Assessment and Prevention of Risk Factors Associated with Smoking in Jordanian Adolescents: Application of Newman System Model as a Guiding Framework

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Abstract

Background: The tobacco smoking is one of the greatest health threats in the world. In Jordan, smoking rates are rising especially in adolescents. Assessment of the factors associated with adolescent smoking in Jordan is helpful to develop intervention programs to prevent or control smoking, especially for minors.

Aim: This paper aims to assess the factors associated with adolescent smoking in Jordan, and provide early interventions for prevention of smoking utilizing the constructs of Newman System Model.

Methodology: Literature review guided by the constructs of Newman System Model was utilized to identify factors that are related to smoking among Jordanian adolescents, and to provide early interventions for prevention of smoking in adolescents.

Results: There are different physiological, psychological, socio-cultural, developmental, and spiritual factors associated with smoking in adolescents in Jordan. These factors are also associated with intrapersonal, interpersonal, and extra personal stressors encountered by adolescents. Newman System Model was helpful in determining all of these factors and dimensions and providing appropriate preventive interventions.

Conclusion: Newman System Model provided a useful framework to systematically assess risk factors for smoking and providing appropriate preventive interventions among adolescents in the Jordanian community.

Keywords: Newman System Model; Assessment; Prevention; Smoking; Jordan; Adolescents

Introduction

The tobacco smoking is one of the greatest health threats in the world. It devastates the health of people, and kills millions of people each year. It is estimated that up to half of smokers will eventually die of a tobacco-related disease[1]. Smoking is one of known causes of cancer, heart disease, stroke, and chronic obstructive pulmonary disease. It kills more of the U.S. population than, drugs, alcohol, homicide suicide, car accidents, and AIDS combined[2]. In Jordan, the prevalence of smoking remains unacceptably high, with fifty percent of men considered smokers. In Jordan, the smoking-related diseases in Jordan are clearly evident. For example, during 2006, more than half of all deaths in Jordan were caused by chronic, non-communicable diseases, about 33% of all deaths were caused by heart disease and stroke, and 13% of deaths were caused by cancer. In fact, few smokers in Jordan agree that they should not smoke indoors, which indicates high social acceptance of smoking.

In Jordan, smoking rates are rising especially in adolescents, which it is considered an emergent problem. In 2007, 16% of students aged 13 - 15 in Jordan are smokers[3]. Unfortunately, smoking in adolescents is more serious than smoking in adulthood. About eighty percent of the adult smokers started smoking cigarette for the first time during adolescence[4]. Active smoking by adolescents is associated with chronic health problems, and early mortality[5]. A longitudinal study in
Irbid and found that the prevalence of smoking for boys was 22.9% and 8.7% for girls, and smoking prevalence increased every year after year for current smoking[9]. Another study was conducted for a community sample in the area around Al-Isera Private University, and found that about 65% of the sample smoked their first cigarette before the age of 18 years and 88.5% of them started before the age of 21 years[8].

Many complex factors may contribute to adolescent smoking. Identification of adolescents at high risk for smoking initiation, progression and addiction is essential for effective adolescent-targeted smoking prevention programs. The risk factors that lead to adolescent smoking include physiological, social, psychological, environmental, and economic factors[9].

In Jordan, the current policy regarding smoking was issued in 1971 including jail or fine for smoking in public places. However, it was challenged by the absence of enforcement mechanisms and application. In 2001 the same policy was modified to restrict tobacco sales to minors with penalties for persons who violate it. In 2003, 2008, and 2009, additional restrictions on smoking that prohibit smoking in public and private institutions was added to the policy. Unfortunately, all of these policies were challenged and not enforced, including the policy that restricts tobacco selling to minors[9]. Enforcing policies that restrict adolescent smoking without identifying the actual risk factors for smoking in adolescents would not be effective.

As the smoking in adolescents is usually associated with continuing smoking till adulthood, and the current policy that restrict tobacco selling to minors is not applied, there is a need to provide more data to help reframing the current policy. The purpose of the current paper is to assess risk factors for smoking in adolescents, and to provide preventive interventions that would help enforcing more effective laws in the future to achieve zero tolerance level of smoking among adolescents in Jordan.

