

Factors Affecting Health-Promoting Behaviors among Vietnamese Students in Korea



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Purpose: This study aimed to examine health-promoting behaviors among Vietnamese students in Korea and identify the factors affecting these behaviors. **Methods:** A survey using self-administered questionnaires was employed. Data were collected between October 2020 and May 2021 from 260 Vietnamese students whose stay in Korea has been for longer than six months and who agreed to participate in the study. Variables included health-promoting behaviors (physical activity, nutrition, stress management, and health risk behavior), self-esteem, acculturative stress, and social support. A multiple regression analysis was performed to assess the factors that might influence health-promoting behaviors. **Results:** Of the total participants, 56.9% were women, and the mean age was 24.60 ± 2.58 years. The mean score of the participants on total health-promoting behaviors was 2.64 ± 0.36 , on self-esteem 2.96 ± 0.35 , on acculturative stress 2.39 ± 0.15 , and on social support 2.53 ± 0.24 . Self-esteem, acculturative stress, social support, length of stay in Korea, and education level were found to affect health-promoting behaviors, and these variables explained 76.2% of the variance. **Conclusion:** There is a need to develop intervention strategies for promoting self-esteem and social support programs and coping strategies for managing acculturative stress to increase health-promoting behaviors among Vietnamese students.

Key Words: Health behavior; Self-esteem; Psychological stress; Social support

INTRODUCTION

The Korean cultural influence has expanded globally, but more so in Asian countries, especially those in South-east Asia [1,2]. The Korean wave began in Southeast Asia in the late 1990s with Korean popular culture, food, fashion, and make-up trends gaining immense popularity across Asian countries [2]. This could be attributed to factors such as cultural proximity between the Korean and Asian peoples [2]. This led to an increasing interest in various aspects including studying abroad in Korea [1]. Moreover, in 2001, the Korean government set up the “Study Korea Project” to attract international students to Korean colleges and universities. This led to a skyrocketing in the number of international students in Korea. According to

the Korea Ministry of Education, the number of international students in Korea was 91,332 in 2015 and 160,165 in 2019, showing a total growth of 75% between 2015 and 2019 [3]. By country of origin, the total number of Chinese students in 2019 was 71,067, the highest with 44.4%, but the total rate decreased by 3.8% from the previous year (48.2%). On the contrary, the number of Vietnamese students was 37,426 in 2019 (23.4% of the total), up 1,365 from the previous year (27,061, 19.0%) [3].

International students, such as Vietnamese students, studying in Korea face several problems in the new environment encountering cultural differences, language barriers, difficulty in socio-cultural adaptation, discrimination, financial constraints, and homesickness [4,5]. Having to leave friends and family behind, these students often feel

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a deep sense of loss and loneliness. This situation leads to the challenge of establishing comparable social networks among the international students to provide social support to overcome language and cultural barriers and to resolve interpersonal problems [6]. Social support typically validates one's self-esteem and self-concept; it also provides necessary emotional and instrumental support. Loss of social support can lead to feelings of isolation or disorientation [7]. Previous research has shown that elevated levels of acculturative stress can lead to serious health risks [6]. Social support increases the self-esteem of international students by reducing their acculturative stress. Self-esteem leads to better health and social behavior [6,7]. International students with a high level of self-esteem, together with strong social support, are less vulnerable to stressors [6]. These factors contribute to improving the health-promoting behaviors of international students.

As one of the major criteria that determines health, health-promoting behaviors are crucial in avoiding many illnesses. Health promotion and disease prevention are associated with these behaviors [7,8]. International students living in an unfamiliar environment may find it difficult to engage in health-promoting behaviors [7-9]. Difference in lifestyle and the socio-cultural background of international students are factors that influence their health-promoting behaviors [9,10]. Therefore, not engaging in health-promoting behaviors can be a significant risk factor for international students' overall health status and chronic health conditions.

Vietnamese students studying in Korea too face many such problems owing to their lack of language skills, their financial difficulties, interpersonal relationships, lack of social support, and the cultural differences between Vietnam and Korea. These factors affect their health and quality of life [11,12]. When faced with problems while studying in an unfamiliar environment, Vietnamese students too do not engage themselves in health-promoting behaviors, thus causing a significant risk factor for their overall health status and chronic health condition. Not engaging in health-promoting behaviors thus leads to a deterioration of their physical health.

With the sharp increase in Vietnamese students in Korea, currently, much research has focused on their accommodation status or the relationship between acculturative stress and the mental health status [11,12]. However, considering that Vietnamese students account for the second-highest number of students among the international students studying in Korea, their health-promoting behaviors has not been explored in research so far. This study aims to bridge this gap and identify the health-promoting behav-

iors and factors affecting these behaviors among the Vietnamese students in Korea. The findings from this study provide basic data for the developing a healthcare program to maintain and promote the health of Vietnamese students studying in Korea.

METHODS

1. Study Design

This study employed a cross-sectional design using self-administered questionnaires to analyze and identify the health-promoting behaviors and factors affecting health-promoting behaviors of Vietnamese students in Korea.

