

A Study on the Relationship between Health Equity and Subjective Health Status of Adolescents

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청소년의 건강 형평성과 주관적 건강상태와의 관계 연구

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Abstract : The subjective health status of adolescence reflects one's overall socio-emotional function and is an important factor in determining the health-related quality of life during this period. This study was to identify the correlation between subjective health status and health equity of adolescents. Data from the 16th online survey of youth health behavior (2020) was used to analyze 39,987 adolescents. Health equity was used as indicator for residential areas, economic conditions perceived by students, household abundance, family type, and parental education. Subjective health status was classified as a healthy group("very healthy", "healthy") and unhealthy group("normal", "unhealthy", and "very unhealthy") in response to the question "how do you think your health is usually?" The data were analyzed using complex sample analysis by using SPSS/Win 22.0. Significant factors related to the subjective health status of subjects were the area of residence (OR=0.86, $p=.031$), economic level (OR=1.33-2.09, $p<.001$), and family type (OR=1.24, $p=.033$). The economic level perceived by adolescents was the most important variable related to the subjective health status of adolescents, and adolescents from multicultural families often perceived their health as unhealthy compared to adolescents from general families. Therefore, there is a need for continuous interest in adolescents with low economic levels and adolescents from multicultural families and specific strategies to improve their health status.

Keywords : Adolescents, Health, Equity, Socioeconomic level, Subjective Health Status

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요약 : 청소년기의 주관적 건강상태는 개인의 전반적인 사회·정서적 기능을 반영하는 것으로 이 시기 건강관련 삶의 질을 결정하는 중요한 요인이다. 본 연구는 청소년의 주관적 건강상태와 건강형평성의 관계를 파악하고자 하였다. 제16차 청소년건강행태온라인조사(2020) 자료를 이용하여 39,987명의 청소년을 분석하였다. 건강형평성은 거주 지역, 학생들이 인식하는 경제적 여건, 가구의 풍요도, 가족형태, 부모 교육수준 등을 지표로 사용하였다. 주관적 건강상태는 “평소 자신의 건강이 어떠하다고 생각하는가?” 라는 질문에 건강군(“매우 건강하다”, “건강하다”)과 불 건강군(“보통이다”, “건강하지 않다”, “매우 건강하지 않다”)으로 분류하였다. 수집된 자료는 SPSS/Win 22.0을 이용하여 복합표본분석을 실시하였다. 대상자의 주관적 건강상태와 관련된 유의한 요인은 거주 지역($OR=0.865$, $p=.031$), 경제 수준($OR=1.338-2.095$, $p<.001$), 가족 형태($OR=1.245$, $p=.033$)로 나타났다. 청소년이 지각한 경제수준은 청소년의 주관적 건강상태와 관련된 가장 중요한 요인이었으며, 다문화가정 청소년은 일반가정 청소년에 비해 자신의 건강상태를 건강하지 못하다고 인식하는 경우가 많았다. 따라서 경제수준이 낮은 청소년과 다문화가정 청소년에 대한 지속적인 관심과 건강상태를 향상시킬 수 있는 구체적인 전략이 요구된다.

주제어 : 청소년, 건강, 형평성, 사회경제적 수준, 주관적 건강상태

1. Introduction

Health is essential for individuals to perform normal social functions and pursue happiness. The health need is an individual's legitimate right and it is important to ensure health equity to exercise it [1].

Health equity is the absence of unfair and avoidable health differences between all population groups due to demographic, socioeconomic, or geographic factors [2]. It means that everyone has an equitable opportunity to fully demonstrate their health potential [3]. Health equity has been used in the same sense as socioeconomic health inequality [4], and the highest level of health equity can be defined as having no difference in health levels between population groups [1].

The health level of the population group is determined by a combination of biological, behavioral, environmental, and socio-economic factors [1], and the socio-economic status of an individual is suggested as the most important factor causing the difference in health level [5].

