

Original article

Gender differences in depressive symptoms in Thai adolescents

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Background: Studies found that males and females differ in many aspects of psychiatric disorders, such as in prevalence, symptoms, and symptom severity.

Objective: We studied gender differences in depressive symptoms in Thai adolescents.

Methods: Through stratified random sampling 1,220 students in grade 10 to 12 from 10 high schools in Bangkok were recruited for the Study of Depression in Thai Youth Project. The Center for Epidemiologic Studies Depression Scale (CES-D), Thai version, which is a 20-item self-report questionnaire, was used to assess depression. In this report, the response to CES-D were compared between boys (n = 473) and girls (n = 747).

Results: By using the score of 22 as a cut-off for significant depression, 19% of boys and 17% of girls were found to be depressed. The mean CES-D score of boys was 15.0 (SD = 7.1) and of girls was 15.5 (SD = 6.8). However, the difference did not have statistical significance. Depressive symptom prevalence in both groups was compared. Boys were significantly more likely than girls to view life as failure (36.7% vs. 23.2%, $p < 0.05$), to not feel happy (43.4% vs. 27.4%, $p < 0.05$), and to not enjoy life (55.6% vs. 36.0%, $p < 0.01$). Girls were significantly more likely to have crying spells (45.3% vs. 10.0%, $p < 0.001$), and to feel sad (54.6% vs. 36.6%, $p = 0.01$). The comparison of symptom severity revealed that boys scored higher in cognitive symptoms and girls scored higher in mood symptoms. CES-D subscales were compared. Boys scored higher in positive affect subscale and girls scored higher in negative affect and somatic subscales. The difference was also significant even in the non-depressed group.

Conclusion: There is no significant difference in the prevalence and severity of depression in both genders. The significant difference lies in the symptom profiles. Girls have more mood and somatic symptoms while boys have more cognitive symptoms and lack of well-being. This difference also exists in the non-depressed group. The findings have important implications in both diagnosis and treatment of depression in adolescents.

Keywords: Adolescents, depression, depressive symptoms, gender

There is evidence to suggest that the prevalence of childhood mental health problems is gradually increasing. Studies suggest that 20% of children and adolescents have mental health problems at some point, and one in ten have a clinically recognizable mental health disorder. Older children and young people were found to be more prone to a mental health disorder than younger children [1].

Regarding gender differences, previous research has reported higher frequency of many psychopathological categories in boys than in girls in childhood, and a reversal of the gender ratio in adolescence and onwards. A study in 1,710 high school

students found that at point of entry and at 1-year follow-up girls had significantly higher rates at all age levels for unipolar depression, anxiety disorders, eating disorders, and adjustment disorders; and boys had higher rates of disruptive behavior disorders [2]. A national survey in Great Britain in 12,294 children aged 5 to 16 years found that 11% of boys had a mental health disorder, compared with 8% of girls. Conduct and hyperkinetic disorders are much more likely in boys than girls, while girls are more liable to suffer from emotional disorders [1]. A study in Thai adolescents, who came to a mental health clinic in a general hospital, found that girls were significantly more likely to have mood and somatic problems than boys. Mood disorders were found in 14.6% of girls and in 4.8% of boys, and somatoform disorders were found in 12.7% of girls and 2.4% of boys [3].

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Studies on depression showed that in adolescence, the prevalence increases in both boys and girls. However, the prevalence is higher in girls. Depressive symptoms in both groups are different and the severity is higher in girls [4-6]. A study in Spanish youth using the Children's Depression Inventory (CDI), to measure depression, found that girls scored higher than boys [7]. It is unclear how early such gender specific patterns emerge. Some researcher suggested that starting in early adolescence, girls report higher levels of depressive symptoms than boys. This difference increases over adolescence and sustains even after adolescence [8]. Depressive symptoms in adolescence are related with lifestyles in young adulthood. Youth with high depressive symptoms showed significantly higher rates of most risky lifestyles compared with the low symptoms group. The risk included, for example, having multiple sex partners; having been arrested/committed crime; excessive drinking and smoking [9]. The study of symptomatology of depression is therefore important in terms of prevention of youth risk behaviors. Studies on depression in Asian samples are limited. Most studies focus on the prevalence and associated factors. Few studies have looked into gender differences in depressive symptomatology. For this reason, the Study of Depression in Thai Youth Project was established at King Chulalongkorn Memorial Hospital. We have conducted studies on depression in Thai children and adolescents in various aspects such as psychometric properties of instruments measuring depression (the Thai versions of the Children Depression Inventory-CDI and the Center for Epidemiologic Studies Depression Scale -CES-D); the prevalence, risk factors and symptoms of depression in children [10-13]. We have currently started to examine depression in adolescents. In a previous report, we presented the first part of the study that looked into the prevalence and associated factors of adolescent depression [14]. In this report, we examine depressive symptoms in the sample to see if there are differences between male and female subjects.

