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REGULAR ARTICLE

Association between interpersonal relationship among high-school students and mental health

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Abstract
Objectives Adolescents have many anxieties, and having someone to consult is important for them to maintain their mental health. This study examines: whether students have someone to consult; if they have, whether there are differences in their depressive state and in their degree of satisfaction with their school lives depending on whom they consult; and how their mental health is affected by their human relations.
Methods Persons whom high-school students consult about their worries, Depression Self-Rating Scale for Children (DSRS-C), and satisfaction of high-school students with their school lives were surveyed in 2,646 students of public high schools in A Prefecture, and the persons selected for consultation were classified into four groups ("no one," "friends," "adults," and "friends and adults") and analyzed.
Results In terms of whom they consult we found that high-school students, especially girls, frequently consult "friends and adults." Mean DSRS-C score was significantly higher for those who consulted "no one" than for those who consulted "friends" or "friends and adults." Regarding hopelessness, the mean score of those who consulted "no one" was significantly higher than for those who consulted "friends and adults." Those who consulted "no one" had significantly lower mean score for satisfaction with school life than did those who consulted "friends and adults."
Conclusions Most of the students selected "friends and adults" for persons to consult, but boys were more likely to have "no one" to consult. Students (boys and girls) having no one to consult are likely to be more depressive and less satisfied with their school lives.

Keywords High-school students · Consultation · Friends · Suicide · Mental health

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Introduction

Adolescents have many anxieties, and it is important for them to have someone to listen to their problems. Friendships are particularly important for them to maintain their mental health. In most cases, the "listeners" are their friends, and there is a tendency for students to choose different listeners depending on the type of problem [1]. However, in many cases, students do not have anyone with whom to share their problems [2]. Studies have been conducted on changes in the styles of human relations during adolescence, the growing importance of friendships among college students related to their mental health, the formation of friendships in the process of coping with interpersonal stress, interpersonal stress coping, and measurement of mental health. The results from these studies indicate that interpersonal relations and friendship are especially important for young people to maintain their mental health [3–8].

In an epidemiological study, Harrington [9] reported that children may experience depression and that it markedly prevails during adolescence. Murata et al. [10] also reported that depression of students today is closely related to educational problems, and can be attributed to their mental health; each time students fail in their attempts at

self-realization, their self-esteem is affected, and when this process has reached a standstill it takes the form of a pathological condition. Another study of the relation between depressive symptoms and related factors also reported that depression is associated with the degree of stress that students feel in school [11]. There seems to be a certain relation between students' interpersonal relations at high school or their level of satisfaction with school life and depression.

This study examines: whether students have someone to consult; if they have, whether there are differences in their depressive states and the degree of their satisfaction, depending on whom they consult; and how their mental health is affected by human relations.

Methods

Survey subjects

We asked 10 public full-time comprehensive high schools in A Prefecture to participate in this survey; all 2,646 students from 3 schools participated. The high schools are all in 3 local cities with approximately the same population (about 30,000 residents) and in the same area in A Prefecture. In Japan, these types of schools are the most common as regards course, scale, gender ratio, and academic ability. They have students aged 15–18 years. We checked all responses for omissions and errors (particularly for the questions allowing multiple answers), and valid responses were received from 2,109 students (860 boys and 1,249 girls) (79.7%).

Survey items

Persons to whom high-school students talk about their problems (as an index of interpersonal relations) and depression and satisfaction of high-school students with their school lives (as indices of mental health) were surveyed.

Assessment of persons to whom students talk about their problems was based on items used in a previous report, "Self-image of high school students," by Fukaya et al. [1]. We conducted a questionnaire survey to analyze who students consult. The items included the possible problems: "1. Trouble with friends," "2. Bullying by classmates," "3. No boyfriend/girlfriend," "4. Interest in the opposite sex," "5. Bad breath or body odor," "6. Worries about appearance and weight," "7. Worries about hairstyle and clothes," "8. Poor performance at school," "9. Being unable to make a decision on a career," "10. Being in disagreement with parents regarding career decision," "11. Lack of worthwhile and challenging goals," and "12. Unable to find a purpose in life." As for persons whom students consult, they were asked to choose from the following choices (multiple answers allowed): "1. Friends," "2. Parents," "3. Other family members or relatives," "4. Teachers," "5. Seniors" "6. Counseling organizations," "7. Others," and "8. No one."

