

Prevalence of and Factors Related to Depression in High School Students

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Abstract

Objective: The study aimed at investigating the prevalence of and factors related to depression in high school students.

Method: A total of 805 (n = 367 girls; n = 438 boys) first year students from three high schools in the city of Aydın filled in a self-report questionnaire that contained questions about socio-demographics, academic achievement and religious belief. It included also a depression rating scale, social support scale, problem solving inventory and an assertiveness scale. T-tests, chi-square tests, Pearson moment products correlation coefficients, and logistic regression analysis were used to analyze the data.

Results: 141 students (17.5%) scored on and above the cut-off point on the Children Depression Inventory (CDI). In the first regression analyses low self-esteem, low grade point average (GPA) and low perceived social support from friends in boys, and low self-esteem, low paternal educational level and low social support from friends were the predictors of girls' depression. When self-esteem scores were excluded, low GPA, low perceived social support from friends and family, and inefficient problem solving skills were predictors of depression in boys; low perceived social support from friends and family, low paternal educational level, and inefficient problem solving skills were the independent predictors of depression in girls.

Conclusion: Depression is prevalent in high school students. Low self-esteem, low perceived social support from peers and family, and inefficient problem solving skills appears to be risk factors for adolescent depression. Low GPA for boys and low paternal education for girls were gender specific risk factors. Psychosocial interventions geared for increasing self-esteem, social support and problem solving skills may be effective in the prevention and treatment of adolescent depression.

Key Words: Adolescence, depression, self-esteem, assertiveness, social support, problem solving

INTRODUCTION

The word adolescence is derived from the Latin word, *adolescere*, which means to grow up and to grow hairy, and signifies a stage of life during which biological, psychological, and social changes gain momentum and interact intensively with each other (Hamburg and Takanishi, 1989). In this period an adolescent endeavors to gain a place in the social world, and draws up and realizes his/her personal plans and objectives at the same time. When the number of areas and the speed of change to which adolescents must adapt increase in comparison to childhood, the number of teenagers with mental health problems rises accordingly (Kim, 2003). Currently, more adolescents are reported to suffer from mental

health problems than compared to the past (Collishaw et al., 2004).

Depression is the most significant mental health problem of adolescence (Whiting, 1981; Petersen et al., 1993; Hamrin and Pachler, 2005; Dopheide, 2006;). The prevalence of depression in this period is reported to vary from 5% to 20% (Lewinsohn et al., 2000; Melnyk et al., 2003; Saluja et al., 2004). In contrast to its rare prevalence in childhood, the prevalence of depression rises markedly in adolescence. While the prevalence of depression is lower than 3% in childhood, this rate reaches 14% in adolescence (Lewinsohn et al., 1998). Adolescent depression brings about similar consequences as does adult depression. Depression both causes disabil-

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ity and constitutes a risk factor for suicidal behaviors in adolescents (Gröholt et al., 2000; Sourander et al., 2001; Liu and Tein, 2005; Eskin et al., 2007).

Adolescent depression is prevalent among teenagers in Turkey as well (Çuhadaroglu and Sonuvar, 1992). In one study Eskin (2000) found that 60.5% of the adolescent sample scored above the cut-off point on the General Health Questionnaire (GHQ-12). This result shows that 60% of these students scores were high enough to suggest the presence of mental health problems. In another study, Bilal (2005) administered the Structured Clinical Interview for DSM-IV (SCID) to high school students with GHQ-12 scores 1 standard deviation above the mean and the results revealed that 70.9% of those diagnosed had major depression. In this regard, adolescence is significant life period for an understanding of depression as a developmental psychopathology, and developing strategies for the treatment and prevention of it.

In an analysis of the relevant literature, it was concluded that adolescent depression is related to various demographic-, family-, and school-related characteristics. Empirical studies put forth that depression is more prevalent among girls than among boys (Allgood-Merten et al., 1990; Nolen-Hoeksama and Girgus, 1994), and is related to the death or divorce of parents (Denton and Kampfe, 1994), a psychiatric disorder in a family member (Denton and Kampfe, 1994; Kaslow et al., 1994; Williamson et al., 1995), exposure to abuse and neglect, increased need for adult support (Meadows et al., 2006), failure at school, and a low grade point average (Undheim and Sund, 2005).

