ADOLESCENTS' HEALTH BEHAVIOURS AND ITS ASSOCIATIONS WITH PSYCHOLOGICAL VARIABLES

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SUMMARY

Objective: The purpose of the study was to investigate the prevalence of health risk behaviours among a random sample of Korean adolescents and the relationship of psychological variables with health risk behaviours.

Methods: 885 students ranged from 7th to 9th grade were randomly selected from 3 junior high schools in Dobong-gu district, Seoul. Four Korean-version measures were used to assess the health risk behaviour and psychological variables of adolescents. Frequency analysis, correlation analysis, and regression analysis were performed to accomplish the purpose of the study.

Results: Korean adolescents showed high prevalence of physical inactivity (n=67%), smoking (n=54%), drinking alcohol (n=69%), eating problem (n=49%), mental health problem (n=57%), and viewing pornography (n=47%). In addition, this study revealed that the three psychological variables (multidimensional health locus of control, self-efficacy, and self-esteem) were significantly correlated with health risk behaviours, and had significant effect to account for health risk behaviours (R^2=0.42 for physical inactivity, 0.33 for viewing pornography, 0.31 for smoking, 0.28 for mental health problems, 0.26 for illegal drug use, 0.19 for drinking alcohol, and 0.15 for eating problem).

Conclusion: The current study provides significant information on psychological variables related to adolescents' health risk behaviour. This study has the potential to influence the development of better health education and promotion programs for adolescents.

Key words: health risk behaviours, health locus of control, self-esteem, self-efficacy, Korean adolescent

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INTRODUCTION

Adolescence is a time of rapid physical, psychological and social change. These multiple changes promote exposure to some new health risk behaviours such as physical inactivity, smoking, drinking alcohol, illegal drug use, and sexual activity. Thus, adolescence is a key life stage for shaping health in adulthood and in later life and, at the same time, it is in itself a stage of risk for morbidity and mortality (1).

It has been noted and well documented that many health risk behaviours are often initiated during the adolescent years and the initiation of risk behaviours is occurring at progressively younger age. A large volume of study indicated that the rates of smoking, drinking alcohol and drug use during adolescence have remarkably increased since 1980s, and many adolescents experienced health risk behaviours at markedly earlier ages (2, 3). US Centre for Disease Control and Prevention reported that the primary students aged 9 to 13 years have already experienced alcohol drinking and smoking (respectively, 36%, 12%). For the adolescents aged 14 to 18 years, they have shown a very high prevalence in alcohol use. Seventy seven percent of adolescents have ever experienced drinking alcohol, and among them, 17% of adolescents reported drinking alcohol every day or 1–2 per week (4). Unlike to Western countries, the data related to adolescent health behaviour in Korea are limited. The available data, however, demonstrate similar trends to the Western ones. Korean Ministry of Health and Welfare indicated that 43% of adolescents aged 14–18 years have experienced smoking. Among them, 53% are males and 25% are females (5). In addition, one national survey concerning sexual behaviours of general adolescents revealed that 31% of students aged 10 to 13 years in the primary schools have already experienced porno movies and 48% of the secondary school students aged 14 to 18 years have ever contacted with pornography through the computer. Among them approximately 17% of students aged 17 to 18 years have substantially experienced sexual intercourse (6).

Traditionally, in many areas of public health a number of studies aimed at understanding why the majority of adolescents initiate health risk behaviours have attempted to identify study participants' socioeconomic characteristics associated with risk behaviours (7, 8). Others have focused on providing information, education and counselling programs without fully considering the psychological factors associated with adolescents' risk behaviours (9). As a result, it is timely to rethink the concept of adolescent health and consider it in a comprehensive approach of health promotion. To improve our limited understanding of adolescent health risk behaviours, those studies are required that concentrate on the broad range of interactions with psychological variables (2, 10).

With regard to such a possible relationship between health risk behaviours and psychological variables, many studies across a wide range of populations and settings have demonstrated the existence of a relationship between health risk behaviours and psychological variables (11, 12). However, most of previous studies have been conducted in Western countries. The same level of

research has not been focused on the Korean adolescent populations. Health risk behaviours, especially in Korea, are only now being considered crucial factors in the health status of adolescents and important public health and social issues. Data, moreover, concerning the link between adolescents' risk behaviour and their psychological characteristics are limited.