According to their responses, students were categorized into four groups: "friends" (including "1. Friends" and "5. Seniors"), "adults" (including "2. Parents," "3. Other family members or relatives," "4. Teachers," "6. Counseling organizations," and "7. Others"), "friends and adults" (including "1. Friends," "5. Seniors," or both, and one or more of "2. Parents," "3. Other family members or relatives," "4. Teachers," "6. Counseling organizations," and "7. Others"), and "no one" (including "8. No one" and the ones who did not choose any other response option); we categorized "7. Others" into the "adults" group because students meant adults such as school nurses, cram-school teachers, and neighbors. School teachers and family members were classified into the same category, "adults", because no significant differences were shown in the survey of depression or the level of satisfaction with school life. Students who chose "8. No one" for all twelve questions or any other response option were excluded from the survey.

Depression in students

Using the Japanese version, translated by Murata et al. (1990), of the Birleson Depression Self-Rating Scale for Children (DSRS-C) [10, 12], we asked students about their mental condition over the past week. The self-rating scale is designed to examine apathy and depression, and consists of 18 items: "less pleasure—6," "sadness—6," "apathy—3," and "less active/physical symptoms—3."

Students were asked to choose one of three responses: "always—2 points," "sometimes—1 point," and "never—0 points." The full score was 36 for DSRS-C, and a cutoff score of 16 was used. The higher the score, the more severe the depression. Firth and Chaplin [13] have also demonstrated the efficacy of DSRS-C as a scale for depression screening. We employed DSRS-C for the following reasons: it is a simple scale of 18 questions, and the questions are comprehensible to high-school students, which would avoid students' feeling annoyed. Two factors, "depression/sadness" (full score 14) and "less pleasure" (full score 12), were extracted from the DSRS-C.

The reliability of each factor was evaluated by calculating the reliability coefficient (Cronbach's α), which was 0.80 for "depression/sadness" and 0.75 for "less pleasure." These values are large enough to ensure the reliability of DSRS-C, which consists of the two factors.

Assessment item 10, "a sense of hopelessness," in the DSRS-C is considered to be an important question item in identifying suicidal thoughts [14, 15].

Level of students' satisfaction with their school life

In the survey, we asked the students about their satisfaction with their school lives. They were asked to choose one of the following five responses: "Definitely yes—5 points," "Yes—4 points," "Neutral—3 points," "No—2 points," and "Definitely no—1 point" [16]. There were a total of twenty questions: "participation in school activities—2," "troubles in school—1," "friendship among students—2," "satisfaction with school—1," "school rules and discipline—2," "academic performance and progress—1," "school environment—4," "social relations—4," and "sense of fulfillment—3." Regarding high-school students' satisfaction with school life, four factors were extracted: "satisfaction with school life," "presence of friends," "attachment to school," and "fulfillment in school activities." Focusing on the mean total scores concerning "satisfaction with school life" (full score 30), we examined the interrelation between persons whom students consult and their degree of satisfaction with their school life.

Ethical consideration

Since the survey was conducted in three schools, we explained the purpose and methods of the survey as well as the policy of the preservation of privacy including the names of the schools and the students, to obtain the teachers' consent in each school. The explanation was given to parents by principals, which helped us to obtain the parents' consent. Prior to implementing the questionnaire survey, homeroom and sub-homeroom teachers gave an explanation to students as follows: "Respondents have the right to refuse to participate in the survey. Even if a respondent refuses to answer some questions, he/she will not receive any unfair treatment. Respondents do not have to enter their names so they cannot be identified. The survey result will be processed into and used as statistical information and will not be used for any other purpose than this study." The survey was implemented under the supervision of homeroom and sub-homeroom teachers during a short homeroom class or lunch break. Submission of the questionnaire sheets was considered as consent to take part in the survey.

Analysis methods

Responses were categorized into four groups: consultation with "no one," "friends," "adults," and "friends and adults," and processed by using Excel version 5.0 and the statistical package SPSS 10.0j for Windows. To obtain the percentages of persons whom students consulted by gender, the χ^2 test and residual analysis were performed to test for differences in population rates. Regarding depression, variance analysis divided into boys and girls (one factor and four levels) was performed on DSRS-C scores, mean scores for the factors "depression/sadness" and "less pleasure" and item 10 of DSRS-C, "a sense of hopelessness," and mean total scores on "satisfaction with school life." Bonferroni's method was used for multiple comparisons. The significance level was set at 5% for all cases.