Material and method

Sample

Through stratified random sampling 1,220 students in grade 10 to 12 from 10 high schools in Bangkok were recruited. This included 473 males and 747 females. The study protocol has been approved by the Ethics Committee for Human Research of the Faculty of Medicine, Chulalongkorn University.

Instruments

Two instruments were used in the study. The first instrument was a questionnaire on demographic, personal, and family information. The second instrument was the Center for Epidemiologic Studies Depression Scale (CES-D), Thai version. The CES-D is a 20-item self-report questionnaire that has been used widely to assess depression both in clinical and research settings. The scale was developed by the National Institute of Mental Health [15]. The items include depressed mood, feelings of guilt and worthlessness, feelings of helplessness and hopelessness, loss of energy, and sleep and appetite disturbances. Respondents are asked to choose from four possible responses in a Likert format, where "0" is "rarely or none of the time (less than 1 day)", and "4" is "almost or all of the time (5 to 7 days)". The scoring of positive items (items 4, 8, 12, and 16) is reversed. A total score is calculated by summing all items, and ranges from 0 to 60. Higher scores reflect greater levels of depressive symptoms while lower scores reflect lower levels of symptoms. The CES-D has four separate factors: positive affect (item 4, 8, 12, 16), negative affect (item 3, 6, 9, 10, 14, 17, 18), somatic symptoms (item 1, 2, 5, 7, 11, 13, 20), and interpersonal relations (item 15, 19). Items on the positive affect subscale are reversed to reflect 'unhappy' or 'lack of well-being' scores. The CES-D has very good internal consistency with alphas of 0.85 for the general population and 0.90 for a psychiatric population [15, 16]. A score greater than or equal to 16 has been used to identify clinically significant depressive symptoms. A study in a sample of Thai adolescents found the CES-D, Thai version, to have good statistical property, with a reliability (alpha) of 0.86. Using the Receiver Operating Characteristic Curve, a cut-off point of 22 produced the best overall screening characteristics. At this cut-off point the CES-D, Thai version, has a sensitivity of 72%, specificity of 85% and an accuracy of 82% [11]. In this report, a cut-off point of 22 was used to identify significant depression.

Procedure

Participants in the study initially received two consent forms. One was a parental consent form for minors and the other was a consent form for participants to read and sign. The teachers were requested to announce to their classes that a research project investigating adolescent mental health needed volunteers to participate in the study. Consent forms

for parent/guardians and student participants, and information sheets providing details about the study, were distributed to be read and signed by those willing to participate.

On the day of data collection, the second author collected the consent forms and then read the instructions of the survey. Time was then allowed for questions from the participants. Each participant then completed a demographic questionnaire and the CES-D. To help control for extraneous variables, all participants were tested in a classroom setting. The procedures for the study were conducted in the same way and in the same order for every school.

Statistical analysis

Data were analyzed using the SPSS 16.0 statistical package. For descriptive purposes, demographic characteristics and the CES-D scores were compared between groups using chi-square or t tests as appropriate. All p values were based on two-tailed tests with $\alpha = 0.05$.

