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SMOKING HABITS AMONG ADOLESCENTS

– A literature review



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TURUN AMMATTIKORKEAKOULU THESIS

Due to the addictive nature of nicotine, adolescents who experiment with smoking are at high risk to develop a regular smoking pattern and to continue smoking in adulthood.

This thesis examined the factors contributing to smoking initiation among adolescents. The method employed in this study was a systematic literature review. The purpose of this study was to identify factors contributing to adolescent smoking initiation. The aim of the thesis is to produce an evidence based information that will be published on Turku University of Applied Sciences' Hoitonetti.

Six articles were systematically selected to answer the research question. The study found the influence of smoking friends, smoking siblings and family influences, adolescents' sense of wellbeing and poor ego development to be strong contributing factors to adolescent smoking initiation. The study also found that adolescents with psychological problems have a high chance of initiating smoking. Some risk groups were identified in the study. These include adolescents with low self esteem, those who performed badly in school, those with weight concerns, those who spend a lot of time on television, popular students in schools with high smoking rates, those with tattoos, and adolescents in their last grades in school.

Smoking prevention programs should aim at identifying risk groups and finding measures to protect vulnerable groups from initiation. The study recommends counseling adolescents on the dangers of keeping bad company. Programs should aim at helping adolescents gain emotional control so as to enable them resist pressures from peers. Also since adolescents learn by imitation, older siblings and family members should be educated on the dangers of smoking in the presence of adolescents and also about leaving cigarettes at the disposal of adolescents. The study recommends supporting adolescents on ways of dealing with stress so that they don't turn to cigarettes. Also preventive measures should also aim at ego development.

KEYWORDS:

Smoking initiation, adolescent smoking, smoking risk factors, teenagers

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1 INTRODUCTION

Adolescence is a stage of significant growth and potential but it is also considered to be a time of great risk. A lot of adolescents are facing pressures to use alcohol, cigarettes, or drugs and to start sexual relationships, thereby putting themselves at high risk for intentional injuries and infection from sexual transmitted diseases. (Kipke 1999, 2.)

According to the World Health Report 1999 a considerable number of deaths would be prevented and tobacco related deaths would be halved if most of the adult smokers quit smoking over the next 20 years. People who begin smoking early have a greater risk of lung cancer compared to those who begin smoking at a later age as a result of the cumulative exposure. (Colditz & Hunter 2000, 7.)

Tobacco is known to be the only legal consumer product that can cause harm to everyone exposed to it and kills most of those who use it as intended. Tobacco is also considered as the single most preventable cause of death in the world. The use of tobacco is widespread due to low prices, strong marketing, lack of education about its negative effects, and poor public policies against its use. (WHO 2008, 8.)

Tobacco contains many chemicals which are known to cause cancers. (Report on Carcinogens 2005, 408). Tobacco kills more than the combination of AIDS, legal drugs, illegal drugs, road accidents, murder and suicide. (Mackay & Eriksen 2002, 36). The easiest way to stop the effect of tobacco is to prevent its initiation. (Robin & Sugarman 2001, 143).

The purpose of this study is identify factors contributing to adolescent smoking initiation and the aim of the thesis is to produce an evidence based information that will be published on Turku University of Applied Sciences' Hoitonetti.

2 BACKGROUND ON ADOLESCENTS

2.1 Adolescence

Adolescence is a time when young people undergo physical, psychological, sociocultural and cognitive development (DiClemente et al 2009, 4). It is a time when many physical, psychological and behavioural transformations happen and when adolescents develop a lot of the habits, behavioural patterns and relationships they will take into their adulthood (Committee on Adolescent Health Care Services and Models of Care for Treatment 2008, 17).

Studies on humans and nonhuman primates show that adolescence is a period for undertaking important development tasks like maturing physically and sexually; acquiring skills necessary to perform adult roles; gaining more independence from parents, and establishing social ties with members of the same and opposite gender (Kipke 1999, 2). During this period, the adolescent establish their emotional and psychological independence, learn to understand and takes charge of their sexuality and think about their future in society. This process is gradual, emotional and at times unsettling. The adolescent may feel sad, disillusioned and hurt one moment; happy, optimistic and in love the next moment. (UNICEF 2002, 4.) Adolescence is a period the young person is trying to achieve a personal identity so it is a time he or she may experiment with different behaviours (Haven 1996, 14). The adolescent period is a stage when the adolescent takes on new roles and experiment with independence. They seek for identity, learn to apply values gained in early childhood and build skills that will help them in adulthood. (UNICEF 2002, 1.)

2.2 Physical Development

Adolescence is a stage when young people undergo significant changes of the body, mind and personal responsibilities. Teenagers undergo significant psychological and emotional changes in addition to physical changes. Puberty is one of the main changes that occur during adolescence. (Wolfe & Crooks 2006,75.) Puberty may be defined as “the period of transition from a state of reproductive immaturity to a state of full reproductive competence” (Bancroft & Reinisch 1990, 9). Adolescence is considered as a transitional period because during this stage a child is becoming, but not yet an adult (American Bar Association 2004, 1).