Results

Persons whom students consult

High-school students, in most cases, consulted "friends and adults," and girls are more likely to select them. The rate for boys with no one to consult was higher than that for girls (Table 1).

Relation between students' depression and whom they consult (Table 2)

Comparison by DSRS-C average score

The mean DSRS-C score of all students was 13.27 ± 5.76. The mean score of those who consulted "no one" was significantly higher than those who consulted "friends and adults" for both boys and girls. The mean scores for those who consulted "adults" and "friends" were significantly higher than those who consulted "friends and adults,"

Table 1 The rate of persons whom students consult (860 boys, 1,249 girls)

Persons whom students consult	*n*	Gender	*n*	*P*
No one	57 (2.7%)	Boys	44 (5.1%)	<0.001
		Girls	13 (1.0%)	
Adults	91 (4.3%)	Boys	49 (5.7%)	<0.05
		Girls	42 (3.4%)	
Friends	230 (10.9%)	Boys	137 (15.9%)	<0.01
		Girls	93 (7.4%)	
Friends and adults	1,731 (82.1%)	Boys	630 (73.3%)	<0.01
		Girls	1,101 (88.2%)	

χ^2 test for comparison of percentages

Table 2 The result of analysis of variance (ANOVAs) of DSRS-C, depression/sadness, less pleasure, a sense of hopelessness, and satisfaction with school life for gender

Gender	Persons whom students consult	DSRS-C Mean ± SD	†	Depression/ sadness Mean ± SD	†	Less pleasure Mean ± SD	†	A sense of hopelessness Mean ± SD	†	Satisfaction with school life Mean ± SD	†
Boys (n=860)	No one	16.68 ± 6.20	c	4.70 ± 3.14		7.25 ± 2.75	c b	0.66 ± 0.64	a	18.27 ± 5.70	c a
	Adults	14.71 ± 5.42		3.69 ± 2.84		6.61 ± 2.46		0.39 ± 0.53		19.63 ± 5.61	
	Friends	14.17 ± 5.25		4.82 ± 3.47	b	5.88 ± 2.59		0.61 ± 0.68	b	20.82 ± 4.88	
	Friends and adult	12.81 ± 5.59		3.70 ± 2.96		5.67 ± 2.44		0.39 ± 0.62		21.34 ± 4.61	
Girls (n=1,249)	No one	18.92 ± 5.33	b c c	6.69 ± 3.01	b b	7.31 ± 2.72	b c c	1.00 ± 0.58	c a	16.38 ± 5.45	c b b c
	Adults	16.43 ± 6.45		4.86 ± 3.13		6.69 ± 2.93		0.55 ± 0.67		18.36 ± 5.52	
	Friends	15.41 ± 6.73		5.15 ± 3.60		6.24 ± 2.69		0.62 ± 0.72	c a	21.38 ± 5.71	
	Friends and adult	12.86 ± 5.64		4.08 ± 2.88		5.01 ± 2.39		0.29 ± 0.51		22.43 ± 4.85	

↑ Bonferroni's multiple comparisons

Variance analysis (one factor and three levels) was performed and Bonferroni's method was used for multiple comparison, e.g., "Significantly different from those who consulted "no one" at $^{a}P < 0.05$, $^{b}P < 0.01$, and $^{c}P < 0.001$"

especially for girls. Students with no one to consult tended to be more depressive than those who consulted both "friends and adults."

Comparison by mean scores for the factors "depression/ sadness" and "less pleasure" in DSRS-C

For the first factor in DSRS-C, "depression/sadness," which is consistent with major depressive episodes described in DSM-IV, the mean score of all students was 4.10 ± 3.02. For boys, the mean score of those who consulted "friends" was significantly higher than that of those who consulted "friends and adults." As for girls, the mean scores of those who consulted "no one" and "friends" were significantly higher than that of those who consulted "friends and adults."

For the second factor, "less pleasure," the mean score of all students was 5.45 ± 2.51. For boys, the mean score of those who consulted "no one" was significantly higher than that of those who consulted "friends" and "friends and adults." For girls, the mean scores of those who consulted "no one," "adults," and "friends" were significantly higher than that of those who consulted "friends and adults." This suggests that students with no one to consult experience strong depression/sadness or less pleasure, compared with those with both friends and adults to consult.