Results

Characteristics of the sample

The sample consisted of 1,220 students, 473 boys, and 747 girls. They ranged in age from 15 to 19 years, with an average age of 16.6 years (SD 1.0). The

majority came from families in the middle to low socioeconomic bracket. The mean age of boys was 16.5 (SD 1.0) years and of girls was 16.6 (SD 1.0) years. There was no significant difference in the background data between boys and girls except for the grade point average which was significantly higher in girls than in boys; 3.1(SD 0.5) and 2.8 (SD 0.6) respectively, $p < 0.001$. Details of the background data are shown in **Table 1**.

Prevalence and severity of depression

By using the score of 22 as a cut-off for significant depression, 19% (90 cases) of adolescent boys and 17% (128 cases) of girls were found to be depressed. However, the difference did not have statistical significance.

The severity of depression was measured by the CES-D total score. Of the whole sample, the mean total score of girls was higher than boys, 15.5 (SD 6.8) and 15.0 (SD 7.1) respectively. In the subgroup analysis, the mean total scores of girls in both non-depressed and depressed groups were higher than boys. However, the difference was significant only in the non-depressed group (CES-D score ≤ 21), where the mean total score of boys was 12.4 (4.7) and of girls was 13.3 (4.5), $p = 0.004$ (**Table 2**).

Table 1. Characteristics of the sample

	Boys (n = 473)		Girls (n = 747)		X ²	p
	Number	%	Number	%		
Age (years)						
15 years	97	20.5	135	18.1	3.68	0.298
16 years	133	28.1	188	25.2		
17 years	162	34.2	274	36.7		
18 years and above	81	17.1	150	20.1		
Grade point average						
<2.00	49	10.3	26	3.5	60.64	<0.001
2.00-2.9	239	50.5	272	36.4		
>3.00	185	39.1	449	60.1		
Number of children in the family						
1	91	19.2	167	22.3	3.13	0.372
2	242	51.2	389	52.1		
3	110	23.2	149	19.9		
4 and above	30	6.3	42	5.6		

Table 2. Prevalence of depression and mean CES-D scores

	Boys (n = 473)	Girls (n = 747)	<i>p</i>
Cases with score >22	90 (19.0%)	128 (17%)	NS
Mean total score (SD)			
- total sample	15.0 (7.1)	15.5 (6.8)	NS
- non-depressed group	12.4 (4.7)	13.3 (4.5)	0.004
- depressed group	26.1 (4.4)	26.5 (5.0)	NS

Symptom prevalence

The response to CES-D were compared between depressed boys and depressed girls. Chi-square tests were used to examine gender differences in the prevalence of depressive symptoms (**Table 3**). A symptom was considered present if rated as 2 or higher, indicative of at least moderate severity. Out of 20 symptom items, boys were found to have higher prevalence than girls in 10 symptom items, and vice versa. Boys were significantly more likely than girls to view life as failure (item 9: 36.7% vs. 23.2%, $p < 0.05$), to not feel happy (item 12: 43.4% vs. 27.4%,

$p < 0.05$), and to not enjoy life (item 16: 55.6% vs. 36.0%, $p < 0.01$). Girls were significantly more likely to have crying spells (item 17: 45.3% vs. 10.0%, $p < 0.001$), and to feel sad (item 18: 54.6% vs. 36.6%, $p = 0.01$).

Symptom severity

The severity of depressive symptoms, as reflected by the mean score of each item, was compared between the non-depressed group and the depressed group as shown in **Table 4**.

Table 3. Depressive symptom prevalence (%) in depressed group

Item	Boys (n=90) %	Girls (n=128) %	<i>p</i>
1. Bothered by things	52.3	61.8	NS
2. Poor appetite	26.6	30.5	NS
3. Shake off blues	38.9	49.2	NS
4. (not) Good just as others	75.5	69.5	NS
5. Troubled mind	51.1	50.0	NS
6. Depressed	41.8	48.4	NS
7. Everything effort	13.3	18.0	NS
8. (no) Hopeful future	32.2	28.9	NS
9. Life failure	36.7	23.2	0.04
10. Fearful	17.8	24.2	NS
11. Restless sleep	33.9	30.5	NS
12. (not) Happy	43.4	27.4	0.02
13. Talk less	21.1	30.4	NS
14. Feel lonely	53.3	61.7	NS
15. People unfriendly	17.8	14.8	NS
16. (not) Enjoy life	55.6	36.0	<0.01
17. Crying spells	10.0	45.3	<0.001
18. Feel sad	36.6	54.6	0.01
19. People dislike me	14.4	12.5	NS
20. Can't get going	32.3	30.4	NS