2. Setting and Sample

The participants of the study were Vietnamese students studying at K University, D city, in Korea. Students who have lived in Korea for longer than six months were chosen to participate in the study. The required sample size was calculated using the G-power 3.1.9.2 program, a significance level of .05, a power of .90, effect size of 0.15, and with 14 independent variables. It was estimated as 194 students, with at least 213 students (plus 10%) needed for this study. A convenience sample of 260 students participated in the study.

3. Instruments

The research instrument is the Vietnamese version of a self-reported questionnaire. It was translated from previous instruments that have proven its validity and reliability. The research subjects' general characteristics, such as gender, age, religion, marital status, residence type, length of stay in Korea, education, Korean language ability, and finance, were obtained apart from their health insurance and self-rated health status.

The Health-Promoting Behavior (HPB) scale was used to assess Vietnamese students' health-promoting behaviors. The HPB was developed by Belloc and Breslow. The items in the questionnaire were revised and supplemented with items suggested by Kang [13] and Sun [14]. This modified scale was translated into Vietnamese and used to measure the HPB of the Vietnamese students in this study. The 18-item profile measures 4 self-reported sub-categories: 4 on physical activity, 4 on nutrition, 4 on stress management, and 6 on health risk behaviors management, rated on a 4-point Likert scale, ranging from 1 (never) to 4 (regularly). On this scale, higher points in-

dicating a higher level of health-promoting behaviors. The Cronbach's α value of the questionnaire tool, modified and supplemented by Kang [13], was .73, and the one by Sun [14] was .78. The Cronbach's α reliability coefficient for our study was determined to be .75, and for the subscales, it varied between .72 and .77.

Acculturative stress was measured using the Acculturative Stress Scale for International Students (ASSIS) developed by Sandhu and Asrabadi [15]. The questionnaire was translated into Vietnamese by Ninh [11] and used to measure the acculturative stress of the Vietnamese students in this study. The 36 items measure stress-related themes found to be associated with acculturation, with 6 sub-categories, such as "perceived discrimination", "culture shock", "guilt", "perceived hatred", "homesickness", "fear", and "others". The items were rated on 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). A higher score indicates a higher perceived stress level arising from acculturation. The Cronbach's α of the original scale by Sandhu was .87, the Cronbach's α was .94 in Ninh [11], and in this study, Cronbach's α was .89.

The Interpersonal Support Evaluation List (ISEL) developed by Cohen was used to measure social support received by Vietnamese students [16]. ISEL evaluates how others affect a person's responses to stressful events. Questionnaire items were revised and supplemented as suggested by Park et al. [17] and Sun [14]. The modified scale was translated into Vietnamese and used to measure the social support obtained by Vietnamese students in this study. The 16-item tool measures self-reported social support rated on a 4-point Likert scale, ranging from 1 (definitely false) to 4 (definitely true). A higher score indicates higher perceived social support. Cronbach's α for the original instrument was .90 and .84 in Sun [14]. The internal consistency for the scale in the present study was .78.

Self-esteem was measured using Rosenberg's Self-Esteem Scale [18]. This scale conceptualizes self-esteem as a single dimension so that participants can evaluate themselves comprehensively. This scale was translated into Vietnamese and used to measure the self-esteem of the Vietnamese students in the study. The self-esteem scale consists of 10 items, rated on 4-point Likert scale ranging from 1 to 4 [18]. On this scale, higher points indicate a higher level of self-esteem. In terms of the tool's reliability, Cronbach's α of the original tool was .90 and that of the present study was .73.

The questionnaire was based on related literature and academic experiences. A small pilot study was conducted with ten students to ensure that the questions were understandable. As there was no negative feedback from stu-

dents, the contents of the questionnaire were not changed.

4. Data Collection

The researcher contacted the executive committee of the Vietnamese international students' association at K University for a list of students (their duration of study in Korea and information contact, email, phone number) attending school and randomly selected students qualified to participate in the research. Students were invited to take part in the study through email because of the coronavirus outbreak. On receiving their consent to participate in the study, the researcher contacted the participants regarding the location and data collection time. Data were collected using self-administered questionnaires from October 2020 to May 2021. All participants submitted a written agreement to take part in the research. They then filled out self-reported questionnaires. It took participants an average of 45 minutes to complete the questionnaire. When the questionnaires were collected, the researcher reviewed the questionnaire immediately to check for any missing items. The participants were asked to supplement the questionnaire if necessary.

5. Ethical Consideration

Before implementing the study, ethics approval was received from the Institutional Review Board (IRB) of K University (40525-202004-HR-008-01). Finally, verbal consent was obtained, and an informed consent form was given to all participants. Only those who voluntarily agreed to take part could fill out the questionnaire. We explained the research purpose and the questionnaire. It was clarified to the students that they were free to withdraw their participation at any time even if they had initially consented to participate. They would not be at any disadvantage for doing so.

