A Structural Equation Model of Health Promoting Behavior of Chinese International Students in Korea

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A Structural Equation Model of Health Promoting Behavior of Chinese International Students in Korea

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박사 학위 논문을 진행하면서 한없이 부족한 저를 느끼며 어려운 시간도 있었지만, 주위의 모든 분들의 소중함을 느낄 수 있는 중요한 시간 이였습니다. 그 동안의 시간이 결실로 맺어진 것에 대해 매우 기쁘게 생각하며, 이 논문이 완성되기까지 많은 관심과 격려를 베풀어 주신 주위의 모든 분들께 깊은 감사를 드립니다.

특히 석사 학위과정에서부터 박사학위 내내 아낌없는 후원을 해주시고 저의 관심 현상을 연구로 발전할 수 있게끔 지적 자극을 심어주시고, 학문적 통찰력과 고매한 인품으로 논문의 시작부터 마무리까지 체계적이고 논리적인 틀을 잡아주시고 지도와 조언을 해주신 유일영교수님께 진심으로 감사 드립니다. 관심영역 안에서 연구대상자의 선정의 중요성과 연구의 필요성 그리고 연구의 결과가 간호학계에 미치는 영향에 대해서 항상 고민하게 해주시고 본 연구가 간호학 안에서의 기여도에 대해 지적해주시고 고민하게 해주신 김소선 학장님, 문화적응이라는 개념을 간호학과 건강 안에서 처음으로 고민하게 해주시고, 논문의 이론적 배경에 대해 통찰력을 심어주신 이현경 교수님께 진심으로 감사를 드립니다. 논문 지도를 부탁 드렸을 때 흔쾌히 허락해 주시고 논문의 처음부터 끝까지 논리적 흐름을 잡아주시고, 매 순간 용기를 북돋아 주시며 지지해 주신 언론홍보대학원의 김용찬 교수님, 통계부분에서 중요한 부분을 고민하게 해주신 박창기 교수님께 감사를 드립니다. 제 연구 주제에 관심을 가지고 조언해 주시고 제 상황을 배려해 주신 오의금 교수님, 고일선 교수님,

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통계의 어려운 부분을 해결해 주시고 밤새 같이 고민해주신 연세대학교 통계연구소의 이학배 교수님, 김연정 선생님께도 감사를 드리며, 설문지의 도맡아서 책임지고 끝까지 도와 준 중국유학생 진메이와 중국어 번역 감수를 해준 다나에게도 감사 드립니다. 또 유학생 현황 파악과 설문조사에 이르기까지 과정을 도와주시고 격려해주신 연세대학교 연구처 신혜진 선생님께도 감사를 드립니다.

바쁘신 시간을 흔쾌히 내 주시고 설문조사에 협조해주신 서울 소재 대학교 및 대학원의 중국유학생 여러분들께 진심으로 감사를 드립니다. 여러분이 아니었으면 이 연구를 할 수도 없었고, 이 연구는 전적으로 여러분들의 것입니다.

박사 학위논문의 어려움을 이해해 주시고 배려해 주신 수원여대 간호과의 김혜옥 교수님, 최옥순 교수님, 이명선 교수님, 김정애 교수님, 서인순 교수님, 오수민 교수님, 황라일 교수님, 최나영 교수님, 천의영 교수님, 김명숙 교수님, 유영미 교수님, 임희수 교수님, 한숙원 교수님, 정성원 교수님, 그리고 같은 시기에 임용되어 저에게 지지와 힘이 되어 준 소은선 교수님, 여지영 교수님, 양성원 교수님, 그리고 정선희 교수님께도 감사를 드립니다.

제 학업과 일에 늘 깊은 관심과 아낌없는 지지를 보내주신 주명준 교수님과 박난준 교수님께도 감사를 드립니다.

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박사과정에 합격했다는 소식에 많은 분들이 일과 학업의 병행의 어려움에 대한 염려와는 달리 처음부터 지지해주시고 제가 중요한 결정을 할 때마다 조언해 주시고 격려해 주신 L&K Medical의 안영보 본부장님과 김기향 부사장님, 강국진 대표님께 고마운 마음을 전합니다.

석사, 박사 과정을 같이 하면서 한 없는 지지와 힘이 되어 준 김경자 선생님, 우수희 선생님, 김은경 선생님, 박수호 선생님, 유하나 선생님, 유성희 선생님, 신혜선 선생님, 안현미 선생님, 윤선희 선생님, 신희건 선생님, 김숙경 선생님께 고마운 마음을 전합니다. 돌이켜 보면 처음 대학원에 첫 발을 디뎠을 때 제 모습과, 간호학이라는 학문을 하면서 지금 훌쩍 커버린 제 모습을 보면, 선생님들과 함께였기에 여기까지 올 수 있었고, 선생님들로부터 학문적으로 그리고 인간으로서도 많은 발전을 할 수 있었던 큰 힘이 되어주셨습니다.

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그리고 박사과정 입학부터 지금까지 매 순간 어려운 부분을 해결해 주시고 지지해 주신, 제 연구 주제에 대해서 처음으로 같이 고민해 주시고, 통계와 영문 번역작업까지 모든 과정을 같이 한 최경온 박사님께 무한한 감사와 존경의 마음을 전합니다.

논문을 쓰는 동안 받아온 가족들의 사랑을 생각하면 가슴속에서 뜨거운 것이 올라오는 것 같습니다. 이 과정을 통해 조건 없는 사랑을 베풀어 준 가족의 소중함을 다시 한번 절실히 깨달았습니다. 처음 제게 박사과정을 하라고 격려해주고, 학위 과정 내내 지지해 준 효정 언니와 시원 형부, 보현과 진욱 부부에게 감사의 마을을

전합니다. 승권 삼촌, 승준 삼촌, 승애 이모 승금 이모에게도 감사의 마음을 전합니다. 박사과정 입학과 동시에 하나님께서 우리 집에 주신, 그래서 내 박사 기간과 같이 이제 만 3세가 되는 우리 집 보물 시윤에게 바쁘다는 핑계로 많은 시간 같이 보내지 못한 미안한 마음과 많이 사랑한다는 말을 전하고 싶습니다.

일과 학업을 병행하면서 너무나 바쁘고 한 없이 날카로워져 있는 저를 싫은 내색하나 없이 지지해 주고 조건 없는 사랑과 희생으로 보듬어 주고, 분에 넘친 물질적, 정신적 지원을 해준 보훈이, 우리엄마(김승옥) 우리아빠(김용갑) 하늘에 계신 친할머니 진심으로 사랑하고 존경합니다. 제가 힘들고 게으름을 피우고 싶을 때 포기하지 않고 힘을 내게 한 원동력입니다. 그 동안 절 바라봐 주시고 지지해 주셔서 정말 감사합니다. 이젠 제가 엄마 아빠 보훈에게 최선을 다하겠습니다.

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급변하는 세계화의 추세 속에 국제사회에서의 위상이 높아져 가는 한국에서 다문화 환경과 문화적응, 건강증진이라는 주제의 제 연구가 간호학에서 이 분야에 대한 관심을 불러 일으키고 더 발전된 연구로 나아가는데 조금이나마 도움이 되었으면 합니다.

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김선정 올림

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ABSTRACT

A Structural Equation Model of Health Promoting Behavior of Chinese International Students in Korea

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The main purpose of this study is to identify the causal relationship among the factors related to the health promoting behavior of Chines international students in Korea. The research method is to build a hypothetical model based on a conceptual framework of Pender's health promotion model and literature reviews.

Self-esteem and social support were included to the variables of individual characteristics and experiences, and perceived health status, self-efficacy, acculturative stress and acculturation level were included to the variables of behavioral-specific cognition and affects.

The data was collected from November 15, 2010 to February 28, 2011 from Chinese international students currently enrolled in formal academic degree at the 10 universities located in Seoul-metropolitan area in Korea and staying in Korea at least six months. A self-administered questionnaire in standard Chinese was distributed. Out of 300 questionnaires, 272 were included in analysis after data cleaning.

The results are as follows.

1. The health promoting behavior of Chinese international students in Korea was significantly influenced by the perceived health status, the self-esteem, the acculturative stress and the acculturation level and is explained 30 percent by the 4 variables. The perceived health status is the strongest determinant.
2. The perceived health status was affected by the social support and self-efficacy and was explained 12%. The social support was the strongest determinant.
3. The self-efficacy was affected by the self-esteem and was explained 42%.
4. The acculturative stress was influenced by the self-efficacy and the social support, explained by 19 %. The self-efficacy was the strongest determinant.
5. The acculturation level was affected by the social support, but was explained by only 2%.

In summary, Chinese international students in Korea with the higher the perceived health status, the self-esteem, the acculturation level, and the lower the acculturative stress reported the higher health promoting behavior. These results can be applied to develop the intervention strategy to maintain and encourage the health promoting behavior of the Chinese international students in Korea.

Further study is suggested for international students from other countries. Also, the concept of acculturation needs to be included in health promotion and overall health care in this global time.

Keyword: Chinese International Student, Health Promoting Behavior, Acculturation, Perceived Health Status, Self-Esteem, Social Support, Structural Equation Model

Chapter 1. INTRODUCTION

1.1 Needs of Research

Health is one of the most precious and fundamental factor in human lives. As with the change of society, the concept of the health care is changing from medical treatment in the past to broader sense of positive and proactive health promotion. Long term health behavior can easily become accustomed health practice. Once it becomes permanent health habit, changing it involves strong resistance. In comparison with the late-middle age, it is relatively easy to develop a good health behavior in early adulthood, thus it is important to encourage good health behavior at the early age (Kim, 1995).

Adolescence is a period to increase independency, to form self-identity and major attitude toward health (Barrnett, 1989). The adolescence is active with strong curiosity and sometimes shows unpredictable behaviors and health hazardous behaviors such as drinking, smoking and irregular diet (Kim et al, 1997). International students at the similar age departed from their family has a responsibility to manage their own health but sometimes they do not recognize the importance of health, try health hazardous behavior by curiosity or lure from peer group, and face various health problems. Therefore in order to develop health promotion program matched to socio-cultural characteristics of a certain group, it is important to understand the characteristics of the health promoting behavior of the group.

In case of Korea, The government set up the “Study Korea Project” to attract international students to Korean colleges and universities, launched by the by the Ministry of Education and Human Resources Development in 2001. Due to the strong push of Korean government, the number of the international students in Korea has increased dramatically since 2003 (The Ministry of Education and Human Resources Development, 2008). The goal of the Korean government plan is to recruit 150,000 international students until 2018 from 100,000 international students in 2012 (Presidential Council of Future and Vision, 2009).

The majority of international students in Korea are Chinese students. With the establishment of diplomatic relations between Korea and China, huge numbers of Chinese international students have entered to Korea for bachelor, master, or doctoral degree as well as research purpose. In 2010, 76 percent of international students in Korea were Chinese (Korea Immigration Service Statistics 2010).

However, many international students are facing various problems. The typical problems are health, financial difficulty, language, study, human relationship and medical service (Kim, et al. 2005; Uhm, 2003; Heo, 1998; Hwang, 2008; Chang, 2005). Some colleges and universities require students to subscribe health insurance throughout the academic years but most of others do not. The lack of payment capability for the health service, not many healthcare professional to understand their cultural background and health related issues and communication barrier build health risk factors for these population (Hull, 1999). The health management of long-term immigrants became one of the social problems (Ahn et al. 1998; Benefante, 1992; Robertson et al, 1997; Takeyha et al, 1984).

Migration to foreign country creates various mental pressures to leave existing social position and to adapt completely different life style. The pressures may jeopardize physical and mental health status of the immigrant (Ha, 2008). International students, departed from their parents and families, have a responsibility to manage their own health. However, without recognition of the importance of health, they may try health risk behaviors out of curiosity or by peer group pressure. Moreover, the difference of the life style and socio-cultural background of the international students may influence prevalence of the disease and health promoting behavior (Chen et al., 2007).

Most prior researches have focused on the accommodation status or the relationship between acculturative stress and mental health status of the international students in Korea but few of them have paid attention to the health promoting behavior of the international students (Zhang, 2005; Lee, 2008; Wang, 2008; Oh, 2008; Sohn, 2007; Heo, 1998). However, it is necessary to pay attention to the health promoting behavior and related life style of the international students in order to encourage healthier campus life and long term friendly relationship with them.

Therefore, this research try to explain the health promoting behavior of Chinese international students in Korea with known influential factors from the prior researches and new acculturation factors, to prove causality among the factors. The result of this study will be able to explain and predict the health promoting behavior of the Chinese international students who are the majority of international student population in Korea.

1.2 Purpose of the Study

The purpose of the study is to explore the health promoting behavior of Chinese international students in Korea under the acculturation environment and identify the causal relation of the significant factors affecting the health behavior of them.

1) To identify the variables affecting the health promoting behavior of the Chinese international students in Korea
2) To develop a structural equation model to explain the causal relation among the factors affecting the health promoting behavior of the Chinese international students in Korea under acculturation environment.

1.3 Definitions of the Terms

1.3.1 International students

'International students' are those who study at the foreign educational institutions to get official academic degree. They are supposed to return to the home country once they get the academic degree (Hwang, 2007).

The operationalized definition of the 'international students' in the present study is the undergraduate, the master students or doctorate students in Korea with D-2 student visa and no Korean ethnic background.

1.3.2 Health promoting behavior

'Health promoting behavior' is integrated activities to improve the well-being of a person or group and to maintain and enhance self-realization or satisfaction (Pender, 1996). The health promoting behavior consists of 6 subcategories; nutrition, physical activities, stress management, health responsibility, interpersonal relationship and spiritual growth (Walker et al, 1987).

In this study, the health promoting behavior was operationalized to the scores using the Health Promotion Lifestyle Profile, originally developed by Walker, Sechrist and Pender (1987) and translated and modified to adapt to the Korean culture by Seo (1995) with six subscales such as nutrition, physical activities, stress management, health responsibility, interpersonal relationship and spiritual growth.

1.3.3 Constructs relevant to the health promoting behavior

1.3.3.1 Self-esteem

'Self-esteem' is an overall evaluation or appraisal of his or her own worth. It is an attitude to believe or disbelieve his or her own ability, success, importance and value (Lee, 2003). In this study, the self-esteem was operationalized to the scores using Rosenberg self-esteem scale (RSES), developed by Rosenberg (1965).

1.3.3.2 Social support

'Social support' is a network of meaningful others surrounding to a person by social ties. It is physical and mental aid by interpersonal transactions from a spouse, family, friend, neighbor and others (Norbeck et al, 1981). In this study, the social support was operationalized to the scores using Interpersonal Support Evaluation List (ISEL), developed by Cohen and Hoberman (1983) and translated and modified to adapt to Korean culture by Seo (1988).

1.3.3.3 Perceived health status

'Perceived health status' is a subjective evaluation of a person's own present health status (Ware, 1976). In this study, the perceived health status was operationalized to the scores using Perceived Health Status Scale (PHSS) by Speake, Cowart and Pellet (1989).

1.3.3.4 Self-efficacy

'Self-efficacy' is a self-confidence to believe to successfully complete a desirable behavior. (Bandura, 1977). In this study, the self-efficacy was operationalized to the scores using General Self-Efficacy Scale (GSE) by Sherer and Maddux (1982).

1.3.3.5 Acculturative stress

‘Acculturative stress’ is Stressors related to the adjustment to a new lifestyle, including language, customs, social interaction styles, social rules, and institutional laws, resulting from an encounter with new cultural paradigms (Berry, 2003). In this study, the acculturative stress was operationalized to the scores using Acculturative Stress Scale for International student by Sandh & Asrabadi(1994).

1.3.3.6 Acculturation level

‘Acculturation’ is a cultural adaptation process to form new and mixed cultural pattern by various ethnic characteristics (Gove et al, 1993). In this study, the acculturation level was operationalized to the scores using Suinn-Lew Asian Self-identity Acculturation by Suinn, Khoo and Ahuna (1995).

