

# Perceived Health Knowledge and Health Education Needs Associated with Child Health Behaviors : A Survey of Some Elementary School Students in Seoul

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## I . Introduction

Health is a fundamental human right to be reserved and is achieved from the coordinated process of governmental support on public health promotion and individual efforts on their health behavior changes(Kim et al., 1998). World Health Organization (WHO) emphasizes the supporting role of government on individual behavior changes providing health education in community health services(WHO, 1997).

Children and adolescents under 20 years, in particular, are very interested in and sensitive to risk behaviors such as drinking

alcohol, smoking cigarettes, and using drug. Furthermore, the obtained risk behaviors in these ages affect their health status throughout their middle and old ages as well as their young adult ages. Therefore, it is the essential point of health education to protect the child and adolescence from risk behaviors and keeping desirable health habits(Yoo, 2000).

Health education has been conducted as a school health service in Korea. Since the School Health Act was established in 1967, health education has been the major school health services with school environment management and health examination. Recently, the importance of health education

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at school is rapidly growing because of social and governmental focus on health promotion and well-being. From the health promotion perspective for the public population, the ages of child and adolescence are very significant(Choi and Kim, 1995). First, school population is consisted of one forth(26.8%) of the Korean population according to the updated data from the Korean ministry of statistics(2004). This population meets everyday together in each school and the school can be the best place of health education for building desirable health behaviors. Second, the primary purpose of their meeting is to learn and be trained something, which means that health education effects can be maximized for child and adolescence in school because of their learning readiness. Practically, third, current Korean youth health behavioral status is very poor and thus, it is timely necessary of behavioral modification support for the population under 20(i.e., World Smoking Cessation Committee, 2001). The top five causes of death under 20 year population were very close to individual life style such as traffic accident or suicide in 2004(Korea National Statistical Office, 2004).

Based on the above significance of youth health in public health promotion, school health education should actively involve and take a key role of school health promotion. Need assessment of health may provide

diverse information to teachers when preparing health education class(i.e., which topics are students' best or worst favorites and on which topics their students have sufficient or poor knowledge). Integrated modification considering with students' interest and knowledge is the key for success of health education programs in school. Developed countries such as the United States conducted diverse health education development trials and focused, recently, on building individual students' potentials to choose and keep desirable health behaviors such as 'building healthy choice', 'problem-solving training', 'decision-making discussion' and 'life skill building'(Kahn et al., 2001). These strategies and educational methods were developed based on 'which ability students should have to solve their health topics' and 'which topics students want to know more'(Essen, 2004). Thus, the coordinated information of health knowledge and needs provides the clues for health education strategies, materials, methods and media.

However, there was little trial to identify health education needs coordinated with health knowledge to develop better health education process. Furthermore, participants' general characteristics were little considered in program development although some general characteristics such as sex and age are very sensitive to risk behaviors or educational needs. Most information about

health knowledge and health needs had been solidly utilized to determine health education class topics without any considering students' general characteristics(Yoon, 1997; Kim et al., 1998; Lee, 1999; Kim, 2001; Shin et al., 2002). Therefore, this study was conducted to describe child perceived health knowledge, health education needs, and health behaviors by sex as a representative general characteristic and then, to identify their associations for students' better health behavior changes.

## II. Methods

### 1. Study Participants

The survey participants were 410 from fourth to sixth grade students in two elementary schools in a county of Seoul, Korea. Two schools were, first, randomly selected from a total of 16 elementary schools registered in the designated county and six classes were randomly selected from fourth to sixth grade classes(two classes per grade) in each school. All students of the selected 12 classes in the two schools were initial survey participants of this study.

The absent students in the survey period and the students whose responses were problematic or patterned were excluded from this study. The final participants in the statistical analyses were 410: 131 fourth grade

students(32.0%), 137 fifth grade students(33.4%), and 142 sixth grade students(34.6%). Boys were 225(55.0%) and girls were 185(45.0%). The participants were consistently distributed through grades and boys were slightly more than girls even though the difference was small.