6. Data Analysis

The collected data were analyzed using the IBM SPSS 20.0 program. The general characteristics of the participants as well as their health-promoting behaviors, acculturative stress, social support, and self-esteem were indicated in frequency, percentages, means, and standard deviations, respectively. The level of health-promoting behaviors, depending on participants' general characteristics, was measured using an independent t-test and one-way ANOVA followed by post hoc Scheffé's comparison. Each variable was tested for normality using the Kolmo-

gorov-Smirnov test, and a normal distribution was verified. A Variance Inflation Factor (VIF) was used to identify the degree of multicollinearity. A review of the regression analysis assumptions showed that the residuals were normally distributed; in terms of multicollinearity, the variation information factor was 1.05 to 1.22. Therefore, multicollinearity was not present. Besides, the straight-line relationship between the variables was examined and analyzed as Pearson's correlation coefficients. Dummy variables were used to perform stepwise regression analysis to identify the factors affecting the health-promoting behavior of the subjects. Education and length of stay in Korea were coded as dummy variables (yes=1, no=0). The reference group was the "undergraduates" group with which we compared the other groups. About the length of stay in Korea, "6~12 (months)" was the reference group. Statistical significance was adopted at the level of $p < .05$.

RESULTS

1. Health-Promoting Behaviors according to General Characteristics

The study population comprised 260 Vietnamese students in Korea. The average age of the participants was 24.60 ± 2.58 years. The Vietnamese students were predominantly women (56.9%), and most of the students claimed that they did not follow any religion (51.5%). Most of the student participants were single (96.9%). About 154 (59.2%) students were in undergraduate programs, and 94 (36.2%) were in the Korean language course. The average length of stay in Korea was 37.12 ± 17.07 months. Regarding their Korean language ability, 32.4% were in the advanced level and 61.1% in the intermediate level. Most of the participants (82.7%) had a health insurance plan and 64.6% lived with friends. A total of 23.1% stated that they lived in a studio, and 9.6% of students stayed in a dormitory. Almost all Vietnamese students lived on their personal earnings (96.5%). About their self-rated health status, almost half the number of students (49.2%) answered "normal," while 24 participants (9.2%) responded with "very well" (Table 1).

The mean total HPB scores and the mean scores on physical activity, nutrition, stress management, and health risk behavior subscales determined a significant difference between the scores of women and men ($F=2.15$, $p < .001$; Table 1). The nutrition scores differed significantly with age ($F=2.31$, $p < .001$), education ($F=5.47$, $p < .001$), and length of stay in Korea ($F=4.83$, $p < .001$). Scheffé's posthoc test showed a difference between the groups. The

mean nutrition subscale scores of doctorate students (3.77 ± 0.38) and masters' students (2.92 ± 0.57) were significantly higher than those of undergraduate students (2.57 ± 0.39). Mean nutrition scores of the students whose length of stay in Korea > 61 months (2.97 ± 0.73) were significantly higher than those of students whose length of stay in Korea was 13~36 months (2.28 ± 0.39) and 6~12 months (2.07 ± 0.19).

There were significant differences in the mean total HPB scores according to education level ($F=3.75$, $p=.012$) and length of stay in Korea ($F=5.78$, $p < .001$). Scheffé's posthoc test showed that the mean total HPB scores of the doctorate students (2.79 ± 0.18) and masters' students (2.73 ± 0.14) were significantly higher than those of students in the undergraduate group (2.66 ± 0.21). The posthoc test showed that health-promotion behaviors among students whose length of stay in Korea > 61 months (2.78 ± 0.23) and 37~60 months (2.66 ± 0.22) were significantly higher than those whose length of stay in Korea was 6~12 months (2.59 ± 0.14).

The mean score of the total HPB of the students was 2.64 ± 0.36 . In the sub-categories, the highest mean score was of stress management, 3.12 ± 0.37 . Nutrition shows the lowest mean score of 2.43 ± 0.43 . The mean total acculturative stress score of the students was 2.39 ± 0.15 . Home-sickness shows the highest score among the sub-categories, 2.98 ± 0.38 . The mean score of social support was 2.53 ± 0.24 out of a maximum of 3.19. The mean score of self-esteem was 2.96 ± 0.35 (Table 2).

As a result of the correlation between health-promoting behaviors and other factors such as self-esteem, acculturative stress, social support, a statistically significant correlation was seen between health-promoting behaviors and variables (Table 3): Health-promoting behaviors showed a positive correlation with self-esteem ($r=.32$, $p < .01$) and social support ($r=.13$, $p=.024$), but a negative correlation with acculturative stress ($r=-.15$, $p < .01$). Self-esteem showed a positive correlation with social support ($r=.22$, $p < .01$). Acculturative stress showed a negative correlation with self-esteem ($r=-.27$, $p=.023$) and social support ($r=-.11$, $p=.016$). Students with higher self-esteem and higher social support had higher health-promoting behaviors. Conversely, students with high acculturative stress showed low health-promoting behaviors. Self-esteem was positively correlated with physical activity, nutrition, stress management, and health risk behavior. Acculturative stress showed a negative correlation with nutrition ($r=-.17$, $p=.022$) and health risk behavior ($r=-.16$, $p=.025$). Students with high self-esteem showed more physical activity and better stress management. Social support was positively correlated to stress management and health risk behavior.