Chapter 2. LITERATURE REVIEW

2.1 Chinese International Students in Korea

2.1.1 Status of the Chinese international students in Korea

The Korean government set up the "Study Korea Project" to attract international students to Korean colleges and universities, launched by the by the Ministry of Education and Human Resources Development (Now Ministry of Education, Science and Technology: MEST) in 2001. In 2004 "Study Korea Project" has been established by amending international student invitation policies with the goal to attract 50,000 international students until 2010 (MEST, 2008). According to the statistic data of January, 2011 as provided in Table 1. The total number of international students studying in Korea reaches up to 84,480.

Table 1. Number of international students in Korea

(End of 2010. Unit: person)

Year	2005	2006	2007	2008	2009	2010
Total	24,797	38,649	56,006	71,531	80,985	87,480
D-2	20,683	30,101	41,780	52,631	62,451	69,600
D44	4,114	8,548	14,226	18,900	18,534	17,880
Growth rate per year	45%	56%	45%	28%	13%	8%

Source: Korean Immigration Service Statistics, January, 2011

Comment: D-2 (Visa for the international student),
D44 (Visa for the language school student)

In accordance with the data (Table 2) on the status of international students provided by Foreign Policy Division of the Immigration (As of 2010, 12), 66,635 students from China occupies the highest percentage (76%) among international students currently residing in Korea.

Table 2. Trend of Chinese international students in Korea (2005~2010)

(End of 2010. Unit: person)

# of International Student	2006	2007	2008	2009	2010
Chinese	20,080	31,829	44,746	59,683	66,635
Total	38,649	56,606	71,331	80,985	87,480
Ratio	(54%)	(56%)	(63%)	(74%)	(76%)

Source: Korean Immigration Service Statistics, January, 2011

Such inflow of large number of international students produces positive effects in economic aspects as well as in other social aspects. Local students will have chances to learn the global citizenship by having interests in language, history, culture, art, society, and economics situation of foreign countries through international students and similarly, international students will have deeper understanding on politics, economics, society and culture of Korea and this will eventually lead to secure the Korean friendly supporters from long term perspective. (Noh, et al., 2003).

2.2 Health Promoting Behavior

2.2.1 Health status in the context of intercultural environment

Students from other countries, living and adapting to foreign cultures, are faced with various stressful situations. A large number of international students experience acculturative stress such as difficulties in verbal communication, a sense of alienation from heterogeneous social and cultural environment, racism, identity and cultural confusion. More and more international students complain mental health problems such as depression and psychological maladjustment (Lee, 2010). Previous researches revealed that students from other countries experience more difficulties in the academic areas as well as physical and mental health areas comparing to the local students (Barratt, et al, 1994; Lin, et al, 1997; Yang, et al, 1994; Ying, et al, 1994).

According to Lin, et al (1997), the biggest difficulty experienced by international students coming to the United States during their first 6 months was culture-shock and what they needed most was friends. Furthermore, the research showed that the difficulties experienced by international students while adapting are homesickness, foods, language, health care, financial issues, and plan for future career, social violence, maintaining cultural and religious customs, and racism. According to the study of Mallinchrodt, et al (1992), many international students suffer serious difficulties while adapting to foreign society such as language, tuition fees and other financial problems, social adaptation, homesickness, and role conflict in routine daily life. In order to adapt to

new culture, people try various efforts, and in this process they experience cognitive and emotional dissonance (Seo, 2009).

The result of the Health Survey of Immigrants conducted as a part of ‘U.S. Healthy People 2010’ program showed that the longer the people stay in the United States, the much higher rate of addiction to alcohol or other substances (Kandula et at, 2004). A study in Canada also showed that the rate of immigrant women's drinking or smoking is relatively low when they first came to Canada but as they live longer, the rate of drinking and smoking increases.

Few studies have been conducted on their health problems, health patterns and actual condition of medical service of the international students in Korea. JoongAng Ilbo on December 11, 2009 reported a result of survey of 1,000 Chinese international students in Korea, which was commissioned to Gallup Korea by Korea-China Cultural Association. Chinese international students The newspaper reported that the biggest difficulty was the cultural differences and the second was the medical problems. Even though international students can subscribe health insurance plan with a half of average cost paid by the regional insured, most of the students did not hold the health insurance. Almost 65 percent of the international students answered the health insurance fee is too expensive and 55 percent of the international students did not know how to subscribe the insurance (Shin, 2009).

According to a study with Chinese international students, some students express severe difficulties due to unfamiliar customs and foods, communication, different social values, homesickness, tuition and other financial issues, and uncomfortable local life (Lee, 1996). All these difficulties may cause acculturative stress, and the failure to effectively

handle such stress may cause psychological disorders such as tension, depression, anxiety as well as physical symptoms such as headaches, stomach ulcers, and heart disease (Lee, 2005; Lim, 2008).

Health problems experienced by international students are usually associated with stress and most of the problems are psychosomatic (Ebbin et al, 1988) but they also suffer physical and mental health problems (Baratt & Hubae, 1994). However, due to language problems, they face a barrier to use health care services.

Students in their early adulthood have high potential to change their health behaviors comparing to the people in their mid or late adulthood since their health habit have not been fixed yet. Additionally, health habits established during this period become basis for healthy life of mid and late adulthood. Furthermore, this is a very significant period since their attitude toward health and practice affect their children as future (Hwang, 2009). In the study of Walker, et al. (1988), young people tend to carry out health promoting lifestyle less than older people.

As a part of survey on Korean students, Park (2006) subcategorized health behaviors by diet, exercise, drinking, smoking, gender consciousness and carried out a research on differences of health behavior by type of residence. She reported that students living in home-stay appeared to have poorer health habits in diet, exercise, drinking, sexual activities than students living in dormitory or living with their own family.

There are almost no studies done on the health issues of the Chinese international students, the majority of international students in Korea. Since they experience difficulties from the life as international students and acculturation issues to society and Korean culture, it is necessary to pay attention to them.

2.2.2 Health promoting behaviors of international students

Health promotion, as a course to promote healthy experiences, makes the individuals to choose and combine individual and social health factors based on their own situation and make them to promote their own healthy experiences and feelings of fulfillment (Oh, 1993). Health promotion is conceptualized as activities to pursue higher level of well-being by promoting the change of individual habits and environments (Lee, 2007) .

Life style and health habits of college students in their young adulthood is important since it is a period of transition. They establish physical, psychological and social relationship and adaptation, intellectual maturity, changes in interpersonal relationships, and formation of self-identity (WHO, 2008). International students tend to ignore the importance of health by harmful activities out of curiosity or lured by peer groups (Park, 2002; Han, 2005). In comparison with other age and gender, they are found to practice less healthy lifestyle activities (Walker, et al, 1988; Lee, 1996; Lee, et al, 1996; Jeon, et al, 1996; Jeon, 1997; Park, 1996; Hwang, 2008). Among Chinese international students living in Korea, the level of health promoting behavior by female students is significantly better than male students (Park, 2009). Meanwhile, studies on the age differences on the level of health promoting behaviors revealed no significant differences (Park, 2009; Kim, 2010). The level of health promotional activity performance of Chinese students in Korea showed significant differences according to the academic level, gender, financial status, and satisfaction level on their majors (Kim, 2010).

2.3 Factors related to Health Promoting Behavior

This chapter is to provide basis of the establishment of path between constructs included in the hypothetical model. Pender's (1996) HPM was a conceptual framework of the structural equation model. The concepts of self-esteem and social support are individual characteristics and experiences variables and perceived health status, self-efficacy, acculturative stress and acculturation level are concepts under the criteria of behavior-specific cognitive and affects variables.

2.3.1 Individual characteristics and experiences

2.3.1.1 Self-esteem

2.3.1.1.1 Self-esteem and health promoting behavior

Self-esteem is an overall evaluation or appraisal of his or her own worth. It is an attitude to believe or disbelieve his or her own ability, success, importance and value (Lee, 2003). Rosenberg (1979) defined self-esteem as something that people respect themselves, consider them positively. People with high self-esteem lead pleasant social life, overcome troubles well, tend to adapt to society better, and have greater satisfaction since they consider that their situations are valuable and productive and behave with confidence. However people with low self-esteem has confused self-identify and consider themselves as valueless and weak and even abuse themselves and get to have an inferiority complex.

Therefore, people with low self-esteem tend to lead to self-denial, unsatisfactory self-identity and self-contempt that cause uneasy state of mind and negative attitude toward life and finally failure to adapt (Han, 2001).

The relationship between self-esteem and health is that the higher their self-esteem, the more interest in their health. Such interest is expressed as more positive way to practice the health behaviors (Kim, 1997; Park, 1997; Park, 1997; Lee, et al, 1998; Lim, 1998, Hong, et al, 1999; Oh, 2007; Jeong, 2007; Flynn, 1997; McNicholas, 2002). In addition, Bandura (1986) considered health behavior as a result of self-esteem. In accordance with the study, individuals with high self-esteem are more functional and self-accepting and therefore they tend to perform health behaviors better. Muhlenkamp, et al (1986) suggested that the self-esteem is a positive indicator of health promoting behaviors in the study with adult to identify the relationship between self-esteem and positive health behavior. Studies with youth (Park, 1997; Kim, et al, 2000; Tak, et al; 2004) also showed that the higher self-esteem of the youth, the higher level of health promoting behavior and this explains the 39 percent of health promoting behavior (Mun, 2006). Self-esteem of Korean students has positive relationship with health promoting behavior (Lim, 1998) and that of Chinese international students has also positive relationship with the health promoting behavior (Park, 2009).

In this study, hypotheses are set as that self-esteem directly affects health promoting behaviors.

2.3.1.1.2 Self-esteem and self-efficacy

The relationship between the concepts of the self-esteem and self-efficacy is originated from Bandura's (1978) cross-deterministic perspective and that means human being's ability on self-contemplation include self-esteem and self-efficacy and the two factors become each other's determinants. Additionally, the path from the self-esteem to the self-efficacy can be explained by the study of Pender (1996) based on the theory that individual psychological factors affect self-esteem. The path from the self-esteem and multi-causality can be explained by the theoretical background that self-confidence is a major determinant of the development of self-esteem. Studies with nursing students showed statistically significant correlation between self-esteem and self-efficacy (Park et al., 2002; Hwang, 2006). Therefore, in this study, hypotheses are set as that self-esteem directly affects self-efficacy.

2.3.1.2 Social support

2.3.1.2.1 Social support and health promoting behavior

People make relationship with others in social and psychological environment and interact with each other. Social support is the interaction with significant others to fulfill the desire for the development. Cohen, et al (1985) broadly defined the social support as an interpersonal process to prevent to people under stressful condition and to promote their well-being.

In the previous studies on the social support, it can be categorized into 1) the perspective that the social support is a predictor to affect directly to the health as an ability or indicator of integrated social environment (Dean et al, 1977; Liem et al, 1978; Norbeck, et al, 1981) and 2) the perspective that the social support is a moderator to control the response or interpretation about life events and to influence onset of disease (Park, 1984, O, et al., 1990; Choi, 1984; Weinert, 1987).

Hurbbard, et al (1984) reported the social support affect health behavior of person older than 55 significantly. Females who participated in the health program showed higher level of social support and health behavior than males. It was consistent with other studies that due to higher sense of perceived social support, the women manage herself better than men (Langlie, 1977; Mechnic, et al, 1980). Yarcheski, et al 1989 showed that the social support has the closed relationship with positive health practice among young people too.

Results of previous studies reporting the relationship between social support and illness are relatively consistent. In the studies focused on the relationship among social support and physical and mental health, the higher perception of social support lowers the risk of illness and mortality rate and the better mental health (Lee, 1982; Cobb, 1976; Cohen, et al, 1985; Muhlenkamp, et al, 1986). Other studies reported that the social support has a crucial role as a moderator to control unpredictable changes of life and to keep physical and mental health. (Park, 2007; O, 2007; Lee, et al., 2005; Lee, 2007; LaRacco, et al, 1980; Nobeck, et al, 1983).

Schwarzer, et al. (1990) performed meta-analysis for 93 studies about the relationship between social support and disease and the support from family and friends

was the strongest determinant to lower their difficulties. Considering these studies, hypotheses are set as that social support indirectly affects health promoting behavior.

2.3.1.2.2 Social support and perceived health status

There are studies reporting a positive relation between social support and perceived health status on the health promoting behavior of male office workers (O, 1994, 1995; Baek, 2005). Also, similar report has been made with female married immigrants, which states social support has significant direct effect with the perceived health status (Jeong, 2008). Moreover, a study for middle-aged female reported the social support affect the perceived health status positively and directly (Seo, 1995). A study with Korean college students support that higher level of social support lead higher level of the perceived health status (Lim, 1998). Therefore a hypothesis is set as that the social support indirectly affects the health promoting behavior and directly affects the perceived health status.

2.3.1.2.3 Social support and self-efficacy

Many existing studies report the higher level of perception of social support, the higher level of health status (Muhlenkamp, et al, 1986; Cox, 1986; Koo, 1992; O, 1994; Park, 1995; Seo, 1995; Moon, 2000). A study with students of an alternative school (Jang, 2010), other study with female marriage immigrants (Jeong, 2008), and with male office workers (Baek, 2005) showed consistent results that the social support has positive

correlation with self-efficacy and they are statistically significant. Therefore, in this study, hypothesis is set as that social support indirectly affects self-efficacy.

2.3.1.2.4 Social support and acculturative stress

Social support was first introduced as buffer of stress by Cassel (1976) in 1970s. Social support functions to prevent stress proactively and to be a buffer to help against maladjustment under stressful circumstance (Yang, 1991). Also social support decrease the level of stress and contributes to psychological well-being (Kaplan, et al, 1977).

According to the social support studies with the people in multicultural environment, social support lowers depression, anxiety and stress (Alderete, et al, 1999; Berry, 1998; Berry, et al, 1988; Hovey, et al, 1996, 1997). One of the crucial aspects of the acculturative stress is the loss of social support from intimate relationship with family or significant others. The loss of the social support means the loss of endorsement for mundane decision or judgment. Without the endorsement, people have to guess with insufficient information and the continuous guesswork makes the people feel difficult to control the surroundings. It eventually ends up to heighten the acculturative stress (Smart et al, 1995).

The studies of the relationship between acculturative stress and social support indicated the higher social support, the lower acculturative stress (Choi, 2001; Jang, 2005; Kim, 2008; Kim et al., 2010; Hwang, 2011). The higher the level of the social support is, the better mental health status (Kwon, 2007) is. The study of international student showed social support was the significant predictor to adapt of studying abroad

(Hwang, 2011). Therefore, in this study, hypothesis is set as that social support directly affects acculturative stress.

2.3.1.2.5 Social support and acculturation level

Berry et al.(1987) discovered the social support has a role of mediator between acculturation and stress of Korean-Canadian immigrant. In that study, immigrants with intimate friends, immigrated by relatives, Christians reported significantly low stress than their counterparts. Considering all those factors indicate availability of social network, the researcher reported that social support lowers acculturative stress among Korean immigrants.. The studies of relationship between social support and acculturation level demonstrated the higher social support, the higher acculturation level (Bahn, 2008; Jeong, 2008; Choi, 2001). Therefore, in this study, hypothesis is set as that social support directly affects acculturation level.

2.3.2 Behavior-specific cognition and affect

2.3.2.1 Perceived health status

2.3.2.1.1 Perceived health status and health promoting behavior

Personal perception of the health status is a major motivator of health promoting behavior. Self-rated health status is generally well-being oriented. Recent studies with perceived health status instead of traditional clinical diagnosis revealed that higher level

of self-rated own health status has a positive effect to health practice. Also, the subjective estimation of own health status can be as valid as the result of clinical evaluation (Kim 2005; Park, et al., 2003). Therefore, the subjective perception can provide the information on socio-psychological aspect of health (Goldstein, et al, 1984). Moreover, some of the recent studies using perceived health status argued that the perceived health status is more valid than clinical diagnosis because self-rated health status does significant role in health promoting behavior (Cockerham, et al, 1983; Linn, et al, 1980; Ware, et al, 1981; Desmond, et al, 1993; Dishman, et al, 1985; Duffy, 1988; Brown, et al, 1983; Nicholas, 1993; Speake et al, 1989).

