Iran J Public Health, Vol. 50, No.10, Oct 2021, pp.2002-2009

Original Article

Health Behavior, Emotional Intelligence, and Stress of Elementary School Students in Korea

Sang Yong Park [1], ***Hye Sun Shin*** [2], ****Sun Jung Park*** [3]

1. *Department of Clinical Laboratory Science, Donga University of Health, Yeongam-gun, Republic of Korea*
2. *Department of Nursing, Songho University, 45, Nasnro 210, Hengseong-eup, Hengseong-Gun, Gangwon-do, Republic of Korea*
3. *Department of Nursing, Sahmyook Health University, Seoul-si, Republic of Korea*

***Corresponding Author:** Email: bun8973@naver.com

(Received 05 Jan 2021; accepted 12 Mar 2021)

Abstract

Background: We aimed to provide the baseline data of nursing intervention for promoting the health promotion and promotion of growth and development for elementary students.

Methods: By subjecting the 887 elementary students from 20 elementary schools located in the northern area of Gyeonggi-do Province, South Korea, data were gathered from April 10-May 30, 2017. The SPSS was used for analysis of data.

Results: Some elements of emotional intelligence were found to differ depending on the gender and family type of lower-grade children, and depending on gender, sleep time, family type, and physical activity experience of higher-grade children. Some factors of stress were found to have differences according to sleeping time of the lower grades, and according to gender, sleeping time, family type, and whether they have experience in physical activity of higher-graders.

Conclusion: It is possible to improve emotional intelligence and solve the stress of elementary students. This study will be the baseline data on developing the Health Promotion Education Arbitration Program for elementary students.

Keywords: Elementary school students; Health behavior; Emotional intelligence; Stress

Introduction

School-age children in Korea have grown physically but have lost their physical strength, and are affected by mental health and threatened by stress due to a climate that emphasizes schoolwork. Health problems of elementary school children have been reported as lack of sleep due to academic study and extracurricular activities, unbalanced nutritional intake due to irregular diet, constant stress from the surroundings, confusion of values due to defenseless mass media, and game addiction (1-3).

In addition, Korea's educational reality is that most education focuses only on intellectual growth focused on knowledge injection due to fierce competition for university entrance exams, and students are in a situation where they are unable to actively practice the health promotion lifestyle related to maintaining and improving health. Therefore, health problems of elementary school

children are on the rise. In addition, as diseases that were known to only appear in adults have been known to appear in children through various mass media, the interest in children has increased (4). As in elementary school students, growth and development progresses rapidly and health habits are formed, promoting health behavior through education at this time is very important to grow into healthy adults. Elementary school students should be prepared for a healthy life in school and life by checking their health status in advance, detecting diseases early, and managing them appropriately. Emotional awareness is the ability to accurately detect one's inner feelings in one's physical condition, emotions, and thoughts, as well as recognize and evaluate one's own complex emotions (5).

In addition, as emotional intelligence is identified as a concept that indicates the ability to recognize and properly adjust emotions within oneself to meet their internal and contextual needs in the same conflict situation, parents should raise their interest in health toward their children so that elementary school children can perform health promotion activities on their own, and that children should understand and mediate their own physical and psychological health (6). Furthermore, to promote physical health, children should be equipped with the optimal ability to perform their roles and tasks, and support physical activities to maintain physical health, thereby helping to improve physical strength so that there are no restrictions on daily life or school life.

In order to detect and manage health problems of elementary school children early, it is first of all to prepare an assessment tool that can comprehensively and efficiently evaluate the health status, and based on this, grasp the physical and psychological health status, the health interests of parents, and stress. Currently, basic research to comprehensively assess and manage the health status of elementary school children in Korea is lacking, so this study aimed to promote the health and growth and development of elementary school children by grasping the overall health status, emotional intelligence, and stress of elementary school children. Furthermore, it was intended to provide basic data for nursing intervention to improve the quality of life of children and families.

The purpose of this study was to identify health behaviors of elementary school students, check the difference in emotional intelligence according to gender, sleeping time, family type, and physical activity experience of lower and senior students, check the difference in stress according to gender, sleeping time, family type, and physical activity experience of lower and senior students.

Methods

Research design

This study was a descriptive survey to understand the health behavior, emotional intelligence, stress, and parents' health interests of elementary school children.

The subject of this study was used with G-power 3.0 by Faul, Erdfelder, Lang, & Buchner (7) and after it was calculated as effect size 0.25, $\alpha = 0.05$, $\beta = 0.1$, test power 0.9. The number of necessary subjects was 232 men. This study was not a confirmative study but an exploratory study so when β error got bigger, the sample size became smaller. There was a limitation on normalizing the study result, so it was set the β error in less, calculated the number of samples then consider with a failure rate of 20% to increase the power and make the sample size bigger. The subjects of this study were 887 elementary students, so the subject of study was appropriate to trust the study result.