### 2. Survey Method and Process

Self-administered survey was conducted to collect the data. The teacher of each selected class distributed the questionnaires to all students at the end of the final class of the day and the teachers sufficiently explained the purposes and contents of this survey to the students and the students voluntarily participated in the survey without any pressure. All survey responses were collected by the class teachers. The 12 class teachers of the selected classes were invited a survey preparation meeting and were trained for the survey processes by this study investigators before the survey.

The questionnaire contained the items of perceived health knowledge, health education needs(health topics which they want to know more), health behavior, and general characteristics. General characteristics were sex, age, grade, and type of residence. The numbers of items of perceived health knowledge and health education needs were 14 each consisted of the same health topics, and the numbers of health behavior items

were 19(Table 1).

Perceived health knowledge and health education needs were measured by the 14 questions each developed for this study from comprehensive review on school health education research and particularly, based on the school health education program standards of the Centers for Disease Control and Prevention(CDC) in US(Lee, 1988; Yoon and Kim, 1998; CDC, 2004). The measures of perceived health knowledge and health education needs were scored by the five-point likert scale from 1(absolutely no idea/interest) to 5(very well known/very interested). The higher the mean scores of the two measures, the greater the perceived health knowledge and the interests.

Health behavior was measured by the 19 items selected from the school health education program standards of the Centers

for Disease Control and Prevention(CDC) in US(CDC, 2004). The items asked about individual hygiene(washing hands, tooth brushing, using individual glass, taking shower), safety(traffic, food, electronic, leisure safety), and health protection (vaccination, healthy food choice, exercise, et al.) behaviors.

Reliability of perceived health knowledge, health education needs, and health behavior measures were very consistent. Cronbach's alpha of the perceived health knowledge measure were .87 and the alpha per item ranged from .85 to .90. Cronbach's alpha of the health education needs measure was .91 ranging between .89 and .92 per item. Internal consistency of the health behavior measure was .74 ranging between .71 and .75, which was relatively little low but still within the acceptable boundary.

Table 1. Variables and contents included in this survey

Variables	Contents
General characteristics	Grade, sex, residential type
Perceived health knowledge	Significance of public health, desirable health habits, nutrition and healthy eating, strengths of exercise, human sex, physical development in childhood, mental development in childhood, disease prevention, stress management & drug control, injury prevention, health care service utilization, physical environment and health(2), pollution and environmental control
Health education needs	Significance of public health, desirable health habits, nutrition and healthy eating, strengths of exercise, human sex, physical development in childhood, mental development in childhood, disease prevention, stress management & drug control, injury prevention, health care service utilization, physical environment and health(2), pollution and environmental control
Health behaviors	washing hands, tooth brushing, using individual glass, taking shower, traffic, food, electronic, leisure safety, vaccination, healthy food choice, exercise, et al.

### 3. Data Analysis

Collected data were entered into a computerized database using the Statistical Package for the Social Sciences (SPSS) version 12. Data entry accuracy was validated using a double check process. Frequency, percentage, mean, and standard deviation were utilized to show general distribution of each variable. T-test and simple correlation analysis were used to test mean differences of perceived health knowledge, health education needs, and health behaviors by sex. Then, stepwise multiple regression analysis was used to identify significant variables of general characteristics, health knowledge, health education needs affecting health behaviors.

## III. Results

### 1. Distributions of perceived health knowledge, health education needs, and health behaviors by sex

Mean scores of perceived health

knowledge, health education needs, and health behaviors were, generally, higher among girls than boys (Table 2). The mean score difference of health behaviors was statistically significant by sex ( $p < .05$ ) although the sexual differences of perceived health knowledge and health education needs were not statistically meaningful.