Moreover, perceived health status is reported as a predictor of physical exercise and a persons with better perception of health change attitude toward the physical exercises positively. Lee's study (2006) reported that the perceived health status affects nutrition and spiritual growth Therefore, in this study, hypothesis is set as that perceived health status directly affects health promoting behavior.

2.3.2.2 Self-efficacy

2.3.2.2.1 Self-efficacy and health promoting behavior

Self-efficacy is a self-confidence to believe to successfully complete a desirable behavior (Bandura, 1977). In other words, it is a belief that a person can do a certain behavior to achieve a specific goal (Bandura, 1982). It is a necessary concept to change the health behavior and to maintain the change (Robertson, et al, 1997). Self-efficacy

affects every aspect of the behavior such as emotional responses (type of the thought, capability and anxiety) and realization of dream and one's own future (Strecher, et al, 1986). Low self-efficacy produces high level of stress and low level of confidence. On the contrary, people with high self-efficacy utilize their interest and ability to overcome the problems, match their talent to the circumstantial needs and try more effort (Bandura, 1982). Self-efficacy motivates health promoting behavior directly, influences to enforce or to maintain the behavior. Self-efficacy plays core role by the possibility of self-confidence to complete and get the desirable result from the behavior (Kim, et al., 1997; Park, et al., 1996; Shin, et al., 2000; Jeong, 1999; Choi, 1999; Desmond et al, 1993).

Many studies confirmed self-efficacy is the most significant predictors of health promoting behavior (Desmond, et al, 1993; McAuley, et al, 1991; Pender, et al, 1990; Weitzel, et al, 1990; Park, 1995; Jeong, 2008; Lim, 1998). Self-Efficacy is an influential factor to the behavior and it shows stronger correlations with three subcategories of the health promoting behavior such as spiritual growth, interpersonal relation, and stress management than health control behavior (Palank, 1991; Weitzel, 1989). Therefore, in this study, hypothesis is set as that self-efficacy directly affects health promoting behavior.

2.3.2.2.2 Self-efficacy and perceived health status.

Previous studies with industry shift workers (Kim, 2000), middle-aged female (Lee, et al., 1996), and female marriage immigrants (Jeong, 2008) all reported that self-efficacy affects the perceived health status. Therefore, in this study, hypothesis is set as that self-efficacy directly affects perceived health status.

2.3.2.2.3 Self-efficacy and acculturative stress

In their stress-coping theory, Lazarus and Folkman (1984) argued that self-efficacy affects the choice of what to do and how long to keep trying. Thus people with high self-efficacy take a difficult task as a challenge, tend to focus more on it and try more efforts to solve it rather than easily give up. A person with stress evaluates the stressor and seeks the cognitive or behavioral coping strategy. In the case, the self-evaluation is very important to choose right coping strategy. Higher self-efficacy lowers anxiety and psychological symptoms from stress (Uhm, 2002; Koo, 2001; Shin, 2000; Jeon, 2004) and raises satisfaction of daily life (Koo, 2001; Shin, 2000; Lee, 2000).

Kim (2005) reported that Chinese international students with high self-efficacy tends to prefer more social competition under discriminative circumstance. And the more they feel difficulties in daily life in Korea, the lower self-efficacy they have (Jang, 2010). A study with escaped North Korean students at late adolescent showed consistent result that self-efficacy plays important role in acculturative stress (Kim, 2010). Therefore, in this study, hypothesis is set as that self-efficacy directly affects acculturative stress.

2.3.2.3 Acculturative stress

2.3.2.3.1 Acculturative stress and health promoting behavior

Acculturative stress refers pain and adverse effect from acculturation process. It has physical, psychological and social aspects along with stress behavior such as negative mental health state (anxiety and depression), sense of isolation and confusion of identity as well as physical symptoms. Moreover, it makes difficult to integrate into the society and brings risk to the person (Smart, 1994; Lee, 1997). Therefore, acculturative stress is an important concept of the health promoting behavior.

In previous studies of the influence of acculturative stress to mental health, it is reported that the higher the language barrier is, the deeper the depression is (Alderet, et al., 1999). In Hovey's study (1996), the higher acculturative stress and the lower social support, the higher the anxiety level is. And the acculturative stress increase the level of depression and suicidal impulse. In case of foreign immigrant to Korea, the acculturative stress plays negative role not only on mental health status, but also on physical health (Kim, et al., , 1999; Jeong, et al., 2003; Han, 2006; Kim, et al., 2010; Lee, et al: 2011; Choi, 2008). A Study targeted on foreign workers in Canada, language issue was confirmed to a predictor to anticipate industrial accident rate (Thurston & Verhoef, 2003).

To take a look at the subscale of acculturative stress, homesickness is the highest, next to perceived hate, social isolation and difficulties from communication. The general characteristics affects to acculturative stress are financial support, length of stay, purpose of stay, and fluency of Korean language (Kim, 2009; Na, 2006; Kyeong, 2010).

Depression and anxiety also influence the acculturative stress (Son, 2007; Kim et al., 2010). Therefore, in this study, hypothesis is set as that acculturative stress directly affects health promoting behavior.

2.3.2.4 Acculturation level

2.3.2.4.1 Acculturation level and health promoting behavior

Berry (1997) defined acculturation is a consequence to change culture to one's or both members of the groups when two group of different culture contact for relatively long period. Berry's Model of Acculturation is useful to explain the acculturation. Berry categorizes four type of acculturation status. Integration is to maintain identity with home culture while to take on some characteristics of the new culture. Assimilation is not to keep identity from the home culture, but would rather take on all of the characteristics of the new culture. Separation is to keep identity from the home culture but refuse to take characteristics of the new culture. Marginalization is nothing to do with either the new culture or the old culture. According to the study of Song (2008), the most common early acculturation strategies are integration and marginalization. Integrated students feel less loneliness than marginalized students and have lower anxiety than separated or marginalized students. The happiness of integrated students are higher than that of marginalized students.

Acculturation is not a linear or uni-dimensional process but multi-dimensional process related to the change of behavior, values, and attitude and creates chronic stress.

It is reported if the stress was not properly relieved, it may create various health problems (Lee, 2004; Kerr, 1998; Fiona, et al, 2006). Thus acculturation level has been considered an important socio-psychological moderator in the study about the health issue of who experience rapid social changes in the acculturation process (Suinn, et al, 1995). Berry(1998) argued that the low level of acculturation creates stress behavior such as low level of mental health, high level of isolation, and identity confusion. However, an ability to avoid those issues depends on various characteristics of group and person.

Acculturation has correlation with physical and mental health issues such as cardiac, obesity, diabetes, smoking and mental stress (Satia, 2003). The acculturation level affects to a personal behavior, emotion and cognition (Cuellar, et al, 1997). Help-seeking behavior and pursuit of mental health are also affected by the acculturation level (Wu, 2004).

The reason acculturation affects to health derives from the change of lifestyle. The relationship between lifestyle change and physical and mental health was confirmed by the previous studies (Ahn, et al., 1998; Benfante, 1992; Robertson, et al, 1977; Miller, et al, 2004; Finch et al, 2004; Palmer et al., 2007; Marmot, et al., 1976).

The previous studies demonstrated diverse issues from acculturation and confirmed relationship with physical and mental problems (Na, 2006; Kim, 2004; Jang, 2005; Kyeong, 2010; Kim, 2009). Homesickness and perceived discrimination of international students on acculturation process are key influencer of health condition of the students (Na, 2006). A study about acculturation and health of international students in Korea indicated that acculturation level has negative correlation with depression and

positive correlation with emotional well-being (Son, 2007). Therefore, in this study, hypothesis is set as that acculturative level directly affects health promoting behavior.

2.3.2.4.2 Acculturation level and acculturative stress

The level of acculturative stress depends on the state of acculturation and acculturation strategy of the person. Dona and Berry(1994) reported high level of acculturative stress with separation or marginalization strategy, low level of stress on integration strategy and mid-level of stress on assimilation strategy. According to the studies of Song (2008) and Nam (2007), the aspect of assimilation and marginalization showed strong correlation with acculturative stress. The aspect of assimilation related with the lowest level of acculturative stress while that of the marginalization associated with the highest level of stress. Therefore, in this study, hypothesis is set as that acculturation level directly affects acculturative stress.

Through the literature review, the status of international students in Korea and their health issues, physical and mental health problems related to acculturation, the determinants of the health promoting behavior of international students in Korea are presented. The goal of the research is to develop essential knowledge base of health promoting behavior model for Chinese international students in Korea. In order to archive the goal, the research will try to develop a model for health promoting behavior with known influential factors from the prior researches and new acculturation factors, to

identify causality among the factors and ultimately to develop enhanced health promoting behavior model which can explain and predict the health promoting behavior of the Chinese international students in Korea.

Chapter 3. CONCEPTUAL FRAMEWORK & HYPOTHETICAL MODEL

3.1 Conceptual Framework

The purpose of the study was to build an explanatory model for the health promoting behavior of the Chinese international students in Korea. Based on the Pender's the Health Promotion Model (1996) and the literature review, the hypothetical model was constructed. After the major constructs for the study were determined, the conceptual framework of the study was formulated by the relationship among the constructs from the literature review.

Figure 1 is the conceptual framework of the present study.

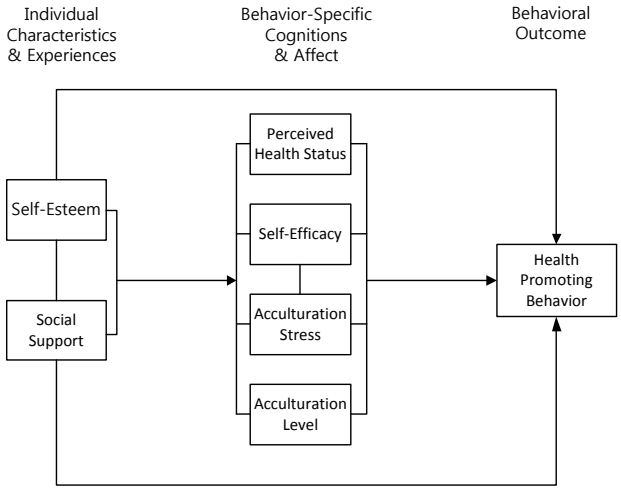

Figure 1 Conceptual framework

In order to develop the conceptual framework to explain the health promoting behavior, circumstantial variables, theoretical variables and structural variables must be considered. In this study, the conceptual framework was developed based on the health promotion model (HPM) of Pender (1996). Pender's the HPM stemmed out of Bandura's Social Learning Theory and Health Belief Model.

The social learning theory was developed to overcome the flaw of the traditional behavioral approaches. In the traditional behavioral theories, human behavior was thoroughly determined by external stimuli in passive way. The personal learning effect of the human being was not considered. On the contrary, the social learning theory stated that the human behavior was formed by interaction among environmental stimuli, learning and behavior. The self-efficacy lies at the center of Bandura's social learning theory. The self-efficacy is a self-confidence that an individual believes that he or she can to successfully complete a desirable behavior. It is different from outcome expectancy that a given behavior will lead to a certain outcomes (Bak, 2005).

The health belief model (HBM) was developed and modified by Rosenstock, Hochbaun, Kegeles and Becker to analyze and predict the health behavior based on a personal apprehension about the health and disease. (Pender, 1987). The HBM did not try to understand human behavior objectively based on scientific discoveries but analyzed the various experiences of the human to understand the human behavior (Becker et al, 1977). In the HBM, the predictors of the health related behavior were the personal perception factors such as perceived susceptibility, perceived seriousness, perceived benefits, perceived barriers, cues to action and other moderating variables (Becker et al, 1977).

Pender (1982, 1987, 1996) defined the health promoting behavior to the activities to improve the well-being of a person or group and to maintain and enhance self-realization or self-achievement. She tried multi-dimensional approach to understand the interactivities among the variables. She suggested the first health promotion model in 1982, the second model in 1987 and the third revised model in 1996.

The main assumptions of the Pender's model are 1) more positive and better emotions about past experiences of the process, 2) greater perception about the benefit of the health promoting behavior, 3) higher the perceived self-efficacy, 4) more positive emotion related to behavior, 5) more positive interpersonal relationship, 6) better environment to encourage the health related behavior and the interests, and 7) less perceived barrier, and all these factors will increase the level of the health promoting behavior.

The third model of Pender's HPM included the expectancy-value factor and the cognitive-perception factor. Three determinants to the health promoting behavior were the individual characteristics and experiences, behavior-specific learning and affect, and behavioral outcomes.

The individual characteristics and experiences consist of prior health related behaviors and personal characteristics which affect the health promoting behaviors in direct and indirect way. In social learning theory, the prior health related behaviors affect to the health promoting behavior indirectly through the self-efficacy, the benefit, the barrier and perception of behavior related emotion. Personal characteristics are comprised of biological, psychological and socio-cultural experiences. The personal biological factors include age, gender, body mass index, menopausal status, physical capability,

power, agility and balance. The personal psychological factors include self-esteem, self-motivation, personal ability, perceived health status, and health definition. The personal socio-cultural experiences include race, ethnicity, cultural adaptation, education and socio-economic status. These individual characteristics influence directly to the health promoting behavior as well as the behavior-specific learning and affect.

According to Pender (1996), there are two types of individual characteristics and experiences that affect behavioral outcomes. The first is prior related behaviors that an individual possesses. The second is personal characteristics that are comprised of biological, psychological, and socio-cultural experiences. These individual characteristics and experiences interact with the interpersonal and situational influences to shape the behavioral outcomes.

Unlike her previous health promotion models, at the third health promotion model, Pender announced the self-esteem and the perceived health status as psychological factors of the individual characteristics and they influence behavior-related learning and affect. However, in the previous studies, the social support was confirmed to be an antecedent to increase the self-efficacy and the perceived health status (Kim, 1999; Koo, 1992; Park, 1995; Seo, 1995; Song, 1991; O, 1994; Lim, 1998; Cox, 1986; Muhlemkamp et al, 1986). Therefore, considering the characteristics of the Chinese international students in Korea, the present study include gender, age, academic degree, the length of stay in Korea, subscription of the health insurance plan, residence, living expense, religion as well as self-esteem and social support to the individual characteristics and experiences variables.

The variables of the behavior-specific learning and affect have crucial motivational meanings. These variables can be modified by the nursing intervention. The perceived benefits of action, the perceived barriers of action, the perceived self-efficacy, the activity-related affect, the interpersonal influences and the situational influences are included. The perceived benefits of action and the perceived barriers of action affect to the health promoting behavior both directly and indirectly. After the thorough literature review, the perceived health status and the self-efficacy as the strongest influencers were included to the variables of the behavior-specific learning and affect.

Many international students live in Korean society, the different political, physical, social and economic environment from their own countries. And they go through acculturation process to adapt foreign culture. Acculturation is not a linear or uni-dimensional process but multi-dimensional process related to the change of behavior, values, and attitude and creates chronic stress. It is reported if the stress were not properly relieved, it may create various health problems (Lee, 2004; Kerr, 1998; Fiona et al, 2006). Many previous studies reported the acculturation level (Ban, 2008; Jeong, 2008; Kim, 2010; Berry, 1987) and the acculturative stress (Choi, 2001; Jang, 2005; Kim, 2008; Alerete et al, 1999, Hovey et al, 1996, 1997) might be influenced by the psychological and social characteristics. One of the important variables is the social support. Therefore the acculturation level and the acculturative stress were included to the variables of the behavior-specific learning and affect.

The paths among the seven variables in the hypothetical model were derived from the health belief theory, the social learning theory, the acculturation, and the health

promotion model. However if the causalities between variables were not consistent to the theory, those paths were modified by the empirical studies.

