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# An Investigation on Self-Rated Health of Adolescent Students and Influencing Factors From Sichuan, China

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To investigate adolescent students' self-rated health status and to identify the influencing factors that affect students' health status. A stratified cluster sampling method and the Self-assessed General Health Questionnaires were used to enroll 503 adolescent students from Sichuan Province, Southwest part of China. Most adolescent students perceived their self-rated health as "Fair" (29.4%), "Good" (52.1%), or "Very Good" (16.3%). Regarding the sleep quality, most of them rated them as "Fair" (24.9%), "Good" (43.1%), or "Very Good" (19.7%), but 59.7% students reported to sleep less than 8 hours a day, even a few reported to sleep less than 6 hours (4.4%) or more than 9 hours (9.7%). A considerable number of students (41.1%) reported that they "Never" or just "Occasionally" participated in appropriate sports or exercises. As to the dietary habit, a significant number of students (15.7%) reported that they "Never" or "Occasionally" have breakfast. Students from different administrative levels of schools (municipal level, county level, and township level) rated differently ( $P < 0.05$ ) in terms of their self-rated health, Health Behaviors, Sleeping, Dietary behaviors, Safety Awareness, and Drinking and Smoking behaviors. In general, Chinese teenage students perceived their own health status as fairly good. However, attention needs to be paid to health problems of some of the students, such as lack of sleep and exercise and inadequate dietary habits, etc. More concerns need to be addressed to students from different administrative levels of schools, and strategies should be put forward accordingly.

*Keywords:* adolescence, self-rated health, influencing factors

## INTRODUCTION

One of the most intensively studied measures of health status is the self-rated health.<sup>1,2</sup> Self-rated health has

been commonly used for measuring physical health status, whereas the development of one's perception about self-rated health likely occurs during childhood and adolescence.<sup>3</sup> Davies and Ware<sup>4</sup> suggest that self-rated health is more likely a "state" than a "trait," and they argue that person factors such as physical and mental health problems are the main determinants of the somewhat varying state of self-rated health. However, more scholars such as Bram & Claartje believe that self-rated health expresses how individuals view their health, taking into account physical, mental, and social aspects of health.<sup>5</sup>

Adolescence is a unique biological and psychosocial stage of human life cycle, distinct from both childhood and adulthood.<sup>6</sup> Although adolescence is a relatively healthy time of life, it is also the time when behaviors can develop that may have long-term effects on adult health and well-being. The evolution of self-discovery in adolescence offers unique opportunities for them to

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access to life's possibilities. A good health is a necessary foundation for the future development for every adolescent.<sup>7</sup> However, a significant proportion of adolescents experience some health-related issues such as tiredness and depression, and even long-term illnesses.<sup>8</sup>

The health status of adolescents has been highly recognized by different countries around the world and a considerable number of studies could be found in the literature. Studies carried out by the School Health Education Unit in the United Kingdom show that school-aged young people are likely to rate themselves as healthy. Approximately 81% of male and 71% of female students reported their health to be good in a Swedish High School, but these adolescents were considerably less physically active compared with those a decade ago.<sup>9</sup> Most of them prefer to watch television and/or use the computer instead of participating in sports or physical activities.<sup>9</sup> Taylor et al<sup>10</sup> found that experiences related to participation in activity during childhood and adolescence may positively influence physical activity during adulthood.

In China, with the transformation of educational model from traditional examination-oriented education to quality-oriented education, the overall quality of youth, particularly their health condition is giving increased attention. Xiao Chen & Wang Qingyun did a survey study and the results showed a decline in the overall health and fitness of Chinese teenagers and demonstrates the need for more effective measures to help students develop healthy lifestyles.<sup>11</sup> Approximately 51.0% and 9.8% of adolescents did not achieve optimal sleep duration (defined as <8.0 hours per day) on weekdays and on weekends in Chinese adolescents.<sup>12</sup> The prevalence of overweight and obesity combined was 19.2% among children and adolescents aged 7–18 years in 2010, with a significant and continuous increase in the prevalence of obesity in children and adolescents in China.<sup>13</sup> Physical inactivity is closely related to an increased risk of cardiovascular disease, diabetes mellitus, osteoporosis, and certain types of cancer.<sup>14–17</sup>