Survey tool of child's health behavior

The research tool of a child's health behavior is 18 questions, and it is composed of physical activity habits and weight control, nutrition and eating habits, sleeping habits, etc. The research tool is based on the survey of customized visiting health care program of Ministry of Health and Welfare (8) and it was composed through the document research and counsel of experts. For verifying the validity of detail regarding the prepared question that was selected as a research tool of child's health behavior, the verification on the validity of detail was inquired to experts, composed of 3 professors

in pediatric nursing and 3 elementary teachers. Verifying the validity of detail is evaluated with 4 points Likert criterion to check if each question is valid about the health behavior of a child. Moreover, Contents Validity Index (CVI) was checked too. The CVI of each question was 0.80 and more so it was selected as question that was evaluated as valid. The creditability Cronbach's α of this study was 0.84.

Emotional intelligence

The emotional intelligence test tool for the lower grades of elementary school was developed by Moon (9) and the emotional intelligence diagnosis tool produced by the Daegyo Education and Science Institute was modified later (10). The total score is 44 points, and the higher the score, the higher the emotional intelligence. The credibility Cronbach's α of this study was 0.91.

The emotional intelligence test tool for the higher grades of elementary school was based on the latest model of emotional intelligence by Mayer and Salovey (5) and used the youth emotional intelligence test produced by Moon (9). Each question is a 5-point Likert scale, which means that the higher the score, the higher the emotional intelligence. The credibility Cronbach's α of this study was 0.94.

Level of stress

In order to understand the level of stress in children, a questionnaire modified and supplemented earlier (11, 12) was used by modifying and supplementing the stress scale produced by Cheon (13) and reconstructed by Lee (14) for elementary school students. Each question is a 5-point Likert scale, which means that the higher the score, the higher the level of stress. The credibility Cronbach's α of this study was .96.

Data collection method

The data collection was conducted by 20 elementary schools in northern Gyeonggi Province from April 10 to May 30, 2017, after deliberation by Shinhan University's agency IRB (Approval Number: SHIRB-201706-HR-045-01) and then research assistants received answered questionnaires children after explaining about the survey.

Data analysis method

The collected data were analyzed by frequency and percentage, mean and standard deviation of the subjects' general characteristics, physical activity habits and weight control, nutrition and eating habits, and sleeping habits using SPSS 23.0 (Chicago, IL, USA). Analysis of frequency, cross tabulation analysis, and descriptive analysis were conducted to determine the actual state of general characteristics and physical characteristics, and the mean and standard deviation.

Results

General characteristics

The demographical characteristic of the child appeared as 464 male students (52.3%) and female students (47.7%). The type of family appeared as 469 both parent homes (52.9%), 286 single-parent families (32.2%), 45 grandparent families (5.1%), 45 others (Besides of nursing home) (5.1%), and 42 children in relative's home (4.7%).

Nutrition, eating habits, and sleeping behavior

Table 1 shows nutrition, eating habits, and sleeping habits.

Physical activity of the subject

The weekly physical activity (exercise) count of children showed highest with 260 children of '5 times in a week' (29.3%) and it followed with 161 children of 'once in a week'(18.2%), 132 children of 'thrice in a week' (14.9%), 121 children of 'twice in a week' (13.6%). In addition, there was a case that response as 'There is no physical activity from the very start' with 137 children (15.4%). The time of commuting to school or walking for exercise showed highest with 323 children of '30mins~1hour' (36.4%), it followed with 206 children of '1hour~2hour' (23.2%).

Table 1: Nutrition, eating habits, and sleeping behavior (N=887)