The self-esteem and the social support were assigned to the exogenous variables in the individual characteristics. Since the behavior-specific learning and affect variables are key factors to be modified by nursing intervention, the perceived health status, the self-efficacy, the acculturative stress and the acculturation level were included to the category.

3.2 Hypothetical Model

Figure 2 presents is the hypothetical model based on the conceptual frameworks.

The hypothetical model in the present study consisted to two exogenous variables and five endogenous variables. The exogenous variables were the self-esteem and the social support. The endogenous variables were the perceived health status, the self-efficacy, the acculturative stress, and the acculturation level. The number of observed variables for the exogenous variables is 2 and that for the endogenous variables is 5. All variables have their own error term.

In the hypothetical model, the paths were drawn from the self-esteem, the social support, the perceived health status, the self-efficacy, the acculturative stress, and the acculturation level to the health promoting behavior. Among the exogenous variables, the self-esteem was defined to a determinant of the self-efficacy and the social support was connected to the perceived health status, the self-efficacy, the acculturative stress and the

acculturation level. Among the endogenous variables, the self-efficacy influenced to the perceived health status and the acculturative stress, and the acculturation level affected to the acculturative stress.

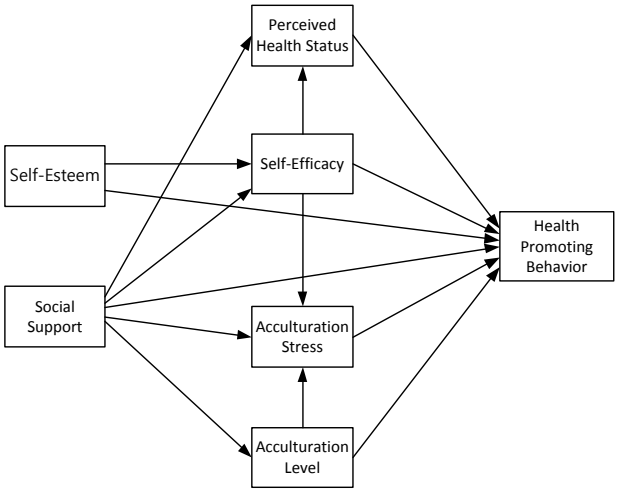

Figure 2 Hypothetical model

3.3 Hypotheses

The suggested hypotheses in the present study are as follows.

3.3.1 Six hypotheses with the health promoting behavior as the dependent variables

H1. The higher the self-esteem, the higher the health promoting behavior.

H2. The higher the social support, the higher the health promoting behavior.

H3. The higher the perceived health status, the higher the health promoting behavior.

H4. The higher the self-efficacy, the higher the health promoting behavior.

H5. The lower the acculturative stress, the higher the health promoting behavior.

H6. The higher the acculturation level, the higher the health promoting behavior.

3.3.2 Two hypotheses with the perceived health status as the dependent variables

H7. The higher the social support, the higher the perceived health status.

H8. The higher the self-efficacy, the higher the perceived health status.

3.3.3 Two hypotheses with the self-efficacy as the dependent variables

H9. The higher the self-esteem, the higher the self-efficacy.

H10. The higher the social support, the higher the self-efficacy.

3.3.4 Three hypotheses with the acculturative stress as the dependent variables

H11. The higher the social support, the lower the acculturative stress.

H12. The higher the self-efficacy, the lower the acculturative stress.

H13. The higher the acculturation level, the lower the acculturative stress.

3.3.5 A Hypotheses with the acculturation level as the dependent variables

H14. The higher the social support, the higher acculturation level.

Chapter 4. METHOD

4.1 Research Design

This study employs a multivariate structural analysis to identify the causal relationship among the health promoting behavior and the factors identified in Pender's (1997) PPM and acculturation of the Chinese international students in Korea and to build a structural equation model.

4.2 Research Sample

The target population of the study is the Chinese international students in Korea who are 1) enrolled in academic degree program at the university at all levels and 2) has stayed in Korea longer than 6 months. Among the target population, the accessible population is the Chinese international students residing in Seoul metropolitan area.

The convenient sampling and snowball sampling were used to recruit samples. The international offices and the Chinese international students' association of 10 universities and graduate schools were sources of referral.

4.2.1 Inclusion and exclusion Criteria

The inclusion criteria are as follows;

- understand the purpose of the research and agree to participate in the study
- be able to understand and answer the questionnaire in standard Chinese

The exclusion criteria are as follows.

- an exchange student or a student in the language school
- has Chinese nationality but with Korean ethnic orientation (Korean Chinese or Chosun race)

4.2.2 The estimation of required sample size

The principles to estimate the effective sample size of the path analysis are basically identical to get the effective sample size for the structural equation modeling. According to Garver & Mentzer (1999), and Hoelter (1983), 1) the sample size must be bigger than covariate (correlation) matrix. 2) the sample size must be at least a 5:1 ratio for the number of subjects to the number of model parameters, but a 10:1 ratio is recommended. 3) If the observed variables are 12 or less, then minimum 200 samples are necessary. If the observed variables are more than 12, then the minimum sample size should be $1.5 \times p(p+1)$, 4) if the data is not satisfied with normality assumption, then the sample size must be 15 times of the number of the observed variables.

In the hypothetical model, the number of the observed variables is 7. The number of parameter estimates is 20 including error terms. The effective sample size is 1) 49 (= 7×7 correlation matrix), 2) 200 (= 20 parameter estimates×10), 3) 200 (the number of the observed variables is 7＜12), 4) 105 (= 15×7 observed variables). Conservatively, 200 is the effective sample size. With the dropout rate 20%, the minimum sample size is 240. With the respect of the past research experiences and expected completion rate, total 300 survey questionnaires were distributed and 272 were included for analysis.

4.3 Measurement

The research instrument is a self-reported survey questionnaire. It is translated and revised from the research instruments with that have been proven its validity and reliability by previous studies. After 2 pretests and screening, total 133 items: 10 general demographic questions; 37 health promoting behavior; 3 perceived health status; 13 self-efficacy; 13 acculturation level; 20 acculturative stress; 10 self-esteem, and 17 social support are used.

The following steps were taken to modify and validate the measure.

Step 1: Based on the literature review and the target population, the researcher selected the instruments with the proven validity and reliability. Three nursing faculty reviewed the content validity of the questionnaire.

Step 2: The questionnaire was translated from Korean to Chinese by a professional Chinese translator.

Step 3: A Chinese doctorate student who has stayed in Korea more than 7 years and is fluent in Korean language back-translated the Chinese questionnaire into Korean. The researcher compared the original Korean questionnaire and the back-translated questionnaire and reviewed whether the meaning of the questions might be changed. During this process, some of the Chinese questionnaires directly translated from English for other researches were used to minimize the loss of the meaning by the English-Korean-Chinese translation.

Step 4: To confirm whether the subject can fully understand the Chinese questionnaire, the pretest was conducted with 5 Chinese graduate students who have stayed in Korea more than 3 years. Based on the pretest results, some of the questions were modified to clarify the meaning.

Step 5: Two pilot tests were conducted with 2 groups of 10 Chinese international students to finalize the questionnaire.

Step 6: Using statistical method, the content analysis and reliability test for the instruments for the hypothetical model were performed to select the final items in the questionnaire.

4.3.1 Health promoting behavior

Health Promoting behavior was measured by the modified version of the HPLP (Health Promotion Lifestyle Profile), originally developed by Walker, Hill-Polerecky and Pender. Seo translated the HPLP in Korean language.

The 47-item profile measures self-reported daily activities over 6 subcategories; “spiritual growth”, “health responsibility”, “physical activity”, “nutrition”, “interpersonal relationship” and “stress management:, rated on a 4-point Likert scale, ranging from 1 (never) to 4 (always). Higher scores indicate better health promoting behavior.

After a series of pretests and pilot tests, total 37 items were selected to measure the health promoting behavior of the Chinese international student in Korea. (11 of the spiritual growth, 8 of the health responsibility, 3 of the physical activity, 6 of the nutrition, 5 of the interpersonal relationship, and 4 of the stress management).

Cronbach’s α for the HPLP total scale was 0.92 and that of the subcategories ranged from 0.79 to 0.87. In the present study, Cronbach’s α was 0.85. The subcategories are shown as the spiritual growth was 0.79, the health responsibility was 0.74, the physical activity was 0.74, the nutrition was 0.78, the interpersonal relationship was 0.72 and the stress management was 0.70.

4.3.2 Perceived health status

Perceived health status was measured by 3 items that originally developed by Speake, Cowart and Pellet in 1989. The 3 self-reported items rated on 5 point Likert scale, ranging from 1 to 5. Higher score indicates better perceived health status. Cronbach's α for the original instrument was 0.77. The internal consistency for the scale in the present study was 0.82.

4.3.3 Self-efficacy

GSE (General Self-Efficacy) scale, originally developed by Sherer and Meddux (1982) was used to measure the self-efficacy. The 17 Self-reported items rated on 5 point Likert scale. The higher the total score is, the more self-efficacious the respondent.

This study used all of 17 original items of the GSE scale. Among the items, 9 negative items No. 1, 5. 6. 10, 11. 12, 14, 16, and 17 were reversed coded for internal consistency. When Sherer developed the GSE scale, the Cronbach's α was 0.87 and that of the present study was 0.85.

4.3.4 Acculturative stress

The degree of perceived stressfulness associated with the experience of acculturation was measured with 20 items selected from the Acculturative Stress Scale

(Sandhu & Asrabadi, 1994) for international students. Yang, et al translated the ASC in Korean language for foreign workers. The original scale contains 36 items addressing stress-related themes found to be associated with acculturation, such as, "perceived discrimination", "culture shock", "guilt", "perceived hatred", "homesickness" and "miscellaneous". The items rated on 5 point Likert scale, ranging from 1(strongly disagree) to 5 (strongly agree). Higher score means higher perceived stress level from the acculturation.

As a result of the pretest and the pilot test, the 20 items from the original acculturative stress scale were selected for the questionnaire. The Cronbach's α of the original scale by Sandhu & Asrabadi was from 0.87 to 0.95. The Cronbach's α of this study was 0.84 and the subcategories are shown as the homesickness was 0.78, the culture shock was 0.77, the perceived hatred was 0.70, the perceived discrimination was 0.74, and the miscellaneous was 0.55.

4.3.5 Acculturation level

Acculturation level was measured by Suinn-Lew Asian Self-identity Acculturation scale (SL-ASIA) that was originally developed by Suinn, Khoo and, Ahuna(1995) and was translated into Korean language by Jeong (2007).

The 20 items measure self-reported acculturation level with 6 subcategories; "language preference", "friendship choice", "food preference", "pride", and "generational

identity". The items rated on a 5-point Likert scale, ranging from 1 (Strongly disagree) to 5 (Strongly agree). Higher score indicates higher level of the acculturation.

Among 20 items in the original tool, 13 items; 4 of the language preference, 3 of the friends choice, 3 of the food preference, 1 of the pride, 2 of the generational identity were selected to measure the acculturation level. 1 negative items was reversely coded to maintain the consistency of the instrument.

Cronbach's α of original SL-ASIA was 0.79. With the present sample, the Cronbach's α was 0.82. The subcategories are shown as the language preference was 0.72, friendship choice was 0.75, food preference was 0.76 and generational identity was 0.66.

4.3.6 Self-esteem

Self-esteem Scale (SES), developed by Rosenberg and translated by Jeon (1974) was used to measure the self-esteem of the Chinese international student. SES consists of 5 positive items and 5 negative items, rated on 4 point Likert scale from 1 to 4. SES score was computed by reverse coding the 5 negative items (No. 3, 5, 8, 9 and 10) and then averaging them with 5 positive items. Higher SES score indicates higher self-esteem. The Cronbach's α of the original tool was 0.90 and that of test-retest in 15 week was 0.82. The internal consistency for the scale in the present study was 0.79.

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4.3.7 Social support

Social support was measured using the Interpersonal Support Evaluation List (Cohen & Hoberman, 1983). Seo (1988) translated and revised for Korean. The 18-items tool measures self-reported social support over 4 subcategories; “tangible support”, “belongingness”, “esteem”, and “appraisal”:, rated on a 4-point Likert scale, ranging from 1 (definitely false) to 4 (definitely true). Higher score indicates higher perceived social support.

One item was deleted because it jeopardized the internal reliability. The original Cronbach’s α of ISEL by Cohen and Hoberman in 1983 was 0.90. In our sample, Cronbach’s α was 0.83.

Table 3. List of Cronbach's α for research instruments

	Subscale	# of items	Original	Present Study
Acculturative level	Total	13	0.79	0.84
	Language preference	4		0.72
	Friendship choice	3		0.75
	Food preference	3		0.76
	Pride	1		
	Generational identity	2		0.66
Acculturative stress	Total	20	0.87	0.84
	Homesickness	3		0.78
	Culture shock	3		0.77
	Perceived discrimination	6		0.74
	Perceived hatred	3		0.70
	Miscellaneous	5		0.55
Health promoting behavior	Total	37	0.92	0.85
	Spiritual growth	11		0.79
	Health responsibility	8		0.74
	Physical activity	3		0.74
	Nutrition	6		0.78
	Interpersonal relations	5		0.72
	Stress management	6		0.70
Self-efficacy		17	0.87	0.85
Self-esteem		10	0.90	0.79
Social support		17	0.90	0.83
Perceived health status		3	0.77	0.82

4.4 Data Collection

After obtaining the approval from the Institutional Review Board (IRB) of Yonsei University College of Nursing (YUCN 2010-1023) the data were collected. The survey was conducted from November 15, 2010 to February 28, 2011. The researcher introduced the purpose of the study and the content of the questionnaire to 10 Chinese international student representatives at the universities and graduate schools in Seoul metropolitan area. After the introduction session, the student representatives arranged for the survey.

Chinese version of the questionnaire was used for the survey. Korean version of the questionnaire was also prepared for the potential Q & A to clarify the content of the questionnaire. At the survey meetings, the Chinese international student representatives and the researcher explained the purpose of the study and the confidentiality and voluntary participation of the data collection process. All the participants submitted a written agreement to participate in the research. Then they filled out self-reported questionnaires.

It took about 60 minutes to complete the questionnaire. When the questionnaire was collected, the research assistants reviewed the questionnaire immediately to check missing items. The participants were asked to supplement the questionnaire, if necessary. A gift certificate of 10,000 Korean Won was provided to the participant upon the completion.

4.5 Data Analysis

4.5.1 Data validation

Total 300 questionnaires were distributed and 289 were collected. From the 289 questionnaires, followings were excluded: if they were not in inclusion criteria – such as the length of stay was less than 6 months (n=5); if they skipped more than 5 items (n=4); if they were too reckless such as answered in zigzag or in straight (n=4); if the answers conflicted each other more than 3 items when the positive and negative items existed in one construct (n= 4). Final analysis included 272 questionnaires.

4.5.2 Statistical tools

1) IBM SPSS Statistics 19.0 for Windows was used to analyze general characteristics of the participants, descriptive analysis for the research variables, internal reliability test, factor analysis and correlation analysis.
2) IBM AMOS 19.0 for Windows was used for path analysis such as to estimate regression coefficient, and direct, indirect and total effects between the variables.
3) IBM AMOS 19.0 for Windows was used to evaluate the model fit of structural model such as absolute fit indices, incremental fit indices and parsimony fit indices.

4) If necessary, the model modification was conducted to seek the revised model with validity and model fit by IBM AMOS 19.0 for Windows.

Chapter 5. RESULT

5.1 Characteristics of Participants

Total of 272 Chinese international students participated in the study. Table 4 presents characteristics of the participants. Ninety two (33.8%) are male students and 180 (66.2%) are female students. The average age of the participants is 25.7 years. Thirty nine (14.3%) students are undergraduate students, 174 (64%) students are master's students and 59 (21.7%) are doctorate students.