It is the time for educators and health care professionals to address the health condition of adolescents in China today. It is particularly important in light of increasing recognition for their health status, which is crucial to their well-being later as an adult. This study addresses the issue by exploring the self-rated health of adolescent Chinese students and identifying some critical risk factors that may affect students' health status. In addition, the comparisons were also performed regarding adolescents' health status between different genders, ages, grades, and schools. Hopefully, the appropriate strategies could be developed to reduce

the risk factors affecting health and to improve the self-rated health of adolescent students.

## MATERIALS AND METHODS

### Participants

The study was conducted in 6 junior and senior high schools from Sichuan province, the Southwest part of China. A stratified cluster sampling method was adopted to enroll 520 adolescent students from 6 middle schools, including 2 municipal, 2 county, and 2 township level schools. The inclusion criteria were as follows: (1) first-year and second-year students from junior and senior high schools, (2) students volunteered to participate the survey, (3) students were able to understand the content of questionnaire and willing to answer the listed questions. The exclusion criteria included the following: (1) the third-year students from either junior or senior high school are excluded because they were preparing for the high school or college entrance examinations and (2) students who were unwilling to participate the survey.

### Survey questionnaires

The Self-assessed General Health Questionnaires (SAGHQ) were used as the study instruments. The SAGHQ was developed by a research team after an intensive review of the literature, and it aims to measure the self-rated health of adolescents for Chinese students and identifying some critical factors that may affect the students' assessment of their health status. The SAGHQ has 56 items, under 8 dimensions, including: Self-rated health, Health promoting behaviors, Sports and exercise, Sleeping, Dietary habit, Safety awareness, Drinking, Smoking, Internet, and Games. Students were asked to rate the degree of their agreement with each statement on a Likert scale, ranging from 1 = Never to 5 = Always. High scores on the scale illustrated a high level of compatibility. The scale was also pilot tested among 30 students and the final modifications were made based on experts' opinions and pilot-tested students' suggestions. The Cronbach alpha was 0.724 for the scales.

### Data collection

All investigators in the survey have received unified training. A brief introduction to the questionnaire informed participants of the institution of the researchers, the purpose of the study, the confidentiality of information with no right or wrong answers, no consequences on their study results. They were asked to consider their responses based their own life. Data were

collected from March to June 2014. All participants answered the questionnaires independently and anonymously at their own classrooms, and were encouraged to drop the questionnaires into a box at the back of their classroom. A total of 520 questionnaires were distributed, 503 of them were collected and checked to be valid questionnaires, accounting for 96.7% of the total.

### Statistical analysis

The SPSS version 18.0 was used for data analysis in this study. The descriptive statistics were used to describe the characteristics of the study participants, and the analysis of variances was geared to analyze the self-rated health status among different ages, grades, and schools, etc.

### Ethical considerations

Ethical approval was obtained from the Institutional Review Committee, Sichuan University. Administrative supports were also granted from the headmasters of 6 middle schools. The students and their parents were informed about the study purposes and processes before the beginning of the study, and were assured of anonymity and confidentiality before verbally agreeing to take part. Verbal informed consent was obtained from each participant and their parents, because some of their adolescents' parents were immigrant workers outside the province. Students or their parents had the right to quit the study anytime without any comment or penalty.

## RESULTS

### Basic characteristics of the surveyed students

A total of 503 students were surveyed in this research. Among those, 228 were males (45.33%), 275 were females (54.67%); 186 (36.98%) were from junior high schools, and 317 (63.02%) from senior high schools. The average age for the surveyed students was  $14.84 \pm 2.023$  years; the average age for students in junior high schools was  $12.45 \pm 0.900$  years, and for students in senior high schools it was  $16.24 \pm 0.824$  years. Regarding the administrative levels of school, 78 students (15.5%) were from municipal level schools, 144 were from county schools (28.6%), and 281 were from rural or township level schools (55.9%).

