Structural model of factors influencing smoking behavior among Korean–Chinese adolescent boys

SoonBok E. Park, RN, PhD [a,*], Kwang-soo Lee, PhD [b,1], Soon-Nyung Yun, RN, PhD [c,2], Wenying Cui, RN, MPH [d,3]

[a] Department of Nursing, Yanbian University of Science & Technology, 3458 Choyang St., Yanji, Jilin Province, China
[b] College of Health Science, Yonsei University, Wonju, Kangwon, South Korea
[c] College of Nursing, Seoul National University, Seoul, South Korea
[d] Department of Nursing, Yanbian University of Science & Technology, 3458 Choyang St., Yanji, Jilin Province, China

ARTICLE INFO

ABSTRACT

Aim: The aim of this study is to develop and test structural equation model to explore factors influencing smoking behavior among Korean–Chinese adolescent boys.
Methods: Participants were recruited from six middle schools in China ($N = 768$). Self-administered questionnaire included: (1) demographic information, (2) smoking behavior, and (3) individual factor (i.e., life satisfaction, future orientedness, stress), familial factor (i.e., relationship with parents, family life, socioeconomic status), environmental factor (i.e., father's smoking, friends' smoking, anti-smoking environment), and Intention Refusal Self-efficacy. AMOS analyses were used to evaluate the proposed model.
Results: The model was a good fit for the data. Intention Refusal Self-efficacy significantly influenced smoking behavior. The model explained 52% of the variance in smoking behavior.
Conclusions: Smoking behavior is significantly related with factors of intention to smoke, refusal skill, self-efficacy, friends' and father's smoking, and anti-smoking environment. Targeting these issues might be useful when developing strategies for smoking prevention programs.

© 2014 Elsevier Inc. All rights reserved.

1. Introduction

The prevalence of smoking in Chinese males is very high (57.4%), with more than 350 million male cigarette smokers (WHO, 2010). Among Chinese adolescent males, the smoking rate ranges from 15% to 48%, compared with 1% to 13% among females (Booker et al., 2007).

Adolescent smoking prevention is an important public health priority. Research shows that the earlier adolescents start smoking, the more likely they are to become addicted to nicotine and become adult smokers (Office of Adolescent Health, U.S. of Health & Human Services, 2013). A wide range of factors have been found to have an influence on adolescent smoking (O'Loughlin, Karp, Koulis, Paradis, & DiFranza, 2009).

1.1. Individual factor: Life satisfaction, future orientedness and stress

Satisfaction with life represents the current perception of one's life, and future orientedness involves a positive belief in one's future developments. Both are subjective measures of well-being and are strongly associated with adolescent adjustment and substance use, such as smoking (Topolski et al., 2001). Students who are satisfied with their life and more future-oriented tend to smoke less (Chapman et al., 2001). Adolescent stress is significantly related to smoking behavior (Lin, Tzeng, Lu, & Hsu, 2008).

1.2. Familial factor: Relationship with parents, family life and parental socioeconomic status

A poor parent–child relationship is associated with higher levels of smoking (Chassin et al., 2005), while parent–child connectedness significantly decreased the smoking initiation (Mahabee-Gittens, Xiao, Gordon, & Khoury, 2013). Family conflict is related to an increased risk of adolescent smoking. Adolescents who are less likely to smoke are more likely to report positive family relationships (Shakib et al., 2005). Adolescents with a lower parental socioeconomic status (SES) are more likely to smoke than middle and upper-middle class adolescents (Dodu, Koivusilta, Rainio, & Rimpelä, 2010).

* Corresponding author. Tel.: +86 540 529 4398; fax: +86 433 291 2510.
E-mail addresses: psalmpark@gmail.com (S.E. Park), planters@yonsei.ac.kr (K. Lee), yoonys@snu.ac.kr (S.-N. Yun), cuiwenying1002@gmail.com (W. Cui).
[1] Tel.: +82 33 760 2413.
[2] Tel.: +82 2 740 8825.
[3] Tel.: +86 433 291 4257.

1.3. Environmental factor: Father's smoking, friends' smoking and anti-smoking environment

Parental smoking was significantly associated with a higher risk of smoking initiation in adolescents (Gilman et al., 2009). Friend's smoking identified as one of the major factors related to adolescent smoking (Loke & Wong, 2010). Anti-smoking norms and environment are related to lower smoking prevalence. Adolescent perception that cigarettes are easy to obtain increased the risk for smoking initiation and progression (Doubeni, Li, Fouayzi, & DiFranza, 2008; Gilpin, Lee, & Pierce, 2004).