The average length of stay was 44 months. A majority (31.2%) stayed from 1 to 3 years.

Almost half of the students (47.4%) subscribe to health insurance plan. Most of the students (76.8%) do not have a religion. About 51 percent (138) are financially supported by their parents. Forty students receive scholarship from the Korean government and 45 (16.5%) support themselves.

Table 4. Characteristics of the participants

n=272

		Frequency	(%)	Mean±S.D.
Gender	Male	92	(33.8)	
	Female	180	(66.2)	
Age	≤ 21 years	8	(02.9)	25.74 years±2.68
	22~24 years	88	(32.4)	
	25~27 years	112	(41.2)	
	28~30 years	50	(18.4)	
	≥ 31years	14	(05.1)	
Academic degree	Undergraduate	39	(14.4)	
	Master's student	174	(64.0)	
	Doctorate student	59	(21.7)	
Length of Stay in Korea	6 months ~ 1 years	26	(09.6)	39.88 months±23.89
	1~3 years	108	(39.8)	
	3~5 years	85	(31.2)	
	More than 5 years	57	(19.5)	
Health insurance	Yes	129	(47.4)	
	No	143	(52.6)	
Residence	Dormitory	98	(36.0)	
	Home stay	132	(48.5)	
	Lease	9	(03.3)	
	Others	33	(12.1)	
Finance	Scholarship	48	(17.6)	
	Parents	138	(50.7)	
	Own	45	(16.5)	
	Others	41	(15.1)	
Religion	None	209	(76.8)	
	Buddhist	27	(09.9)	
	Christian	29	(10.7)	
	Others	7	(02.6)	

5.2 Descriptive Statistics of the Variables

5.2.1 Health promoting behavior

The Health promoting behavior was assessed by a 37-item tool developed by (Pender, 1987, 1996). It has a 4-point Likert scale for self-reported health promoting behaviors. It includes the domains of health responsibility, physical activity, nutrition, spiritual growth, interpersonal relations, and stress management. A higher score indicates higher self-rating of health promoting behavior.

The mean score of total health promoting behavior was 2.77 (±0.31), out of maximum of 4. The subcategories score shows that interpersonal relationships shows the highest by its mean score of 3.17 (±0.45). Mean score of spiritual growth is 3.12 (± 0.47), stress management 2.97 (± 0.47), physical activity 2.53 (±0.57), and nutrition 2.48 (±0.58). Health responsibility shows the lowest mean score of 2.27 (±0.47). Both the skewness and kurtosis are less than 1 which indicates no significant violation on normality.

Table 5. Descriptive statistics of health promoting behavior and subcategories

n=272

	Mean	S.D.	Min.	Max.	Skewness	Kurtosis
Health Promoting Behavior	2.77	0.31	1.89	3.43	-0.427	0.065
Spiritual Growth	3.12	0.47	1.82	4.00	-0.323	-0.382
Health Responsibility	2.27	0.47	1.13	3.50	-0.175	-0.238
Physical Activity	2.53	0.57	1.00	4.00	-0.184	0.007
Nutrition	2.48	0.58	1.00	3.83	-0.222	-0.279
Interpersonal Relationship	3.17	0.45	1.80	4.00	-0.254	-0.282
Stress Management	2.97	0.47	1.75	4.00	-0.143	-0.221

S.D. : Standard Deviation

5.2.2 Perceived health status

The perceived health status was assessed with 3-item tool. It has a 5 point Likert scale, a higher score indicates higher self-rating of health status. The mean score of the perceived health status was 3.0 (±0.79) out of maximum of 5. Both the skewness and kurtosis are less than 1.

Table 6. Descriptive statistics of the perceived health status

n=272

	Mean	S.D.	Min.	Max.	Skewness	Kurtosis
Perceived Health Status	3.00	0.79	1.00	5.00	0.248	-0.196

5.2.3 Self-efficacy

Self-efficacy was assessed with a 17-item tool. The mean score of the self-efficacy was 3.48 (±0.5) out of maximum of 5. The skewness is less than 1 and the kurtosis is 1.25, still less than 2. This indicate no significant violation on normality.

Table 7. Descriptive statistics of self-efficacy

n=272

	Mean	S.D.	Min.	Max.	Skewness	Kurtosis
Self-Efficacy	3.48	0.50	1.82	4.65	-0.475	1.250

5.2.4 Acculturative stress

Acculturative stress was assessed with a 20-item tool. It consists of 5 domains of stressor; homesickness, culture shock, perceived discrimination, perceived hatred, and other sources of stress. A higher score indicates stronger self-rating of acculturative stress.

The mean score of the acculturative stress was 2.55 (±0.5) of maximum of 5. Homesickness shows the highest score among subcategories, 2.86 (±0.87). culture shock (2.7 ± 0.81) and perceived discrimination (2.34±0.65) follow. Perceived hatred shows the lowest score, 2.24 (±0.66).

Table 8. Descriptive statistics of acculturative stress

n=272

	Mean	S.D.	Min.	Max.	Skewness	Kurtosis
Acculturative stress	2.55	0.50	1.20	3.65	0.081	-0.458
Homesickness	2.86	0.87	1.00	4.67	-0.052	-0.704
Culture Shock	2.70	0.81	1.00	4.67	0.199	-0.626
Perceived Discrimination	2.34	0.65	1.00	3.83	0.130	-0.563
Perceived Hatred	2.24	0.66	1.00	5.00	0.345	0.494
Miscellaneous	2.67	0.64	1.20	4.00	-0.163	-0.495

5.2.5 Acculturation level

Acculturation level was assessed with a 13-item tool. It consists of 5 domains indicating acculturation level; language preference, friends choice, food preference, pride, and generational identity. The mean score of the acculturation level was 2.63 (±0.61) out of maximum of 5.

Food preference shows the highest score, 3.12 (±0.95) then pride (2.7 ± 1.1), friend choice (2.67 ± 0.74), and language preference (2.51±0.88) follow. Generational identity shows the lowest score, 2.26 (±0.76).

Table 9. Descriptive statistics of acculturation level

n=272

	Mean	S.D.	Min.	Max.	Skewness	Kurtosis
Acculturation Level	2.63	0.61	1.08	4.08	-0.040	-0.319
Language Preference	2.51	0.88	1.00	4.75	0.369	-0.738
Friendship Choice	2.52	0.74	1.00	4.33	0.131	-0.321
Food Preference	3.12	0.95	1.00	5.00	-0.102	-0.690
Pride	2.70	1.10	1.00	5.00	0.111	-0.494
Generational Identity	2.26	0.76	1.00	4.00	0.165	-0.555

5.2.6 Self-esteem

Self-esteem was assessed with a 10-item tool. The mean score of the self-esteem score was 3.01 (±0.4) out of maximum of 4.

Table 10. Descriptive statistics of self-esteem

n=272

	Mean	S.D.	Min.	Max.	Skewness	Kurtosis
Self-Esteem	3.01	0.40	1.70	3.80	-0.308	0.260

5.2.7 Social support

Social support was assessed with a 17-item tool. The mean score of the social support was 3.04 (±0.36) out of maximum of 4.

Table 11. Descriptive statistics of social support

n=272

	Mean	S.D.	Min.	Max.	Skewness	Kurtosis
Social Support	3.04	0.36	2.18	3.94	0.222	-0.352

5.3 The Relationship between Demographic Characteristics and Research Variables

The relationships between the demographic characteristics and research variables were analyzed. Gender, academic degree, subscription of the health insurance, age and the length of stay in Korea were included in the analysis.

5.3.1 Gender

Independent t-test was used to identify the gender difference to the research variables. The results indicate that there are significant gender differences in the overall health promoting behavior and its subcategories. The overall score of the female shows higher score (2.83) than the male (2.66). Among the 6 subcategories, the score of female is significantly higher than the male for the health responsibility, the nutrition, the interpersonal relationship and the stress management. However, the male shows higher score than the female at the physical activities.

Table 12 shows the variables that have statistically significant differences by the gender.

Although the gender does not show significant differences in overall acculturative stress, the female participants (2.95) reported significantly higher score in homesickness than the male participants (2.67).

At the Health promoting behavior the female shows higher score (2.83) than the male (2.66). Among the 6 subscales of the Health Promoting behavior, the score of female is significantly higher than of the male at the health responsibility, the nutrition, the interpersonal relationship and the stress management. However, the male shows higher score than the female at the physical activities.

At the Self-efficacy the male has higher score (3.61) than the female (3.42) while the female shows higher score (3.10) than the male (2.93) at the social support. It means the female Chinese students get more social support than the male in Korea.

Table 12. The difference of the research variables by the gender

n=272

	Mean			t
	Male	Female	Total	
Health promoting behavior	2.66	2.83	2.77	- 4.46***
Health Responsibility	2.18	2.31	2.27	- 2.10*
Physical activity	2.64	2.48	2.53	2.21*
Nutrition	2.20	2.63	2.48	-6.31***
Interpersonal Relationship	3.05	3.24	3.17	-3.28***
Stress Management	2.80	3.06	2.97	-4.40***
Self-Efficacy	3.60	3.42	3.48	2.85**
Acculturative stress				
Homesickness	2.67	2.95	2.86	-2.52*
Social Support	2.93	3.10	3.04	-3.61***
n	92	180	272	

Only statistically significant variables are listed.

* p<0.05, ** p<0.01, *** p<0.001

5.3.2 Academic degree

One way ANOVA was used to identify the difference of the research variables according to the academic degree.

On the overall acculturation level, the master's students show the highest score (2.70). The undergraduate students (2.53) follow and the doctorate students show the lowest (2.43). However, the results are not consistent among the sub-categories of the acculturation level. For the friendship choice, the undergraduate students show the highest score (2.76), then the master's students (2.53), and the doctorate students the lowest (2.36). For the food preference, the master's students show the highest (3.27) and for the generation identity, the doctorate students show the lowest score (1.94).

There is no statistically significant difference for the acculturative stress related to the academic level. But for the culture shock, the doctorate students show the highest (3.02), next to the masters students (2.62) and the undergraduate students do the lowest (2.54).

For the self-efficacy, the score of doctorate students is the highest (3.63), next to the masters students' (3.46) and the undergraduate students' is the lowest (3.35). Contrary to the self-efficacy, for the perceived health status, the lower academic degree reported the better health status.

Table 13. The difference of the research variables by the academic degree

n=272

	Mean				F
	Doctorate Student	Mater's Student	Under-graduate	Total	
Health Perception	2.90	2.97	3.32	3.00	3.79 *
Self-Efficacy	3.63	3.46	3.35	3.48	4.50 **
Acculturative stress					
Culture Shock	3.02	2.62	2.54	2.69	6.49 **
Miscellaneous	2.51	2.67	2.86	2.66	3.68 *
Acculturation level	2.43	2.70	2.64	2.63	4.30 **
Friendship choice	2.36	2.53	2.76	2.52	3.57 *
Food Preference	2.84	3.27	2.88	3.12	6.22 ***
Generational Identity	1.94	2.35	2.36	2.26	6.93 ***
n	59	174	39	272	

* p<0.05, ** p<0.01, *** p<0.001

5.3.3 Health insurance

Independent sample t-test was used to identify the differences in research variables according to the subscription of the health insurance plan. While it is mandatory to subscribe the student's health insurance plan at the time of enrollment, it is not enforced to maintain the plan. Almost half of the participants do not have the health insurance.

The students with the health insurance plan show higher score at the acculturation level. Especially they show higher score of the language preference and

food preference than the students with no health insurance plan. Although there is no significant difference at the overall Health promoting Behavior, the score of the health responsibility differ between the student with (2.36) and without (2.18) the health insurance plan.

Moreover, the students with the health insurance plan show higher self-efficacy score (3.57) than one without the plan (3.4).

Table 14. The difference of the research variables by health insurance

n=272

	Mean			F
	With insurance	Without insurance	Total	
Health promoting behavior				
Health Responsibility	2.36	2.18	2.27	3.259 **
Self-Efficacy	3.57	3.40	3.48	2.906 **
Acculturation level	2.73	2.54	2.63	2.541 *
Language Preference	2.63	2.39	2.51	2.271 *
Food Preference	3.30	2.96	3.12	2.951 **
n	129	143	272	

* p<0.05, ** p<0.01, *** p<0.001

5.3.4 Age and the length of stay

Pearson correlation analysis was used to identify the relationship between two interval variables, the age and the length of stay in Korea and the research variables. The results are summarized at Table 15.

Older students tend to have higher self-efficacy and self-esteem but lower acculturation level. The longer the participants stay in Korea, the higher social support but reported significantly lower acculturation level.

Table 15. The age, the length of stay in Korea and the research variables

n=272

	Age	Length of Stay
Health Promoting Behavior	0.039	0.021
Self-Efficacy	0.215 **	0.068
Acculturation Level	-0.128 *	-0.123 *
Acculturative Stress	-0.029	-0.116
Self-Esteem	0.133 *	0.049
Social Support	0.044	0.143 *

* p<0.05, ** p<0.01, *** p<0.001

5.4 Correlation among the Research Variables

Correlation matrix is presented in Table 16.

The Health promoting behavior shows positive correlation with the self-esteem (r=0.427), the perceived health status (r=0.338), the self-efficacy (r=0.318), and acculturation level (r=0.195), but shows negative correlation with the acculturative stress (r=-0.294).

The perceived health status shows positive correlation with the social support (r=0.325), the self-esteem (r=0.231), the self-efficacy (r=0.193) and the acculturation level (r=0.129).

The self-efficacy has positive correlation with the self-esteem (r=0.648), and the social support (r=0.188) but has negative correlation with the acculturative stress (r=-0.396).

The acculturation level shows positive correlation with social support (r=0.151) but has negative correlation with the acculturative stress (r=-0.134). The acculturative stress has negative correlation with self-esteem (r=-0.325) and social support (r=-0.134). The self-esteem shows positive correlation with the social support (r=0.357).

Table 16. Correlation matrix of the research variables

n=272

	Z_1	Y_1	Y_2	Y_3	Y_4	X_1
Y_1	0.391**					
Y_2	0.318**	0.193**				
Y_3	- 0.294**	- 0.106	- 0.396**			
Y_4	0.195**	0.129*	0.026	- 0.134*		
X_1	0.427**	0.231**	0.648**	- 0.325**	0.077*	
X_2	0.338**	0.325**	0.188**	- 0.240**	0.151*	0.357**

*p<0.05, **p<0.01

Z_1: Health Promoting Behavior

Y_1: Perceived Health Status, Y_2: Self-Efficacy, Y_3: Acculturative Stress,

Y_4: Acculturation Level

X_1: Self-Esteem, X_2: Social Support

5.5 Model Estimation by Path Analysis

The path analysis was used to explain how personal characteristics and behavioral perception and emotion influence to the health promoting behavior.

Good model is the closest and the simplest model to explain a reality. In order to estimate the model, goodness of fit index and parsimony fit index are used.

5.5.1 Acceptability of hypothetical model

To identify unique structure of the model, known information should be more than unknown information. If the number of observed variables (= known information) is more than that of estimated variables (=unknown information), we call it an over-identified model (Bollen, 1989). In the hypothetical model of this study, the number of observed variables is 28 while the number of estimated variables is 19. Therefore it is satisfied to be an over-identified model with a unique solution. Moreover, the recursive rule is also satisfied since the arrows indicating effects of endogenous variables on other endogenous variables all run in the same direction. Therefore the sufficient condition to identify the model is also satisfied (Bollen, 1989).

5.5.2 Model fit test for hypothetical model

To measure the goodness of fit for the hypothetical model, there must be no missing data. Since all the missing data were processed either by elimination or filled by follow-up interviews before the data analysis, there is no sample with a missing data in the study. Maximum likelihood method was used to estimate coefficients of the path analysis. Absolute fit index, incremental fit index, and parsimony fit index are used to test the goodness of fit of the hypothetical model.