**Methodology**

Literature review guided by the constructs of Newman System Model was utilized to identify factors that are related to smoking among Jordanian adolescents. Neuman’s system model is an ideal framework for studying adolescence perceived stressors that influence their smoking. Neuman’s systems model is successfully applied for an individual, a group of people, communities, or a specific aggregate[10]. Neuman viewed the client as an open system with continuous interaction with both internal and external environmental stressors[10]. Identification of the perceived stressors is essential in explaining why more adolescents are smoking, and why they continue to use nicotine despite the warnings by physicians and mass media. The literature review revealed that there are many negative stressors that enhance the decision of adolescents to use nicotine. Example of these stressors are wanting to belong to the peer group, high anxiety and stress resulted from life demands, fear of rejection from the group of peers, peer pressure, low self-esteem and poor body image, dealing with stressful situations, weight control, and lack of self-confidence (Joffe et al., 2014; Lovato et al., 2013). These stressors are consistent with Neuman classification of stressors as intrapersonal, interpersonal, and extra personal.

In addition, Neuman identified five variables that influence a client’s encounter with a stressor (i.e., physiological, psychological, socio-cultural, developmental, and spiritual). Because these variables influence a client’s encounter with a stressor, it is important for nurses and health care providers to assess them when examining the stressors related to nicotine ingestion in adolescents. These variables can be directly related to smoking in adolescents. For example, Physiological variables may include the effects of smoking on health. Psychological variables are related to self-esteem in adolescent. Socio-cultural variables may directly be related to the media and peer pressure. Developmental variables are related to identity of adolescents. Spiritual variables are related to the role of religion which may not encourage smoking. Neuman also described the core structure of the human well-being which may be directly affected by smoking related diseases which are considered a leading preventable cause of death.

The flexible line of defense, which is the system’s first line of defense, is related to primary prevention. The lines of resistance are related to the secondary prevention, and the normal line is related to the tertiary prevention[10]. Health is the condition of optimal stability of the client. Neuman describes optimal system stability as “the condition in which a system variables are in balance or harmony with the whole of the client”[10].

**Application of Neuman System Model to Assess the Risk Factors for Adolescents Smoking in Jordan Community**

**Client as all smoker/ or may become Smoker adolescents in Jordan community**

For the purpose of this paper, the client will be defined as all adolescents in Jordan community who are smoking, or at risk of becoming smokers. This is appropriate application as Neuman defines the client as an individual, a group of people, communities, or a specific aggregate[11]. Adolescents represent a basic part of the core structure of Jordanian community. In Jordan, adolescents account for one-third of the Jordanian population[11]. In Jordan, adolescent are affected by different factors in their internal and external environment which make them in constant change, if they are smokers, this indicates that they may negatively interact with their environment, and they may move toward illness rather than wellness. As smoking was reported as a leading preventable cause of death, smoking in adolescent negatively affect the core structure of the Jordanian community.

**Client Variables**

**Physiological factors related to adolescents initiation of smoking**

Nicotine builds a biochemical pathway that leads to the pleasure effect of taking other drugs[12]. Addiction researchers showed the association between tobacco and increased levels of dopamine in the brain, which lead to cause greater pleasure for smoking and, therefore, leads to more smoking. Adolescents and young adult are vulnerable population for addiction and some psychiatric problems[13,14]. In fact, adolescents who are daily smokers are more likely to report withdrawal symptoms than non-daily smokers[13].

Smoking first cigarette may seem harmless. Surprisingly, research has recently recognized that during adolescence, addiction on nicotine may begin with the very first cigarette[7]. Adolescents who try the first cigarette usually progress to regul-
Smoking Cessation Strategy for Adolescents

Psychological factors related to adolescent’s initiation of smoking

According[7], fatigue, stress, frustration and depression levels in adolescents who are smokers were as two times greater compared to nonsmokers. In fact, there is a relationship between stress and increase level of smoking for both male and female. The adolescent with high level of depression or distress and low social-support is more liable to be smoker than the others[16]. Furthermore, tobacco smoking in adolescents predicts maladaptive coping styles in adulthood[17]. Self-esteem is an important contributing factor for maintenance of health behaviors[17]. Adolescents with lower morality and self-efficacy scores, have more positive attitudes towards smoking[18].

Social and cognitive factors related to adolescents initiation of smoking

Social and cognitive factors have a role in initiation of smoking in adolescence. In Jordan, smoking practices by teachers and friends may motivate students to smoke. Trying something new and spending free time with friends who are currently smokers are the major reasons to start smoking among adolescents in Jordan[7]. During adolescence, the social and cognitive skills develop and the adolescent learn to develop self-identify that separates the adolescent from parents, siblings, peers, and others, yet is heavily influenced by those same individuals[7]. In addition, peer relationships become increasingly important as part of the adolescents’ normal social development. Furthermore, curiosity, social norms, and social pressure in the, school, anywhere else are the most frequent reasons for adolescents’ smoking in the experimental stage, teens are exposed to some smoker models as peers, siblings, parents, popular advertising in the media and movies[7].