The physical changes of puberty affect many parts of the lives of adolescents. Changing bodies may result in changes in circles of peers, adults' view of adolescents, and adolescents' view of themselves. For girls puberty may begin as early as eight years. Adolescent girls experience a rapid growth spurt, usually beginning around age 10. This growth spurt continues for a few years and then girls continue to grow more slowly until they are seventeen or eighteen. During puberty, girls develop breast buds, there is appearance of pubic hair, height increases, menstruation starts and hips widen. Growth spurt in boys usually starts one to two years after most girls. Boys continue to develop for three to four years after the girls. This means that boys may not finish growing physically until they are 21. Puberty in boys is marked by the appearance of pubic hair, increase in length of penis, height increases, voice deepening, and development of muscle mass. (McNeely & Blanchard 2009, 7.) Individual adolescents differ in the pace of their development and so there cannot be an average or normal adolescent. For example in any group of thirteen year old adolescents, some will still look like children and others may behave like mature adolescents. Also an adolescent may appear mature in some parts and less mature in other parts. For instance a fourteen year old adolescent may have reached full physical development but might behave emotionally like a teen a few years younger. Another example may be a fifteen

year old who may have advanced thinking abilities but might only be beginning puberty. (Haffner 2008, 46.)

2.3 Physical Appearance and Body Image

Adolescence is a period of considerable physical and psychological change, and the development of a satisfactory body image at this time is very crucial. The body appreciation and the approval of appearance by others is very important in the development of personal identity and sense of social belonging. (Price 2009, 38.) When children reach adolescence, they become more concerned about their appearances and that of others (D'Arcy 2009). Adolescents are known to spend a lot of time concerned about their physical appearance as such they may spend considerable amount of time in the bathroom or in front of the mirror (American Psychological Association 2002, 8). A study conducted by Sabbah et al (2009) found that more girls than boys were dissatisfied with their weight although they were not overweight.

Changes associated with puberty can be particularly concerning for girls who mature at a different rate from their other friends. This might be especially problematic because adolescents want to fit in and be like one's peers. (Cash & Smolak 2011, 78 – 79.) Body image is a person's inner belief of his or her own physical appearance. Every person holds an image of the physically perfect person in mind and compares his or her appearance against this ideal. An adolescent who is happy with his or her body shape and appearance is considered to have a positive self-image. The transformations of puberty and resulting sexual maturation usually make adolescents feel self-conscious and awkward about their bodies. Adolescent girls seem to be particularly susceptible to developing a negative body image. Boys are also vulnerable to the media representation of the "perfect" male body, in this case taut and bulging with muscles. (Weinshenker 2002.) Adolescent participants' narrative in a study by Yoo & Johnson (2007, 358), disclosed teasing about aspects of their appearance such as clothing, facial characteristics, weight, height, hair and

other physical characteristics. Clothing was found to be most frequent cause of teasing among participants in the study. Participants in the study reported that they tried to change some aspects of their appearance after being teased especially about their clothing. (Yoo & Johnson 2007, 374-377). A study by Ayala et al. (2007, 21) found that among adolescent girls were classified as at risk for or overweight and who more strongly recognized and agreed with socially sanctioned standards of appearance as represented in the media were more dissatisfied with their body image.

2.4 Cognitive Development

A lot of advanced thinking capabilities develop during the adolescent period. During adolescents young people gain the ability to plan ahead, anticipate the response of others, and become better debaters and arguers. The increased cognitive ability to think about possibilities may also lead to becoming lost in thoughts and worries. (Wolfe & Crooks 2006, 76.) Although there are individual differences in cognitive development among adolescents, these new capabilities enable them to make mature decisions that was previously beyond their cognitive capacity. Cognitive competence includes the ability to think or argue in a logical manner, think abstractly, problem solve, reflect, and plan for the future. (American Psychological Association 2002, 11.) “A growing capacity for logical and scientific reasoning will affect the young person’s skills in communication, decision making and negotiation” (Aldgate et. Al 2004, 214).

During adolescents, young people are able to think about what is possible, instead of limiting thought to what is real. They are able to think about abstract concepts. Adolescence is marked by increased introspection, selfconsciousness, and intellectualization. They develop the ability to think about things in multiple ways at the same time. Teenagers develop the ability to view things in relative terms, as opposed to absolute, black-or-white terms. They are more likely to question others’ opinions and less likely to accept facts as absolute truths. Their belief that everything is relative can become so

overwhelming that they may become extremely sceptical at times. (Rosado 2000, 7.)