An individual's health level is frequently measured using the subjective health status that he or she evaluates. Subjective health status is a measure of overall health covering biological,

psycho-social, and functional health levels, is closely related to prevalence, mortality, medical service use, and well-being, and is used as an important indicator for predicting the health status of the population [6]. Subjective health status is influenced by individual socioeconomic factors and is used as an index to measure health inequality.

Adolescence experiences various changes physically, psychologically, and socially, and as self-identity develops, awareness of health arises, and the recognition of health formed at this time affects lifelong health [7]. The subjective health status of adolescence reflects one's overall socio-emotional function and is an important factor in determining the health-related quality of life during this period [8]. However, the subjective health status of adolescents in Korea is reported to be the lowest among OECD countries [9], so it is important to come up with measures to improve the subjective health level of adolescents.

In previous studies, subjective health status was studied about to with concerning demographic characteristics [10, 11], socioeconomic characteristics [3, 12, 13], health behavior [3, 10, 14], and psychological characteristics [11, 14], and most of them

have been conducted on adults and the elderly. In addition, studies on health equity according to socioeconomic level have been actively conducted, but only a few studies on adolescents [6, 10, 15, 16, 17].

Individual health determinants vary widely, such as biological, lifestyle, and socioeconomic conditions. However, since health in adolescence depends on the status of parents in childhood [18], It is difficult to rule out the influence of parents' socioeconomic level on health equity in adolescence [17].

Therefore, the purpose of this study is to provide basic data for promoting youth health by identifying the relationship with the subjective health status of adolescents by using socioeconomic levels that have an important influence on individual health levels as a factor of health equity.

2. Research Methods

2.1. Research design

This study is a secondary analysis study that analyzes the subjective health status according to the health equity of adolescents using raw data from the online survey of youth health behavior.

2.2. Subjects of study

Data from the 16th Youth Health Behavior Online Survey [19] conducted by the Ministry of Education, the Ministry of Health and Welfare, and the Korea Centers for Disease Control and Prevention on students from the first grade of middle school to the third grade of high school were used. The total subjects of the study were 39,987 adolescents, including 38,922 adolescents from ordinary families and 1,065 adolescents from multicultural families.

2.3. Research Instruments

In this study, health equity was used as indicator for the area of residence, economic

status perceived by students, household abundance, family type, and parental education. Residential areas were classified into Metropolis, small and medium cities, and county areas, and the economic status of families perceived by students was classified as upper (upper, upper-middle), middle (middle), and lower (middle-lower, lower). The Family Affluence Scale (FAS) used six questions to measure the economic status of households: number of cars owned (no: 0 points, one: 1 point, two or more: 2 points), whether they own a room (none: 0 points, Yes: 1 point), number of family trips (none: 0 points, one time: 1 point, two times: 2 points, more than three times: 3 points), number of computers owned (none: 0 points, one: 1 point, two: 2 points, three or more: 3 points), number of toilets owned in the home (none: 0 points, one: 1 point, two: 2 points, three or more: 3 points), and air purifiers owned in the home (none: 0 points, Yes: 1 point). The scores were combined and classified into upper (10–13 points), middle (5–9 points), and lower (0–4 points). The family types were general families and multicultural families, which were classified as multicultural families if they answered "No" to the question "Were they born in Korea?" among fathers or mothers, and general families if they answered "Korea" where their parents were born.

Subjective health status was classified as a healthy group if they answered "very healthy" or "healthy" to the question "how do you think your health is usually?" and those who answered "normal", "not healthy" or "not very healthy" were classified as an unhealthy group.

2.4. Data analysis methods

Since the sampling of the 16th Youth Health Behavior Online Survey used the stratified-stage colony extraction method, this study used a complex sample analysis method considering stratified variables, colony variables, and weights. For data analysis, the SPSS/WIN 22.0 program was used for

cross-analysis of complex samples for subjective health status according to general characteristics and health equity. A complex sample binary logistic regression analysis was conducted to identify factors related to subjective health status.