Table 4. Mean CES-D item scores

No.	Item	Total Sample Mean (SD)		Non-depressed Mean (SD)		Depressed Mean (SD)	
		Boys (n = 473)	Girls (n = 747)	Boys (n = 383)	Girls (n = 619)	Boys (n = 90)	Girls (n = 128)
1	Bothered by things	1.06 (0.70)	1.20 (0.62)	0.95 (0.65)***	1.09 (0.56)	1.54 (0.69)	1.71 (0.65)
2	Poor appetite	0.61 (0.67)	0.74 (0.67)	0.49 (0.60)***	0.64 (0.61)	1.13 (0.72)	1.21 (0.76)
3	Shake off blues	0.65 (0.75)	0.73 (0.73)	0.49 (0.64)	0.56 (0.61)	1.33 (0.81)*	1.55 (0.71)
4	Good just as others	1.49 (0.83)	1.39 (0.78)	1.39 (0.83)	1.31 (0.77)	1.96 (0.71)	1.77 (0.72)
5	Trouble mind	1.20 (0.70)	1.21 (0.65)	1.12 (0.66)	1.14 (0.63)	1.56 (0.75)	1.52 (0.66)
6	Depressed	0.69 (0.66)	0.76 (0.68)	0.52 (0.53)*	0.61 (0.57)	1.40 (0.68)	1.52 (0.67)
7	Everything effort	0.60 (0.60)	0.61 (0.60)	0.49 (0.56)	0.52 (0.56)	1.06 (0.55)	1.05 (0.58)
8	Hopeful future	0.87 (0.86)	0.74 (0.75)	0.82 (0.82)**	0.68 (0.71)	1.08 (0.96)	1.02 (0.86)
9	Life failure	0.64 (0.69)	0.44 (0.60)	0.46 (0.56)***	0.30 (0.47)	1.38 (0.73)**	1.10 (0.69)
10	Fearful	0.55 (0.61)	0.59 (0.65)	0.44 (0.54)	0.48 (0.57)	1.02 (0.65)	1.12 (0.74)
11	Restless sleep	0.70 (0.76)	0.72 (0.70)	0.56 (0.67)	0.62 (0.64)	1.31 (0.82)	1.21 (0.74)
12	Happy	0.78 (0.69)	0.69 (0.62)	0.62 (0.58)	0.58 (0.57)	1.46 (0.69)**	1.22 (0.59)
13	Talked less	0.68 (0.68)	0.67 (0.65)	0.58 (0.65)	0.55 (0.55)	1.09 (0.65)	1.23 (0.76)
14	Felt lonely	0.88 (0.76)	0.93 (0.70)	0.71 (0.66)	0.77 (0.58)	1.61 (0.73)	1.72 (0.71)
15	People unfriendly	0.45 (0.60)	0.40 (0.58)	0.33 (0.52)	0.29 (0.47)	0.94 (0.68)	0.92 (0.68)
16	Enjoyed life	0.81 (0.77)	0.74 (0.69)	0.63 (0.66)	0.62 (0.64)	1.58 (0.72)**	1.30 (0.62)
17	Crying spells	0.52 (0.55)	0.93 (0.61)	0.42 (0.50)***	0.82 (0.55)	0.94 (0.55)***	1.42 (0.66)
18	Felt Sad	0.76 (0.64)	0.95 (0.59)	0.62 (0.55)***	0.82 (0.49)	1.38 (0.63)*	1.59 (0.63)
19	People dislike me	0.49 (0.60)	0.49 (0.58)	0.37 (0.54)	0.38 (0.53)	1.00 (0.58)	1.00 (0.53)
20	Can't get going	0.59 (0.67)	0.62 (0.65)	0.42 (0.55)	0.48 (0.54)	1.32 (0.67)	1.30 (0.68)

*significant at $p < 0.05$, **significant at $p < 0.01$, ***significant at $p < 0.001$

Non-depressed group (CES-D score ≤ 21)

Symptoms with three highest scores in boys and girls were the same. They were 'good just as others' (item 4), 'troubled mind' (item 5) and 'bothered by things' (item 1).