#### 1) Perceived health knowledge by sex

Comparing perceived health knowledge scores by sex, boys and girls had similar perceived health knowledge distributions from each other. Boys had high scores in 'strengths of exercise', 'environment pollution and control' and 'nutrition and healthy eating'. Girls had high scores in 'nutrition and healthy eating', 'desirable health habits' and 'environment pollution and control'. Both boys and girls perceived that they had little knowledge of 'mental development in childhood' (Table 3). Comparing knowledge per topic, boys were better than girls in 'strengths of exercise' and 'physical environment and health'. Girls had

Table 2. Means of perceived health knowledge, health education needs, and health behaviors by sex

Factor	Sex	Mean $\pm$ S.D.	t	p
Perceived health knowledge	Boy	3.18 $\pm$ .67	- .55	.58
	Girl	3.21 $\pm$ .57		
Health education need	Boy	3.88 $\pm$ .83	- .65	.52
	Girl	3.93 $\pm$ .64		
Health behavior	Boy	3.78 $\pm$ .43	-2.04	.04
	Girl	3.95 $\pm$ .38		

Table 3. Distributions of perceived health knowledge by item and sex

The 14 health topics	Sex	Rank	Perceived knowledge scores	
			Mean $\pm$ S.D.	t
Significance of public health	Boy	10	2.96 $\pm$ 1.05	- .44
	Girl	9	3.00 $\pm$ .86	
Desirable health habits	Boy	5	3.54 $\pm$ .99	- .95
	Girl	2	3.63 $\pm$ .82	
Nutrition and healthy eating	Boy	3	3.62 $\pm$ .95	-1.59
	Girl	1	3.77 $\pm$ .88	
Strengths of exercise	Boy	1	3.87 $\pm$ 1.07	3.66**
	Girl	5	3.49 $\pm$ .97	
Human sex	Boy	14	2.51 $\pm$ 1.14	-3.49**
	Girl	12	2.87 $\pm$ .89	
Physical development in child	Boy	8	3.03 $\pm$ 1.05	- .67
	Girl	8	3.10 $\pm$ .91	
Mental development in child	Boy	13	2.81 $\pm$ 1.12	.69
	Girl	13	2.73 $\pm$ 1.00	
Disease prevention	Boy	11	2.95 $\pm$ 1.05	.41
	Girl	11	2.90 $\pm$ 1.01	
Stress management & drug control	Boy	6	3.49 $\pm$ 1.24	1.89
	Girl	6	3.25 $\pm$ 1.14	
Safety and injury control	Boy	4	3.60 $\pm$ 1.07	.45
	Girl	4	3.55 $\pm$ .97	
Utilization of health care service	Boy	9	2.98 $\pm$ 1.11	.09
	Girl	10	2.96 $\pm$ 1.03	
Physical environment and health	Boy	11	2.95 $\pm$ 1.14	2.02*
	Girl	14	2.72 $\pm$ 1.06	
Environment pollution and control	Boy	2	3.65 $\pm$ 1.01	.67
	Girl	3	3.58 $\pm$ 1.01	
Living environment and health	Boy	7	3.08 $\pm$ 1.13	- .55
	Girl	7	3.16 $\pm$ 1.08	

\* P &lt; .05, \*\* P &lt; .01

better scores than boys in 'human sex'. Generally, boys had better perception in exercise and environmental health while girls had better perception in sex, nutrition and health habits than boys.

## 2) Health education needs by sex

Comparing perceived health education need scores by sex, boys and girls had some different patterns of health education needs from each other. Boys had high scores in

‘strengths of exercise’, ‘environment pollution and control’ and ‘disease prevention’. Girls had high scores in ‘disease prevention’, ‘desirable health habits’ and ‘strengths of exercise’. Both boys and girls showed low needs of health education in ‘human sex’ and ‘utilization of health care

service’(Table 4). Comparing health education needs per topic, boys had better scores than girls in ‘environment pollution and control’(p < .01); however, there was no statistically significant difference by sex in the other health education needs.