2.5 Self Image and Self Esteem

The physical changes that occur during adolescence can significantly affect the self image of the adolescent. Some adolescents may feel attractive, grown-up, and confident, while others feel self-conscious, ugly and afraid. These physical changes are mixed with psychological and emotional changes. Physical changes affect self-image and behaviour while also prompting changes and reactions in others. Changes in a child's physical appearance may for example, evoke different types of behaviour from parents, peers and others. (Wolfe & Crooks 2006, 76.) Adolescents with low self-esteem are considered to be less equipped to refuse invitations to use substances or drugs (Price 2009, 38). Self-concept develops during the adolescent stage and is associated with physical, cognitive and emotional growth. Self-esteem has a strong influence on adjustments across a many aspects of the adolescent's life. Self esteem is known to affect educational achievements, social relationships, mental health and ability to deal with stress. (Aldgate et al. 2004, 214-215.)

Puberty is considered to be the most influential factor in young adolescence (ages 12-14). Adolescents become very concerned with bodily appearance and the need to comply with an undefined code of normalcy. Adolescents may adopt conformity and peer compliance as defences against rejection and disapproval. (Sofronoff et al. 2004, 4.)

2.6 Adolescent Risk Behaviour

Risk taking behaviours are behaviours in which the results are unknown and from which there is a possibility of identifiable and possibly fatal, injury. These are behaviours that can cause physical harm to the participant or others. Risk behaviours include driving at high speed, alcohol use and driving, using illicit drugs, exhibiting aggressive behaviour towards others and engaging in unprotected sexual activity. They also include behaviours that are socially unacceptable and could lead to serious legal consequences such as shoplifting, vandalism, assault, theft and drug dealing. (Sofronoff 2004, 60-61.) According to Sarkar & Andreas (2004, 699), adolescent drivers are more dangerous than other drivers but their perceived risk of being caught engaging in dangerous driving may not be enough to deter them from such behaviour. Wang et al (2010, 320) found that early adolescents who were male and who did not come from two-parent families had more risk behaviours than others. According to Wang et al (2010, 320), although adolescents may be pressured into identifying with peers' risk behaviours, adolescents who have good emotional regulation may deal with stress better and be less affected by peers' risk behaviours.

Giannakopoulos et al (2008, 168) found time spent on studying to be strongly associated with decreased risk of smoking. They found adolescent smokers to spend more time watching TV and playing videogames, other than sports activities, playtime or walks. Also they found that sport activities outside school were inversely associated with smoking. Giannakopoulos et al (2008, 168) found that smoking adolescent smokers were less likely to be involved in health-promoting dietary and physical activity habits. According to Sabbah et al (2008, 47), students who were not happy with their weight were more likely to be involved in risky behaviours such as bullying others at school, being bullied and smoking nargila, than adolescents who were more satisfied with their weight. They also found that girls who were dissatisfied with their weight engaged in more risky behaviours such as fighting or fighting that resulted in an injury than with girls who were satisfied with their weight.

In the study by Robert & Ryan (2002, 1061), adolescents who had tattoos reported greater involvement in sexual intercourse, higher levels of substance use by their peers and by themselves, higher levels of violence perpetration and have more school problems than their nontattooed counterparts (Robert & Ryan 2002, 1061). According Ryan & Robert (2002, 1062), tattoo may be permanent, easily noticed indicator for identifying an adolescent who is at risk for involvement in premature sexual intercourse, substance use, violence and school problems. Observation of a tattoo during physical examination of an adolescent should prompt a more intensive assessment for high risk behaviours and subsequent counselling during clinical office visits (Ryan & Robert 2002, 1062). Violence is found to a higher extent in male adolescents males with tattoos and female adolescents with body piercing (Carroll et al. 2002, 1027). A study by Felton & Bartoces (2002, 63) found low problem solving skills, fewer health enhancing behaviours and less education to be risk factors for early sex. Since adolescent smokers are also more bound to be involved in other risky behaviours, the observation of tattoos should be a way of identifying adolescent who may be involved in risk behaviours. (Dearden et al. 2007, 160.)

2.7 Addiction To Tobacco

Addiction may be described as continued uncontrollable use of a substance regardless of harmful consequences. Many smokers do not acknowledge that they are addicted to tobacco. Most people think they can quit whenever they want to. Many youth are of the opinion that they have a lot of time to work on quitting. The first step in recovery is acknowledging that there is a problem. (MacDonald 2004, 26-27.) Addicted smokers experience a strong irresistible or uncontrolled desire to smoke. These irresistible desires to smoke can be aroused by smoking cues, abstinence and stressful situations in the environment. (DiFranza 2010, 381.)

Nicotine is like heroine and cocaine addiction in some ways because it is a psychoactive drug. It is also considered as a reinforcing drug, which is the

reason why the smoker finds it hard to quit. Due to the reinforcing effect, most smokers may find it difficult to stop smoking. Cigarette smoking can be described as a physical and psychological addiction. (Becket 2004, 12.)