In addition, smoking behavior of family and best friend smoking has a significant effect on adolescent smoking. Family smoking including parent and sibling smoking are also associated with development of adolescent smoking behavior[7]. Moreover, the influence of parental smoking on adolescent smoking initiation could be evident even when parents quit.

Developmental factors related to adolescent’s initiation of smoking

The physical changes of puberty are triggered by increases six hormones that stimulate the physical, emotional and neurological developmental changes of puberty. The timing of these physiological changes is thought to be influenced by genetic factors, nutrition, catecholamine and Adrenocorticotropic Hormone (ACTH) levels associated with physiologic stress response, and other factor that leads to initiation of smoking. The addictive properties of nicotine are similar to those of cocaine and heroin[12]. Simply, the way in which the adolescent become smoker is directly affected by trying new experience, and falling down in the trip of addiction.

Spiritual factors related to adolescent’s initiation of smoking

Smoking is not accepted in Islam[19]. However, adolescents challenge spiritual beliefs. Ethically, we have to protect the second hand smokers from having second hand tobacco smoke-related illnesses, and consequently, public health protection for the society as a whole. Using the ethical principle, not to harm, and utilitarianism, support the view point which suggests that prohibition of smoking is ethically and morally justifiable to protect the public health. In fact, there is no such law that expressly vests the right to smoke freely in cigarette smokers. Intrapersonal, Interpersonal, and Extra personal Stressors that make Jordanian Adolescents Smoking

The literature review revealed that there are many negative stressors that enhance the decision of adolescents to use nicotine. Example of these stressors are wanting to belong to the peer group, high anxiety and stress resulted from life demands, fear of rejection from the group of peers, peer pressure, low self-esteem and poor body image, dealing with stressful situations, weight control, and lack of self-confidence[20]. These stressors are consistent with Neuman classification of stressors as intrapersonal, interpersonal, and extra personal.

Intrapersonal stressors

Intrapersonal stressors may include some events, factors, or conditions related to physical health or body that influenced the adolescent decision to use nicotine such as the feelings or beliefs about body image or self-esteem. These stressors may include use the cigarettes for the purpose of weight loss, or decrease the high level of stress or emotional tension. Other factors include low self-esteem and poor body image. High anxiety and stress resulted from dealing with stressful situations, weight control, and lack of self-confidence[20].

Interpersonal stressors

Interpersonal stressors may include some events or conditions in the relationship with friends, family members or significant others that influence the decision to use nicotine. These stressors may include peer pressure in school, feeling like a part of the group, family conflicts, and role models, wanting to belong to the peer group, fear of rejection from the group of peers, peer pressure[20].

Extra personal Stressors

Extra personal stressors may include some events or stressors related to school, work, media (i.e., television, magazines, etc.), culture, ethnicity, education, or socioeconomic status, religion, (or beliefs about life), that influenced the adolescent decision to use nicotine. Other factors may include coercion into dropping out of school, coercion into completing high school, coercion into attending trade school, college, or university, stressful work environment for those who work, effects of other people using cigarettes, and lack of flexible working hours, Television which usually shows people smoking as having fun and show individuals as being so happy when they are smoking.

The role of environment

In Jordan, the environmental factors related to adolescents’ initiation of smoking is clearly identified. Recently, the tobacco industry spent millions of dollars on magazine advertising[21]. For example, although Television advertisements about smoking are not allowed in Jordan, children in Jordan can still see smoking advertisement via satellite Television. This may make adolescents more susceptible to smoking by environmental influences. On the other hand, adolescent’s environment af-
factors adolescent smoking levels. Studies show that increases in price of cigarettes significantly reduce cigarette smoking. When the cigarettes be easy available for young children, they are twice as likely to smoke as those who find access difficult or expensive[22].

Definition of Health

Neuman describes optimal system stability as “the condition in which a system variables are in balance or harmony with the whole of the client”[10]. Adolescent smoking, however, is a state of insufficiency, in which disrupting needs are yet to be satisfied inappropriately as smoking is dangerous for health. Neuman indicated that Illness results when there is a deficit in the amount of energy available within a system[10]. The need for smoking indicates a trial to compensate for this need inappropriately.

Nursing Interventions For smoking prevention among adolescents in the Jordanian community based on Newman systems model.