Some of the cognitive and behavioral features of adolescents are related to depression. One of the features associated with adolescent depression is self-esteem. It has been noted that the probability of depression is lower for adolescents with a high level of self-esteem (Lewinsohn et al., 1997; Guillon et al., 2003; Burwell and Shirk, 2006). One adolescent coping skill is problem-solving and another is assertiveness. Inadequate problem-solving skills are a significant risk factor in the development and maintenance of suicidal behaviors (Nezu et al., 1986; Nezu and Ronan, 1988; Marx et al., 1992; Priester and Clum, 1993; Pollock and Williams, 2004; Speckens and Hawton, 2005). A problem-solving approach is recognized as an effective way to prevent and treat emotional problems in adolescence and early adulthood (Heppner et al., 1984; Spence et al., 2003). Following childhood, the significance of peers and the society in which they

live increase significantly for adolescents. The ability to initiate and sustain relationships and to control the adverse effects of peers effect the psychological development of adolescents. Deficiency in assertiveness skills is an important risk factor for both depression (Chan, 1993) and suicidal behavior (Eskin, 1995, 1996).

Adolescents and children constitute a section of the population whose mental health problems are studied relatively less than those of adults. In addition, treatment options for such problems are insufficient, both in quality and quantity. Studying the prevalence of mental health problems in adolescents and its associated factors are of vital importance for the planning and implementation of mental health services to be offered to this group. In spite of the significance of the issue, the number of related studies is inadequate in Turkey. The present study, having been designed considering the above-mentioned facts, aimed to determine the prevalence of depression among high school students in Turkey and the factors associated with it.

METHOD

Participants

The study included 805 students (367 female, 438 male) that attended 1 of 3 high schools in the city of Aydin (Anatolian High School and 2 different general high schools). The researchers assumed that these schools represented the socioeconomic diversity of the city due to their central locations and large student populations. Having regarded Turkey's university entrance exam as a significant source of stress, the study was conducted only with ninth year students in order to exclude this effect.

Student age ranged from 13 to 18 years (mean: 14.8 ± 0.7 years). Five students (0.6%) reported that their mothers were dead and 21 students (2.6%) reported that their fathers were dead. The average number of siblings per student was 1.5 ($SD = 1.1$). The level of education of the students' fathers was higher than that of their mothers (fathers: 10.2 ± 3.9 years; mothers: 8.4 ± 4.1 years; $t = 15.4$; $df = 803$; $P < 0.0001$). Among the participants, 82.1% reported that their family income level was average, 9.6% of them regarded it as high, and 8.3% report a low level of family income.

Instruments

General Information Form: On this form participants answered questions related to sex, age, parental

Table 1. Bivariate correlation coefficients between depression assessed with CDI (cut-off point or above = 1; less than cut-off point = 0) and independent variables.

Variables	Girls	Boys
Age ^a	0.04	0.10**
Number of siblings ^a	0.19***	0.12**
Mother alive ^b	-0.07	0.02
Father alive ^b	-0.05	-0.04
Parental divorce ^b	-0.11**	-0.09**
Maternal education ^a	-0.22***	-0.18***
Paternal education ^a	-0.27***	-0.14**
Religious belief ^a	-0.00	-0.02
GPA ^a	-0.13***	-0.36***
Perceived family income ^a	-0.09**	-0.04
Assertiveness ^a	-0.07*	-0.14**
Self-esteem ^a	-0.52***	-0.41***
Self-appraised problem-solving ^a	0.31***	0.28***
Perceived support from family ^a	-0.38***	-0.35***
Perceived support from friends ^a	-0.32***	-0.30***

*P < 0.10. **P < 0.05. ***P < 0.0001.

^aPoint bi-serial correlation coefficient.

^bPhi coefficient.

loss, parents' level of education, parents' marital status, number of siblings, GPA for primary education, and the level of family income. The form included the following question: "What is the depth of your religious belief?" The participants were asked to respond to this question on a 7-point Likert scale ranging from "none whatsoever" to "very strong".

Children's Depression Inventory (CDI): This scale was developed by Kovacs (1981) in order to assess the level of childhood depression. It contains 27 items, each of which consists of 3 statements. For each item, the participant is asked to select the statement that best describes his/her feelings during the past 2 weeks. Scores range from 0 to 54. Higher scores indicate more severe depression. This inventory was adapted to Turkish by Öy (1991).