Withdrawal symptoms of nicotine include anxiety, sleep disturbances, depression, increased appetite, irritability, cognitive and attention deficits. Although withdrawal is associated with the pharmacological effects of nicotine, many behavioural factors can also contribute to the intensity of withdrawal symptoms. Some smokers claim that the smell, and the mere sight of a cigarette and the ritual of obtaining, lighting, handling and smoking the cigarette are all linked to the pleasurable effects of smoking and may worsen withdrawal or cravings. (National Institute on Drug Abuse 2009, 3.) Nicotine causes reliance by providing centrally mediated reinforcing effects, by controlling elements such as body weight and mood in a manner that is considered useful or pleasing by the tobacco user and by causing a physical reliance such that abstinence may result in unpleasant symptoms (Jiloha 2008, 129).

2.8 Health Effects of Smoking

Smoking prevalence is estimated at around 28.6% (40% among males and 18.2% among females) in the WHO European Region. Smoking rates in men and women has stabilized or is reducing in most western European countries. The rate of smoking in some eastern European countries is declining although in general it is rising in women and stabilizing in men. The rates of weekly smoking in fifteen-year old girls in many western European countries surpasses that of boys of the same age. The rates of weekly smoking in boys in eastern European countries is higher than that of girls. (European Tobacco Control Report 2007, 12.)

Studies have shown that the smoker does not only harm him or herself but also puts the life of others at risk. Research has firmly established that an environment devoid of smoke is the only effective way to protect the population

from the detrimental effects of secondhand smoke exposure. (WHO 2007, 2.) The burning and smoking of tobacco produces a complex mixture of chemicals which are harmful to the health of people who inhale the smoke. Children are at great risk from adults smoking and smoking around a pregnant woman poses a health risk to a foetus. (Mackay & Erikson 2002, 36.)

Tobacco has been found to cause many chronic diseases, acute respiratory diseases such as pneumonia and influenza, and a number of persistent respiratory symptoms such as wheezing and cough (Colditz & Hunter 2000, 3.) Research suggest that the risk of death from lung cancer may rise with amount of cigarettes smoked and duration of smoking. (Report on Carcinogens 2011, 408). Many are of the belief that young people are picking up the habit of smoking due to ignorance about risks associated wit smoking and also that it is a part of adolescent rebelliousness. (Dawn 2006, 71-72.)

Cigarrete smokers been found to have lower level of lung function compared to nonsmokers. The rate of lung growth can also be reduced by smoking. Smoking is known to affect the athletic capabilities of young people. Regular smoking may lead to coughs and worsen respiratory diseases among young people. Adolescent smokers experience shortness of breath at higher rates compared to nonsmoking adolescents and produce phlegm more often than those who do not smoke. (Page & Page 2011, 271.)

Smoking causes damage to different parts of the body such as mouth, teeth, skin, fingernails and hair. Tobacco products contains elements and compounds such as arsenic, carbon monoxide, nicotine and formaldehyde which may cause wrinkles, discolouration of skin complexion and yellowing of fingernails when they enter the bloodstream. Secondhand smoke may also result in cosmetic damage when it gets in contact with the body. The harm caused by smoking on a person's appearance may be cummulative and may take several years of smoking to create observable effects. Smokers who give up the habit can prevent further damage to their physical features but in most cases the years of damage may require cosmetic surgery. Damage caused internally and externally by smoking leads to many changes in a person's appearance.

Smoking makes people seem older than they actually are. (McCay et al. 2009, 70-71.)

Women who are smokers or who stay with a smoker are prone to health effects associated with reproductive health such as problems associated with pregnancy, use of oral contraceptive, menstrual function, and cancers of the cervix and bladder. Smoking may also lead to irregular menstrual cycles and increased menstrual discomfort. Women who are smokers may also have earlier menopause, which increases chances of getting osteoporosis, heart disease and other conditions for which estrogen provides a protective effect. The risk of sudden infant death syndrome may also increase when a pregnant woman smokes. (Page & Page 2011, 273.)

Tobacco smoking can have negative effects on the oral cavity such as bad breath, stained teeth and life threatening conditions such as oral cancer. Also tobacco users often develop gum disease. (Alters & Schiff 2009, 211-212.)

2.9 The economic cost of smoking and benefits of quitting

According to McCay et al (2009, 76-77), smoking costs the smoker in many ways and the cost of smoking goes beyond purchasing tobacco products. A smoker spends a considerable amount of money on medical bills, lost wages, higher insurance costs, and spends a lot of money on cosmetics and clothing. Studies have found that people in the lower socioeconomic classes smoke more than people in the upper socioeconomic classes. (McCay et al 2009, 76-77.)

Tobacco use compromises the health of both the smoker and nonsmokers exposed to tobacco smoke. Treating of tobacco-related diseases requires a number of medical services, such as hospital stays, physician services, other health practitioners' services, prescription drugs, home care, and nursing home care. Healthcare in many advanced countries is catered for by private insurance and socialized health care systems whereas patients in many developing

countries pay for medical care costs themselves. (Research for International Tobacco Control 2003, 21.)