Substance abuse in general is devastating to the health[23-27]. Primary prevention may include education for adolescents regarding the advantages and disadvantages of nicotine use. This may include general educational program about smoking. Secondary prevention assisting adolescents to work through their feelings related to family argument and work related issues and implementation of smoking cessation programs and posting non-smoking signs. Tertiary prevention interventions would focus on improving adolescent’ body image, and provide specialized care for those who have chronic conditions as a result of smoking.

Nurses can engage in education about nicotine use, diet, treatments, and exercises on the part of nurses and other healthcare providers should be embraced as part of the everyday work life if young adult males are to achieve their goals of nicotine cessation. Emotional support and reassurance on the part of the healthcare provider is imperative. Increase level of knowledge about the negative effects of nicotine use is important. In addition, parents must be informed of alternatives to smoking in order to make informed choices.

Political and Legal Factors

There is a need for strict policies and regulations to control smoking which has become a growing public problem in Jordan. Jordan is a country with little resource. Implementation of strong anti-smoking policy needs lots of financial support to raise awareness and use the media to affect the public opinion. However, Jordan government may focus more on critical issues which may be earmarked for further tobacco control measures.

Additional recommendations may include enhancing the role of media, mobilize grassroots, enhance the role of media, and more to pass the law and penalties for those who violate the law[31].

Laws and regulating cigarette sales have not been strongly enforced, despite laws prohibiting those under age 18 from purchasing cigarettes. Although sales of cigarettes to minors are illegal, many adolescents who are smoking have bought their own cigarettes. Therefore, implementation and enforcement of legislation to reduce the sale of cigarettes to minors can result in sever reduction of experimentation and regular use of cigarettes by adolescents.

In 2008 Jordan’s public health law was amended to prohibit smoking in public and private institutions and all public facilities including public and nongovernmental buildings, public transport vehicles, hospitals, healthcare centers, schools, closed playgrounds cinemas, theatres, libraries, museums, airports, lecture, halls and other locations. Beginning June 2009, smoking was banned inside Amman’s fast-food outlets. ‘No smoking’ signs were widely distributed in many public and private settings. Penalties were established in this section in more formative way compared with prior legislation[31]. Despite smoking is not allowed in many public and private settings in Jordan, the law is poorly enforced.

Recommendations

Enhance the role of media

Media can be used for promotion of no smoking in public places; the end result of media use is to fill the gap information about this topic in order to provide individuals with more information to make better health choices[29]. The purpose for using such media is to mobilize widespread support to apply the pressure for passing no smoking in public places policy. Moreover, media needs to focus on the social benefits of smoking among males and females.

Mobilize grassroots

In order to mobilize grassroots the message to audience will be logically persuasive, morally authoritative, and capable of evoking passion. The message will speak at one and the same time to the brain and to heart of people. It will focus on raising public awareness of problems caused by smoking by illustrating its impact on the most vulnerable populations (e.g. children). Educational materials will be used on bad effect of smoking, including posters and stickers.

Further increase in tax rates

Tax and subsequent price increases could reduce consumption in low- and middle-income countries, particularly among poor and young people. They also increase government revenue, which can be earmarked for further tobacco control measures.

Integrating smoking cessation therapy into primary care

Smoking cessation therapies in Jordan should be considered the responsibility of the general health providers. The health care providers should have training in smoking interventions and offer cessation treatment. In addition, tobacco cessation services should be integrated into primary health care and include behavioral counselling and low-cost or no-cost pharmacologic tobacco cessation therapies and access to telephone quit help lines[29,30].

Other Recommendations

Additional recommendations may include enhancing the role of health care professionals in research, education, and practice to assess, intervene, and evaluate the smoking issues regularly and partnering with the community to promote strict and effective strategies for prohibiting smoking in public places and institutions[31]. Other policy recommendations are prepared to aid law enforcement include conducting public health campaigns in collaboration with the Jordanian government, promote information and knowledge exchange between health officers and the public to increase awareness among population, provide enough funding and proper budget allocation to cover the way
for successful cessation programs and effective tobacco dependence, employ health care professionals to provide excellent teaching and communication skills, enforce stronger policies regarding the regulation of the tobacco and cigarette trade through firm actions as the effectiveness of raising prices of tobacco, which is the most effective tobacco control with different types of media to affect the knowledge and attitudes.

Conclusion

Although Jordan is one of the pioneer tobacco control countries in the region, it still has very high prevalence of tobacco use. There is an argent need to collaborate the efforts among policy makers and administrators to enforce the application of smoking control in Jordan. A successful tobacco control policy leads to positive changes to improve public health. Of course, it is hoped that the suggested tobacco control policies will, in part, result in a reduction in smoking prevalence.

References