Absolute fit indices determine how well a default model fits the sample data (McDonald & Ho, 2002) and demonstrate which proposed model has the best fit. These measures provide the most fundamental indication of how well the proposed theory fits the data. Included in this category are the x^2 statistics, the RMSEA((Root Mean-Square Error of Approximation), the GFI (Goodness of Fit Index), and the RMR (Root Mean-Square of Residual).

Incremental fit indices, also known as comparative (Miles & Shevlin, 2007) or relative fit indices (McDonald & Ho, 2002), are a group of indices that do not use the chi-square in its raw form but compare the chi-square value to a baseline model. For these models the null hypothesis is that all variables are uncorrelated (McDonald & Ho, 2002). There are several incremental fit indices including the AGFI (Adjusted goodness of fit index), NFI (Normed Fit Index), NNFI (Non-Normed Fit Index, also known as the Tucker-Lewis index) and CFI (Comparative Fit Index) which is one of the most popularly

reported fit indices due to being one of the measures least effected by sample size (Fan et al, 1999).

Having a nearly saturated, complex model means that the estimation process is dependent on the sample data. This results in a less rigorous theoretical model that paradoxically produces better fit indices (Mulaik et al, 1989; Crowley and Fan, 1997). In this study, the Parsimonious Normed Fit Index (PNFI) and Normed x^2 (x^2/df or Q) are used to evaluate the parsimony of the hypothetical model.

Table 17 presents the results of fit test.

5.5.2.1 Absolute fit indices

The x^2 value is the traditional measure for evaluating overall model fit and, assesses the magnitude of discrepancy between the sample and fitted covariance matrices (Hu & Bentler, 1999). A good model fit would provide an insignificant result at a 0.05 threshold (Barrett, 2007), thus the x^2 statistics is often referred to as either a 'badness of fit' (Kline, 2005) or a 'lack of fit' (Mulaik et al, 1989) measure. While the x^2 test retains its popularity as a fit statistic, it is sensitive to sample size which means that the x^2 statistic nearly always rejects the model when large samples are used (Bentler and Bonnet, 1980; Jöreskog and Sörbom, 1993). On the other hand, where small samples are used, the chi-square statistic lacks power and because of this may not discriminate between good fitting models and poor fitting models (Kenny & McCoach, 2003). In general sample size from 100 to 200 makes x^2 statistics accurate. Due to the

restrictiveness of the x^2 statistics, if the sample size is bigger than 200, researchers have to use alternative indices to assess model fit as well. One example of a statistic that minimizes the impact of sample size on the Model x^2 is Wheaton et al's (1977) relative/normed x^2 (x^2/df). Although there is no consensus regarding an acceptable ratio for this statistic, recommendations range from as high as 5.0 (Wheaton et al, 1977) to as low as 2.0 (Tabachnick & Fidell, 2007).

The p value of x^2 statistics is <0.001 and the normed x^2 is 5.539. Both of them are not satisfied to pass the threshold of acceptable ratio.

Traditionally the acceptable ratio of GFI is as low as 0.9 and RMR and RMSEA is as high as 0.08, but recent trend is more strict cutoff baseline such as minimum GFI is 0.95 and maximum RMR and RMSEA is 0.5 are appropriate. At the hypothetical model in the study, the GFI is 0.961 that satisfies GFI requirement, but the RMSEA is 0.134 that fails to meet the baseline. However the RMR in the model is 0.020 that passes the cutoff line.

5.5.2.2 Incremental fit indices

In the past, the incremental fit indices such as AGFI, NFI, NNFI, and CFI have generally been used with a conventional cutoff in which values larger than 0.90 are considered good fitting models, but there seems to be consensus now that this value should be increased to 0.95 (Miles & Shevlin, 1998). For the hypothetical model, CFI is

0.905 that pass the traditional cutoff criterion, but AGFI (0.845), NFI (0.896) and NNFI (0.728) fail to meet the criterion.

5.5.2.3 Parsimony fit indices

When Mulaik et al (1989) have developed the parsimony of fit index; the Parsimonious Normed Fit Index (PNFI), it penalizes for model complexity which results in parsimony fit index values that are considerably lower than other goodness of fit indices. While no threshold levels have been recommended for the index, Mulaik et al (1989) do note that it is possible to obtain parsimony fit indices within the 0.50 region while other goodness of fit indices achieve values over 0.90. The authors strongly recommend the use of parsimony fit indices in tandem with other measures of goodness-of-fit however, because no threshold levels for these statistics have been recommended it has made them more difficult to interpret. Therefore the general consensus of the parsimony fit index is not a tool to penalize a specific model fit, but a tool to compare two or more models to determine which one is better. If simpler alternative models seem to be as good, we might want to favor the simpler model. The PNFI of the hypothetical model is 0.299.

As it is mentioned, the traditional cutoff baseline of the normed x^2 is 5.0 or less. Recent trend is stricter criterion of 2.0 or less (Tabachnick & Fidell, 2007). The normed x^2 of the hypothetical model is 5.83 it is not acceptable to be a good model.

In summary, the hypothetical model satisfied the GFI and the RMR of the absolute fit indices and the CFI of the incremental fit indices but didn't meet the criterion of the p-value of x^2 statistics, RMSEA, AGFI, NFI, NNFI and the normed x^2. Therefore model modification is needed.

Table 17. Fit indices of the hypothetical model

n=272

Fit Indices	Absolute Fit Indices				Incremental Fit Indices				Parsimony Fit Indices	
	x^2 (df) (p value)	GFI	RMR	RMSEA	AGFI	NFI	NNFI	CFI	PNFI	x^2/df
Criterion	≥0.05	≥0.95	≤0.05		≥0.95				Higher is better	≤2
Hypothetical Model	40.84 (7) (<0.001)	0.961	0.02	0.134	0.845	0.896	0.728	0.909	0.299	5.834

x^2 : x^2 Statistics, GFI: Goodness of Fit Index,

RMR: Root Mean-Square of Residual,

RMSEA: Root Mean-Square Error of Approximation,

AGFI: Adjusted GFI, NFI: Normed Fit Index,

NNFI: Non-Normed Fit Index, CFI: Comparative Fit Index,

PNFI: Parsimonious NFI, x^2/df: x^2 Statistics/degree of freedom

5.5.2.4 Parameter estimation and significance

Table 18 presents the results of the parameter estimation and significance in order to evaluate the regression coefficients of the hypothetical model.

The direct effects among the endogenous and exogenous variables are as follows. The health promoting behavior increases as the self-esteem is high (β =0.2, C.R.=3.9), as the perceived health status is high (β =0.102, C.R.=4.9), as the acculturative stress is low (β = -0.082, C.R.=-2.4), and as the acculturative stress is high (β =0.054, C.R.=2.1). Those 4 variables explain 27.2% of the health promoting behavior (SMC=0.272).

The perceived health status increases as the social support is high (β =0.652, C.R.=5.3), and the self-efficacy is high (β =0.216, C.R.=2.4), 10.7 percent of the perceived health status is explained by those two variables.

The self-efficacy increases as the self-esteem is high (β =0.828, C.R.=14.4) but as the social support is low (β =-0.068, C.R.=-1.1). The two variables explain 43.6% of the self-efficacy.

The acculturation level increases as the social support is high (β =0.253, C.R.=2.5). But, only 2.3% of the acculturation level is explained by the social support.

The acculturative stress works the other way. It increases as the self-efficacy is low (β =-0.36, C.R.=-6.7), the social support is low (β =-0.213, C.R.=-2.8), and the acculturation level is low (β =-0.082, C.R.=-1.8). Those 3 variables explain 17.3% of the acculturative stress.

Table 18. Path coefficients of the hypothetical model

n=272

Dependent variable	Independent Variable	Coefficient	S.E.	C.R.		Standardized coefficient	SMC
Health Promoting Behavior	Self-Esteem	0.200	0.051	3.931	***	0.271	0.272
	Perceive Health Status	0.102	0.021	4.929	***	0.270	
	Acculturative Stress	-0.082	0.035	-2.371	*	-0.135	
	Acculturation Level	0.054	0.021	2.090	*	0.110	
	Social Support	0.089	0.045	1.967	*	0.110	
	Self-Efficacy	0.013	0.043	0.313		0.023	
Perceived Health Status	Social Support	0.652	0.124	5.260	***	0.302	0.107
	Self-Efficacy	0.216	0.089	2.419	*	0.139	
Self-Efficacy	Self-Esteem	0.828	0.057	14.432	***	0.658	0.436
	Social Support	-0.068	0.063	-1.077		-0.049	
Acculturation Level	Social Support	0.253	0.101	2.514	*	0.151	0.023
Acculturative Stress	Self-Efficacy	-0.360	0.053	-6.738	***	-0.373	0.173
	Social Support	-0.213	0.075	-2.834	**	-0.159	
	Acculturation Level	-0.082	0.045	-1.832		-0.102	

* $p<0.05$, ** $p<0.01$, *** $p<0.001$

SMC: Squared Multiple Correlation

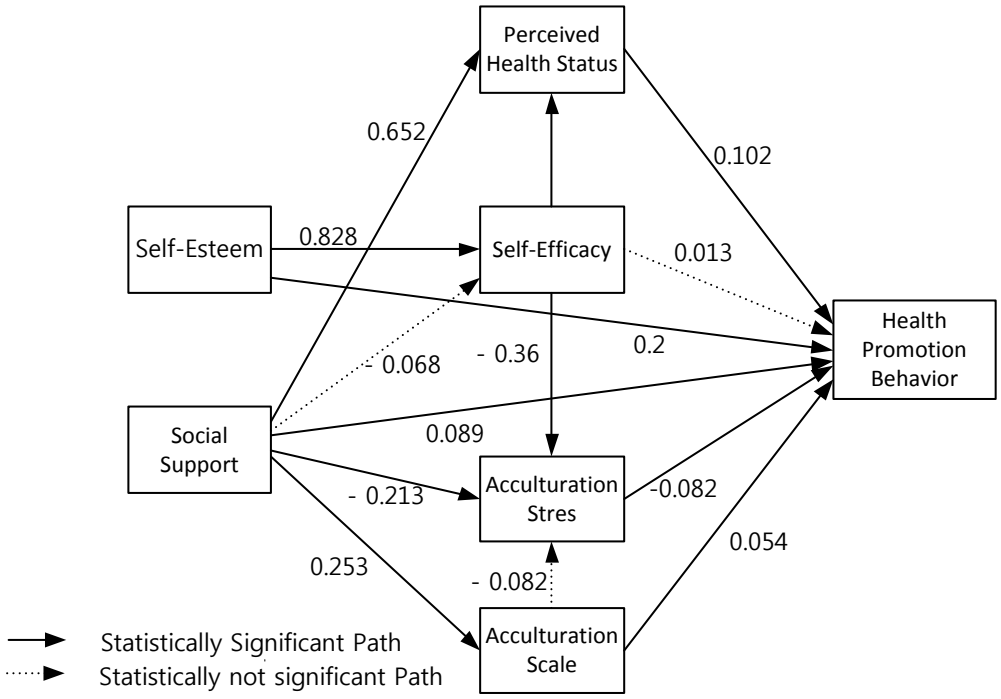

Figure 3. Path diagram of the hypothetical model

5.6 Model Modification and Evaluation

Because the hypothetical model does not meet the criterion of the fit test, the modification of the model is necessary.

5.6.1 Model modification

Based on the test results of the hypothetical model with theoretical background and logical consideration, C.R. (critical ratio) and modification index are used to modify the model.

The first step is the model trimming to eliminate paths which are not statistically significant. The t-statistic and C.R. for each parameter are compared to determine statistical significance. At the model, the paths from the self-efficacy to the health promoting behavior, from the social support to the self-efficacy, and from the acculturation level to the acculturative stress are not statistically significant at a 0.05 level. These 3 paths are eliminated in the order from the lowest C.R.

The second step is the inclusion of additional parameters. The modification index is used to seek potential additional paths to improve the model. The expected value that x^2 would decrease by if such a parameter is to be included. Traditional guideline to use the modification index is ≥ 5 and more conservative criterion is ≥ 10. In the model, the MI between the self-esteem and the social support is 34.61, well enough to consider to add the path to the model. For the direction, the path from the social support to the self-

esteem (0.395) is bigger than one from the self-esteem to the social support (0.324). Hence the path from the social support to the self-esteem is added to improve the model.

At the final model, the path from the social support to the health promoting behavior became no longer statistically significant and was eliminated.

5.6.2 Model testing of the revised model

The test result for the fit of the revised model is as follows.

5.6.2.1 Absolute fit indices

After the model modification, all the absolute fit indices meet the criterion for good model. x^2 statistic shows significant drop from 40.84 to 11.64 and p-value raised from less than 0.001 to 0.310 above the criterion p-value > 0.05. The RMR (0.01) still meets the criterion and The RMSEA drops from 0.129 to 0.025, safely meets the criterion <0.05. The GFI is 0.988 to pass the good model criterion.

5.6.2.2 Incremental fit indices

While the AGFI, NFI, and NNFI of the hypothetical model couldn't meet the indication of the good model fit, the model modification improved all of the incremental fit indices to meet the criterion. The AGFI (0.966), the NFI (0.970) and the NNFI (0.991) improved to safely meet the good model criterion >0.95. The CFI is 0.996.

5.6.2.3 Parsimony fit indices

The PNFI of the revised model is raised from 0.299 to 0.462. When comparing models, the higher parsimony measure represents the better fit. Therefore the revised model can be considered better than the original hypothetical model. The normed x^2 is 1.164 to be satisfied the criterion ≤ 2.

In summary, the revised model in the study met all the model fit indices. For the parsimony fit indices such as the PNFI and the normed x^2 for parsimony, the revised model is more parsimonious than the hypothetical model.

Therefore the revised model is a good model to explain the health promoting behavior of the Chinese international students in Korea.

Table 19. Fit indices of the revised model

n=272

Fit Indices	Absolute Fit Indices				Incremental Fit Indices				Parsimony Fit Indices	
	x^2 (df) (p value)	GFI	RMR	RMSEA	AGFI	NFI	NNFI	CFI	PNFI	x^2/df
Criterion	≥0.05	≥0.95	≤0.05		≥0.95				Higher is better	≤2
Hypothetical Model	40.84 (7) (<0.001)	0.961	0.02	0.134	0.845	0.896	0.728	0.909	0.299	5.834
Revised model	11.637 (10) (0.310)	0.988	0.010	0.025	0.966	0.970	0.991	0.996	0.462	1.164

x^2 : x^2 Statistics, GFI: Goodness of Fit Index,

RMR: Root Mean-Square of Residual,

RMSEA: Root Mean-Square Error of Approximation,

AGFI: Adjusted GFI, NFI: Normed Fit Index,

NNFI: Non-Normed Fit Index, CFI: Comparative Fit Index,

PNFI: Parsimonious NFI, x^2/df: x^2 Statistics/degree of freedom

5.6.3 Parameter estimation and significance of the revised model

Table 20 presents the results of the parameter estimation and significance in order to evaluate the regression coefficients of the revised model. The direct effects among the endogenous and exogenous variables are as follows.

The health promoting behavior will increase as the perceived health status is high (β =0.112, C.R.=5.639), as the self-esteem is high (β =0.23, C.R.=5.629), as the

acculturative stress is low (β = -0.093, C.R.=-2.263), as the acculturation level is high (β =0.057, C.R.=2.329). Those 4 variables explain 29.8% of the health promoting behavior (SMC=0.298).

The perceived health status increases as the social support is high (β =0.652, C.R.=5.123), and the self-efficacy is high (β =0.216, C.R.=2.329). It is explained to 12.8 percent by those two variables.

The self-efficacy increases as the self-esteem is high (β =0.806, C.R.=14.021). The self-esteem explains 42% of the self-efficacy.

The acculturation level increases as the social support is high (β =0.253, C.R.=2.514). However, only 2.3% of the acculturation level is explained by the social support.

The acculturative stress works the other way. It raises as the self-efficacy is low (β =-0.36, C.R.=-6.442), and the social support is low (β =-0.234, C.R.=-3.047). Those 2 variables explain 18.9% of the acculturative stress.