Economically, the costs of smoking to smokers and their families include money spent on buying tobacco, which could have been used on food, clothing and shelter, and other important things. As smoking causes the death of many in their working years, a lot families are deprived of many years of income. Smokers also lose a lot of their income through illness. In the event of a smoker's premature death, a partner, children or elderly parents can be left without a means of sustenance. A considerable amount of money is lost by family members of smokers through time spent looking after them when they are sick, and time lost taking them to health centers or hospital. (MacCay & Eriksen 2002, 40-42.)

Smoking does not only have harmful health effects, but smoking cessation has been found to result in improvements in health. Quitting smoking leads to almost instant improvements in general health and benefits both persons with smoking-related illnesses as well as those with other ailments. People who stop smoking increase their life expectancy. Also smoking cessation has been found to be related to reductions in the risk of developing lung and other types of cancers. It has also been found to reduce the risk of heart disease. Pregnant women who quit smoking have reduced risks of smoking-related complications such as low birth weight. (Sloan et al 2004, 78.)

According to Britton (2004, 34), smoking quitting results in improvements in life expectancy and prevention of disease. Quitting smoking also improves individuals' quality of life as smokers tend to have less health problems compared to non-smokers. Individuals and society also benefits from smoking cessation due to reductions in the effects of secondhand smoke. (Britton 2004, 34.)

According to Alters & Schiff (2009, 214), since cigarette smoking has negative effects on the respiratory system, a smoker who quits may notice that it is easier to breathe. Smoking cessation reduces the occurrence of symptoms

such as cough, mucus production, and wheezing. Smoking Cessation may also reduce the occurrence of respiratory infections such as bronchitis and pneumonia. (Alters & Schiff 2009, 214.)

3 PURPOSE AND AIM

The purpose of this study is identify factors contributing to adolescent smoking initiation. The aim of the thesis is to produce an evidence based information that will published on Turku University of Applied Sciences' Hoitonetti.

4 RESEARCH QUESTION

What are the factors influencing adolescent smoking initiation ?.

5 RESEARCH METHOD

5.1 The Review Method

The method employed in this study was Systematic Literature Review. By this approach the author tries to identify all relevant primary research, makes a standardized appraisal of study quality and the studies of acceptable quality are systematically synthesized (Glasziou 2001, 1). Systematic reviews are helpful in the formulation of effective social and health policy, and also provide information on the effectiveness an intervention. They also reduce guessing on the part of readers. Systematic reviews are helpful in the search for evidence based health care. Data from previous studies can be analysed again to provide a composite picture. (Callagan & Waldock 2006, 344.)

The ability to study the consistency of results can be improved through the combination of data. This is because many individual studies are too small to detect modest but important effects. The combination all the studies that have attempted to answer the same question greatly improves the statistical power of a study. Also systematic reviews improves the generalizability of data. (Glasziou 2001, 1-2.) In systematic reviews, the reviewer influences what gets included and what is excluded. Another disadvantage of a systematic review is that studies may not be properly combined. For example studies using different methods or different participants may be analysed together. Also data from the topic may not be homogenous and the inclusion criteria used might also limit the coverage of the topic. (Callagan & Waldock 2006. 344.)

5.2 The Review Process

Since smoking is a global and widespread problem the author expected to get a lot of researches and literature on the topic. In conducting the systematic review, the author tried to find answers to the question 'What are the factors that influence adolescents smoking initiation'. Three academic search engines namely Elsevier:ScienceDirect, Cinahl and YourJournals@Ovid databases were used in conducting searches. The use of the key words 'Adolescents and smoking' yielded 1716 hits in CINAHL database. This gave an indication that there was a lot of work and research done on the topic. Other terms such as "adolescent smoking initiation" and "adolescent smoking risk factors" were also used to obtain information.

The author limited searches to articles that were peer reviewed, written in English and with full text. Searches were also limited to articles with abstracts. Publications date was limited to articles published between 2000 and 2011.

In summary, the inclusion criteria used in the study is as follows

1. Research articles written in english
2. Research articles published between 2000 to 2011
3. Peer reviewed full text research articles
4. Articles discussing smoking in adolescents

Using the search term 'adolescents and smoking' and the limits set yielded 242 hits in Cinahl. Out of the 242 hits, 21 articles were found to have titles relating to study. By reading the abstracts, 8 articles were found to be relevant to the study.

The author then set up some exclusion criteria to eliminate some of the articles.

The exclusion criteria used is as follows

- i. The research concentrates only on the factors and risk factors of adolescent smoking

The author concentrated only on those articles that addressed the factors influencing adolescents smoking initiation. Using this criteria four of the articles were eliminated. From the 8 research articles, 4 were found to be appropriate for study by reading through the full texts. The content of these 4 research articles were appropriate to answer the research question.

The author then proceeded to find articles from Elsevier:Science Direct database. The key words 'Adolescents and smoking' in Elsevier:Science Direct database yielded 1578 hits. The author decided to make a selection from the first 150 articles. Only one article was selected after checking through the abstracts and full texts. In Your journal@Ovid database one article was selected after looking through the first 150 articles.