Table 1. Sociodemographic Characteristics and Health-Promoting Behavior Score of Students (N=260)

Variables	Categories	n (%) or M±SD	Physical activity		Nutrition		Stress management		Health risk behavior		Total HPB score	
			M±SD	t or F (p) Scheffé	M±SD	t or F (p) Scheffé	M±SD	t or F (p) Scheffé	M±SD	t or F (p) Scheffé	M±SD	t or F (p) Scheffé
Gender	Men	112 (43.1)	2.90±0.35	5.93	2.13±0.27	4.61	3.33±0.30	3.71	2.38±0.33	2.10	2.73±0.19	2.15
	Women	148 (56.9)	2.28±0.29	(<.001)	2.65±0.39	(<.001)	2.96±0.35	(<.001)	2.52±0.32	(.001)	2.57±0.32	(<.001)
Age (year)	≤ 21 ^a	15 (5.8)	2.56±0.39	0.41	2.37±0.56	2.31	3.05±0.28	0.56	2.52±0.30	0.78	2.66±0.11	0.25
	22~24 ^b	120 (46.2)	2.57±0.43	(.331)	2.31±0.38	(<.001)	3.10±0.40	(.687)	2.46±0.36	(.543)	2.63±0.17	(.281)
	25~27 ^c	90 (34.6)	2.44±0.44		2.56±0.44	a, c < e	3.11±0.35		2.48±0.31		2.66±0.18	
	28~30 ^d	30 (11.5)	2.54±0.48		2.50±0.47		3.22±0.36		2.40±0.29		2.62±0.17	
	≥ 31 ^e	5 (1.9)	2.25±0.38		2.86±0.69		3.18±0.48		2.28±0.33		2.52±0.13	
		24.60±2.58										
Religion	Buddhist	79 (30.4)	2.51±0.50	1.03	2.52±0.44	2.05	3.10±0.40	0.29	2.41±0.31	3.12	2.63±0.17	3.63
	Christian	40 (15.4)	2.63±0.45	(.370)	2.44±0.43	(.110)	3.12±0.35	(.958)	2.64±0.34	(.102)	2.70±0.15	(.137)
	Others	7 (2.7)	2.70±0.42		2.52±0.32		3.18±0.28		2.51±0.23		2.62±0.17	
	None	134 (51.5)	2.54±0.40		2.37±0.42		3.13±0.38		2.43±0.33		2.64±0.17	
Marital status	Married	8 (3.1)	2.46±0.55	0.54	2.62±0.57	0.95	3.21±0.39	0.73	2.40±0.28	0.62	2.67±0.21	0.48
	Single	252 (96.9)	2.55±0.43	(.681)	2.42±0.42	(.361)	2.40±0.28	(.478)	2.46±0.33	(.542)	2.64±0.16	(.631)
Education	Korean language course ^a	94 (36.2)	2.59±0.43	1.01	2.11±0.27	5.47	2.66±0.33	4.51	2.45±0.34	0.20	2.59±0.17	3.75
	Undergraduate ^b	154 (59.2)	2.54±0.45	(.380)	2.57±0.39	(<.001)	3.07±0.37	(.041)	2.47±0.33	(.951)	2.66±0.21	(.012)
	Masters ^c	9 (3.5)	2.39±0.37		2.92±0.57	b < c, d	3.13±0.38	c > b	2.46±0.26		2.73±0.14	c, d > b
	Doctorate ^d	3 (1.2)	2.33±0.38		3.77±0.38		3.21±0.63		2.40±0.40		2.79±0.18	
Length of stay in Korea (month)	6~12 ^a	25 (9.6)	2.62±0.42	0.67	2.07±0.19	4.83	3.06±0.36	2.25	2.44±0.26	0.56	2.59±0.14	5.78
	13~36 ^b	137 (52.7)	2.59±0.43	(.570)	2.28±0.39	(<.001)	3.10±0.38	(.032)	2.48±0.37	(.641)	2.60±0.21	(<.001)
	37~60 ^c	65 (25.0)	2.49±0.43		2.64±0.46	a, b < d	3.19±0.36	c > a	2.45±0.26		2.66±0.22	c, d > a
	> 6 ^d	33 (12.7)	2.53±0.51		2.97±0.73		3.26±0.37		2.41±0.28		2.78±0.23	
		37.12±17.07										
Korean language ability (TOPIK)	Elementary (level 1,2)	17 (6.5)	2.67±0.32	0.94	2.32±0.23	1.21	3.17±0.12	0.54	2.45±0.28	0.71	2.62±0.19	1.81
	Intermediate (level 3,4)	159 (61.1)	2.55±0.47	(.470)	2.56±0.48	(.341)	3.22±0.30	(.502)	2.34±0.42	(.601)	2.61±0.13	(.089)
	Advanced (level 5,6)	84 (32.4)	2.62±0.34		2.74±0.52		3.13±0.40		2.67±0.28		2.65±0.14	
Health insurance	Yes	215 (82.7)	2.56±0.43	0.91	2.42±0.43	1.01	3.12±0.36	0.31	2.46±0.32	0.23	2.65±0.16	0.34
	No	45 (17.3)	2.48±0.45	(.310)	2.48±0.44	(.362)	3.10±0.44	(.771)	2.45±0.39	(.803)	2.63±0.18	(.722)
Residence	Dormitory	25 (9.6)	2.69±0.45	1.81	2.56±0.39	1.41	3.01±0.42	1.90	2.44±0.29	0.91	2.67±0.15	0.58
	Studio	60 (23.1)	2.42±0.43	(.061)	2.38±0.40	(.071)	2.96±0.27	(.076)	2.55±0.36	(.141)	2.63±0.17	(.631)
	Living with family	7 (2.7)	2.60±0.45		2.39±0.40		3.12±0.37		2.40±0.25		2.58±0.17	
	Living with friends	168 (64.6)	2.57±0.43		2.38±0.43		2.44±0.29		2.43±0.32		2.64±0.16	
Finance	Scholarship	4 (1.5)	2.50±0.54	0.15	2.75±0.56	1.09	3.25±0.35	0.49	2.45±0.25	0.16	2.63±0.14	0.64
	Parents	5 (1.9)	2.65±0.28	(.851)	2.46±0.80	(.331)	3.12±0.37	(.610)	2.44±0.26	(.901)	2.64±0.17	(.530)
	Own	251 (96.5)	2.55±0.44		2.42±0.43		3.14±0.39		2.46±0.33		2.64±0.16	
Self-rated health status	Very well	24 (9.2)	2.50±0.41	0.44	2.51±0.54	0.47	3.01±0.39	0.71	2.49±0.38	0.12	2.60±0.13	0.43
	Well	98 (37.7)	2.59±0.41	(.771)	2.43±0.41	(.752)	3.13±0.35	(.601)	2.45±0.32	(.902)	2.65±0.17	(.781)
	Normal	128 (49.2)	2.52±0.46		2.43±0.43		3.12±0.39		2.46±0.33		2.63±0.18	
	Bad	7 (2.7)	2.53±0.56		2.33±0.51		3.07±0.31		2.40±0.36		2.58±0.15	
	Very bad	3 (1.2)	2.50±0.67		2.23±0.19		3.36±0.27		2.47±0.41		2.61±0.14	