### Self-rated health status

The students' average height (cm) was  $160.25 \pm 8.531$  and body weight (kg),  $48.59 \pm 10.61$ . In terms of self-rated health, 1 (0.2%) rated "Very Poor," 10 (2%) rated "Poor," 148 (29.4%) rated "Fair," 262 (52.1%) rated "Good," and 82 (16.3%) believed that they had "Very Good" health.

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### Sleeping

In terms of the sleep quality, the numbers of students who reported as "Very Poor" to "Very Good" were as follows: 19 (3.8%), Very Poor; 43 (8.5%), Poor; 125 (24.9%), Fair; 217 (43.1%), Good; and 99 (19.7%), Very Good. Regarding the sleeping hours, 59.7% students reported to sleep less 8 hours a day, even a few reported to sleep less than 6 hours (4.4%) or more than 9 hours (9.7%).

### Sports and exercise

Exercising or participating in sports programs are keys to teenage students' health. Table 1 presents the data regarding the numbers of students who reported their engagement in sports and exercises. As listed, 80 students (15.9%) reported that they had "Never" performed proper amount of exercise every day, and 127 students (25.2%) reported that they had just "Occasionally" performed proper amount of exercise per day. A considerable numbers of students (181, 36%) reported that they had "Never" or just "Occasionally" taken exercises at least 3 times a week, 20–30 minutes every time (Table 1).

In term of dietary habit, nearly a quarter (131, 26.1%) of students reported "Never" or just "Occasionally" having foods with rich fibers; more than one-third (198, 39.4%) of students reported not drinking enough water per day, a significant number of students (79, 15.7%) reported that they "Never" or "Occasionally" have breakfast (Table 2).

### Health promotion behaviors

In terms of health promotion behaviors, nearly one-third of adolescent students (148, 29.4%) reported "Never" or just "Occasionally" washed hands before eating; almost two-third of students (332, 66.0%) reported "Never" or just "Occasionally" checked their body once a month for change or abnormal conditions; and more than half (296, 54.9%) stated that they had "Never" or just "occasionally" brushed teeth or used floss after meal (Table 3).

### Comparison on students' health status with different genders, grades, ages, and schools

The students' self-rated health and the health conditions for 8 dimensions were compared between different genders, grades, ages, and levels of schools. The results showed that there were statistical significant differences between male and female students in terms of Sports/Exercise, Dietary habit, Safety Awareness, Drinking, Smoking, and Internet/Games, whereas there were statistical significant differences among grades and ages in terms of Health Behaviors, Sleeping, Safety Awareness, Drinking, and Smoking (Table 4).

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**Table 1.** Engagement in sports and exercises of adolescent students (N = 503).

	Never	Occasionally	Sometimes	Often	Always
Performing proper amount of exercise every day	<b>80 (15.9)</b>	<b>127 (25.2)</b>	116 (23.1)	159 (31.6)	21 (4.2)
Doing exercise at least 3 times a week, 20–30 minutes every time	<b>34 (6.8)</b>	<b>147 (29.2)</b>	79 (15.7)	118 (23.5)	125 (24.9)
Performing warm-up before strenuous exercise	57 (11.3)	175 (34.8)	90 (17.9)	109 (21.7)	72 (14.3)
Keeping upright abdomen posture when standing everyday	41 (8.2)	183 (36.4)	140 (27.8)	108 (21.5)	31 (6.2)
Keeping upright abdomen posture when sitting everyday	39 (7.8)	223 (44.3)	157 (31.2)	66 (13.1)	18 (3.6)
Relaxing for some time every day	19 (3.8)	134 (26.6)	98 (19.5)	167 (33.2)	85 (16.9)

Bold text indicates statistical differences.