3. Results and Discussion

Subjective health status according to general characteristics of subjects differed significantly in gender ($x^2=386.92$, $p<.001$), school level ($x^2=100.11$, $p<.001$), age ($x^2=146.89$, $p<.001$),

and academic performance ($x^2=334.50$, $p<.001$). In the case of females, attending high school, age 18 years old, and poor academic performance, there were many cases in which they perceived their usual health as unhealthy (Table 1).

The subjective health status according to health equity of the subjects differed significantly in economic level ($x^2=763.30$, $p<.001$), family affluence ($x^2=34.29$, $p<.001$), family type ($x^2=16.33$, $p<.001$), father's ($x^2=24.50$, $p<.001$) and mother's educational background ($x^2=34.47$, $p<.001$). In the case of lower economic levels, low household

Table 1. Subjective Health Status according to General Characteristics of the Subjects

(N=39,987)

Variables	Categories	Healthy group	Unhealthy group	x^2	<i>p</i>
		n (Weighted %)	n (Weighted %)		
Gender	Male	14,432 (74.7)	4,815 (25.3)	386.92	<.001
	Female	13,706 (65.7)	7,034 (34.3)		
School level	Middle school	16,250 (72.2)	6,268 (27.8)	100.11	<.001
	High school	11,888 (67.6)	5,581 (32.4)		
Age (years)	12	1,800 (75.5)	605 (24.5)	146.89	<.001
	13	5,815 (73.5)	2,118 (26.5)		
	14	5,186 (71.2)	2,065 (28.8)		
	15	4,712 (69.4)	2,027 (30.6)		
	16	4,293 (68.5)	1,927 (31.5)		
	17	3,884 (67.0)	1,895 (33.0)		
Academic performance	Upper	3,866 (75.6)	1,219 (24.4)	334.50	<.001
	Upper-middle	7,585 (73.2)	2,761 (26.8)		
	Middle	8,651 (70.6)	3,502 (29.4)		
	Middle-lower	5,880 (66.1)	2,976 (33.9)		
	lower	2,156 (60.7)	1,391 (39.3)		
Residence type	Living with family	27,041 (70.0)	11,392 (30.0)	3.73	.406
	Living with relatives	77 (61.8)	47 (38.2)		
	Lodging/ Self-boarding	82 (70.1)	34 (29.9)		
	Dormitory	913 (70.5)	366 (29.5)		
	Care facility	25 (67.5)	10 (32.5)		

abundance, adolescents from multicultural families, and parents' educational background below middle school graduation, there were many cases in which they perceived their usual health as unhealthy (Table 2).

Significant factors related to the subjective health status of the subject are gender (OR=1.552, $p<.001$), academic performance (middle: OR=1.078, $p=.028$, lower: OR=1.358, $p<.001$), age (OR=1.079, $p<.001$) in general characteristics, and significant factors related to the subjective health status of subjects related to health equity are the area of residence

(OR=0.865, $p=.031$), economic level (OR=1.338–2.095, $p<.001$) and family type (OR=1.245, $p=.033$). In the case of women, middle and lower than those with higher academic performance, and as the age increased, lower than those with middle and higher economic level, and adolescents from multicultural families, they were more likely to perceive their health as unhealthy. Compared to those living in small and medium-sized cities, those living in country areas were less likely to perceive themselves as unhealthy (Table 3).

Table 2. Subjective Health Status according to the Health Equity of the Subjects

(N=39,987)