When the mean scores of each symptom were examined, it was found that in most symptoms girls scored higher than boys. Overall, the mean scores of seven out of 20 symptoms differed significantly. Boys scored higher in 'hopeful future' (item 8-I felt hopeful about the future), and 'life failure' (item 9-I thought my life had been a failure). Girls scored higher in 'bothered by things' (item 1-I was bothered by things that do not usually bother me), 'poor appetite' (item 2-I did not feel like eating; my appetite was poor), 'depressed' (item 6- I felt depressed), 'crying spells' (item 17-I had crying spells) and 'feel sad' (item 18-I felt sad).

Depressed group (CES-D score ≥ 22)

Symptoms with three highest scores in depressed boys were 'good just as others' (item 4: I felt that I was just as good as other people), 'feel lonely' (item

14: I felt lonely) and 'enjoy life' (item 16: I enjoyed life). In girls they were 'good just as others' (item 4- I felt that I was just as good as other people), 'feel lonely' (item 14- I felt lonely.) and 'bothered by things' (item 1- I was bothered by things that don't usually bother me).

The mean scores of each symptom were examined. Boys scored higher than girls in most symptoms. Overall, the mean scores of six symptoms differed significantly. Boys scored higher in 'life failure' (item 9- I thought my life had been a failure), 'happy' (item 12- I was happy), and 'enjoy life' (item 16- I enjoyed life). Girls scored higher in 'shake off blues' (item 3- I felt that I could not shake off the blues, even with help from my family or friends), 'crying spells' (item 17- I had crying spells), and 'feel sad' (item 18- I felt sad).

CES-D subscales

The analysis of CES-D subscales found that in both groups boys scored higher in the positive affect and the interpersonal subscales, while girls scored higher in the negative affect and somatic subscales.

However, in the non-depressed group, the difference was significant in three subscales: positive affect ($p < 0.05$), negative affect ($p < 0.001$), and somatic subscales ($p < 0.01$). In the depressed group, the

difference was significant in two subscales: positive affect ($p < 0.01$) and negative affect ($p < 0.05$) as can be seen in **Figures 1 and 2**.