In Table 4, significant main effects ( $P \leq 0.05$ ) were observed in terms of self-rated health for different schools, but not for gender, age, and grade. Using analysis of variance comparison of means test, self-rated health for town students was consistently lower than the county, county was lower than municipal students. Self-rated health declined significantly from municipal level to county level and to township level. The analysis indicates that the adolescence coming from different administrative levels of school show a significant difference in the 6 dimensions including Health Behaviors, Sleeping, Dietary habit, Safety Awareness, Drinking, and Smoking ( $P \leq 0.05$ ), but there is no significantly difference in the other 2 dimensions including Sports/Exercise and Internet/Games ( $P > 0.05$ ). In term of Sports/Exercise and Dietary habit, the analysis show that female scores was lower than male scores ( $P \leq 0.05$ ), but in the dimension of Safety awareness, Drinking, Smoking, and Internet/Games, female student scores were higher than male student scores ( $P \leq 0.05$ ).

**Table 2.** Dietary habit of adolescent students (N = 503).

	Never	Occasionally	Sometimes	Often	Always
Having 3 meals at relatively fixed time	23 (4.6)	72 (14.3)	104 (20.7)	168 (33.4)	136 (27.0)
Choosing light food	35 (7.0)	164 (32.6)	168 (33.4)	100 (19.9)	36 (7.2)
Having foods with rich fiber (like whole grains, fruits, and vegetables)	<b>13 (2.6)</b>	<b>118 (23.5)</b>	131 (26.0)	155 (30.8)	86 (17.1)
Drink no less than 2000 mL waters (about 8 cups) every day	<b>33 (6.6)</b>	<b>165 (32.8)</b>	144 (28.6)	106 (21.1)	55 (10.9)
Having all the 5 kinds of foods (fish and meat, eggs and diary food, cereals and flours, fruits, a little amount of oil or fat)	28 (5.6)	221 (43.9)	154 (30.6)	68 (13.5)	32 (6.4)
Choosing food contains little addictive	21 (4.2)	158 (31.4)	167 (33.2)	117 (23.3)	40 (8.0)
Having breakfast everyday	<b>5 (1.0)</b>	<b>74 (14.7)</b>	62 (12.3)	161 (32.0)	201 (40.0)

Bold text indicates statistical differences.

In addition, we included personal and proximal situation factors such as gender, age, and grade; school situation was an important predictor of perceived health in all adolescences. Students' health assessment was likely to be influenced by their overall awareness with their health, as indicated in Table 4, because school is regarded as an influencing factor of students' assessment for their health.

## DISCUSSION

The concept of self-rated health implies a global assessment of one's own health, summarizing the way in which different aspects of health, physical as well as mental, are combined within one's perceptual framework.<sup>11</sup> Adolescence is an important period for the people to form health awareness, which will help them to choose and improve their health behavior. Most health behaviors retained significant associations with attained

**Table 3.** Health promotion behaviors of adolescent students (N = 503).

	Never	Occasionally	Sometimes	Often	Always
Washing hands before eating	<b>8 (1.6)</b>	<b>140 (27.8)</b>	95 (18.9)	165 (32.8)	95 (18.9)
Checking one's own body at least once a month for change or abnormal conditions	<b>97 (19.3)</b>	<b>235 (46.7)</b>	89 (17.7)	60 (11.9)	22 (4.4)
Brushing teeth or using floss after meal	<b>87 (17.3)</b>	<b>189 (37.6)</b>	94 (18.7)	100 (19.9)	33 (6.6)
Reading newspapers or magazines about health promoting	50 (9.9)	227 (45.1)	108 (21.5)	97 (19.3)	21 (4.2)

Bold text indicates statistical differences.

educational level, even after controlling for school achievement and sociodemographic background.<sup>18</sup>