Variables	Categories	Healthy group	Unhealthy group	χ^2	p
		n (Weighted %)	n (Weighted %)		
Residential area	County area	1,714 (71.8)	683 (28.2)	3.03	.358
	Metropolis	14,101 (70.0)	5,857 (30.0)		
	Small & Medium Cities	12,323 (69.8)	5,309 (30.2)		
Economic level	Upper	3,728 (80.9)	843 (19.1)	763.30	<.001
	Upper-middle	8,701 (74.1)	2,926 (25.9)		
	Middle	13,036 (67.7)	6,317 (32.3)		
	Middle-lower	2,301 (58.0)	1,624 (42.0)		
	Lower	372 (52.7)	319 (47.3)		
Family affluence	Upper (10–13 points)	3,301 (73.0)	1,201 (27.0)	34.29	<.001
	Middle (5–9 points)	22,667 (69.9)	9,605 (30.1)		
	Lower (0–4 points)	2,170 (66.9)	1,043 (33.1)		
Family type	General family	27,445 (70.2)	11,477 (29.8)	16.33	<.001
	Multicultural family	693 (63.8)	372 (36.2)		
Father's education [†]	Middle school or less	388 (62.1)	209 (37.9)	24.50	<.001
	High school	6,303 (69.3)	2,727 (30.7)		
	College graduate or above	15,866 (71.0)	6,390 (29.0)		
Mother's education [†]	Middle school or less	270 (59.8)	171 (40.2)	34.47	<.001
	High school	7,326 (68.8)	3,264 (31.2)		
	College graduate or above	15,467 (71.0)	6,191 (29.0)		

[†]Excluding non-response

Table 3. Factors associated with the Subjective Health Status of the Subjects

(N=39,987)

Variables	Categories	AOR	<i>p</i>	95% CI	
				Min	Max
Gender	Female	1.553	<.001	1.468	1.643
	Male	1			
School level	High school	0.916	.100	0.825	1.017
	Middle school	1			
Academic performance [†]	Lower	1.358	<.001	1.271	1.451
	Middle	1.078	.028	1.008	1.152
	Upper	1			
Residence type	Living with family	1.011	.876	0.882	1.158
	Not living with family	1			
Age		1.079	<.001	1.049	1.111
Residential area	County area	0.865	.031	0.758	0.986
	Metropolis	0.993	.831	0.937	1.054
	Small & Medium Cities	1			
Economic level [†]	Lower	2.095	<.001	1.928	2.278
	Middle	1.338	<.001	1.261	1.419
	Upper	1			
Family affluence	Lower	0.908	.135	0.799	1.031
	Middle	0.975	.517	0.904	1.052
	Upper	1			
Family type	General family	1.245	.033	1.018	1.523
	Multicultural family	1			
Father's education	College graduate or above	0.922	.435	0.753	1.130
	High school	0.857	.135	0.699	1.050
	Middle school or less	1			
Mother's education	College graduate or above	0.948	.681	0.735	1.222
	High school	0.9894	.379	0.696	1.148
	Middle school or less	1			

AOR=Adjusted Odds Ratio; CI=Confidence Interval

†; upper(upper, upper-middle), middle(middle), lower(middle-lower, lower)

Dependent variable; Subjective Health Status

Reference category; Healthy group

In terms of gender, 34.1% of female students and 25.3% of male students were in the unhealthy group, and female students perceived their health level as 1.55 times lower than male students. This is similar to the results of Choi [10] study, which used data from the 7th adolescent health behavior online survey, in which 40.7% of girls and 28.4% of boys reported subjective health conditions as unhealthy and girls had lower health levels. Previous studies [10, 20, 21, 22, 23] have also shown that girls evaluated their subjective health status lower than boys, and gender is reported as an important factor in assessing the health status of adolescents. This study found that household affluence, which objectively measures socioeconomic level, and parental educational background, were not related to the subjective health level of adolescents. This was consistent with previous studies reporting that family affluence [10] and parental education [10, 20] were not related to the subjective health status of adolescents. However, in a study by Choi et al. [15], it was found that the higher the family abundance or the higher the level of parental education, the higher the subjective health status of adolescents. It was reported that parental education is related to access to health information and medical services, so it acts as an important factor in the health status of adolescents. It pointed out that indicators such as parental occupation and educational background, which are used to measure the socioeconomic level of adolescents, may be inaccurate because adolescents often do not know or respond to their parents' educational background when their parents' educational level is low [27]. In addition, household abundance was used to more objectively measure the socioeconomic position of adolescents, but the validity of household abundance has not been verified in Korea yet [16]. It suggests the necessity of further research on whether the survey content of household abundance reflects the

socio-economic position of adolescents.