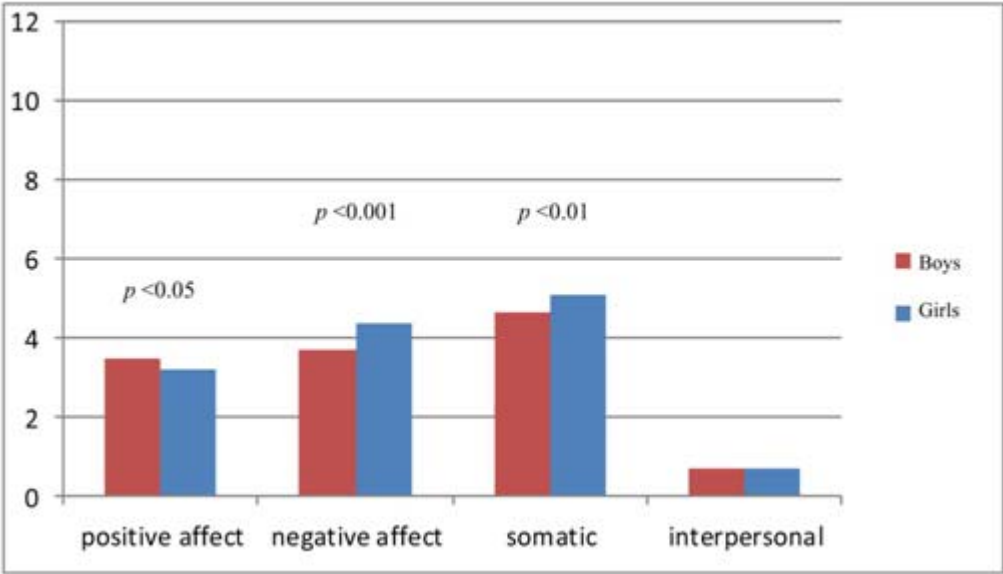


Figure 1. Mean scores and SD of CES-D subscales in non-depressed group

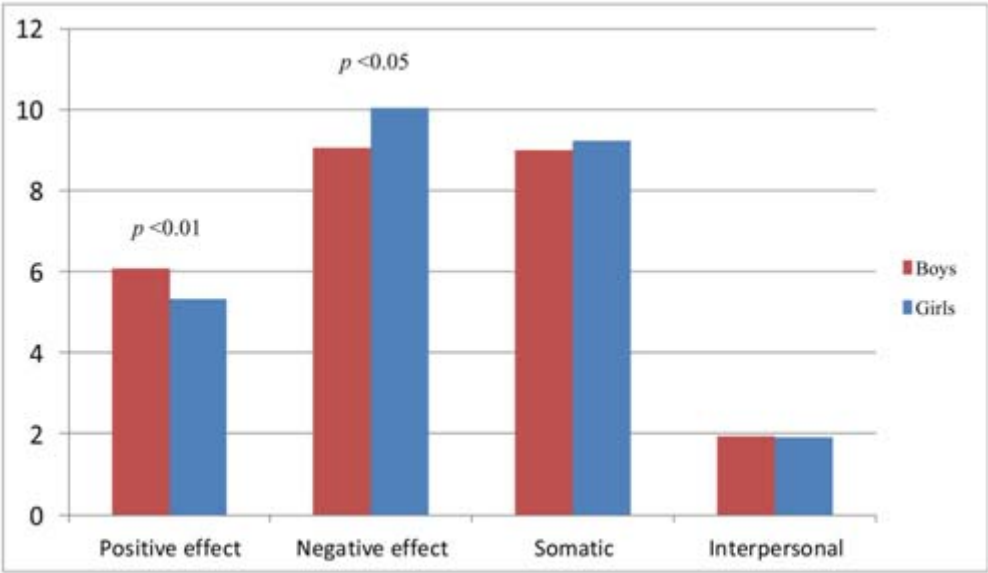


Figure 2. Mean scores and SD of CES-D subscales in depressed group

Discussion

Studies in adults found lifetime prevalence of depression to be twice as high in women as men [17, 18]. Higher female than male rates of depression are not apparent among preadolescent children and are not consistently found until mid-adolescence [19]. The present study revealed a different trend as the prevalence of depression was higher in boys than in girls, 19%, and 17% respectively. The reasons may be sociocultural. In Asian countries, families have higher expectations on sons than on daughters and boys are expected to perform well. This may cause high frustration in boys and results in a higher prevalence of depression. Although the difference in prevalence did not have statistical significance, it points to the importance of boys' mental health. The common belief that boys are 'strong' and do not need emotional care as much as girls, should be re-evaluated.

Many studies find girls to have more severe depressive symptoms. However, some studies find the reverse. A study in Mexican adolescents found no significant gender difference on depression as measured by the CES-D [20]. The study of Compas et al. [21] found that gender differences in depressed mood were moderate in size and consistent in clinically referred youths, with referred girls scoring higher than referred boys on all measures, whereas gender differences in community samples were either non-significant or small in magnitude. The present study revealed two interesting points. First, the mean CES-D score that reflects the severity of depression was higher in girls than in boys in both depressed and non-depressed groups. This means that the tendency for girls to rate more severe symptoms does not exist in depression only. It exists in normal condition as well. Second, the gender differences exist in the non-depressed group, not in the depressed group. The explanation may be that in depression there is an increase in symptoms in both boys and girls. They endorsed higher ratings than in normal condition. However, the increase was more in boys than in girls. This resulted in the non-significant difference in the mean CES-D scores of both genders. Further controlled studies are needed to verify this finding.