Variable		*Factor*		*Frequency*		*%*			
Number of breakfasts of children in the past week		Never		122		13.5			
		1-2 times a week		159		17.9			
		3-5 times a week		158		17.6			
		6-7 times a week		448		50.5			
Factor		Never		1-2 times a week		3-5 times a week		6-7 times a week	
Frequently consumed food in the past week	Fruits	48	5.4	326	37.0	332	37.4	179	20.2
	Carbonated drnks	175	19.7	523	59.0	160	18.0	29	3.3
	Fast food(pizza, hamburger, chicken, etc.)	189	21.3	610	68.8	70	7.9	18	2.0
	Ramen/Cup Ramen	146	16.5	542	61.1	163	18.4	36	4.1
	Snacks	135	15.2	487	54.9	217	24.5	48	5.4
	Chocolate, Candy, Ice cream, etc.	145	16.3	458	51.6	227	25.6	57	6.4
	Vegetables	45	5.1	237	26.7	325	36.6	280	31.6
	Milk	87	9.8	240	27.1	265	29.9	295	33.3
	Meat/Fish	47	5.3	348	39.2	355	40.0	137	15.4
	Processed Foods (Pork cutlet, Ham, Frozen dumplings etc.)	180	20.3	490	55.2	174	19.6	43	4.8
	Coffee	721	81.3	133	15.0	23	2.6	10	1.1
Average Sleeping Time in past week		< 5 hours		48		5.4			
		5-6 hours		72		8.1			
		6-7 hours		120		13.5			
		7-8 hours		216		24.4			
		8-9 hours		251		28.3			
		> 9 hours		180		20.3			
Adequacy of sleeping time		Not enough at all		59		6.7			
		Not enough		243		27.4			
		Enough		363		40.9			
		Very enough		222		25.0			
Latelyfor a week average bedtime		Before 9p.m.		74		8.3			
		9p.m.-10p.m.		234		26.4			
		10p.m.-11p.m.		204		23.0			
		11p.m.-12a.m.		212		23.9			
		12a.m.-1a.m.		114		12.9			
		After 1a.m.		49		5.5			
Lately for a week average wake up time		Before 4a.m.		9		1.0			
		4a.m.-5a.m.		21		2.4			
		5a.m.-6a.m.		26		2.9			
		6a.m.-7a.m.		244		27.5			
		7a.m.-8a.m.		488		55.0			
		After 8a.m.		99		11.2			

The exercise rate during physical education class in school showed 344 children of '1 hour below in a week' (38.8%). With regards to the checking, if the physical activity besides physical education class in school was done or not, it showed the response with 610 children of 'yes' (68.8%) and 277 children of 'no' (31.2%). The response about the physical activity event that was ongoing participation currently shows highest on 382 children of 'walking' (43.1%), it follows with 342 children of 'running' (38.6%). When checking the physical activity place besides of physical education class in school, it was confirmed to have the highest number with 234 children of 'surrounding in house' (26.4%). When analyzing the period of physical activity that children were attending currently, it showed the highest with 209 children of 'more than 2 years' (23.6%) and it followed with 138 children of '3 months below' (15.6%). The attending time of 1 time physical activity showed the highest with 297 children of '1~2 hours below' (33.5%) and it followed with 216 children of '30 minutes~1 hour below' (23.4%).

Emotional intelligence

When analyzing the difference of emotional intelligence in accordance with sex of lower school student, it showed significantly from empathy (P =.004), and emotional regulation (P =.001) among the 4 areas of emotional intelligence but, when checking on the average per every area of male/female emotional intelligence and standard deviation, the female student group showed higher than male student group from emotional awareness (9.34±1.97), empathy (10.25±2.67), and emotional regulation(14.11±3.10) area. From the emotional intelligence according to family type of low school student, it statistically showed significant difference from emotional awareness (P =.000), and emotional regulation (P =.015) area. But it was confirmed that there was no significant difference in statistic from emotion expression (P =.131), and empathy (P =.265) area. When checking the difference of emotional intelligence in accordance with high school children, the female student group statistically showed significant difference from the area on utilization ability of emotional intelligence (P =.003) among each subordinate scope of emotional awareness, empathy ability, thought promotion ability of emotion, utilization ability of emotional intelligence, and emotional regulation ability. Also, it showed the score of female student group was higher with thought promotion of emotion (24.58±3.80), and emotional regulation ability (25.84±4.40) area than male student. When analyzing the emotional intelligence according to the sleeping time of higher school children, it drew significantly high result with utilization ability of emotional intelligence (P =.009), and emotional regulation ability (P =.021) area to child group who slept more than 8 hours. When analyzing the emotional intelligence according to the family type of higher school student, it statistically showed the significant result from emotional regulation ability (P =.000) area in case there was both parents. When analyzing the emotional intelligence according to the experience status of regular physical activity of higher school children, it statistically showed the significant difference with a group that had the experience to regular physical activity on empathy ability (P =.000), thought promotion ability of emotion (P =.002), and utilization ability of emotional knowledge (P =.000) area.

Stress

There was no significant difference from all areas of stress when analyzing the difference of stress according to sex of lower school children. When analyzing the stress according to the sleep time, it statistically showed the significant result from the personal factor (P =.017) and academic factor (P =.023) areas to child group who sleep less than 8 hours.