Table 4. Distributions of health education needs by item and sex

The 14 health topics	Sex	Total rank	Education needs score	
			Mean ± S.D.	T
Significance of public health	Boy	11	3.79 ±1.07	.04
	Girl	10	3.79 ± .81	
Desirable health habits	Boy	7	3.95 ±1.07	-1.09
	Girl	2	4.06 ± .91	
Nutrition and healthy eating	Boy	6	3.96 ±1.09	- .51
	Girl	5	4.01 ± .97	
Strengths of exercise	Boy	1	4.17 ±1.44	.96
	Girl	2	4.06 ±1.19	
Human sex	Boy	14	3.01 ±1.09	-1.25
	Girl	14	3.18 ±1.03	
Physical development in child	Boy	8	3.92 ±1.09	.77
	Girl	9	3.83 ±1.03	
Mental development in child	Boy	5	4.00 ±1.09	- .45
	Girl	4	4.05 ± .97	
Disease prevention	Boy	3	4.04 ±1.14	- .70
	Girl	1	4.11 ± .97	
Stress management & drug control	Boy	10	3.80 ±1.30	- .94
	Girl	7	3.91 ±1.07	
Safety and injury control	Boy	4	4.02 ±1.12	.99
	Girl	7	3.91 ± .97	
Utilization of health care service	Boy	13	3.69 ±1.22	- .06
	Girl	13	3.70 ±1.09	
Physical environment and health	Boy	11	3.79 ±1.25	- .01
	Girl	10	3.79 ±1.07	
Environment pollution and control	Boy	2	4.11 ±1.10	3.08**
	Girl	12	3.77 ±1.07	
Living environment and health	Boy	9	3.83 ±1.25	-1.13
	Girl	6	3.97 ±1.01	

\* P< .05, \*\* P< .01

### 3) Health behaviors by sex

Comparing perceived health behavior scores by sex, boys and girls had similar patterns of health behaviors to each other. Boys and girls had high scores in 'eating well-heated meat and fish', 'taking drug based on doctor's prescription' and 'drinking clean water' in order. Girls had the lowest score in 'abstaining from sweets' and boys had the lowest score in 'wearing mask to come popular places with cold'(Table 5).

Comparing health behaviors per topic, girls generally had better scores than boys; in particular, in 'washing hands', 'using private glass to drink water', 'drinking clean water', taking parasite-killing pills every year', 'washing hands after toilet stuff', 'eating well-heated meat and fish', 'taking drug based on doctor's prescription', 'checking expiration date of any food product', 'trying to keep positive attitudes', 'searching outside support to solve life problems' and 'planning for the future in advance'(p < .05). Boys had greater score than girls in 'abstaining from sweets'(p < .05).

## 2. Relationships between perceived health knowledge, health education needs, and health behaviors

Simple correlation analysis explained the relationships between perceived health knowledge, health education needs, and health behaviors by sex and stepwise multiple

regression analysis examined the significant knowledge and need factors associated with child health behaviors. Perceived health knowledge had significant positive correlation with health behaviors both in boys and girls(p < .01). The greater the perceived health knowledge scores the better the child health behaviors both in boys and girls(Boy: r = .36, girl: r = .27, Table 6).

Health education needs also had significant relationships with health behaviors both in boys and girls, and the correlation coefficient was greater in boys than in girls. Both in boys and girls, the correlation between perceived health knowledge and health behaviors was greater than the correlation between health education needs and health behaviors, in particular, correlation between perceived health knowledge and health behaviors(r = .36) was two folds greater than correlation between health education needs and health behaviors(r = .18) among boys; where as the two correlations were similar to each other among girls.

Table 7 shows the significant knowledge and need factors associated with students' health behaviors. The significant factors were perceived health knowledge, sex, grade and health education needs in order, and the four factors described health behaviors in 21.0%. As predicted in Table 6, perceived health knowledge was the strongest factors related to health behaviors with 10% explanation