Table 1. Article selection from databases

Data-base	key-word(s)	Hits	Approved title	Approved abstract	Approved full-text
CINAHL	Adolescents and Smoking	242	21	8	4
Elsevier:ScienceDirect	Adolescents and smoking	1578	1	1	1
Your Journals@Ovid	Adolescents and smoking	605	1	1	1

5.3 Analysis of Materials

Six articles (Can et al. 2009; Weiss et al. 2008; Damianaki et al. 2008; DiNapoli 2009; Hayes & Plowfield 2007; Kulbok et al. 2008) were systematically selected to answer the research question.

The articles were published in Journals of School Health, Public Health Nursing, International of Behavioural Medicine, Child: Care, Health & Development, Applied Nursing Research and American Journal of Maternal Child Nursing.

The researches were conducted in Greece (Damianaki et al. 2008, 311) , Turkey (Can et al. 2009, 93), USA (DiNapoli 2009, 126 ; Kulbok et al. 2008, 508; Hayes & Plowfield 2007, 116) and China (Weiss et al. 2008, 149).

Samples of two of the researches (Weiss et al. 2008, 149 and DiNapoli 2009, 126) were extracts from previous studies.

Five (Can et al. 2009; Kulbok et al. 2008; Weiss et al. 2008; Damianaki et al. 2008; Hayes & Plowfield 2007) out of the six articles used for the review discussed smoking among both adolescent boys and girls whereas one article (DiNapoli 2009, 126) concentrated on adolescent girls.

Logistic regression analysis were used in data analysis of four (Can et al. 2009, Weiss et al. 2008, Damianaki et al. 2008, DiNapoli 2009) of the articles. In Can et al (2009, 93) and Weiss et al (2008,152), chi-square was combined with logistic regression analysis. In the study by Kulbok et al (2008), the research team conducted content analysis by identifying, coding and categorizing dominant patterns in the data, in response to interview questions.

Table 2 Summary of findings of articles

Authors, Title of Publication and Journal	Aims and purpose	Sample	Main findings
Can G ; Topbas M ; Oztuna F ; Ozgun S ; Can E ; Yavuzilmaz A. 2009 Factors contributing to regular smoking in adolescents in Turkey. Journal of School Health	The objectives of this study were to determine the levels of lifetime cigarette use, daily use, and current use among young people (aged 15-19 years) and to examine the risk factors contributing to regular smoking	The study was conducted in the Province of Trabzon in Turkey with 4666 students (aged 15-19 years)	Those students whose siblings smoked were 1.35 times more at risk than those whose siblings did not smoke. Those whose friends smoked were 2.42 times more at risk than those whose friends did not smoke. Those with poor grades 2.62 more at risk than those with good grades. Subjects whose mothers smoked were 1.57 times more at risk than those whose mothers did not smoke
Kulbok PA; Rhee H; Botchwey N; Hinton I; Bovbjerg V; Anderson NLR (2008). Factors influencing adolescents' decision not to smoke Public Health Nursing	The objective of this study was to explore nonsmoking attitudes, beliefs, and norms from the perspective of 16–17-year-old nonsmokers	39 nonsmokers recruited from youth organizations in an urban community in Central Virginia, USA.	Concerns for health and addiction, a positive self-image, and perceived confidence, emerged as factors affecting participants' decisions not to smoke. The approval of parents and friends, and personal beliefs further reinforced adolescents' nonsmoking decisions.
Hayes ER; Plowfield LA (2007) Smoking Too Young: Students' Decisions About Tobacco Use. American Journal of Maternal Child Nursing	To describe college students decisions related to smoking	100 college students (aged 18-23 years)	Peer pressure was the greatest influencing factor to beginning to smoke, and health was the major reason for not beginning to smoke. Addiction and stress maintained smoking

Authors, Title of Publication and Journal	Aims and purpose	Sample	Main findings
Weiss JW; Palmer PH; Chou C; Mouttapa M; Johnson CA (2008) Association between psychological factors and adolescent smoking in seven cities in China. International Journal of Behavioral Medicine	This study explored associations between three psychological factors-anxiety, hostility, and depressive symptoms-and smoking behavior among Chinese adolescents.	4,724 7 th and 11 th grade students from seven large cities in China	Study showed that anxiety, hostility, and depressive symptoms were significantly associated with a higher risk of lifetime smoking for both boys and girls.
Damianaki A; Kaklamani S; Tsirakis S; Clarke R; Tzanakis N; Makris D (2008) Risk factors for smoking among school adolescents in Greece. Child: Care, Health & Development	to identify factors, which influence schoolchildren to smoke	924 students from 15 high schools in a semi-urban area in Crete, Greece	Stepwise logistic regression analysis showed a positive relationship between current smoking and having brother or sister smoking, having more than three friends who were smokers and last school grade.
DiNapoli P. (2009) Early initiation of tobacco use in adolescent girls: key sociostructural influences Applied Nursing Research	The aim of the study was to develop a risk reduction model that increases the likelihood of healthy behavior choices in girls during early adolescence.	3,775 adolescent girls from eight school districts in New Hampshire	Those sociostructural variables that decrease the relative risk for the initiation of tobacco use were noted in the following: (1) 71% of the girls who feel that it is important to contribute to their community are less likely to initiate tobacco use (2) 54% of the girls are more likely to feel that their community is a good place to live in, are more than twice as likely to have parents who think smoking is wrong, are 9% more likely to have parents whom they can talk to when they have personal problems, and are 38% more likely to enjoy school.

