A. J., Levin, E. D., & Swartzwelder, H. S. B. (2000). Binge pattern ethanol exposure in adolescent and adult rats: differential impact on subsequent responsiveness to ethanol. *Alcoholism: Clinical and Experimental Research*; 24: 1251-6.
- WHO, (1982). *Report of an ARF/WHO Scientific Meeting on the Adverse Health and Behavioral Consequences of Cannabis Use*. Addition Research Foundation, Toronto.
- WHO, (1998). Adolescents Health. Retrieved from <http://www.afro.who.int/en/divisions-a-programmes/drh/child-and-adolescent-health/programme-components/adolescent-health.html>
- WHO, (1999). *Global status report on alcohol*. Geneva, Switzerland.
- WHO, (1999). *Global Status Report on Alcohol*. Geneva: World Health Organization.
- WHO, (2000). International Guide for Monitoring Alcohol Consumption and Alcohol Related Harm. Department of Mental Health and Substance Dependence, Non-communicable Diseases and Mental Health Cluster. <http://whqlibdoc.who.int/hq/2000/WHO MSD MSB 00.4.pdf>
- WHO, (2002). Alcohol, Smoking and Substance Involvement Screening Test (WHO ASSIST) Working Group. The Alcohol, Smoking and Substance Involvement Screening Test (ASSIST): development, reliability and feasibility. *Addiction*; 97: 1183–1194.

WHO, (2002). *World health report 2002: Reducing risks, promoting healthy life*. Geneva, Switzerland.

WHO, (2004). *The world health report 2004*. Geneva, Switzerland.

WHO, (2004). WHO statistical information system, *Global Alcohol Database*.

[http://www.who.int/alcohol/alcohol\\_apc\\_data](http://www.who.int/alcohol/alcohol_apc_data).

WHO, (2005). *Gender, Health, and Alcohol Use*. Geneva, Switzerland. Retrieved from:

at:<http://www.who.int/gender/documents/Alcoholfinal.pdf>

WHO, (2008). *World drug report 2008*. Geneva, Switzerland.

WHO, (2009). *World drug report 2009*. Geneva, Switzerland.

Wills, T. A., Vaccaro, D., & McNamara, G. (1992). The role of life event, family support, and competence in adolescent substance use: A test of vulnerability and protective factors. *American Journal of Community Psychology*, 20, 349–74.

Wittchen, H. U., Frohlich, C., Behrendt, S., Gunther, A., Rehm, J., Zimmermann, P., Lieb, R., Perkonig, A. (2007). Cannabis use and cannabis use disorders and their relationship to mental disorders: A 10-year prospective-longitudinal community study in adolescents; *Drug and Alcohol Dependence*; 88.

Woodward, L. J., & Fergusson, D. M., (1999). Early conduct problems and later risk of teenage pregnancy in girls. *Development and Psychopathology*; 11: 127-141.

Wu, P., Bird, H. R., Liu, X., Fan, B., Fuller, C., & Shen, S., et al., (2006). Childhood Depressive Symptoms and Early Onset of Alcohol Use. *Pediatrics*; 118(5): 1907-15.



- Yount, K.M. & Rashad, H. (2008). (eds.). *Family in the Middle East: Ideational Change in Egypt, Iran, and Tunisia*.
- Yusuf, A., (1983). *The Holy Qur'an: Text Translation and Commentary*, Amana Corp., Brentwood, MD (1983).
- Zhang, Z. F., Morgenstern, H., Spitz, M.R., Tashkin, D.P., Yu, G.-P., Marshall, J.R., Hsu, T.C, & Schantz, S.P. (1999). Marijuana use and increased risk of squamous cell carcinoma of the head and neck. *Cancer Epidemiology, Biomarkers & Prevention*; 6: 1071-1078.
- Zimmerman, M. A., & Schmeelk-Cone, K. H. (2003). A longitudinal analysis of adolescent *substance use* and *school* motivation among African American youth. *Journal of Research on Adolescence*; 13: 185–210.
- Zuckerman, M. (1993). P-impulsive sensation seeking and its behavioral, psycho-physiological biochemical correlates. *Neuropsychobiology*; 28: 30–36.
- Zuckerman, M., & Kuhlman, D. M. (2000). Personality and risk-taking: Common biosocial factors. *Journal of Personality*; 68: 999-1029.