Table 5. Distributions of health behaviors by item and sex

Item	Sex	Rank	Health behavior score	
			Mean $\pm$ S.D.	T
Washing hands	Boy	8	3.99 $\pm$ .75	-2.26*
	Girl	8	4.15 $\pm$ .67	
Using private glass to drink water	Boy	13	3.62 $\pm$ 1.15	-1.95*
	Girl	13	3.84 $\pm$ 1.10	
Regular taking shower and haircut	Boy	10	3.86 $\pm$ .99	-1.35
	Girl	11	3.98 $\pm$ .83	
Tooth brushing after eating	Boy	17	3.07 $\pm$ 1.01	- .98
	Girl	17	3.17 $\pm$ .99	
Abstaining from sweets	Boy	17	3.07 $\pm$ 1.19	2.40*
	Girl	19	2.80 $\pm$ 1.10	
Drinking clean water	Boy	3	4.38 $\pm$ .98	-2.40*
	Girl	3	4.59 $\pm$ .77	
Taking parasite-killing peels every year	Boy	16	3.13 $\pm$ 1.57	-2.93**
	Girl	15	3.58 $\pm$ 1.47	
Washing hands after toilet stuff	Boy	5	4.23 $\pm$ .83	-2.00**
	Girl	5	4.40 $\pm$ .84	
Taking vaccination for infectious disease prevention	Boy	6	4.12 $\pm$ 1.00	- .31
	Girl	8	4.15 $\pm$ .86	
Eating well-heated meat and fish	Boy	1	4.57 $\pm$ .73	-2.30*
	Girl	1	4.72 $\pm$ .55	
Wearing mask to come popular places with cold	Boy	19	2.86 $\pm$ 1.25	- .48
	Girl	18	2.91 $\pm$ 1.16	
Taking drug based on doctor's prescription	Boy	2	4.51 $\pm$ .72	-2.09*
	Girl	2	4.64 $\pm$ .61	
Keeping safe ways to use electronics	Boy	8	3.99 $\pm$ 1.05	-2.64**
	Girl	7	4.25 $\pm$ .86	
Always using a cross-way in the street	Boy	4	4.26 $\pm$ .86	-1.03
	Girl	6	4.35 $\pm$ .91	
Taking warm-up exercises before swimming	Boy	11	3.77 $\pm$ 1.18	-1.55
	Girl	12	3.95 $\pm$ 1.05	
Checking expiration date of any food product	Boy	7	4.21 $\pm$ 1.08	-2.79**
	Girl	4	4.47 $\pm$ .82	
Trying to keep positive attitudes	Boy	14	3.41 $\pm$ .99	-2.46*
	Girl	14	3.64 $\pm$ .90	
Searching outside support to solve the problems	Boy	12	3.69 $\pm$ .96	-3.34**
	Girl	10	3.99 $\pm$ .86	
Planning for the future in advance	Boy	15	3.25 $\pm$ 1.18	-2.06*
	Girl	5	3.48 $\pm$ 1.03	

\* P&lt; .05, \*\* P&lt; .01

while health education needs explained health behaviors only by 2.1%. Thus, higher perceived health knowledge, girls, lower

grade, and more health education needs was associated with the better scores of health behaviors.

Table 6. Simple correlation between perceived health knowledge, health education needs, and health behaviors by sex

Variable	Sex	1	2	3
1. Health knowledge	Boy	1.00	.29**	.36**
	Girl	1.00	.15	.27**
2. Health education need	Boy		1.00	.18*
	Girl		1.00	.24**
3. Health behavior	Boy			1.00
	Girl			1.00

\* P< .05, \*\* P< .01

Table 7. Significant knowledge and needs characteristics affecting health behaviors

Variables	Regression Coefficient	Standard Error	$\beta$	R <sup>2</sup> Change
(Constant)	3.034	.243		
Perceived health knowledge	.181	.041	.259	.100
Sex	.208	.048	.244	.063
Grade	-.078	.030	-.150	.026
Health education needs	.089	.035	.149	.021

R<sup>2</sup> = .210  
 Adjusted R<sup>2</sup> = .197  
 F = 16.494

## VI. Discussion

This study was conducted to describe child perceived health knowledge, health education needs, and health behaviors by sex as a representative general characteristic and examined their associations for students' better health behavior changes because knowledge and needs on health topics are sensitive to sexual differences and the differences provide practical advice on health

education program development for the child and adolescence.