1.4. Intention to smoke, refusal skill, and self-efficacy

Intention to smoke and self-efficacy are powerful predictors in explaining adolescents' future smoking behavior. Higher levels of self-efficacy are related to lower rates of smoking initiation (MacDonell et al., 2013) and protective against the susceptibility of smoking in the future (Islam & Johnson, 2005). Adolescents' intentions to smoke in the future are significantly associated with smoking behavior (Lin et al., 2008). The ability of adolescents to refuse peer pressure has a significant role. Adolescents who declared that they would not care about what friends might think if they refused a cigarette are significantly less likely to initiate and continue smoking (Erbaydar, Lawrence, Dagli, Hayran, & Collishaw, 2005).

The purpose of this study was to develop and test a hypothesized model, using structural equation modeling to explore factors related to smoking and to gain a more comprehensive picture of smoking behavior among Korean–Chinese adolescent boys. Based on the literature review, the authors have constructed a conceptual model of interrelationships among adolescent smoking and influencing factors: 1) individual factor, familial factor, and environmental factor influence smoking; 2) Intention Refusal Self-efficacy is a mediator between environmental factor and smoking behavior; and 3) there are reciprocal relationships among individual factor, familial factor, and environmental factor (Fig. 1).

2. Methods

2.1. Research design

Structural equation modeling (SEM) was used to examine relationships among the variables. SEM provides a more comprehensive and flexible approach to research design and data analysis than other multivariate statistical models (Hoyle, 1995). SEM method allows for the testing of hypotheses on direct and indirect effects among variables and enables to evaluate these impacts while controlling for measurement errors (Pentz & Chou, 1994).

2.2. Participants and data collection

The target sample was seventh and eighth grade middle school students from six Korean–Chinese schools. Students were recruited in the Autonomous Prefecture of Yanbian, China, which borders on the Korean peninsula and has traditionally been home to a sizeable ethnically Korean population. Nearly all Korean–Chinese in this region are fluent in Korean, and they have preserved the traditional Korean culture and lifestyle (Park & Kim, 1998). Approval for the study was obtained from the institutional review board from the College of Nursing at Seoul National University. The principals or responsible teachers of the participating schools gave permission for conducting a survey in their schools. A self-administered questionnaire was completed by each student in classrooms. The students were informed about voluntary participation, and completion of the survey implied consent. Anonymity and confidentiality of responses were assured.

2.3. Measures

Based on review of literature the research team developed a questionnaire, which included: (1) demographic information, (2) smoking behavior, and (3) individual factor, familial factor, environmental factor and Intention Refusal Self-efficacy. Smoking behavior of the students was defined as follows: "never smokers" are students who had never smoked; "ever smokers" are students who had smoking experience within last 6 months, and; "current smokers" are students who are currently smoking.

The hypothesized model consisted of four latent variables: individual factor, familial factor, environmental factor, and Intention Refusal Self-efficacy. The individual factor consisted of three observable variables: life satisfaction (6 item scale; alpha = .75 for 5 item scale; Funk, Huebner, & Valois, 2006; Park et al., 2005), future orientedness (3 item scale; alpha = .76; Strathman, Gleicher, Boninger, & Edwards, 1994), and stress (17 item scale; alpha = .87; Kim & Lee, 1996; Ahn, 2008). The familial factor included of three observable variables: relationship with parents (8 item scale;
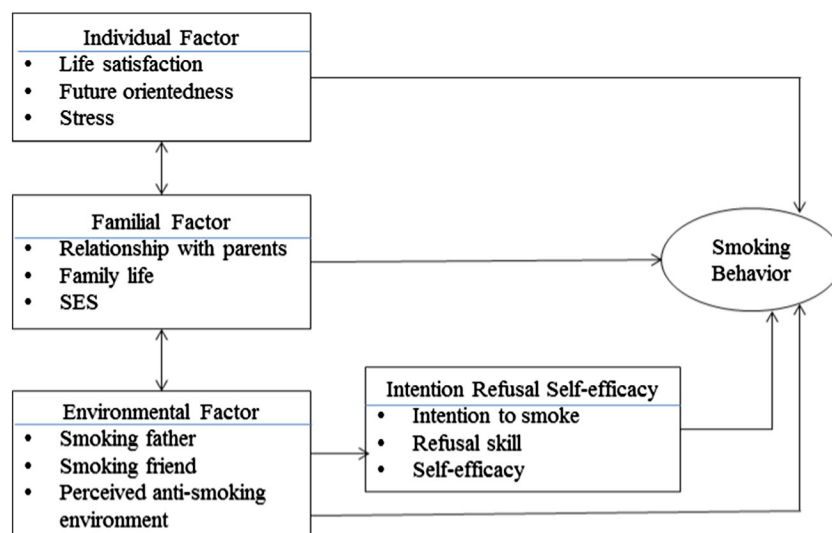

Fig. 1. Conceptual model.