When analyzing the stress according to the parent type of overall lower school student, it showed higher stress score on child group with a single parent or parentless than children with both parents.

When analyzing the stress in accordance with experience status of regular physical activity of overall lower school student, it was not significant for

all. When analyzing the stress depending on the sex of higher school children, it statistically showed the significant difference with the social factor (P =.026) and personal factor (*P* =.041) area among each subordinary scope. When analyzing the stress handling depending on the sleeping time of the child, it showed the significant result from home factor (*P* =.014) area to a group who slept more than 8 hours. When analyzing the stress handling depending on parent formation of higher school students, it statistically showed the significant result from the academic factor (*P* =.001) to child group who have both parents. When analyzing the stress under experience status of regular physical activity, it statistically showed the significant result from social factor (*P* =.000), home factor (*P* =.002), and academic factor (*P* =.002) areas.

Discussion

Among the general characteristics, it showed children from both-parents families occupy a high proportion of 50%. This is similar to the findings of Kim (15), as single-parent families and grandparents other than foster families were highly identified. Various family types such as single-parent families are increasing due to changes in various family types, changes in values, and an increase in the divorce rate (15). Accordingly, various social support as well as family surveys should be supported so that children who grow up in various families can grow up healthy.

As a result of checking the health behaviors of children, the number of breakfasts in the past week was 13.5% of "not at all" and 50.5% of "six to seven days a week," indicating that children who eat breakfast for six to seven days a week are 50% higher. The study by Lee et al (1) showed high levels of non-breakfast, contrary to this study. It is necessary to confirm the generalized research results through repetitive studies in the future.

As a result of analyzing the differences in emotional intelligence according to the gender of children in lower grades, significant differences were found in the areas of empathy (*P*=.004) and emotional control (*P*=.001) among the four emotional intelligence areas and the score of female student group was higher than that of the male student group. In a study (16), the same results as in this study were confirmed, and the opposite results were confirmed in another study (17). People with developed emotional intelligence can accurately perceive the emotions of themselves and others and react sensitively, and as the ability to express appropriately in consideration of relationships with others is high, continuous research is needed to confirm the emotional intelligence of elementary school children (18).

In the case of children in the lower grades, there was a difference between emotional awareness and emotional intelligence according to the family type, and in both-parents families, emotional awareness and emotional intelligence are higher than that of single-parent families. In order to improve this, it is necessary to check the family type of elementary school lower grade students, to identify the problems and difficulties for students who are not in both-parents families, and to find a way to solve the problem. As a result of analyzing emotional intelligence according to the regular physical activity experience of older children, in the group with regular physical activity experience, here was a statistically significant difference in the area of empathy ability (*P*=.000), emotional thinking promotion ability (*P*=.002) and emotional knowledge utilization ability (*P*=.000). Therefore, supporting the developmental tasks of late elementary school children who improve their emotional intelligence through regular physical activities is an important task that is fundamental to fostering healthy adults in the future (19). Furthermore, it is required to operate various programs to promote physical activities to increase emotional intelligence of late elementary school children.

As a result of analyzing stress according to sleep time of children in lower grades, statistically significant results were found in the areas of personal factors (*P*=.017) and school factors (*P*=.028) in the group of children who sleep less than 8 hours. While studies conducted on the same tool-like subjects had not been identified, direct comparison was difficult, a study (20) in college students has found a significant correlation between stress

and sleep. Therefore, it is necessary to develop an intervention program to improve the sleep quality and relieve stress of children in the lower grades of elementary school. As a result of analyzing stress according to gender of older children, statistically significant differences were found in the individual factors (*P*=.041) and social factors (*P*=.026) of each sub-area. In order to develop an effective stress intervention program, it is required to specifically identify and analyze the sub-regions of stress according to gender. As a result of analyzing the stress according to the presence or absence of regular physical activity, the domestic and school-related factors (*P*=.002) were positively significant, and the social factor (*P*=.000) was negatively significant. As a method of increasing regular physical activity as a method of resolving stress in high school elementary school students is important, additional studies are needed to confirm these relationships.

This study is a prospective study that tries to develop the program to promote the maintenance of physical and mental health of elementary students through securing the additional data after analysis technique on the data. However, due to the COVID-19 from 2020, the additional study cannot proceed so this study was granted in the background of the observation data according to elapse of a certain period from starting of the study. Hence, the study result cannot come out fast due to the delay of study proceeding so compares to data gathering, it was after the delay of research result. By knowing the insufficient point of this study from this time forward, the further study will be fast study result after data gathering. It is recommended to have a follow-up study. For further study, the number of samples that subject with elementary students of the more various area will be secured and analyzed. In accordance with the needs, there must be a follow-up study that figures the related factors. Figuring out the health condition, emotional intelligence, and stress in the subject of an elementary student with change after 2017 due to COVID-19 is important.