Regarding to the distributions of perceived health knowledge, education needs, and health behaviors by sex, girls, generally, had better health behavior scores than boys except 'abstaining sweets' in this study. This result was similar to the findings of most previous studies about youth health behaviors(Lee et al., 1997; Shin and Jung, 2000; Kim, 2001). Shin and Jung(2000) reported the overall

health behavior scores were greater among girls than boys in their study with 467 elementary school students of the 4th to 6th grades. Kim(2001) also found the sexual difference of health behavior scores in the pre-test of his health education intervention study. Lee and the colleagues(1997) conducted the self-administered survey on health knowledge, interests, and health behaviors to the 5,166 students of 5 elementary schools in Seoul. They found the sexual differences by health behavior topic areas. Girls' health behavior scores were better than boys' in individual hygiene and environmental management, but boys had better scores than girls in healthy eating and exercise behaviors. The healthy eating behavior was also better in girls than boys in this study, too. Thus, it is a consistent fact that sex is a significant factor predicting child health knowledge and health behavior status from both previous child health-related research and this study.

This study found that there were sexual differences in the relationship between health behaviors, health education needs, and perceived health knowledge. Health behaviors were more closely related to the perceived health knowledge than health education needs among boys; while there was little difference of health behavior relationships with perceived health knowledge and health education needs among

girls. This finding indicates that there may be sexual difference in health behavior change methods. Perceived health knowledge was the primary factor to improve health behaviors than health education needs; which means that knowledge-focused health education enriching students' self-confidence is more important than educational needs or interests among boys; however, knowledge and interests had similar weight for health behavior improvement among girls. In addition to, this finding indicates that health education goals and methods should be differentiated by sex. In other words, health education program organizers need more focus on building students' health knowledge and self-efficacy on knowledge for boys, and need to give equal weight on knowledge building and students' interests for girls in health education program development. However, it has been few studies examining which variables were more closely associated with health behaviors between health education needs and health knowledge with sexual comparison. The finding of this study can be significant information on health teachers and health education professionals at this point of little previous research trials on health education needs, knowledge, and health behaviors by sex. In most previous related studies, health education needs generally, seemed stronger factor than health knowledge predicting health behaviors when

without any sexual comparison(Shin and Jung, 2000; Kim, 2001).

This study found that perceived health knowledge was the strongest factor predicting desirable health behaviors among children shown in Table 7. The other significant factors were sex, grade, and health education needs in order. This finding indicated that building self-confidence on health knowledge is better strategy to achieve better health behaviors than careful consideration on participants' health education needs, particularly, for boys. Lee(2002) insisted that educators' opinions on health knowledge topics and the related education goals are important part in health education program development rather than students' interests.

Lee(2002) compared health education topic areas between Hong Kong and the United States, and he suggested the following six categories of risk behaviors which should be taught to children regardless of the students' interests: poor eating behavior, physical inactivity, tobacco use, alcohol and substance use, injury, sexual behavior and pregnancy. That is, knowledge building is the primary and basic strategy for better health behaviors than any other variables. Kim(2001) discussed the causal relationships between health education - health concerns - health knowledge; that is, health education at school increases students' health concerns first and the increased health concerns

stimulate students to learn more about health. Kim(2001) conducted an health education intervention study in three elementary schools with nine control schools for 10 months and an hour health education every week for 10 months provided a serial hypothesis between health education experience, high health concerns, enlarged health knowledge, finally, and better health behaviors than before intervention.

It is necessary to discuss two limitations of this study. The first is about survey samples in terms of the survey finding representativeness. The survey samples of this study had weak evidence to represent the general Korean elementary school students. This study examined the research purposes in the survey for the 4-6th grade students in two elementary schools conveniently selected in Seoul areas. Thus, the survey findings should be carefully indicated limited for some high grade children in metropolitan areas. In relation to the survey samples, this study was conducted for only the 4 to 6th grade students not including the 1-3rd grade students because the low grade students had literacy problems for the self-administered survey. Thus, evaluations for the low grade students in the elementary level or kindergarten children needs to be conducted in the form of observation or face-to-face interview survey. The other limitations of this study is about the other variables significantly related to

health knowledge and health behaviors although they were not considered in this study such as health locus of control, parents' or teachers' health concerns, or self-efficacy (Shin and Jung, 1998; Park and Park, 2000; Kim, 2001).