Comparison by response to assessment item 10 "hopelessness"

Regarding hopelessness, the mean score of all students was 0.38 ± 0.59. For boys, the mean scores of those who consulted "no one" and "friends" were significantly higher than that of those who consulted "friends and adults." For girls, the mean score of those who consulted "no one" was significantly higher than that of those who consulted "adults" and "friends and adults." The mean scores of those who consulted "adults" and "friends" were significantly higher than that of those who consulted "friends and adults." Students who consulted no one or only friends were more likely to feel strongly that there was no point in life compared with those who consulted friends or adults.

Students' satisfaction with school life

Regarding satisfaction with school life, the mean score of all students was 21.68 ± 4.99. For boys, the mean score of those who consulted "no one" was significantly lower than that of those who consulted "friends" and "friends and adults." For girls, the mean score of those who consulted "no one" was significantly lower compared with that of those who consulted "friends" and "friends and adults." The mean score of those who consulted "adults" was significantly lower compared with that of those who consulted "friends" and "friends and adults." It was clarified that students with no one to consult are less satisfied with their school lives, compared with those who consult only friends and friends or adults. Students who consult both friends and adults are most likely to feel satisfied with their school lives.

Discussion

Regarding the persons to whom students talk about their problems, most of the students, especially girls, consulted "friends and adults." Boys usually do not consult others about their problems and, when they do, they only talk to their friends. These findings are consistent with the following results of studies: significant differences in friendships among adolescent boys and girls [17, 18], and gender differences in personal relations with friends due to their developmental stages [6, 19].

Students who do not consult others were more likely to become depressed. Although some students do not share their problems with others because they have self-confidence or feel independent in a positive way, it is possible for them to became depressed without knowing, which

might lead to becoming depressed or suicidal in the worst cases. This may have some connection with the fact that boys are more likely to have suicidal thoughts than girls, which is consistent with the 2007 report by the National Police Agency that 141 of 220 high-school students who committed suicide in 2006 were male and 79 were female [20]. In adolescence, internally boys tend to feel insecure, which might affect their physical health [21]. There are differences in the way of self-expression and attitudes towards others. Boys superficially tend to be more assertive, while girls try to be self-effacing, in harmony with others [22]. This might be a reason why boys tend not to accept other thoughts or opinions and not to change themselves compared with girls. Therefore, although we have the data that boys often talk with "friends" about their problems, this does not necessarily mean that boys can consult their problems frankly. Therefore, early perception and prevention of suicide are very important [23–25].

Students who have no one to consult are least satisfied with their school life. Those who consult "friends and adults" or "friends" are the most satisfied. It was indicated that friendship is closely related to satisfaction in school life. In the area of "peer support," studies about students making friends with each other have been conducted, which show that receiving support from their friends has the following benefits: Students can talk naturally to their friends about real problems; they are in the same circumstances and share common views; and there is no conflict of interest [26–30]. Reciprocity in supportive friendships is closely related to alleviation of depression, and friendship itself affects their mental health [31, 32].

Among the respondents who consulted their friends, students who consulted only "friends" were more likely to have "a sense of hopelessness" and become depressive, compared with those who consulted both "friends and adults." In the first place, depressive students may lack the incentive to build personal relationships and tend to avoid others, or the abilities or skills of students who counsel to recognize a cry for help from their friends may be lower than those of adults. They may also have problems with parents or teachers, which is why they consulted only friends. Emphasis has been placed on interventions from a variety of viewpoints [33], particularly by family members and other adults with proper knowledge as well as preventive measures [34]. Accordingly, there seems to be still many advantages to consulting adults in this study.

The following two problems still exist with this study: Firstly, we conducted a student self-completed questionnaire survey only in Prefecture A to examine the prevalence of depression among high-school students. Thus, it is difficult to generalize the results to high-school students in general. Interviews and other forms of surveys should also be performed in wider areas. It might be necessary to combine survey results with diagnoses by psychiatrists. Secondly, we should focus on students who have no one to consult and conduct surveys depending on their types and the details of their problems. Additionally we should research how they can solve the problems by themselves and what kind of support will be effective for their problems.

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