The present study attempted to identify the prevalence of health risk behaviours among a random sample of Korean adolescents. Specifically, the study investigated the relationship between psychological variables and health risk behaviours.

MATERIAL AND METHODS

Data Collection and Study Participants

The data collection was carried out in 2010 and was sponsored by Seoul Metropolitan City. A total of 885 students ranged from 7th to 9th grade were randomly selected from 3 junior high schools in Dobong-gu district, Seoul. In the initial stage of collecting data, 902 students were invited to participate in a survey designed to assess their health risk behaviours and psychological variables. Then, the consent form was sent to the possible participants and their parents, and 885 students who returned it signed by themselves and their parents participated in this study (98.1%). Only 17 students declined because they or their parents refused to participate in the study. The non-participants were not significantly different in age and gender from students who participated. Students were ineligible to participate in this study if they were in a special classroom (e.g., severe learning disability), which might preclude the valid survey administration. All participants in the age cohort were 14–16 years old (M=15.1 years). The study was approved by the institutional review board of Seoul National University of Science and Technology.

Measures

Korean Health Survey Kit was applied to evaluate adolescents' health risk behaviours (5). The original version of health survey kit consists of 40 health-related items based on adolescents' possible lifestyle events and health risk reference (13, 14). In a pilot test, the original instrument was given to a sample of 60 secondary school students to evaluate item clarity. Students' comments revealed a lack of clarity in the wording of a few items. Data were analyzed for internal consistency on the first administration and for stability on a repeated administration to 56 students in the sample 2 weeks later. Coefficient alpha was 0.92, indicating high internal consistency and test-retest r was 0.83, indicating stability.

Following the pilot study, content validity was evaluated by two experts familiar with the adolescent health to examine each item for congruence with the concept of health risk behaviour. From their recommendations, 6 items from the original scale were deleted and a total of 34 health risk items, listed in random order, were finally used in this study as a tool for assessing health risk behaviours.

In order to measure adolescents' beliefs, self-reliability and ability to control health and life satisfaction related to health, the three revised measures into Korean were used in this study. The Multidimensional Health Locus of Control Scale (MHLC) developed by Wallston, Wallston, and DeVellis (15) was translated into Korean, and used in the study. The revised measure consisted of the three sub-scales and 18 items, and test-retest Cronbach's α reliability coefficients of each sub-scale were as below: 0.87 for internal health locus of control (IHLC); 0.84 for powerful other health locus of control (PHLC); 0.81 for chance health locus of control (CHLC) (1). The Self-efficacy Scale developed by Sherer, Maddux, Mercandane (16) was also revised for the Korean version, and adopted in the study. Among 17 items 13 items were reversed and required the scores to be converted. A Cronbach alpha coefficient of 0.90 was found for the questionnaire (1). The Korean version of the Self-esteem Scale originally developed by Rosenberg (17) was applied in the study. This measure consisted of 10 items, and five reversed items required the scores to be converted. In order to obtain a coefficient of internal consistency, a two week test-retest was performed and reached the reliability of 0.87 (1).

Processes of Translation and Validation of Psychometric Measures

The methodology outlined by Banville, Desrosiers, and Genet-Volet (18) was used to translate the measures from English to Korean. In the initial stage three psychometric measures were translated into Korean by the author, with the assistance of two native speaking Koreans who have obtained doctoral degrees in health psychology. Next, two Korean students who have obtained doctoral degrees from US institutions participated in back-translating the measures into English (without access to the original English version). Then these three versions were compared, evaluated, and modified to reconcile any differences observed. Finally, the measures were administered to two Korean scholars familiar with adolescent health and public health for additional scale modifications following their feedback. Through this process, content validity suitable to the purposes of the study was established. In addition to this, the translated measures were tested among a sample of 60 Korean adolescents of similar age to the target population to evaluate item clarity, response variance, and to estimate reliability. Two weeks later, the measures were administered again to the Korean pilot-based sample (n=56) to evaluate their test-retest reliability.

Data Analysis

Frequency analysis was initially conducted to examine the prevalence of adolescent health risk behaviour. Then the correlations of three psychological variables with adolescents' health risk behaviours were tested by correlation analysis. Regression analysis was performed to identify the effect of psychological variables to explain adolescents' health risk behaviours. All statistical methods applied in this study were conducted by SPSS 17.