Perceived Social Support Scale (PSS): This scale was developed by Procidano and Heller (1983) as 2 subscales for assessing the perceived level of social support from friends (PSS-fr) and family (PSS-fa). These 2 subscales consist of 20 items, which are all yes-or-no questions. Scores range from 0 to 20. Higher scores indicate greater perceived social support. It was adapted to Turkish by Eskin (1993).

Problem Solving Inventory (PSI): PSI is a 32-item scale developed by Heppner and Petersen (1982) and assesses self-appraised problem-solving skills on a 6-point Likert scale. Scores range between 32 and 192. Higher scores indicate lower levels of self-appraised problem-solving skills. It was adapted to Turkish by Şahin et al. (1993).

Rosenberg Self-Esteem Scale: This scale consists of 10 items (5 negative and 5 positive statements) that are responded to on a 4-point Likert scale. Scores range from 0 to 40. Higher scores indicate higher levels of self-esteem. It was adapted to Turkish by Çuhadaroglu (1985).

Scale for Interpersonal Behavior (SIB): SIB is a 50-item multidimensional scale that measures assertiveness (Arrindell and van der Ende, 1985). It assesses how often individuals behave in the way described in each item, according to a 5-point Likert scale. Four scores are obtained from 4 dimensions of assertiveness (46 items), and together with all the other items overall assertiveness scores are calculated. Overall scores range from 50 to 250. Higher scores indicate higher levels of assertiveness. It was adapted to Turkish by Eskin (1993). Total scores were used in this study.

PROCEDURE

After obtaining permission from the Provincial National Education Directorate of Aydın, the questionnaires were distributed to volunteer students through school counselors. Questionnaires filled out were returned to the researchers. In the beginning of the implementation, participants were asked verbally and in written form not to write their names on the scales.

Statistical Analysis

Statistical analysis was performed using SPSS v.9.0. Chi-square was employed for categorical variables and t-test for continuous variables. To identify if there was a relationship between 15 variables and the presence of

Table II. Predictors of depression in high school students assessed with CDI (cut-off point ≥ 19).

Predictor variable	Depressed = 1				Not depressed = 0		
	Coefficient	SH ^a	Wald	SD ^b	P	RO ^c	95% GA ^d
Boys							
Constant	-1.73	0.15	135.35	1	0.0000		
Self-esteem	-0.28	0.04	44.86	1	0.0000	0.76	0.70-0.82
GPA	-1.04	0.24	18.01	1	0.0000	0.35	0.22-0.57
Perceived support from friends	-0.16	0.05	11.67	1	0.0006	0.85	0.78-0.93
Girls							
Constant	-1.39	0.12	128.24	1	0.0000		
Self-esteem	-0.36	0.42	74.02	1	0.0000	0.70	0.64-0.76
Paternal education	-0.17	0.04	17.44	1	0.0000	0.84	0.64-0.76
Perceived support from friends	-0.08	0.04	4.30	1	0.0381	0.92	0.86-0.99

^aStandard Error. ^bDegree of Freedom. ^cOdds Ratio. ^dConfidence Interval.

depression (≥ 19 points = presence of depression [1], < 19 = depression not present [0]), point bi-serial (r_{pb}) or Phi (ϕ) correlation coefficient methods were used for males and females separately. Correlation coefficients between the presence of depression and parental loss were calculated using the Phi (ϕ) method and others were calculated with the point bi-serial correlation coefficient method. A total of 4 logistic regression analyses were applied to data from girls and boys for whom variables with a bivariate correlation coefficient with a significance level of $P \geq 0.10$ were deemed predictive and the presence of depression was deemed predicted. Logistic regression analyses were performed a second time, excluding self-esteem scores, having thought that self-esteem and problem-solving conceptually could overlap with each other.

RESULTS

Among the study population, 17.5% ($n = 141$) scored ≥ 19 on CDI, which was the cut-off point. While the proportion of males with this score was 15.3% ($n = 56$), the proportion females was 19.4% ($n = 85$). This difference between the genders was statistically significant at a marginal level ($\chi^2 = 2.40$, $P < 0.10$). The difference in average CDI scores between females (mean: 12.07 ± 6.72) and males (mean: 10.77 ± 7.08) was statistically significant ($t_{(803)} = 2.68$, $P < 0.01$).