The self-esteem increases as the social support is high low (β = 0.395, C.R.=6.299). The 12.8% of the self-esteem is explained by the social support.

Table 20. Path coefficients of the revised model

n=272

Dependent variables	Independent Variables	Coefficient	S.E.	C.R.	Standardized coefficient	SMC
Health promoting behavior	Perceived Health Status	0.112	0.020	5.639***	0.294	0.298
	Self-Esteem	0.230	0.041	5.629***	0.304	
	Acculturative stress	-0.093	0.033	-2.835***	-0.152	
	Acculturation Level	0.057	0.025	2.263**	0.115	
Perceived Health Status	Social Support	0.652	0.127	5.123***	0.299	0.128
	Self-Efficacy	0.216	0.093	2.329**	0.136	
Self-Efficacy	Self-Esteem	0.806	0.057	14.021***	0.648	0.420
Acculturative stress	Self-Efficacy	-0.360	0.056	-6.442***	-0.362	0.189
	Social Support	-0.234	0.077	-3.047***	-0.171	
Acculturation level	Social Support	0.253	0.101	2.514*	0.151	0.023
Self-Esteem	Social Support	0.395	0.063	6.299***	0.357	0.128

* p<0.05, ** p<0.01, *** p<0.001

5.6.4 The effect analysis of the revised model

The direct, indirect, and total effects among the variables in the revised model are presented at Table 21.

For the health promoting behavior, the self-esteem has the total effect (β =0.365), consisted of the direct effect (β =0.304) and the indirect effect (β =0.061) through the self-efficacy and the perceived health status. The perceived health status (β =0.293), the acculturative stress (β = - 0.151) and the acculturation Level (β =0.115) show the direct effect to the health promoting behavior while the self-efficacy (β =0.095), and the social support (β =0.262) have the indirect effect.

For the perceived health status, the social support demonstrates the total effect (β =0.33), consisted of the direct effect (β =0.299) as well as the indirect effect (β =0.031) through the self-esteem and the self-efficacy. The self-efficacy shows the direct effect (β =0.136) while the self-esteem shows the indirect effect (β =0.136) through the self-efficacy.

For the self-efficacy, the self-esteem shows the direct effect (β =0.648) and the social support has the indirect effect (β =0.232).

For the acculturative stress, the social support shows both the direct effect (β =-0.171) and the indirect effect (β =-0.084) through the self-esteem and the self-efficacy. The total effect of the social support is - 0.255. The self-efficacy brings the direct effect (β =-0.362) to the acculturative stress and the self-esteem has the indirect effect β =-0.235) through the self-efficacy.

The social support shows the direct effect to the acculturation level (β =0.151) and to the self-esteem (β =0.357).

Table 21. The effect coefficients of the revised model

n=272

Dependent Variable	Independent Variable	Direct Effect	Indirect Effect	Total Effect
Health Promoting Behavior	Self-Esteem	0.304***	0.061***	0.366***
	Acculturation Level	0.115**		0.115**
	Health Perception	0.293***		0.294***
	Acculturative Stress	-0.151***		-0.152***
	Self-Efficacy		0.095***	0.095***
	Social Support		0.262***	0.262***
Health Perception	Social Support	0.299***	0.031*	0.330***
	Self-Efficacy	0.136*		0.136*
	Self-Esteem		0.088*	0.088*
Self-Efficacy	Self-Esteem	0.648***		0.648***
	Social Support		0.232***	0.232***
Acculturative Stress	Social Support	-0.171***	-0.084***	-0.255***
	Self-Efficacy	-0.362***		-0.362***
	Self-Esteem		-0.235***	-0.235***
Acculturation Level	Social Support	0.151*		0.151*
Self-Esteem	Social Support	0.357***		0.357***

* p<0.05, ** p<0.01, *** p<0.001

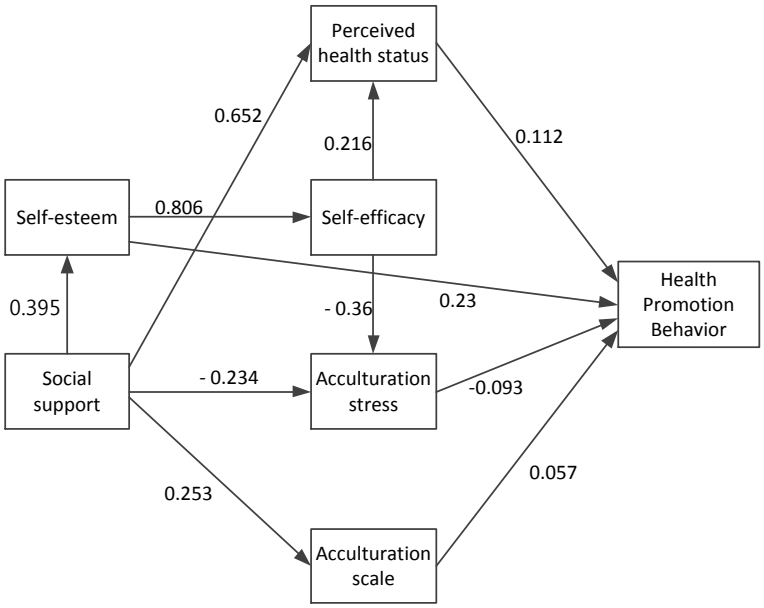

Figure 4. Path diagram of the final model

5.7 Hypotheses Testing

5.7.1 The 6 hypotheses with the health promoting behavior as the dependent variables

H1. The higher the self-esteem, the higher the health promoting behavior

The H1 is supported that the direct effect of the self-esteem to the health promoting behavior is statistically significant. (β =0.230, C.R.=5.629).

H2. The higher social support, the higher the health promoting behavior

At the original hypothetical model, the H2 was supported that the direct effect was statistically significant (β =0.089, C.R.=1.967). But on the way to the model modification, the effect became no longer significant and was ruled out. Therefore only with the direct effect, the H2 is rejected. However, it is confirmed that the statistically significant indirect effect from the social support to the health promoting behavior.

H3. The higher the perceived health status, the higher the health promoting behavior

The H3 is supported that the direct effect of the perceived health status to the health promoting behavior is statistically significant (β =0.293, C.R.=5.64).

H4. The higher the self-efficacy, the higher the health promoting behavior.

The H4 is rejected that the direct effect of the hypothetical model was not statistically significant. (β =0.013, C.R.=0.313). However, it is confirmed that the statistically significant indirect effect from the self-efficacy to the health promoting behavior.

H5. The lower the acculturative stress, the higher the health promoting behavior.

The H5 is supported that the direct effect of the acculturative stress to the health promoting behavior is statistically significant (β =-0.151, C.R.=-2.814).

H6. The higher the acculturation level, the higher the health promoting behavior.

The H6 is supported that the direct effect of the acculturation level to the health promoting behavior is statistically significant (β =0.115, C.R.=2.245).

5.7.2 The 2 hypotheses with the perceived health status as the dependent variables

H7. The higher the social support, the higher the perceived health status

The H7 is supported that the direct effect of the social support to the perceived health status is statistically significant (β =0.299, C.R.=5.123).

H8. The higher the self-efficacy, the higher the perceived health status

The H6 is supported that the direct effect of the self-efficacy to the health promoting behavior is statistically significant (β =0.136, C.R.=2.329).

5.7.3 The 2 hypotheses with the self-efficacy as the dependent variables

H9. The higher the self-esteem, the higher the self-efficacy

The H9 is supported that the direct effect of the self-esteem to the self-efficacy is statistically significant(β =0.648, C.R.=14.021).

H10. The higher the social support, the higher the self-efficacy

The H10 is rejected that the direct effect of the social support to the self-efficacy is not statistically significant (β =-0.068, C.R.=-1.077).

5.7.4 The 3 hypotheses with the acculturative stress as the dependent variables

H11. The higher the social support, the lower the acculturative stress

The H11 is supported that the direct effect of the social support to the acculturative stress is statistically significant (β =-0.156, C.R.=-2.762).

H12. The higher the self-efficacy, the lower the acculturative stress

The H12 is supported that the direct effect of the self-efficacy to the acculturative stress is statistically significant (β =-0.362, C.R.=-6.486).

H13. The higher the acculturation level, the lower the acculturative stress

The H13 is rejected that the direct effect of the acculturation level to the acculturative stress is not statistically significant (β =-0.101, C.R.=-1.832).

5.7.5 The Hypothesis with the acculturation level as the dependent variables

H14. The higher the social support, the higher acculturation level

The H14 is supported that the direct effect of the social support to the acculturative stress is statistically significant (β =0.151, C.R.=2.514).

Chapter 6. DISCUSSION

This chapter will discuss 1) the health promoting behavior of the Chinese international students in Korea and 2) the relationship among the research variables based on the test result of the structural model.

6.1 The Health Promoting Behavior of the Chinese international students in Korea

The Chinese international students enrolled in undergraduate and graduate program in Korea and have stayed in Korea more than 6 months are included in this study. The health promoting behavior was measured by the modified HPLP which has 6 subcategories of, “spiritual growth”, “health responsibility”, “physical activity”, “nutrition”, “interpersonal relationship” and “stress management.” the average score of the health promoting behavior of the samples was 2.77 of 4.

The score was lower than that of Park (2009) which reported 2.94, which used the same measurement with the Chinese undergraduate students at the different city in Korea. However, it was similar to that of other study such as that of Kim (2010), whose samples were Chinese undergraduate students in Korea. There are several studies done with the Korean college students, but they did not use the same measurement, thus it is difficult to compare directly.

For the categories of the health promoting behavior, the interpersonal relationship (3.17) and of the spiritual growth (3.12) indicated high level of the health

promoting behavior while the health responsibility (2.27) and nutrition (2.43) showed lower than the other categories. The result can be explained that the Chinese students were interested in mental and psychological aspects such as harmonious relationship and emotional support. Low score of the nutrition might be related with an irregular eating habits and life schedule.

The female students (2.83) showed higher HPLP score than that of the male students (2.66). The female students showed a higher score at most of subcategories such as the health responsibility, the nutrition, the interpersonal relationship, and the stress management. The male students (2.84) showed higher score at the physical activity than the female (2.48). The male students participated in physical activity and exercise. These gender differences need further study even though many previous studies support that women are better in heath promoting behaviors.

One of the most important findings of the present study was to confirm the causality from the acculturative stress and the acculturation level to the health promoting behavior. The acculturative stress and the acculturation level were reported as major determinants of the health promoting behavior. The result is similar to the previous studies that the acculturative stress affects to prevalence rate (Berry et al, 1987; Samrt, 1995; Lee, 1997, Hovey, 2002; Hovey et al, 1996; Kim et al., 1999; Jeong et al., 2003; Han, 2006; Choi, 2008; Sohn, 2007; Kim et al. 2010). And it is consistent to the previous studies that the acculturation level affects to the health promoting behavior and lower the prevalence rate (Marmot et al, 1976; Maxwell et al, 2005, Reed et al, 1982; Jeong, 2008). However the result that there was no significant path coefficient from the acculturation level to the acculturative stress was not consistent to the previous studies that the

acculturation influenced the acculturative stress (Song,, 2008; Nam, 2007). The acculturative stress derives from the effort to change the acculturation level. There was no linear relationship between the acculturation level as a snapshot and the acculturative stress.

The subscription of the health insurance plan showed limited influence to the health promoting behavior. However, only a half of students in this study had a health insurance and this needs to be increased by school rules or regulations.

6.2 Structural Equation Model of the Health Promoting Behavior of Chines International students

The HPM (Pender, 1996) demonstrated the health promoting behavior would be influenced by the direct effects of the behavior-specific learning and affect and by the indirect effects of the individual characteristics and experiences. The hypothetical model based on HPM did not fit, so the model was modified by including the results of other studies.

At the final model, the self-esteem, the perceived health status, the acculturative stress and the acculturation level explained 30% of the health promoting behavior and all of the model fit indices of the final model were satisfied with recent conservative criterion. Consistent with previous findings, the perceived health status and the self-esteem were two dominant variables to influence the health promoting behavior. Moreover, as a unique position of the international student, the acculturative stress and

the acculturation level showed statistically significant effect to the health promoting behavior. Although there were no statistically significant direct effect from the self-efficacy and the social support to the health promoting behavior, the path analysis confirmed significant indirect effects to the health promoting behavior.

In the previous studies, the R^2 values (or SMC: Squared Multiple Correlation) of the health promoting behavior ranged from 17% to 60% (Kim, 1997; Kim, 1999; Kim, 1982; Kim, 2006; Moon, 1990; Seo, 1995; Yeom, 1997; O, 1995; Lee et al., 1998; Lee, 1997; Lee, 2003; Lim, 1996; Pender, 1996; Jeon, 2008; Jeon: 2008: Jeon, 2009). Unlike most of other previous studies with limited sampling population (for example, 1 college and undergraduate students only), the present study recruited participants from 10 universities and graduate schools. Therefore the value of the SMC on the present study, 30%, can be accepted as that of a good model.

The significant determinants of the health promoting behavior of the Chinese international students are the perceived health status, the self-efficacy, the acculturative stress and the acculturation level.

The perceived health status and the self-esteem have been consistently reported to the main determinants of the health promoting behavior on the previous studies for Chinese international students in Korea as well as Korean students. In this study, it is meaningful to confirm the relative importance of the constructs.

The acculturation level was confirmed to be a determinant of the health promoting behavior in the previous study with the female immigrants in Korea. However, the previous study for the health promoting behavior did not focused on the acculturative

stress. It is significant that the present study included the acculturation level and the acculturative stress and identified as significant determinants of health promoting behavior of Chinese international students in Korea.

The interventions to increase the perceived health status, the self-esteem and the acculturation level and to ease the acculturative stress should be considered to maintain and enhance the health promoting behavior of the Chinese international students in Korea. Moreover, by identifying the significance and the strength of the paths and understand what is the strongest core determinant to boost the health promoting behavior, one can consider more cost effective way of intervention.

6.3 Significance of Research

Based on the present study, followings are the significances of the research on the perspective of nursing theory, nursing research and nursing practice.

6.3.1 Perspective of nursing theory

The study for the health promoting behavior of the international students in Korea has been seldom conducted. Previous studies for the health promoting behavior of Korean college students were mostly dealt with limited scope of the health promoting behavior such as smoking and drinking. Further study is needed to examine whether the study result with existing research variables from the Korean college students can be extended and generalized to the Chinese international students in Korea in the context of acculturation.

In the perspective of nursing theory, the present study explored the knowledge to evaluate the usability of Pender's HPLP (1996) to explain and predict the health promoting behavior of Chinese international students in Korea.

6.3.2 Perspective of nursing research

The path analysis was used to assess the fit of the hypothetical model and to verify the research hypotheses. It confirmed the causalities of the research variables and

determinants to affect the health promoting behavior of the Chinese international students in Korea. It provided better understanding of the causal relationship among the important concepts related to the health promoting behavior of the Chinese international students. Similar studies need to be done with international students from various cultural background.

6.3.3 Perspective of nursing practice

The present study suggested the determinants of the health promoting behavior of the Chinese international students. It makes possible to build intervene strategies to assess and to prioritize resource allocation to encourage the health promoting behavior. It provides the evidence to establish the most efficient nursing intervention strategies and to prioritize the resource distribution.

6.4 Limitations

1. The sampling method of the present study is a convenient sampling and a snowball sampling. It needs to be cautious to generalize the result to all Chinese international students in Korea.
2. Previous studies indicated that the acculturative stress and the acculturation level of non-degree exchange students and language school students are different than those of degree students. Other prior studies demonstrated less than 6 month-stay in a foreign country for international students is a honeymoon period for the acculturative stress. Based on these result, the non-degree students and degree students staying less than 6 months were intentionally excluded for the present study. Therefore it is a distinct limitation to explain the health promoting behavior of early stage (less than 6 months) Chinese international students in Korea.
3. The multivariate path analysis was used to derive the structural model to explain the health promoting behavior. The path analysis for the structural modeling assumed linear relationship among the constructs. If the relationships were not linear function, the result of the analysis might be distorted.
4. Although some of statistically significant differences on the research variables by gender were found, the present study did not use the multi-group path analysis because of not enough sample size.