HPB=health-promoting behavior; M=mean; SD=standard deviation; TOPIK=test of proficiency in Korean.

2. Variables Affecting Health-Promoting Behaviors

Multiple regression analysis with health-promoting behaviors scored as a dependent variable showed that health-promoting behavior was most related to self-esteem ($\beta = .39, p < .001$), followed by acculturative stress ($\beta = -.37, p < .001$), social support ($\beta = .32, p < .001$), length of stay in Korea ($\beta = .25, p = .004$) and education ($\beta = .11, p = .003$). In particular, acculturative stress was negatively associated

with health-promoting behaviors ($\beta = -.37, p < .001$). The explanatory power of these variables was 76.2% ($R^2 = .762$, Adjusted $R^2 = .748$, $F = 117.33, p < .001$) on the health-promoting behaviors of the participants (Table 4).

DISCUSSION

This study investigated the health-promoting behaviors of Vietnamese students in Korea and identified factors af-

fecting these behaviors. The number of female participants was more than the number of male participants; the maximum age was 22~24 years, and most of them were unmarried. The findings from this study are consistent with those from other studies [11,12]. Many Vietnamese stu-

dents in Korea aimed to learn Korean and joined undergraduate programs. Most of them lived with friends (64.6%). However, previous research has shown that most Vietnamese students in Korea live in dormitories [12], a departure from the results of this study.

Table 2. Levels of Health-Promoting Behaviors, Acculturative Stress, Social Support, and Self-Esteem (N=260)

Variables	M±SD	Range (min~max)
Total health-promoting behaviors	2.64±0.36	2.16~3.06
Physical activity	2.55±0.44	1.50~3.75
Nutrition	2.43±0.43	1.67~3.33
Stress management	3.12±0.37	2.00~4.00
Health risk behavior	2.46±0.33	1.60~3.40
Total acculturative stress	2.39±0.15	2.05~2.84
Homesickness	2.98±0.38	2.00~4.00
Perceived discrimination	2.27±0.26	1.56~3.00
Culture shock	2.60±0.37	1.67~3.67
Perceived hatred	2.87±0.39	1.80~3.80
Fear	1.87±0.38	1.00~3.00
Guilt	1.98±0.36	1.17~3.00
Other	2.12±0.39	1.00~3.25
Social support	2.53±0.24	1.88~3.19
Self-esteem	2.96±0.35	2.00~3.80

M=mean; max=maximum; min=minimum; SD=standard deviation.