6 RESULTS OF THE REVIEW

Can et al. (2009, 93) examined the risk factors contributing to regular smoking in adolescents in Turkey. The study comprised 4666 participants. Data was gathered by means of questionnaires. Logistic regression and the Chi-square test were used in data analysis. The findings of the research suggested that those whose mothers, siblings and or friends were smokers and those with poor grades were at significant risk. According to their study, poor school achievement was an influential factor in the progression to regular smoking of those who had experimented.

Kulbok et al (2008, 505) investigated nonsmoking attitudes, beliefs and norms among 16-17 year old nonsmokers. This was a qualitative study comprising of 39 participants. Data was gathered by means of interviews. The findings of the study suggested that positive concerns for health and addition, positive self image and perceived confidence were reasons affecting participants decisions not to smoke.

Weiss et al (2008) explored the association between three psychological factors namely anxiety, hostility and depressive symptoms and smoking behavior among Chinese adolescents. Data used in this study was a cross-sectional slice from a longitudinal investigation of tobacco use. Sample consisted of 4724 7th and 11th grade students from seven large cities in China. Chi-square analysis and stratified univariate logistic regression analysis were performed in this study. The results of the study suggests that anxiety, hostility and depressive symptoms were significantly associated with higher risk of smoking for both boys and girls.

Damianaki et al (2008,310) investigated the factors that influence school children to smoke. This study was a cross-sectional study conducted in Greece and had 924 participants. Data was collected by means of questionnaires. Logistic regression was also used in this study. They observed high prevalence of smoking among adolescents in the last grades of school. They found a link between current smoking and having brother or sister smoking.

DiNapoli (2009, 126) studied tobacco use among adolescent girls. This study used data from a previous study but concentrated only on the health behavior of adolescent girls enrolled in the larger study. The study comprised of 3,775 participants. The study employed the use of Pearson's correlations and multiple logistic regression in data analysis. The findings suggest that sociostructural variables that decrease the relative risk for the initiation of tobacco use were girls who feel that it is important to contribute to their community, girls who feel that their community is a good place to live, girls who are more likely to have parents who think smoking is wrong, girls more likely to have parents whom they can talk to when they have personal problems, those more likely to enjoy school.

Descriptive statistics and qualitative descriptive analysis were used in the study by Hayes & Plowfield (2007, 114). The study comprised of 100 participants. The study found peer pressure to be the greatest influencing factor to beginning to smoke, and health was the main reason for not beginning to smoke. According to the study, addiction and stress maintained smoking.

7 DISCUSSION

This study aimed at finding the reasons why adolescents start smoking. Six articles (Can et al. 2009; Weiss et al. 2008; Damianaki et al. 2008; DiNapoli 2009; Hayes & Plowfield 2007; Kulbok et al. 2008) were systematically selected to answer the research question.

The results showed that friends are an important influence in the smoking behaviour of adolescents. From the study it was found that adolescents whose friends smoked were more at risk than those whose friends did not smoke. This is consistent with studies by Kobus (2003, 45) and Harakeh (2007, 280) who found that adolescents who had best friends who smoked cigarettes were more susceptible to smoking. According to Pärna (2003,356), having a friend who smoked was one of the major and strongest factors associated with smoking. Also smoking rates were higher among popular students in schools with high smoking prevalence in a study by Alexander et al (2001, 27). This is supported by a study by Valente et al. (2005, 323) which also found that popular middle school students were more likely to become smokers compared to their less popular peers. Hayes & Plowfield (2007, 115) found peer pressure to be the greatest contributing factor for starting to smoke. According to Brook et al (2005, 214), adolescents with tobacco-prone personalities tend to associate with tobacco using and deviant peers and also having friends who smoke was linked with adolescent having tobacco-prone personality traits.

The role played by the family in adolescent smoking initiation was also discussed. Most of the articles touched on the influence of sibling smoking. The articles simply talked about sibling influence without clarifying whether it was the younger or older sibling that influenced the adolescent smoking. Study by Harakeh et al (2007, 281) showed that only the older siblings influenced the younger siblings' smoking. Harakeh (2007, 272) explained sibling influence using the Social Learning Theory. According to Harakeh (2007, 272), the older sibling may be seen as a role model by the younger sibling. The younger sibling may think of the older sibling as more competent and knowledgeable and as such may look up to him or her for support in many areas. Therefore the

younger sibling may copy the behavior of older siblings especially when they spend a lot of time together. Also adolescents with parents who smoke were found to be more at risk than adolescents with nonsmoking parents.