### The status of sleeping

Sleeping is an important physiological need of adolescents and a basic, clinical criterion to evaluate their health condition. Primary and secondary school health education guidelines issued by the Ministry of Education in China indicated in 2008, that ample sleep is good for students' growth and health. Junior high school students should have 9 hours of sleep a day, whereas senior high school students should have 8 hours of sleep. This survey shows that only 40.3% of the students have sleep time more than 8 hours, and 4.4% students even have less than 6 hours. In the United States, only 20% of adolescents get their optimal 9 hours of sleep on school nights. Morrison reported that 10%–23% adolescents have sleep quality problems, like difficulty in falling asleep, and early wake-up problems at different degrees.<sup>19</sup> Sun et al<sup>20</sup> indicate that fifth-grade children in Shanghai have an excessive homework burden, which overwrites the benefit of sleep hygiene on sleep duration. Insufficient sleep in school-aged children is common in modern society, with homework burden being a potential risk factor.<sup>20–22</sup> Better sleep hygiene was associated with earlier bedtimes and longer sleep duration. To analyze from the perspective of sleep and stress, all the 3 groups show differences. The municipal group result is better than the county group and county better than the town group. As for the 2 groups of the county and town, with accelerated urbanization and reform of industrial structure in China, some of the town adolescents students' parents are migrant workers, the result may be related to less family care. Establishing a regular, consistent sleep schedule early in adolescence may enhance healthier sleep schedule in the future. Both aspects from the family and school should pay enough attention to the quality of sleep of adolescent students by understanding the students' physical and psychological development and keeping the school homework in an appropriate manner to ensure students have enough

time for sleep. It is the duty for both parents and educators to guarantee adolescents a fair schedule of work, enough rest time, and good sleep quality.

### The dietary habit of adolescent students

Total nutrient and energy requirements are highest during adolescence to meet the needs for physical growth and development; however, adolescents often fail to meet these elevated dietary needs.<sup>23</sup> The survey shows that adolescent students skip breakfast and have unreasonable nutrition composition. Approximately 1.0% of them never have breakfast and 14.7% occasionally have. The status sought by older adolescents consists of rites, which transition them toward adulthood.<sup>24</sup> The various understandings of what healthy eating actually means are likely to have different implications for eating behavior.<sup>25</sup> Respondents indicated that in early adolescence, they lacked interest or were unaware of the importance of diet.<sup>26</sup> Diets abundant in fruits and vegetables are associated with reduced risk for chronic disease, but intakes by adolescents are often inadequate.<sup>27</sup> In terms of dietary habit, county students' scores are lower than municipal group and town group; it may be related to the local dietary habit. School-based interventions that target health-related awareness, attitude, and behaviors among school teachers may help improve school-aged children's eating behaviors.<sup>28</sup>

### The status of physical activity in adolescents

In adolescence, health-related behavioral patterns take shape, which form the core of the health-related lifestyle in adulthood and are associated with various dimensions of health.<sup>29</sup> Such behaviors may be seen as inadequate or dysfunctional coping styles in the face of stress caused by educational demands.<sup>30</sup> Physically active students reported better self-related health than less physically active students.<sup>9</sup> The health benefits of leisure-time physical activity are widely recognized, as inactivity is associated with increased risk of coronary heart disease, various cancers, obesity, and other health problems.<sup>31</sup> Investigation shows that students who never participate in appropriate sports or