According to this study's findings, the health-promoting behaviors of students were on average 2.64 points. This score is higher than that in Sun [14] (2.44) but lower than that in Kim and Yoo [10] (2.77), whose sample comprised Chinese students in Korea. This difference could be due to the unique characteristics of the participants. In the current study, the students responded to all levels of the questionnaire thus revealing the difference in scores. In addition, the differences in socio-cultural background, including cultural attitudes, beliefs, interpersonal relationships, and adjusting to the new environment, could also be the reason for the difference in the scores. Furthermore, life experience and health consciousness can influence health-promoting behaviors [14,19]. It has been reported that health-promoting behavior increases with age; or, age has a positive effect on health-promoting behavior [20].

There were significant gender differences in the overall health-promoting behavior and its sub-categories. The overall health-promoting behavior score of men was higher (2.73) than that of women (2.57). This result is similar to the results of Sun [14] conducted on Chinese students in Korea. Additionally, this study showed that the students

Table 3. Correlations between Health-Promoting Behaviors and Other Variables (N=260)

Variables	Health-promoting behaviors	Physical activity	Nutrition	Stress management	Health risk behavior	Acculturative stress	Social support
	r (p)	r (p)	r (p)	r (p)	r (p)	r (p)	r (p)
Acculturative stress	-.15 (< .01)	-.18	-.17 (.022)	-.14	-.16 (.025)	1	-
Social support	.13 (.024)	.09	.04	.17 (.021)	.29 (.031)	-.11 (.016)	1
Self-esteem	.32 (< .01)	.29 (< .01)	.06 (.014)	.15 (.015)	.16 (.020)	-.27 (.023)	.22 (< .01)

Table 4. Multiple Regression Analysis of Participants' Health-Promoting Behaviors (N=260)

Variables	B	SE	β	t	p	VIF
Education [†]	0.09	0.02	.11	2.72	.003	1.06
Length of stay in Korea [†]	0.14	0.03	.25	3.56	.004	1.08
Acculturative stress	-0.24	0.02	-.37	-4.84	< .001	1.10
Social support	0.22	0.03	.32	3.88	< .001	1.13
Self-esteem	0.26	0.03	.39	5.07	< .001	1.22
R ² =.762, Adjusted R ² =.748, F=117.33, p< .001						

B=unstandardized regression coefficient ; SE=standard error; VIF=variance inflation factor; [†] Dummy variable.

Note. Education (Undergraduate=0, Korean language course, Masters=1, Doctorate=1), Length of stay in Korea (6~12 [months]=0, 13~36=1, 37~60=1, > 61=1).

in the masters' and doctorate programs had a higher HPB score than undergraduate students. In the Korean language course, students with a long length of stay in Korea showed higher health-promoting behavior than those a short length of stay. This is consistent with the results of previous studies, which reported differences in health promotion behaviors depending on the length of stay [19, 21] and the education level [7] of the respondents. This is probably because as freshmen newly arriving in Korea, these students have trouble in managing new life experiences, a new culture, and college life. Accordingly, it is necessary to recognize that these students are vulnerable to health-related problems compared to those from other college periods. Several studies were done with Vietnamese students in other countries, but they did not use the same measurements; thus, it is difficult to compare students' level of health-promoting behaviors directly.

When the sub-categories of these behaviors were examined, the mean score of stress management (3.12) was the highest. Arguably, stress management scores were higher as Vietnamese students were away from home, and studying abroad can be difficult. They live in an unfamiliar environment, usually have a lot more to think about than just their studies, and this can cause them more stress [11,12], taking a toll on their everyday lives and making their stay difficult. Therefore, they were interested in mental stress management while studying and living abroad. While physical activity (2.55) was higher than the midpoint but lower than stress management, health risk behavior (2.46) and nutrition (2.43) were lower than the midpoint. The level of physical activity and health risk behavior being lower than stress management could be because the students were away from their parents and families and had more freedom on entering a new country. They were more likely to experience lifestyle changes. Therefore, it may be difficult to maintain health-promoting behaviors, such as exercising, or refraining from harmful health behaviors. Additionally, without recognizing the importance of health and due to lack of management from their parents, they may try health risk behaviors to control stress and anxiety when they are living away from home [22]. Further, as students adjust to unfamiliar social, cultural, and educational environments, they experience acculturation. This process also can adversely impact such international students. Especially the fear and culture shock experienced can precipitate the development of negative coping strategies, including health risk behaviors. The nutrition scores being the lowest might be related to irregular eating habits and life schedule, requiring dietary acculturation by the student. Moving to a new country may have af-

ected their food practices and changed their eating behaviors.