Availability of tobacco products to adolescents may be a contributing factor to smoking initiation (Robin & Sugarman 2001, 144). According to Alexander et al. (1999, 254), becoming exposed to parents or other family members who use tobacco may arouse curiosity.

Psychological factors were also found to contribute to adolescent smoking initiation. Weiss et al. (2008, 149) found an association between anxiety, hostility and increased risk of smoking. Adolescents who were more worried and nervous, having troubles in regulating anger, feeling sad and lonely, were more likely to have tried smoking (Weiss 2008, 154). According to MacDonald (2004, 27), poverty may result in stress, anxiety and depression and poor people are more likely to smoke. This is also consistent with a study by Weiss et al. (2011, 596). Weiss et al. (2011, 596) found a longitudinal relationship between smoking initiation and psychological characteristics. In the study by Weiss et al. (2011, 596), the risk of smoking initiation was higher among students who scored higher on hostility and depressive symptoms, and were bully-victims.

Adolescents who are less interested in their health, who have low self-image and who have low confidence are also bound to start smoking. This is consistent with a study by Hayes & Plowfield (2007, 114). A study by Song et al. (2009, 490) found that the perception of risks and benefits has an effect on smoking initiation.

According to DiNapoli (2009, 131), poor academic abilities and low feelings of emotional wellbeing are associated with low ego development. According to DiNapoli (2009, 131), sociostructural variables within the family and community may also affect ego development (DiNapoli 2009, 131.) In the study by DiNapoli (2009, 130), early initiation of tobacco use was more likely in persons with low self-esteem, who reported being victimized.

Some risk groups were identified in a number of articles. High smoking prevalence among adolescents in their last grades of high school was recorded in the study by Damianaki et al (2008, 310). This indicates that adolescents in their last grades are a risk group. Also adolescents with poor academic performance were found to initiate smoking at higher rates than those with good grades (Can et al 2009, 95; DiNipoli 2009, 130). Adolescents with body piercings and tattoos can also be considered a risk group because they have the tendency to engage in risky behaviours as discussed in the literature. Being popular in a school with high smoking prevalence can also be considered a risk for smoking. A study by Alexander et al. (2001, 27) found that popular students in schools with high smoking rates are more likely to be cigarette smokers compared to their less popular counterparts.

The role played by the media in smoking initiation was not discussed in the selected articles. However a number of studies have found that television and movies play a crucial role in the smoking behavior of adolescents. According to Gidwani et al (2002, 505), adolescents who watched a lot of television a day were more likely to initiate smoking than those who spent lesser time on television. Weight concerns among adolescent girls may also be contributing factor to adolescent smoking (Austin & Gortmaker 2001, 446; French et al. 1994,1820). This is also supported by Cawley et al. (2004, 309). Cawley et al.(2004, 309) found that females who have a high body mass index, who report that they are trying to lose weight, and who describe themselves as overweight are more likely to initiate smoking than other females.

8 RELIABILITY AND LIMITATION

The articles used in the review are peer reviewed and from academic databases therefore the general quality is good. Most of the articles employed similar methodology and arrived at similar conclusions. Researches were conducted in different countries but the findings were similar. This makes the review very reliable. There were however some limitations discussed in some of the articles. For example the study by Kulbok et al (2008, 512) used a small, nonrandomized sample thereby limiting generalizability.

The study by Weiss et al (2008, 154) was cross-sectional, which did not allow the authors to establish the direction of causality between psychological impact and adolescent smoking behavior. Results of the study by Weiss et al (2008, 154) are based on adolescents' self reports of their psychological states. Most of the articles came from one database and this may be a limitation in this study.

9 CONCLUSION

The review showed that the family, peers, adolescents sense of wellbeing and self-esteem are strong influences in the smoking habit of adolescents. The study also found that adolescents with psychological problems have a high chance of initiating smoking. Some risk groups were identified in the study. These included adolescents with low self esteem, popular students in schools with high smoking prevalence, those with weight concerns, adolescents in their last grades in school, adolescents who spend considerable amount of time on television, adolescents who performed poorly in school and adolescents with tattoos.

Since prevention is said to be better than cure, it is important to examine the root cause of the problem. Smoking prevention programs should aim at identifying risk groups and finding measures to protect these vulnerable group from initiation. Adolescents should be counselled on the effects of keeping bad company and advised to choose their friends wisely. Programs should aim at helping adolescents gain emotional control so that they don't give in to pressures from peers. Also since adolescents learn by imitation, older siblings and family members should be educated on the dangers of smoking in the presence of adolescents and also about leaving cigarettes at the disposal of adolescents.

Adolescents should be supported on ways of dealing with stress so that they don't turn to cigarettes. An important preventive strategy is promoting ego development. Ego development is vital in building self-determined health behaviour.

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