**Table 4.** Comparison on students' self-rated health with different genders, grades, ages, and schools.

	Self-rated health, mean ± s	8 dimensions		
		Health behaviors mean ± SD	Sports/exercise mean ± SD	Sleeping mean ± SD
<b>Gender</b>				
Male	20.57 ± 2.98	13.78 ± 3.47	20.57 ± 3.79	15.26 ± 2.45
Female	20.44 ± 2.58	14.11 ± 3.85	19.69 ± 2.99	15.47 ± 2.46
F/P	0.291/0.590	1.017/0.314	8.376/0.004*	0.881/0.348
<b>Grades</b>				
7	20.51 ± 3.16	14.29 ± 3.44	20.50 ± 2.80	15.95 ± 2.37
8	21.04 ± 2.71	15.44 ± 4.37	20.97 ± 3.24	16.26 ± 2.35
10	20.03 ± 2.83	13.27 ± 3.32	20.12 ± 3.05	14.75 ± 2.37
11	20.52 ± 2.51	13.58 ± 3.56	19.55 ± 3.79	15.05 ± 2.44
F/P	1.972/0.117	6.596/0.000†	4.147/0.006*	9.176/0.000†
<b>Ages</b>				
11	20.67 ± 3.60	14.33 ± 4.31	20.07 ± 3.19	16.33 ± 2.40
12	21.04 ± 2.76	14.71 ± 3.25	20.93 ± 2.56	16.03 ± 2.42
13	20.37 ± 3.05	15.00 ± 4.12	20.56 ± 3.06	16.03 ± 2.24
14	21.00 ± 2.91	14.77 ± 4.54	20.92 ± 3.69	15.96 ± 2.62
15	19.98 ± 2.53	14.10 ± 3.908	20.40 ± 3.22	14.68 ± 2.51
16	20.28 ± 2.64	13.20 ± 3.36	19.53 ± 4.08	14.81 ± 2.26
17	20.51 ± 2.68	13.71 ± 3.49	19.57 ± 2.88	15.32 ± 2.43
18	20.93 ± 2.056	12.21 ± 2.89	20.57 ± 4.03	14.71 ± 3.47
F/P	0.866/0.545	2.540/0.010*	1.810/0.073	3.662/0.000†
<b>School</b>				
City	21.08 ± 3.00	14.97 ± 4.30	20.73 ± 2.99	16.33 ± 2.288
County	20.94 ± 2.40	13.33 ± 3.48	19.60 ± 3.00	15.66 ± 2.41
Town	20.11 ± 2.83	14.00 ± 3.54	20.16 ± 3.66	14.96 ± 2.44
F/P	6.417/0.020*	5.187/0.006*	2.981/0.052	1.403/0.000†

  

	8 dimensions				
	Dietary habit mean ± SD	Safety awareness mean ± SD	Drinking mean ± SD	Smoking mean ± SD	Internet/games mean ± SD
<b>Gender</b>					
Male	23.07 ± 4.71	19.68 ± 4.21	15.425 ± 2.59	18.11 ± 3.288	10.66 ± 2.81
Female	22.17 ± 4.63	20.83 ± 3.39	16.55 ± 2.24	20.08 ± 2.26	12.31 ± 2.41
F/P	4.540/0.034*	11.343/0.001†	27.350/0.000†	62.544/0.000†	50.023/0.000†
<b>Grades</b>					
7	22.28 ± 4.33	21.11 ± 3.73	16.83 ± 2.48	20.09 ± 2.33	12.33 ± 2.48
8	23.92 ± 4.24	21.09 ± 4.54	16.99 ± 1.86	19.766 ± 2.56	11.74 ± 2.81
10	22.62 ± 6.04	20.53 ± 3.17	15.89 ± 2.42	19.46 ± 2.81	11.42 ± 2.79
11	22.23 ± 4.20	19.52 ± 3.74	15.37 ± 2.47	18.40 ± 3.20	11.18 ± 2.71
F/P	2.683/0.046*	6.043/0.000†	0.904/0.000†	10.486/0.000†	4.623/0.003*
<b>Ages</b>					
11	22.93 ± 4.45	20.74 ± 3.91	16.81 ± 2.70	20.70 ± 1.90	12.93 ± 2.93
12	22.63 ± 4.14	21.45 ± 3.82	16.82 ± 2.28	19.71 ± 2.67	11.90 ± 2.48
13	23.02 ± 4.43	20.56 ± 4.15	16.98 ± 2.14	20.03 ± 2.28	12.08 ± 2.43