## V. Conclusion

This study was conducted to describe child perceived health knowledge, health education needs, and health behaviors by sex as a representative general characteristic and examined their associations for students' better health behavior changes because knowledge and needs on health topics are sensitive to sexual difference and the differences provide practical advice on health education program development for the child and adolescence.

High scores of health education needs was found in 'strengths of exercise', 'environment pollution and control' and 'disease prevention'. Boys in order. However, there were significant sexual differences in the relationships between perceived health knowledge, health education needs, and health behaviors. Both in boys and girls, the correlation between perceived health knowledge and health behaviors was greater than the correlation between health education needs and health behaviors. In particular,

correlation between perceived health knowledge and health behaviors ( $r = .36$ ) was two fold greater than correlation between health education needs and health behaviors ( $r = .18$ ) among boys; where as the two correlations were similar to each other among girls.

The significant factors were perceived health knowledge, sex, grade, and health education needs in order, and the four factors described health behaviors in 21.0%. Perceived health knowledge was the strongest factors related to health behaviors with 10% explanation. The higher perceived health knowledge, girls, lower grade and more health education needs was associated with the better scores of health behaviors.

In conclusion, there was significant sexual difference of the relationship between health knowledge, health education needs, and health behaviors among children. Perceived health knowledge was more important factor to improve health behaviors among boys while perceived health knowledge and health education needs had equal importance on health behaviors among girls. Therefore, knowledge building should be an essential part of health education class goals for building better health behaviors although lots of the related theories arise other issues rather than knowledge and new education methods continuously emerge.

Based on the findings and discussions of

this study, the following suggestions can be carefully considered in future research and educational administration meeting. First, health education class should be regularly organized regardless of the interval and length. Systematically consistent educational approach is the most important strategy to obtain and to keep desirable health behaviors from early ages although the health education class is not frequent such as an hour per month or two months. Second, the health education program should be nested in every university, at least as liberal class, to help the future health education teachers in schools. Another method to help the current teachers in elementary schools is to activate the continuing education programs of health education as teachers' training. There are few health-related classes opened in Korean colleges and thus, teachers should give advice and teach students without any educational experience of health. This is the most difficult point of health education in Korean school. The final suggestion is about health education goal setting focused on self-confidence of health knowledge. This study found that perceived health knowledge, in other words, high self-confidence on health knowledge was significantly related to desirable health behaviors. Therefore, as a basic of bases, knowledge building considering student's favorite methods or media needs to be generalized in health education program

development.

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## ABSTRACT

**Objectives:** This study was conducted to describe child perceived health knowledge, health education needs, and health behaviors by sex as a representative general characteristic and examined their associations for students' better health behavior changes.

**Methods:** The survey participants were 410 fourth to sixth grade students in two elementary schools in Seoul, Korea. A total of 12 classes in two elementary schools were randomly selected and all students of the selected classes participated in the self-administered survey. The questionnaire contained the items of perceived health knowledge, health education needs (health topics which they want to know more), health behavior, and general characteristics.

**Results:** Perceived health knowledge, health education needs, and health behaviors were, generally, better among girls than boys. Sexual differences were not large in perceived health knowledge, health education needs, health behaviors. Perceived health knowledge had significant positive correlation with health behaviors both in boys and girls ( $p < .01$ ). The correlation between perceived health knowledge and health behaviors ( $r = .36$ ) was two fold greater than correlation between health education needs and health behaviors ( $r = .18$ ) among boys; where as the two correlations were similar to each other among girls. The significant factors were perceived health knowledge, sex, grade, and health education needs in order, and the four factors described health behaviors in 21.0%. The higher perceived health knowledge, girls, lower grade, and more health education needs was associated with the better health behaviors.

**Conclusions:** There was significant sexual difference of the relationship between health knowledge, health education needs, and health behaviors among children. Perceived health knowledge was more important factor to improve health behaviors among boys while perceived health knowledge and health education needs had equal importance on health behaviors among girls. Therefore, knowledge building should be an essential part of health education class goals for building better health behaviors.

**Key Words:** Perceived Health Knowledge, Health Education Needs, Health Behavior, Child, Elementary School, Sex