Before searching for the predictors of depressive symptoms, we determined which variables of the 15 ex-

amined within the scope of this study were related at a statistically significant level to scoring at or above the CDI cut-off point. These correlation coefficients are shown in Table I. Results revealed that 11 of the 15 variables were related to depressive symptoms at a significance level of $P \geq 0.10$.

Results of the logistic regression analysis performed to define which variables predicted a CDI score at or above the cut-off point are presented in Table II. According to this analysis, low self-esteem, low GPA, and poor peer support were predictive for males scoring high enough to be diagnosed with depression. Low self-esteem, low-level education of the father, and poor peer support were predictive for females scoring high enough to be diagnosed with depression.

Results of the second regression analysis in which self-esteem scores were excluded are shown in Table III. According to these results, low GPA, poor support from family and friends and low levels of problem-solving skills were determined to be predictive for depression in males. Poor support from family and friends, father's low level of education and low levels of problem-solving skills were designated to be predictive of girls having high CDI scores indicative of the presence of depression.

DISCUSSION

The findings of the present study suggest that about 18% ($n = 141$) of the participants could be diagnosed

Table III. Predictors of depression in high school students assessed with CDI (cut-off point ≥ 19), excluding self-esteem scores.

	Depressed =1				Not depressed = 0		
Predictor variable	Coefficient	SH ^a	Wald	SD ^b	P	RO ^c	95% GA ^d
Boys							
Constant	-1.73	0.15	135.35	1	0.0000		
GPA	-1.29	0.22	33.85	1	0.0000	0.28	0.18-0.43
Perceived support from friends	-0.23	0.04	26.87	1	0.0000	0.79	0.73-0.87
Perceived family support	-0.13	0.05	8.41	1	0.0037	0.88	0.80-0.96
Problem solving skills	0.03	0.01	5.39	1	0.0202	1.03	1.00-1.02
Girls							
Constant	-1.39	0.12	128.24	1	0.0000		
Perceived family support	-0.19	0.03	47.90	1	0.0000	0.83	0.79-0.87
Perceived support from friends	-0.15	0.03	20.94	1	0.0000	0.86	0.80-0.92
Paternal education	-0.15	0.04	14.32	1	0.0002	0.86	0.80-0.93
Problem-solving skills	0.03	0.01	8.23	1	0.0041	1.03	1.01-1.05

^aStandard error. ^bDegree of freedom. ^cOdds ratio. ^dConfidence interval.

with depression, a similar percentage as reported in previous studies of the prevalence of depression among adolescents. Studies conducted on the prevalence of depression among adolescents report that the prevalence ranges from 5% to 20% (Lewinsohn et al., 2000; Melnyk et al., 2003; Saluja et al., 2004).

In terms of life phases, there is a difference between genders. While there seems to be no difference between girls and boys in terms of depression before adolescence (Garber and Horowitz, 2002), in adolescence however, depression becomes more prevalent among girls than boys (Nolen-Hoeksema and Girgus, 1994). As expected, the present study found that the proportion of females with CDI scores indicative of depression was higher than that of males and that mean CDI score of the females was significantly higher. Differences between genders observed in the present study are in agreement with previous findings (Lewinsohn and Essau, 2002; Nolen-Hoeksema, 2002).

According to the developmental psychopathology approach, interactions between risk and resilience factors, and preventive factors, according to certain biological parameters over the course of time, are important in the emergence of any disorder or maladjustment (Wenar, 1994; Shirk et al. 2000). Logistical regression

analyses performed in order to reveal which factor (s) independently predicted adolescent depression provided significant information, both general and gender-specific predictors of depression in this age group.

In accordance with the related literature (Lewinsohn et al., 1997; Guillon et al., 2003; Burwell and Shirk, 2006), low self-esteem was the strongest predictive factor for high depression scores. For both males and females, self-esteem scores of those who scored above the CDI cut-off point were lower than those that scored below the cut-off point.