RESULTS

Table 1 shows the results of frequency analysis concerning adolescents' health risk behaviours. For physical activity adolescents' physical inactivity is a crucial factor which might adversely affect their health (16% "never exercised", 27% "once per month", and

Table 1. *Prevalence of adolescents' health behaviours*

Variable		Case (N)	Percent (%)
Physical activity	Never	142	16
	Once/month	239	27
	Once/week	212	24
	2–3/week	150	17
	Everyday	142	16
Smoking	Yes	478	54
	No	407	46
Drinking alcohol	Yes	610	69
	No	275	31
Mental health problem	Yes	504	57
	No	381	43
Illegal drug use	Yes	71	8
	No	814	92
Eating problem	Yes	434	49
	No	451	51
Viewing pornography	Yes	416	47
	No	469	53
Sexual intercourse	Yes	7	0.8
	No	878	99.2
Total		885	100

24% "once per week"). In addition, for addictive behaviours 54% of adolescents have experienced smoking, approximately 69% used alcohol, and 8% reported that they experienced one or more illegal drugs in the past. For the rest of health risk behaviours Korean adolescents showed a high prevalence.

Table 2 illustrates the results of correlation analysis to identify the relationships between psychological variables and adolescents' health risk behaviours. Results indicated that health locus of control significantly negatively correlated with physical inactivity, illegal drug use, drinking alcohol and smoking (r=−0.23, −0.21, −0.20 and −0.16, respectively). Self-esteem also negatively correlated with viewing pornography (r=−0.27), physical inactivity (r=0.24), and illegal drug use (r=−0.22). Furthermore, the results indicated that some negative health behaviours such as physical inactivity, mental health problems, drinking alcohol, statistically correlated with self-efficacy (r=−0.40, 0.24 and 0.16, respectively).

Table 3 shows the results of regression analysis which investigated the effects of psychological variables on health risk behaviours. All psychological variables had statistically significant impact on almost all health risk behaviours (e.g., R^2=0.42 for physical inactivity, 0.33 for viewing pornography, 0.31 for smoking etc.). In specific, health locus of control had significant effect on most of health risk behaviours (strongest effect on physical inactivity, ß=−0.37), and self-esteem also showed a significant linear relationship with the majority of health risk behaviours (strongest effect on illegal drug use, ß=−0.36). Furthermore, self-efficacy had substantial effect on the rest of risk behaviours except for illegal drug use (strongest effect on physical inactivity, ß=−0.32).

DISCUSSION AND CONCLUSION

It is broadly accepted that adolescents' health risk behaviour is becoming substantially problematic in many countries and identifying the factors associated with such behaviours is crucial to solve negative health problems. The current study offers an important insight into the better understanding of factors that influence the onset and adherence of health risk behaviours in adolescents. The study identified health risk behaviour in Korean adolescents that could seriously affect their health status in the future. In particular, the findings indicate that over half of Korean adolescents do not exercise at all or participate in physical activity on an irregular basis. The high rates of physical

Table 2. *Correlation between psychological variables and health risk behaviours*

Variable	HLC	SEs	SEf	PI	MHP	S	IDU	DA	EP	VP
HLC	1.00	0.17**	0.12**	−0.23**	0.03	−0.16**	−0.21**	−0.20**	0.13**	0.04
SEs		1.00	0.77**	0.24**	0.16**	0.04	−0.22**	0.16**	−0.19**	−0.27**
SEf			1.00	−0.40**	0.24**	0.10**	−0.10**	0.16**	−0.23**	−0.10**
PI				1.00	0.32**	0.09*	0.13**	−0.11**	0.15**	0.10*
MHP					1.00	−0.09**	0.17**	0.04	−0.13**	0.08**
S						1.00	0.16**	0.21**	0.11**	0.24**
IDU							1.00	0.21**	−0.23**	0.16**
DA								1.00	−0.21**	0.18**
EP									1.00	0.03
VP										1.00
M	3.66	2.88	8.51	3.67	1.45	1.51	1.00	1.41	1.67	179
SD	0.59	0.52	1.00	1.01	0.44	0.48	0.37	0.50	0.50	0.55

*p<0.05; **p<0.001

HLC: Health locus of control; SEs: Self-esteem; SEf: Self-efficacy; PI: Physical inactivity; MHP: Mental health problem; S: Smoking; IDU: Illegal drug use; DA: Drinking alcohol; EP: Eating problem; VP: Viewing pornography