**Table 4.** (Continued) Comparison on students' self-rated health with different genders, grades, ages, and schools.

	8 dimensions				
	Dietary habit mean $\pm$ SD	Safety awareness mean $\pm$ SD	Drinking mean $\pm$ SD	Smoking mean $\pm$ SD	Internet/games mean $\pm$ SD
14	24.12 $\pm$ 5.06	21.96 $\pm$ 4.61	16.92 $\pm$ 1.92	19.58 $\pm$ 2.28	11.15 $\pm$ 3.37
15	22.92 $\pm$ 4.53	20.22 $\pm$ 3.62	15.68 $\pm$ 2.77	19.66 $\pm$ 2.89	11.34 $\pm$ 2.68
16	22.01 $\pm$ 5.37	19.71 $\pm$ 3.78	15.43 $\pm$ 2.36	18.77 $\pm$ 3.05	11.15 $\pm$ 2.79
17	22.70 $\pm$ 4.04	19.84 $\pm$ 3.38	15.51 $\pm$ 2.55	17.62 $\pm$ 3.29	11.40 $\pm$ 2.58
18	20.29 $\pm$ 5.14	19.57 $\pm$ 3.27	16.21 $\pm$ 1.81	18.71 $\pm$ 3.45	11.86 $\pm$ 3.25
F/P	1.281/0.251	2.354/0.017*	4.965/0.000†	4.073/0.000†	1.903/0.058
School					
City	23.54 $\pm$ 4.45	20.79 $\pm$ 4.37	16.56 $\pm$ 2.40	19.49 $\pm$ 2.95	11.88 $\pm$ 2.85
County	21.42 $\pm$ 4.48	19.17 $\pm$ 3.51	15.44 $\pm$ 2.54	18.51 $\pm$ 3.56	11.13 $\pm$ 2.88
Town	22.90 $\pm$ 4.76	20.76 $\pm$ 3.70	16.21 $\pm$ 2.40	19.45 $\pm$ 2.51	11.70 $\pm$ 2.59
F/P	6.845/0.001†	9.299/0.000†	6.838/0.001†	5.526/0.004*	2.768/0.064

F, F value; P, P value.

\* $P \leq 0.05$ .† $P \leq 0.001$ .

exercise accounted for 15.9% of the total and occasionally attending accounted for 25.2%. Those who participate at least 3 times a week, each time 20–30 minutes of exercise never insisted on joining accounted for 6.8% and occasionally attending accounted for 29.2%. Fortunately, adolescence is a critical time of great behavioral shaping and plasticity. Most adolescent health risks are the result of behavioral causes; much of this morbidity and mortality is preventable. Therefore, educators should encourage students to exercise more actively and make it easier for students to choose and take part in various kinds of sports, which will help their mental and physical development. And it is important to monitor trends in physical activity in young adults, and to understand factors such as attitudes and knowledge of health benefits that may be associated with activity levels.<sup>6</sup> However, there are poor connections among data, research, programming, and policy.<sup>6</sup> In China, everybody has to take a gratuitous compulsory education of 9 years and schools are supposed to organize students to have at least 1 hour of exercise, but most teachers and students cut the exercise time to study. Equality of educational opportunities among different levels of high school has been a central objective, and reforms of educational systems as well as increasing public investment to higher education are required to achieve this goal.

#### The differences among the different schools in self-related health

It indicates the differences in self-assessed health and health-related behaviors among the adolescent students from municipal, county, and township. Students

from municipal have higher scores than students from county and town in self-related health. In terms of health promoting behaviors, students from municipal schools have higher scores than their counterparts from both county and town schools. The results can be explained by the health resources allocation and family investment in health differences between municipal, county, and town. Comparing the latter 2, municipal students have more information and resources related to health.

The study confirms that various person factors with different school are associated with self-rated health and related health behavior. However, the issue of determinants and variance in self-rated health among adolescents needs to be researched in greater depth including cross-sectional studies and longitudinal research design.

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