Adolescents perceived their health level to be lower as their age increased. This is consistent with the report of Kwon et al. [28] that the higher the grade of both male and female students, the lower the subjective health awareness. Adolescence is an active period of not only personal change but also environmental change [20], so it is seen as a result of facing various stressful environments such as future career choices or academic achievement and competition due to entrance examinations. The health status of adolescents has a great influence on the health in their lifetime. Unlike childhood, adolescents have a responsibility and role in their health care as age increases [20, 29]. Therefore, to increase the health level of adolescents, educational strategies suitable for the age are required to acquire correct health information and form an attitude toward health.

As for the residential area, adolescents living in the country area were perceived to be healthier than those living in small and medium cities. This is different from the results of this study reporting that there is no significant difference in the subjective health status of adolescents according to the residential area in the previous study [6, 15, 20] for adolescents, or that the health status of adolescents living in rural areas is more vulnerable than that of adolescents living in urban areas. In addition, in the study by Lee [31], which examined the aspect of health inequality among Korean adults based on social class and regional differences, the subjective health status of adults was the lowest among adults living in rural areas compared to large cities. It is said that geographical location interacts with medical services and social structural conditions related to individual health, resulting in differences in individual health levels. Therefore, it seems necessary to consider the health care services of the residential area about to with concerning the subjective health status of

adolescents.

As for family type, adolescents from multicultural families perceived their health status to be unhealthy compared to those from general families. This is consistent with the result of Chae [32] that adolescents from multicultural families are relatively more likely to consider their subjective health status unhealthy because they do more harmful behaviors such as smoking, drinking, and drug addiction than teenagers from general families. Currently, the total number of students in elementary, middle and high schools in Korea is decreasing, while the number of multicultural students is continuously increasing [33]. Considering that the income level of multicultural families is generally low [32], it is important to raise the health level of multicultural youth in improving the health level and population quality of all the country in the long term. It is necessary to establish a health support policy that reflects the characteristics of multicultural youth.

This study did not include various factors related to the subjective health status of adolescents and used a single item to measure the subjective health status of adolescents, so there is a limit to interpreting the results of the study. Therefore, it is necessary to confirm the subjective health status of adolescents in relation to their health behavior, psychological, and environmental characteristics.

4. Conclusion

This study attempted to identify factors related to the subjective health status of adolescents using the socioeconomic level as a health equity factor using the raw data of the 16th Youth Health Behavior Online Survey in 2020.

Subjective health status according to health equity among adolescents differed significantly in economic level, household affluence, family type, and parental educational background.

Significant factors related to the subjective health status of adolescents were gender, academic performance, age, residential area, economic level, and family type. In particular, the economic level perceived by adolescents was the most important variable related to the subjective health status of adolescents, and the subjective health level of adolescents from multicultural families was lower than that of adolescents from general families. Therefore, there is a need for continued attention and support for youth with low economic levels and youth from multicultural families to improve their subjective health level. It is necessary to consider the variables identified in developing an intervention strategy to improve the subjective health status of adolescents. In future studies, it is necessary to grasp the subjective health status of adolescents about to with concerning their health behavior, psychological characteristics, and environmental characteristics.