Table 3. *Effect of psychological variables on health risk behaviours*

Variable	Health risk behaviour						
	PI	MHP	S	IDU	DA	EP	VP
Psychological variable							
Health locus of control	−0.37**	−0.02	−0.20**	−0.24**	−0.18**	0.19**	0.03
Self-esteem	−0.13**	0.14**	−0.07*	−0.36**	−0.05*	0.01	−0.23**
Self-efficacy	−0.32**	0.18**	0.16**	0.04	0.07*	−0.17**	0.16**
R^2	0.42	0.28	0.31	0.26	0.19	0.15	0.33

*p<0.05; **p<0.001
PI: Physical inactivity; MHP: Mental health problem; S: Smoking; IDU: Illegal drug use; DA: Drinking alcohol; EP: Eating problem; VP: Viewing pornography

inactivity of Korean adolescents might be extensively caused by social and environmental limitations such as a lack of available facilities and time for physical activity, a social context neglecting Physical Education, and excessive schoolwork owing to the dominance of an academic-centered curriculum (12). Korean adolescents seemed to have problems in their mental health and eating behaviour. More than half of adolescents experienced comprehension, mishap, depression and sleep disorder owing to a variety of factors in everyday life such as stress about study, parents' excessive expectation and demands and exclusion from a peer group (19). Similarly, it is possible that adolescent's eating problems result from skipping meals owing to early school time, increase in intake of animal fat owing to the westernized diet pattern and the radical extension of fast food market (2). In addition, Korean adolescents showed the high rates of smoking and alcohol drinking in this study. This can be caused by curiosity, peer pressure, stress about study, and alienation. Interestingly, the findings indicated that many Korean adolescents have already experienced pornography, although the actual sexual intercourse rates of adolescents were reported low in this study. This phenomenon might be a negative effect resulting from a radical social change such as the extensive dissemination of computers and the easy availability of the Internet. The results obtained from this study show a pattern similar to those in previous studies (20–22).

Health behaviour itself is a complex multi-factorial reality and the overt expression of a complicated interaction of social and psychological variables (23). Therefore, variables that impinge upon the health behaviour of adolescents can be related to issues from the emotional, social, psychological and behavioural domains. In particular, negative health behaviours of adolescents may be caused by negative psychological attributes, such as low self-esteem and self-efficacy and loss of ability to control health (24). In recent years, there has been a shift towards theoretically based studies and empirically supported practices that mandate health behaviour care that focuses on the broad ranges of interactions with negative health behaviours and psychological dispositions in adolescence.

In this point, this study revealed that the three psychological variables (multidimensional health locus of control, self-efficacy, and self-esteem) significantly correlated with health risk behaviours. Concerning relationship between psychological variables and health risk behaviours, these identified correlations allowed for further exploration of possible relationships between psychological variables and heath risk behaviours. The three psychological variables had significant effect to account for health risk behaviours. These findings were supported by the previous studies (25, 26). Kim argued that self-efficacy and self-esteem were significant predictors of physical activity and mental health (2). Recently, Georg and colleagues also supported the link between health risk behaviours and psychological variables, and indicated that self-esteem and self-efficacy had significant effect on smoking and alcohol drinking behaviours (27). In practical terms the findings reinforced the argument for consideration of the psychological aspects in the development of the health risk reduction strategy. In addition, if further studies were to be undertaken to look at relationships between other psychological variables and other specific dimensions of adolescent health, then such findings of the existence of significant relationships could increase the understanding of health behaviour.

This study has several methodological limitations. Firstly, this study did not focus on obtaining data from the lower socioeconomic, rural or out-of-school adolescents. Therefore, data obtained in this study cannot be considered representative of the eligible population of all Korean adolescents. One of the frequently questioned methodological limitations in survey research is how to apply the adopted instruments developed in other countries. However, the validity of the instruments used in this study has been proved by the similarity between behavioural and psychological findings obtained by other Korean studies with the same instruments (19, 28).

In spite of such methodological limitations, the current study provides significant information on psychological variables related to adolescents' health risk behaviour. This study has the potential to influence the development of better health education and promotion programs for adolescents. More importantly, the findings of this study will be useful in designing risk-reduction interventions congruent with psychological attributes of Korean adolescents.

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