The acculturative stress level of the Vietnamese students was 2.39 out of 5 points. In similar studies, acculturative stress among Vietnamese students in Korea was 2.3 [11]. The score in this study was higher than that in Sun [14], who conducted the survey on Chinese students in Korea (2.15) but lower than the stress management score in Kim and Yoo [10], whose sample also comprised Chinese students in Korea (2.55). When international students move to a new socio-cultural environment, they may be unfamiliar with the host culture. Korean culture and Vietnamese culture show many similarities. Sharing a historical and cultural background in Sino-centric Confucianism, Vietnam and South Korea have many religions, and both countries respect religious pluralism. However, there are also differences (e.g., climate, food, language, and culture). Vietnamese students experience more acculturative stress than Chinese students, probably because of cultural and climate differences. Since China is a neighbor country of Korea, the cultural norms and the climate of these countries are similar. Vietnamese students experience accumulated pressure to adjust to the new environment, and thus their stress levels increase. They face obstacles, such as different food cultures, unfamiliar living circumstances, financial problems, studying schedules, or difficulties related to language and culture. In this study, homesickness, perceived hatred, and culture shock affect most Vietnamese students. These results are similar to a study on international students from China and other studies [14,23], showing that Vietnamese and other international students miss their parents and friends in their hometowns. Leaving their homeland to study in a new environment in another country could lead students to experience stress and shock caused by their new life experiences and their contact with a new culture. They miss their friends, family, and all things familiar. They may lose optimism if they find it difficult to make friends and communicate in Korean. Especially international students labeled as foreigners find it a stressful experience and difficult to assimilate into a new culture [23]. Sometimes international students might face challenges as discrimination directed at them by the host nationals and other international students; this factor can add to international students' perceived hatred and stress [6,22].

The mean score of social support was 2.53. The score was lower than that in Sun [14], where the social support score among Chinese students was 3.08. This difference could be due to individual differences that may influence one's perception of social support or lack of unsupport.

Life in a new country could often lead to losing the social support established in the home country. A new social support network could balance the loss of support from the host country. However, international students often have limited opportunities to connect with mainstream society and same-ethnic communities in the host country because of barriers such as financial difficulties and transportation limitations [5]. Over time, there is increased risk of isolation; therefore, seeking help for emotional or social problems can reduce differences in the level of perceived social support.

In this study, the mean score of self-esteem score was 2.96, which is higher than that in Sun [14], who conducted the survey on Chinese students in Korea (2.88) but lower than that in Kim and Yoo [10] (3.01). This difference could be due to individual differences such as interpersonal life experiences, childhood, society, the media, and people in their lives, which can all add or take away from how they feel about themselves [24,25]. These factors can affect their self-esteem. In previous research, there is a significant difference in the self-esteem of European students and Asian students [24]. Asian students showed lower self-esteem than their European counterparts. This could be due to cultural differences in terms of modesty in cognitive self-esteem. Research has also suggested that Asians feel as positively toward themselves as Americans do but are less inclined to evaluate themselves in an excessively positive manner [24]. Comparing results on self-esteem from this study with that of others is limited because research on students' self-esteem is lacking. Moreover, the same measurements were not used and hence, it is difficult to make a direct comparison.

Multiple regression analysis showed that health-promoting behaviors were affected by self-esteem, acculturative stress, social support, length of stay in Korea, and education. The explanatory power of all the influencing variables was 76.2%. In particular, self-esteem was the most influential factor. It found that self-esteem can lead to better health and social behavior and poor self-esteem was associated with a broad range of mental disorders and social problems [18,25]. Self-esteem plays a significant role in the adaptation of the individual. It is a protective factor against risks related to student development, including health risk behaviors [18]. Students with a high level of self-esteem are reported to exhibit high levels of health-promotion behaviors [18,25,26]. Positive self-esteem may be considered a good indicator of psychological well-being as it averts depression and anxiety and it is positively associated with school engagement and academic achievement [25,26]. Conversely, negative self-esteem (dissatis-

faction with the self) is related to negative developmental outcomes, such as academic failure and dropout [25,27]. Vietnamese students, especially those who drop out of school will find it more challenging to engage in health-promoting lifestyle behaviors. Thus, self-esteem is key to achievement in school for students. Students with low self-esteem can also suffer from depression and anxiety, thus becoming vulnerable to health-risk behaviors, including smoking and consumption of alcohol [25,28]. Accordingly, self-esteem is an important factor for the continuity of healthy behaviors.

Acculturative stress was also found to influence health-promoting behaviors. Previous research has shown that high acculturation has positive outcomes, including better education and access to health insurance and health-promoting behavior [29-31]. A higher level of acculturation has been shown to reduce anxiety and depression, while a lower level of acculturation is associated with poor health outcomes, more anxiety, and stress [30]. High acculturation is a protective factor against health risk behavior and depression [30,31]. Vietnamese students face unique challenges in adjusting to living and learning in a new environment [11,12,25]. According to the results, almost all Vietnamese students studying in Korea have to live on their personal earnings (96.5%) and thus undergo additional pressures of everyday life. These factors increase their acculturative stress. Previous studies on Vietnamese students in Korea mostly examined the relationship between acculturation stress and mental health [11,12]. Evidence from this study is useful in designing interventions to minimize acculturative stress for Vietnamese students and improve health-promoting behaviors among them.