Conclusion

In this study, it promotes health promotion, growth, and development, and also, it provides the baseline data of nursing intervention for improving the life quality of children and families through figuring out the health condition, emotional intelligence, the stress of elementary students. It is necessary to develop an innovative educational intervention program in consideration of variables that can improve emotional intelligence and solve stress in elementary school students. Furthermore, this kind of arbitration program should be operated from school or community to promote the health maintenance, health promotion, and growth and development of elementary student. Moreover, it will help on improving the life quality of child and family. It shall be utilize as strategy to enhance the health management of elementary student from home or school by learning and analyzing the major factor for proper health management of elementary student.

Ethical considerations

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

Conflict of interest

The authors declare that there is no conflict of interests.

References

1. Lee YJ, Kim MS, Hong SK (2019). A Comparative Study on the Health Behavior of Elementary School Students with Single-Parent Families and Two-Parents Families. *Journal of Korea Academia-Industrial cooperation Society*, 20 (6): 720-720.
2. Park MJ, Lee IS, Shin EK, *et al.* (2006). The timing of sexual maturation and secular trends of

menarchial age in Korean adolescents. *Clinical and Experimental Pediatrics,* 49(6): 610-616.
3. Bernard HR (2002). *Research methods in anthropology: Qualitative and quantitative approaches.* 3rd Alta Mira Press. Walnut Creek. CA.
4. Christine M (2000). *The Art of Action Research in the Classroom.* 1st ed. London, David Fulton Publishers, LTD.
5. Salovey P, Mayer JD, Caruso D (2004). *The positive psychology of emotional intelligence (2nd ed.).* USA. The Oxford Handbook of Positive Psychology.
6. Choi ES, Bang HJ (2010). The Relationship among Depression of Children, Emotional Identification and Expression Abilities and Social Ability. *The Korean Journal of Developmental Psychology*, 23(4): 91-110.
7. Faul F, Erdfelder E, Lang A-G, et al (2007). G*Power 3: a flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behav Res Methods,* 39(2):175–191.
8. Ministry of Health & Welfare (2008). Result of Oriental medical hospitals accreditation demonstration project. Ministry of Health & Welfare, Korea. http://www.koreascience.or.kr/article/JAKO201217136626088.pub
9. Moon Yl (1997). The Present and Future of Emotional Intelligence Research. *Korean Journal of Child Studies*, 1(16):16.
10. Kim HG, Kim YA, JO SH. (2009). A study on the development of child and youth policy evaluation models. *National Youth Policy Institute*, 3(8):1-192.
11. Kim KS (2005). A study on nurses' emotional intelligence, nursingperformance, organizational commitment, and turnover intension [master's the-sis]. University of Sungkyunkwan, Republic of Korea.
12. Gang MS (2005). State of School Children's Stress and School Adjustment [master's the-sis].University of Korea National University of Education, Republic of Korea.
13. Cheon MP (1993). A study on the influence factors of elementary school children [master's the-sis]. University of Korea National University of Education, Republic of Korea.
14. Lee YS (2004). The Relationship Between Stress and School Life Adjustment of Elementary School Students [master's the-sis]. University of Gongju National University of Education, Republic of Korea.
15. Kim MK (2005). A Study on Factors Influencing Psychological Well-being of Single Mothers Focusing on Family and Social Variables. *Family and Environment Research,* 43(1):129-144.
16. Sim HS, Wang JH (2001). The Relationship among Emotional Intelligence, Social Competence and Interpersonal Cognitive Problem Solving of the Elementary School Children. *The Korean Journal of Counseling and Psychotherapy*,13(1):163-175.
17. Eun HG (2009). The Emotional Intelligence and Learning Skills of Elementary School Students. *The Journal of Humanities*, 14(1):149-170.
18. Youn SE (2008). The Analysis of the Mediation Effects of Conflict Resolution Strategies in the Relationship between Emotional Intelligence and Peer Relationship [master's thesis]. University of Korea National University of Education, Republic of Korea.
19. Bang KS, Chae SM, Kim JY, et al (2012). Relationships between Body Image, Self-esteem and Family Strengths in Late School Aged Children. *The Journal of Korean Parent Child Health*, 15(1):33-38.
20. Jeong EI, Park YH (2009). The Development and Validation of the College Adjustment Scale. *The Korean Journal of Educational Methodology Studies*, 21(2):69-96.