Studies comparing depressive symptoms in adults also found gender differences. Depressed women report more somatic symptoms, crying, guilt, and body image dissatisfaction than depressed men [22-25]. In children, depressed girls were found to exhibit more mood symptoms (e.g., feeling sad) and cognitive

symptoms (e.g., self-deprecation), whereas depressed boys exhibit more irritability [26]. In addition, depressed girls reported more guilt, body image dissatisfaction, more depressed mood, self-blame, feelings of failure, concentration problems, fatigue, and health worries than depressed boys. In contrast, depressed boys had higher ratings of anhedonia, morning depressed mood, and morning fatigue [6]. A study by Trangkasombat and Likanapichitkul in 1,264 junior high school students in Bangkok found that, using the Children Depression's Inventory, depressed children endorsed items on cognition (especially self-perception and performance) and somatic symptoms at higher frequencies than items on depressed mood [10]. In the present report, two most severe symptoms (items with highest scores) in both genders were similar. They were self-deprecation and feeling lonely. The third symptom on the list in boys was '(not) enjoy life', and in girls was 'irritable mood'. Symptoms which were more severe in boys included cognitive symptoms such as perceptions about life, 'life as a failure'; and lack of well-being; '(not) happy' and '(not) enjoy life'. Symptoms that were more severe in girls included sadness/depressed mood; 'cannot shake off the blues'; 'crying spells' and 'feel sad'. The analysis of subscales also highlighted the difference in symptom profiles. Girls scored higher in negative affect and somatic subscales while boys scored higher in positive affect (lack of well-being) subscale.

Reasons for gender differences in depression are not yet well understood. As for previous findings that girls were more depressed than boys, one model suggests that compared with boys, girls have greater interpersonal depressive vulnerability and greater reactivity to stressful events [27]. Some researcher postulates that adolescent girls are more prone to exhibit a cognitive style characterized by negative self-evaluation and rumination, which predispose them to depression [28-31]. Gender differences are also found in brain functioning, as women with histories of childhood depression exhibit greater right mid-frontal alpha wave suppression [32]. For our finding that boys are not less depressed than girls, we postulate sociocultural and child-rearing influences. In Thai society, boys are mostly raised by mothers. As women are more emotionally literate than men, boys may be as much in touch with their feelings as girls and as able as girls to express them in the self-report questionnaire. Furthermore, growing up with fathers being emotionally unavailable, boys may develop self-

inadequacy that may predispose them to depression.

The findings of gender differences in depression have many implications. In the assessment of adolescents with emotional problems, clinicians should be aware of these differences. The diagnostic criteria of depression in adolescents should take into consideration the different manifestations of depression. If the same symptom criteria are to be used, cases with depression may be missed as clinicians may focus on symptoms that are not present or not common for that gender. For example, if we focus on sad feelings as a sign of depression, we may not find them in boys. In the same way, if we are not aware that somatic symptoms are signs of depression in girls, we may miss such cases. An awareness of gender differences is also helpful to clinicians in treatment planning. For example, if cognitive symptoms such as the feeling that life is a failure or the feeling of unhappiness are prominent in boys, cognitive therapy should be a main therapeutic intervention. On the contrary, pharmacotherapy may be particularly helpful to alleviate depressed mood in girls.

This is the first study of gender differences in depression in Thai youth. The large sample size in the present study provided power to detect moderate but theoretically important symptom differences between boys and girls. However, there are some limitations. As the sample is exclusively Thai, the present findings may not generalize across ethnic groups. In addition, this study assessed depressive symptoms at one point in time. Longitudinal research is needed to examine whether gender-specific symptoms play differing roles for boys and girls in the onset and maintenance of depression. Furthermore, given that gender differences in depressive symptoms may differ among ethnic groups, for example, among Caucasian, African-American, and Hispanic adolescents [33], it is interesting to see if such trend exists in Asian population.

In conclusion, our study in a community sample of adolescents suggests that there is no significant difference in the prevalence and severity of depression in both genders. The significant difference lies in the symptom profiles. Girls have more mood and somatic symptoms while boys have more cognitive symptoms and lack of well-being. Understanding such differences is integral in the treatment and prevention of depression in adolescents.

The authors declare no conflict of interest.

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