Chapter 7. CONCLUSION

7.1 Conclusion

This study is performed to understand the health promoting behavior of Chinese international students in Korea and to identify the causal relationship among the factors related to the health promoting behavior by developing a structural equation model.

The data was collected from November 15, 2010 to February 28, 2011 from 272 Chinese international students currently enrolled in formal academic program at 10 universities located in Seoul-metropolitan area.

In conclusion, the health promoting behavior of Chinese international students in Korea was influenced by the perceived health status, the self-esteem, the acculturative stress and the acculturation level and these variables explained 30 percent of health promoting behavior in the model. The perceived health status is the strongest determinant. Some of the other variables indirectly affecting health promoting behavior were social support and self-efficacy which affect the perceived health status. And the self-efficacy was affected by the self-esteem. The acculturative stress was influenced by the self-efficacy and the social support and the acculturation level was affected by the social support.

In summary, Chinese international students in Korea with the higher the perceived health status, the self-esteem, the acculturation level, and the lower the acculturative stress reported the higher the health promoting behavior.

7.2 Implications

The followings are the implications based on the results of the present study:

1. The perceived health status was explained to be the most significant determinant to explain the health promoting behavior. It is necessary to have an assessment guidelines to identify health perception of Chinese international students to increase their health promoting behavior.
2. Although the social support did not show direct effect on the health promoting behavior, it has indirect effects on all 4 factors. Among many aspects of the social support, it is urgent to develop a program to provide the informational support program by healthcare professional and the instrumental support to mandate an affordable health insurance plan for the international students.
3. The health service system must be improved and be expanded so the international students can get necessary health care service. For the health promoting program for Chinese international students, it is necessary to provide information for the health promoting behavior such as the stress management, the nutrition, the physical activities, the interpersonal relationship, the generational identify and the spiritual growth.
4. The international student lives in the cross-cultural environment. The systematic effort and intervention are needed to enhance the acculturation level and to decrease the acculturative stress.

7.3 Recommendations

The followings are the further research recommendations based on the results of the present study:

1. Based on the present study, comparative research of health promoting behavior with the international students from other ethnic background is recommended.
2. Replication of this study with larger samples is recommended to better understanding of acculturative stress and acculturation level.

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APPENDICES

Appendix 1. IRB Approval Letter

– 연세대학교 간호대학 연구윤리 위원회(IRB) –

연세대학교 간호대학

연구윤리심의위원회 통보서

수 신	연구의뢰자	김 선 정 박사생
	시험책임자	

심 사 종 류	☑초심자 ☐보완심사 ☐보류심사 ☐반려심사 ☐연구계획변경심사 ☐최종결과보고서 ☐기타보고			
접수번호(승인번호)	간대 IRB 2010-1023		과제승인일자	2010. 11. 3
과 제 명	한국에 거주하는 중국유학생의 건강증진행위와 삶의 질			
연 구 자	연구책임자	소속	직위	성명
		일반원 간호학과	박사 5학기	김 선 정
연 구 종 류 (중복표시가능)	☑설문조사 ☐관찰연구 ☐행동실험연구 ☐조직 및 검체연구(혈액, 체액 등) ☐배아연구 ☐유전자연구 ☐연구 대상자연구 대상자 ☐기타( )			
연 구 예 정 기 간	2010 년 10 월 20 일 ~ 2011 년 8 월 31 일			
심 의 내 용	1. 연구윤리심의 의뢰서 2. 연구계획서 3. 피험자 동의서 및 설명문 5. 연구비 소요 내역서 6. 연구도구 7. 연구책임자 이력서			
심 의 일 자	2010 년 11 월 3 일			
심 의 결 과	☑승인 ☐시정승인 ☐보완재심사 ☐보류 ☐반려			
	권고사항:			

2010 년 11 월 3 일

연세대학교 간호대학 연구윤리심의위원회

위원장 김 선 아 (인)

Appendix 2. Survey Questionnaire

调查问卷

相关人员用

您好！

我是延世大学博士过程研究生金善静，现正在研究有关中国留学生的增进健康行为的课题。

本调查问卷旨在收集有关在韩中国留学生健康意识和生活质量的资料。

本调查问卷作为一种对增进今后中国留学生的增进健康行为起到补助作用的资料，希望大家认真对每道题做出回答，特此感谢。问卷无需记载姓名，填写内容全部保密处理，只为研究使用。所有答辩不为各人使用，只为研究和报告所用。

本调查纯属自发参与，您可以没有任何理由拒绝参与，填写时间约20分钟。参与本调查问卷填写是在您自愿参加的情况下进行的。

对于您百忙之中的配合与协助表示万分感谢。

对本调查相关事宜的疑问请与下边联系方式进行询问。

2010 年 10 月

延世大学研究院博士过程金善静

此致敬礼

[咨询电话：☎ 010-****-****]

I. 下边是您在韩国的文化适应方面的问题。仔细阅读各条目在相应位置上标出✔。

号码	条目内容	完全不一致	大体不一致	一半一半	大体如此	非常如此
1	在家里我更多使用韩国语					
2	我 跟中国朋友在一起说话时用韩国语更多					
3	比起中国人我把韩国人作为朋友相处					
4	我用韩国语思考					
5	我见面的人大多是韩国人。					
6	我喜欢跟韩国同学一起学习					
7	我看韩国语电视节目					
8	在家里我主要吃韩国料理					
9	在外吃饭时我主要吃韩国料理					
10	我对来韩国很自豪					
11	我的饮食习惯转变成了韩国式					
12	我觉得自己快变成韩国人了					
13	我参加中国人的聚会和活动					

II. 下面是您在韩国生活过程中经历的一些压力问题。仔细阅读各条目在与您一致的位置上标出✔。

号码	条目内容	完全不一致	大体不一致	一半一半	大体如此	非常如此
1	思念家乡使我很痛苦					
2	.我很难适应新的饮食习惯					
3	我很难与本专业同学或是社团同学交往					
4	其他人不尊重我的文化传统					
5	我用韩国语表达时会紧张					
6	我对在一个不熟悉的环境中生活而感到伤感					
7	我对参加社会活动感到犹豫					
8	别人对我有偏见					
9	在这里没有给我许多机会					
10	来韩国后我感到有很多压力					
11	我觉得在这里受到了不公平的对待					
12	这里的人们不太接受我					
13	这里的人们不对我的文化价值给予高的评价					
14	我很想念我的家乡和那里的人们。					
15	为了适应这里的文化令我很感到很不方便					
16	由于我是外国人而受到区别对待					
17	我觉得由于自己是外国人受到了区别对待					
18	在这里我感受不到社会所属感。					
19	我觉得由于自己是外国人人们不太愿意跟我交往					
20	我不知道该留在这里还是该返回家乡，所以很担忧自己的未来					

III. 下面是您的生活方式和健康习惯方面的问题。仔细阅读各条目在最贴近你生活的位置上标出✔

号码	条目内容	完全不一致	大体不一致	大体如此	非常如此
1	我对生活乐观充满生机				
2	我爱惜自我				
3	我努力改变生活				
4	有长远的目标				
5	我的人生幸福，我很满足				
6	我了解自己的优点和缺点				
7	对未来充满希望				
8	树立有实现可能性的目标				
9	我知道自己的人生最重要的是什么				
10	很喜欢做事的成就感				
11	对我周围的环境很满足				
12	身体异常时去看医生				
13	阅读健康有关书籍				
14	向医生或是他人询问健康问题				
15	周期性地进行血压测定				
16	收集健康情报相关信息				
17	参加周边各种与健康有关的活动（健康讲座等）				
18	重视自己身体症状和变化				
19	做简单的运动				
20	一周三天进行激烈运动				
21	进行娱乐活动				
22	测量我的脉搏				
23	早餐必吃				
24	一天三顿必吃				

号码	条目内容	完全不一致	大体不一致	大体如此	非常如此
25	带有防腐剂的加工食品坚决不吃				
26	阅读食品的保质期和说明内容				
27	均匀食用纤维多的食品（蔬菜，水果等）				
28	考虑到食物营养素的均匀摄取				
29	与他人讨论担忧的事情和问题				
30	经常对他人进行赞扬和认可				
31	善于向他人表达关心，爱意，温情				
32	有很要好的朋友				
33	与亲密的朋友一起共度时光				
34	每天都有休息的时间				
35	我知道自己压力的原因所在				
36	拿出时间来进行思考和放松				
37	活用适当的加压方法				

IV. 下面是有关自我效能的问题。仔细阅读各条目在相应位置上标出✔。

号码	条目内容	完全不一致	大体不一致	一半一半	大体如此	非常如此
1	我对于制定的计划有信心完成					
2	我的缺点中有一个是当我该做某种事情时无法立即开始进行					
3	我在做事情时一旦开始直到成功方才罢手					
4	我自己树立的目标一定要完成					
5	我在事情还没完成之前就放弃了					
6	我遇到困难时躲避					
7	遇到复杂的问题时连试的想法都没有					
8	.我即使是不开心的事也会一直做到最后					
9	我想做的事情会立即着手					
10	我学习新事物时初期遇到挫折马上放弃					
11	我对没预料到的问题发生时处理不好					
12	我对一件事情感觉难时不会去做					
13	我失败时会更加努力					
14	我对自己能成事没有信心					
15	我相信我自己					
16	我很容易放弃					
17	我很缺乏处理日常生活的问题的能力					

V. 下面是自我尊重感相关问题。仔细阅读各条目在相应位置上标出✔。

号码	条目内容	完全不一致	大体不一致	大体如此	非常如此
1	我是一个与他人一样有价值的人				
2	我认为我有许多优良品质				
3	大体而言我认为自己是个失败者				
4	与他人一样我能做好事情				
5	我没有什么可自豪的地方				
6	我对自我的态度是积极向上的				
7	我对自我大体满足				
8	我希望能更加尊敬自我				
9	有时我认为自己是个毫无是处的人				
10	有时我觉得自己不是个好人				

VI. 下面是社会支持相关问题。仔细阅读各条目在相应位置上标出✔。

号码	条目内容	完全不同意	大体不同意	大体如此	非常如此
1	有人表扬我工作优秀对我表示认可				
2	在我周围有与我一同度过美好时间的人				
3	当我生病时有人能送我去医院				
4	对于我做错的事情有人指导我				
5	我觉得我的存在对我的亲人和朋友很重要				
6	我有需要的物品时有人很痛快地借给我				
7	对于我的个人问题在我身边有可以商议的人				
8	比起其他人我更能满足我的生活				
9	我认识的人大部分跟我的想法一致				
10	我有要做的事情时有能请求帮助的人				
11	孤单郁闷时有可以通电话的人				
12	我生病时有代替我干活的人				
13	我想找人一起吃饭时有人很愿意跟我一起去				
14	我定期与家人，朋友见面快乐地共度时间				
15	比起他人我与朋友和亲人走得更近				
16	当我要换工作或是要改变生活方式时有人给我意见				
17	我不愿意自己单独外出时总有愿意跟我一起出去的人				

VII. 下面是感知的健康状况相关问题。仔细阅读各条目在相应位置上标出✔。

号码	条目内容	非常不好	有点不好	普通	比较好	非常好
1	现在我的整体健康情况					
2	与同龄人比较时我的健康情况是					
3	与3年前我的健康情况比较的话					

VIII. 下面是关于您的一般情况事项。仔细阅读各条目在相应位置上标出✔。

号码	条目内容
1.	您的年龄: 满（　　)岁
2	您的性别: 男（　　）女（　　）
3	您的宗教信仰有无: 无（　　）有（　　）_请填写信仰宗教名称
4	您的学历: 研究院(博士过程) (　　）研究院(硕士过程) (　　）本科生（　　）
5	您已在韩在留时间: 共（　　)年（　　)月
6	您在韩的生活费用: 中国政府资助（　　）韩国政府资助（　　） 母资助（　　）自我解决（　　）其他（　　）_ 其他事项请详细填写
7	您的家庭月收入水平: 1000元 以下（　　）1001~2000元（　　） 2001~3000元（　　）3001~4000元(　　） 4001元以上（　　）
8	您在韩国有亲属或认识的人吗? 有(　　）无（　　）
9	您现在住所: 学校宿舍（　　）居民区月租型（　　） 居民区全税免月租型（　　）其他（　　）
10	您是否加入健康保险: 有（　　）无（　　）

국문요약

한국에 거주하는 중국 유학생의 건강증진행위 설명모형 구축

본 연구는 한국에 거주하는 중국 유학생의 건강증진행위를 설명하고 예측하는 요인을 규명하고 이들 요인들의 영향력을 파악하는 설명모형을 구축하는 연구이다. Pender(1996)의 3차 개정 건강증진모형의 개념적 기틀을 바탕으로, 건강증진행위에 관한 선행연구와 문헌고찰을 토대로 가설적 모형을 구축하여 공변량 구조분석을 적용하였다. 중국유학생들의 건강증진행위의 설명에 기여하는 중요한 변수들간의 구체적인 가설적 경로를 설정한 후 모형의 적합도와 가설 검증을 실시하였으며, 자기존중감, 사회적 지지는 개인적 특성과 경험변수로, 지각된 건강상태, 자기효능감, 문화적응 스트레스, 문화적응도는 행위관련인지와 감정변수로 선정되었다.

자료수집은 중국국적 유학생 중 학위취득을 목적으로 서울과 수도권 지역 10개 대학 및 대학원에 재학 중이며 한국에 체류한지 최소 6개월 이상인 유학생을 대상으로 2010년 11월 15일부터 2011년 2월 28일까지 구조화된 질문지를 이용하여 자가 보고식으로 이루어졌다. 총 272부가 최종 분석에 포함되었다.

본 연구의 결과는 다음과 같다.

1. 중국유학생의 건강증진행위는 지각된 건강상태, 자기존중감, 문화적응 스트레스, 문화적응도에 의해 직접적인 영향을 받으며, 이 변수들에 의해 30%

설명되었으며, 지각된 건강상태는 건강증진행위에 가장 크게 기여하는 요인이었다.

2. 지각된 건강상태는 사회적 지지와 자기효능감에 의해 직접적인 영향을 받으며, 이 변수들에 의해 12% 설명되었으며, 사회적 지지는 지각된 건강상태에 가장 크게 지여하는 요인이었다.
3. 자기효능감은 자기존중감에 의해 직접적인 영향을 받으며, 이 변수에 의해 42%설명되었다.
4. 문화적응스트레스는 자기효능감 사회적 지지에 의해 직접적인 영향을 받으며, 이 변수들에 의해 19% 설명되었다. 자기효능감은 문화적응스트레스에 가장 크게 기여하는 요인이었다.
5. 문화적응도는 사회적 지지에 직접적인 영향을 받으며, 이 변수에 의해 2% 설명되었다.

본 연구를 통하여 지각된 건강상태가 높을수록, 자기존중감이 높을수록, 문화적응도가 높을수록 건강증진행위 정도가 높은 것으로 나타났으며, 문화적응스트레스가 높을수록 건강증진행위 정도가 낮은 것으로 나타났다. 이러한 결과는 중국유학생들의 건강증진행위를 유지, 증진시키기 위한 간호중재 전략의 개발에 유용하게 이용될 수 있을 것이다. 따라서 건강증진행위의 실천 정도를 높이기 위하여 평소에 건전한 건강습관 형성, 자아존중감 증진 및 문화 적응을 돕는 총체적인 교육프로그램의 개발과 적용, 건강교육과 같은 중재방안들이 효과적이라고 사료된다.

핵심어: 중국유학생, 건강증진행위, 문화적응, 지각된건강상태, 자기존중감, 사회적지지, 설명모형구축