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References

1. I. S. Cho, "Health equity", *Journal of the Korean Medical Association*, Vol.58, No.12, pp. 1104-1107, (2015).
2. World Health Organization, About the health equity monitor [Internet], Geneva: World Health Organization, [cited 2020 Jun 20], Available from: <https://www.who.int/data/inequality-monitor/about> (accessed Nov. 3, 2021)
3. S. J. Ko, "Factors of health inequalities by residential area differences", *Korean Local Government Review*, Vol.12, No.3, pp. 169-195, (2010).
4. Y. H. Khang, "Lifecourse approaches to

- socioeconomic health inequalities”, *Journal of Preventive Medicine and Public Health*, Vol.28, No.3, pp. 267–275, (2005).
5. J. B. Dowd, A. Zajacova, “Does the predictive power of self-rated health for subsequent mortality risk vary by socioeconomic status in the US?”, *International Journal of Epidemiology*, Vol.36, No.6, pp. 1214–1221, (2007).
 6. J. S. Ahn, H. J. Kim, “A study on the determinants of children and adolescents’ health inequality”, *Studies on Korea Youth*, Vol.20, No.2, pp. 205–231, (2013).
 7. R. Telama, X. Yang, J. Viikari, I. Valimaki, O. Wanne, O. Raitakari, “Physical activity from childhood to adulthood: a 21-year tracking study”, *American Journal of Preventive Medicine*, Vol.28, No.3, pp. 267–273, (2005).
 8. K. J. Zullig, R. F. Valois, E. S. Huebner, J. W. Drane, “Adolescent health related quality of life and perceived satisfaction with life”, *Quality of Life Research*, Vol.14, No.5, pp. 1573–1584, (2005).
 9. Y. S. Yeom, K. M. Kim, M. R. Lee, J. A. Lee, Report on the results of the 2014 international comparative study on the happiness index of children and adolescents in Korea [Internet], Seoul: Bang Jeonghwan Foundation [cited 2020 Jun 20], Available From : https://kossda.snu.ac.kr/bitstream/20.500.12236/15545/4/kor_report_20140127.pdf (accessed July, 1, 2021)
 10. K. W. Choi, “Factors related to Self-Rated Health in Adolescents: Findings form the Korea Youth Panel Survey”, *Korean Journal of Health Education & Promotion*, Vol.31, No.3, pp. 39–50, (2014).
 11. A. Demirchyan, V. Petrosyan, M. E. Thompson, “Gender differences in predictors of self-rated health in Armenia: a population-based study of an economy in transition”, *International Journal for equity in health*, Vol.11, No.67, pp. 1–10, (2012).
 12. M. K. Kim, W. J. Chung, S. J. Lim, S. J. Yoon, J. K. Lee, E. K. Kim, L. J. Ko, “Socioeconomic Inequity in Self-Rated Health Status and Contribution of Health Behavioral Factors in Korea”, *Journal of Preventive Medicine & Public Health*, Vol.43, No.1, pp. 50–56, (2010).
 13. M. H. Jung, S. S. Kim, Y. S. Kim, E. S. Ahn, “Relationship of Socioeconomic Status to Self-Rated Oral Health”, *Journal of Dental Hygiene Science*, Vol.14, No.2, pp. 207–213, (2014).
 14. I. Y. Yoo, J. A. Lee, “Subjective Health Status and Happiness of Adolescents in Multi-cultural Family Environments”, *Journal of the Korean Society of Living Environment System*, Vol.20, No.5, pp. 699–707, (2013).
 15. Y. H. Choi, J. H. Kim, “Influencing Factors to Health Status according to Health Equality of Adolescent”, *Journal of The Korean Society of Living Environmental System*, Vol.22, No.1, pp. 66–74, (2015).
 16. I. H. Oh, G. E. Lee, C. M. Oh, K. S. Choi, B. K. Choe, J. M. Choi, “Association between the physical activity of korean adolescents and socioeconomic status”, *Journal of Preventive Medicine and Public Health*, Vol.42, No.5, pp. 305–314, (2009).
 17. S. M. Lim, C. H. Kim, H. J. Cho, H. S. Park, “Relationship between overweight and socioeconomic factors in korean adolescents: Using data from the 2007 korean youth’s risk behavior web based study”, *Korean Journal of Family Medical*, Vol.31, pp. 703–710, (2010).
 18. T. H. Yoon, J. Y. Kim, S. H. Yu, J. M. Kim, Y. H. Lee, Y. S. Hong, S. Y. Lee, “The relationship between parental socioeconomic position and childhood mortality”, *Health & Social Science*, Vol.20, pp. 29–46, (2007).
 19. Ministry of Education, Ministry of Health and Welfare, Korea Centers for Disease