Multiple regression analysis revealed that social support also affects health-promoting behaviors. This is consistent with the results of previous studies, which reported on how social support is integral to health promotion [5,22,31]. Considerable evidence links social support with increased health-promoting behaviors and decreased health risk behaviors such as dietary habits, physical activity, smoking habits, and alcohol intake [22,32]. Social support buffers the effects of life stress and acculturative stress [31,33,34]. This seems to contribute to the health-promoting behaviors of Vietnamese students studying in Korea by promoting psychological adaptation to Korean cultural context [31,35].

The study findings showed how length of stay and education level also affected health-promoting behaviors, with students whose length of stay was short showing lower health promotion behaviors than those students whose length of stay in Korea was longer. This is con-

sistent with the results of previous studies. Students with a short length of stay reported higher acculturative stress and poorer health [19,21]. Length of stay has been examined in previous research as an important factor that has affects the level of acculturative stress, adjustment, and health-promotion behaviors. During the cross-cultural experience, a longer duration of stay increases students' linguistic ability, enhances their health-promoting behaviors, and increases their cultural knowledge about the host country, which are all essential for the adjustment process [19,21]. The findings of our study highlight the need to develop a health promotion program for all students, especially newly arrived international students whose length of stay in Korea has been short. The education level of students also affects health-promoting behaviors; Students in the masters' and doctorate programs had a higher level of HPB than undergraduate students. Undergraduate students have trouble adapting to the new culture and college life. Students gain new responsibilities and experience the stress of adjusting to that new environment. Consequently, to overcome the stress, they may take to habits such as choose smoking and drinking. Previous research has shown that education is directly and meaningfully associated with health literacy and health-promoting behavior [6,35]. Thus, it is necessary to provide a health promotion plan for Vietnamese international students, especially freshmen, to habituate them to health-promoting behavior such as stress management, physical activities, and health maintenance.

Most previous studies conducted so far have focused on health perceptions, physical activity, acculturative stress, and social support related to health-promoting behavior, but self-esteem as one of the core factors in health promotion needs to be considered. For international students, self-esteem is important because it influences their choices and decisions. Self-esteem is a protective factor that contributes to better health and positive social behavior. Focusing on self-esteem is considered a core element of health promotion. The finding that length of stay also affects health-promoting behavior is another important factor in building strategies to enhance health for international students. Factors affecting the health-promoting behaviors of Vietnamese students in Korea is a topic not addressed in previous studies. Our study thus provides basic data for developing programs aimed at enhancing health-promoting behavior among Vietnamese students. Based on these results, a health promotion program can be developed for Vietnamese students in Korea and its effectiveness verified.

Apart from its contributions, this study has some limi-

tations as well: the cross-sectional design may hinder the ability to infer the causal effect relationship. The convenience sampling method for recruiting the study participants is another limitation; therefore, this sample may not produce representative results of the entire population. Another limitation is that self-reported data may be exaggerated. More studies using mixed qualitative and quantitative methods are needed for a better understanding of health-promoting behaviors. Finally, the original questionnaires of HPB and ISEL were first developed in English, then translated into Korean, and again they were translated into Vietnamese in this study. Although the translation-reverse translation process was performed, and the reliability and validity of the Vietnamese version were tested, the possibilities for misunderstanding of items due to cultural differences may remain.

CONCLUSION

This research sought to identify the levels of health-promoting behaviors among Vietnamese students in Korea and identify the factors affecting the same. The score on health-promoting behaviors was at a medium level, with factors like self-esteem, acculturative stress, social support, length of stay in Korea, and education level influencing it. The strongest influence was self-esteem. These variables explained 76.2% of the variance in health-promoting behavior.

Being in a new country like Korea and a relatively free environment makes it easy for Vietnamese students to neglect health-promoting behaviors in their regular daily activities. This study provides evidence on the need for development of interventions for health-promoting behaviors during the period of their study abroad. Students with a high level of self-esteem, high acculturation levels, and strong social support contribute to improving health-promoting behaviors. To achieve this, it is necessary to develop intervention strategies for health-promoting behaviors such as self-esteem improvement program, managing acculturative stress, by engagement in club activities, volunteering, and receiving support from experiences of friends, and strategies for cultural adaptation. These social support programs must be comprehensive and must address perceived academic, health, social, and cultural issues so that students can integrate healthy behaviors into their daily lives by understanding ways by which they can protect their health.

CONFLICTS OF INTEREST

The authors declared no conflict of interest.

AUTHORSHIP

Study conception and design acquisition - TTQA and KN; Data collection - TTQA and KN; Analysis and interpretation of the data - TTQA, KM and KN; Drafting and critical revision of the manuscript - TTQA, KM and KN.

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