One of the most distinctive features of adolescence is the rise in the significance of peers (Muus, 1982). The level of the support an adolescent perceives from his/her relationships with friends may affect whether he/she will suffer from depression. Results of the present study support this idea. For both male and female participants, low levels of perceived social support from peers was related to high depression scores. This finding is similar to the results of previous studies, which suggest that problems in peer relationships constitute a risk factor for adolescent depression (Prinstein et al., 2005; Afifi et al., 2006; Allen et al., 2006). Even though peers gain significance during adolescence, family also remains important (Muus, 1982). Family is still the fundamental

source of confidence in this period; therefore, qualitative characteristics of family relationships are expected to affect the psychological state of adolescents. Findings of the present study confirm this view. We found that low levels of perceived social support from family were predictive of depression, which is in agreement with Meadows et al.'s (2006) report of the significance of parental social support to the mental health of both male and female adolescents.

During adolescence an individual has to contend with new problems and difficulties, which result from biological, psychological, and social change and development. The important thing is not the presence of such problems and difficulties, but the presence or lack of personal coping resources with which to resolve them. This is the power of coping skills, which is referred to as resilience (Klohn, 1996; Masten, 2001). The level of problem-solving skills for coping is reported to determine whether mental health problems such as depression and suicide will be experienced (Heppner et al., 1984; Priester and Clum, 1993; Chang, 2002; Spence et al., 2003; Speckens and Hawton, 2005; Eskin et al., 2007). In the present study low levels of problem-solving skills were associated with depressive symptoms in the participants.

Parental education is a significant demographic familial characteristic for children and adolescents. Studies (Hortaçsu, 1994; Hortaçsu, 1995) conducted with elementary school children in Turkey show that the level of parental education affects children's behavioral, social, and emotional characteristics, and academic performance. Findings of the present study suggested that females with fathers who had a low-level education were more likely to have higher depression scores. In the Turkish family structure, fathers decide on the amount of autonomy to be granted to children. Furthermore, within the traditional values of Turkish society, it is known that girls are given less autonomy than boys. In an era in which the need for autonomy gradually increases, fathers with a low-level education may be preventing the fulfillment of their daughters' needs. As a result, this may lead to girls suffering from depression more than boys.

For an adolescent in high school, academic success is of considerable importance. Academic failure is reported to affect adolescents in 2 ways (Undheim and Sund, 2005): First, failure has negative effects on the adolescent as it prevents him/her from attaining the personal developmental and educational objectives he/she has set for him/herself. Second, disappointment caused by

failing to attain the standards that parents have set affects the adolescent negatively. In Turkish society, events that academic failure is thought to cause frighten both official institutions and families at every time students get their report cards. In cases of failure, some teenagers create false report cards or even attempt suicide. In this context, we can predict that academic failure negatively affects student mental health. As was reported by Lewinsohn et al. (1994) and Roeser et al. (1998), findings of the present study also suggest that low GPA is related to high depression scores in adolescent males and females. Nevertheless, low GPA was a predictor of high depression scores for males only. The emphasis on success for the male gender role in Turkish society or academic failures in male students more than females may be related to this finding.

In summary, findings of the present study suggest that depression may be prevalent among high school aged adolescents in Turkey. The findings imply that adolescents with low self-esteem, poor social relationships, and low-level problem-solving skills, and boys that experience academic failure, and girls with fathers that have a low level of education are at risk for depression. Nonetheless, while interpreting the findings of this study, the presence of various limitations should be taken into consideration. Firstly, the fact that the research was correlational makes it more difficult to establish causal relationships. For example, even though relationships between depression, and self-esteem, level of problem-solving skills, and social support were significant, this can not be interpreted as causality because the individual may appraise these personal assets inadequate while going through depression as well as low self-esteem, inadequate level of problem-solving skills, and poor social support may lead to depression. Considering the fact that this was a cross-sectional study, it should be kept in mind that there is a need for longitudinal studies designed to make conclusions concerning causality. Second, the sample of the study included only ninth grade students from 3 high schools in Aydin; therefore, it is difficult to generalize these findings to adolescents in 10th, 11th, and 12th grades, and in other areas of Turkey, as well as to those who are not students. Third, participants that had a CDI score ≥ 19 were regarded as likely to be diagnosed with depression; however, it should be considered that this is not a clinical diagnosis and some teenagers may have these scores due to various reasons other than depression.

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