- Control and Prevention, The 16th Korea youth risk behavior web-based survey [Internet]. Cheongju: Korea Centers for Disease Control and Prevention [cited 2021 May 21], Available From: <http://www.kdca.go.kr/yhs/> (accessed Oct., 11, 2020)
20. S. J. Park, "The longitudinal effects of youth social capital on self-rated health", *Studies on Korean Youth*, Vol.29, No.2, pp. 241-269, (2018).
 21. W. K. Kim, "Predictors of Health Behaviors Among Male and Female Youth in Korea", *Korean Journal of Youth Studied*, Vol.22, No.1, pp. 131-154, (2015).
 22. R. M. Page, J. Suwanteerangkul, "Self rated health, psychosocial functioning, and health-rated behavior among Thai adolescents", *Pediatrics International*. Vol. 51, No. 1, pp. 120-125, (2009).
 23. A. Vilhjalmsdottir, R. B. Gardarsdottir, J. G. Bernburg, I. D. Sigfusdottir, "Neighborhood income inequality, social capital and emotional distress among adolescents, A population-based study", *Journal of Adolescence*, Vol.51, No.1, pp. 92-102, (2016).
 24. B. F. Piko, K. M. Fitzpatrick, "Socioeconomic status, psychosocial health and health behaviours among Hungarian adolescents", *European Journal of Public Health*, Vol.17, No.4, pp. 353-360, (2007).
 25. W. F. Boyce, D. Davies, O. Gallupe, D. Shelley, "Adolescent risk taking, neighborhood social capital, and health", *Journal of Adolescent Health*. Vol.43, No.3, pp. 246-252, (2008).
 26. N. E. Adler, E. S. Epel, G. Castellazzo, J. R. Ickovics, "Relationship of subjective and objective social status with psychological and physiological functioning: preliminary data in healthy white women", *Health Psychology*, Vol.19, No.6, pp. 586-592, (2000).
 27. N. Lien, C. Friestad, K. I. Klepp, "Adolescents' proxy reports of parents' socioeconomic status: How valid are they?", *Journal of Epidemiology & Community Health*, Vol.55, No.10, pp. 731-737, (2001).
 28. H. J. Kwon, K. O. Cho, J. W. Oh, O. Lee, Y. S. Kim, "Association between levels of physical activity and self-rated health in Korean adolescents: The 2009 Korea youth risk behavior web-based survey", *The Korean Journal of Physical Education*, Vol.51, No.5, pp. 253-261, (2012).
 29. B. J. Srof, B. Velsor-Friedrich, "Health promotion in adolescents, a review of Pender's Health Promotion Model", *Nursing Science Quarterly*, Vol.19, No.4, pp. 366-373, (2006).
 30. M. H. Park, H. J. Lee, "A critical review of health behavior studies of adolescents conducted in Korea", *The Journal of Korean Community Nursing*, Vol.13, No.1, pp. 98-114, (2002).
 31. M. S. Lee, "Health inequality among Korean adults: Focusing on differences between social class and region", *Korean Journal of Sociology*, Vol.39, No.6, pp. 183-209, (2005).
 32. M. O. Chae, "Subjective health status, mental health and internet addiction tendency of adolescents in multi-cultural families compared to general families", *Journal of Digital Convergence*, Vol.16, No.12, pp. 383-393, (2018).
 33. Statistics Korea, 2021 Statistics on the Youth [Internet], Daejeon: Statistics Korea [cited 2021 June 30], Available from: <http://kostat.go.kr/portal/eng/pressReleases/13/3/index.board?bmode=read&bSeq=&aSeq=390170&pageNo=1&rowNum=10&navCount=10&currPg=&searchInfo=&sTarget=title&sTxt=> (accessed May 25, 2021)