**ABSTRACT****JORDANIAN ADOLESCENT CANNABIS USE:  
PATTERNS, RISKS, AND PROTECTIVE FACTORS**

by

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**Background:** Cannabis is considered to be the most commonly used substances worldwide. Its use is not only common among adolescents but is increasing in developing countries such as Jordan. Cannabis use among adolescents has been linked to unintentional injuries, physical fights, academic problems, and illegal behavior such as driving under the influence. Studies of cannabis use patterns, risks, and protective factors are limited in developing countries. Therefore, the purpose of this study is to determine the patterns, risks, and protective factors for cannabis use among Jordanian adolescents. **Methods:** A cross-sectional descriptive/correlational survey design was used to assess the patterns among Jordanian adolescents 13-18 years of age drawn from Zarka Governorate in Jordan. Zarka Governorate is located at the central region of Jordan and is home to 15% of the total Jordanian population. Sample size was estimated using a 95% confidence interval for  $p$  that is expected to be about 50% (0.50). The final sample was 384 Jordanian students who attend public schools and participated in the study. These participants were recruited using simple random sampling from three grades (8<sup>th</sup>, 10<sup>th</sup>, & 12<sup>th</sup>). Following permission from the Jordanian Ministry of Education and Wayne State University IRB, participant assent, and parental consent for those less than 18

years of age, students were asked to complete an Arabic version of the POSIT, CAST, AKABSU questionnaires. Reliability & validity was confirmed for the Arabic version of study measures used with adolescents participants. **Results:** An 11.7% of Jordanian adolescents reported using cannabis. Male Jordanian adolescents were more likely to use cannabis than females. Association with cannabis using friends were among the significant associated risk factors of adolescents cannabis use. Gender, father cannabis user, and educational status were among the strong predictors of adolescents cannabis use. Adolescent's positive attitudes and beliefs were predictors of adolescents cannabis use. **Implications:** This study is the next critical step towards establishing a base line data of Jordanian adolescent's health risk behaviors. Developing prevention programs directed to adolescents, families, and at-risk populations.

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### EDUCATION

INSTITUTION AND LOCATION	DEGREE	YEAR(s)	FIELD OF STUDY
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Jordan University of Science and Technology (JUST)	M.S.N	2005	Community Health/Nursing
Wayne State University	Ph.D.	2006-2010	Youth Health Behaviors

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#### Positions and Employment

2000	Staff Nurse, Arabic Heart Center, Amman Jordan
2000- 2002	Instructor, College of Nursing, Jordan Ministry of Education, Amman- Jordan
2005	Staff Nurse, Specialty Hospital, Amman- Jordan
2005- 2006	Instructor, School of Nursing, Jordan University of Science and Technology, Irbid- Jordan
2006	Instructor, School of Nursing, Hashemite University, ZARKA- Jordan

#### Other Experience and Professional Memberships

2001-2003	Volunteer: Jordanian Red Crescent, Ma'an- Jordan
2008 - 2010	Member: Midwest Nursing Research Society
2008-2010	Member: The Council for the Advancement of Nursing Science
2008-2010	Member: Sigma Theta Tau International, Lambda Chapter

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**A.** Haddad L, Shoter A, Umlauf MG., **Al-Zyoud S** ( 2010) Knowledge of Substance Abuse Among High School Students in Jordan. *Journal of Transcultural nursing* (21: 143-150).

**B.** **Alzyoud, S.**, & Weglicki, L. G. (2009). Pilot Assessment of the Arabic Youth Tobacco Use Composite Measure (YTUCM). *Poster Presentation at the Midwest Nursing Research Society (MNRS) 33 annual conference, Minneapolis, MN.*