

Recurrent abdominal pain in adolescents with anxiety and depression disorders

Fastralina¹, Sri Sofyani¹, M. Joesoef Simbolon², Iskandar Z. Lubis¹

Abstract

Background Anxiety and depression disorders in adolescents may affect their academic performances and social functioning at school. Adolescents with these disorders sometimes develop recurrent abdominal pain (RAP).

Objective To assess the occurrence of recurrent abdominal pain among adolescents with anxiety and depression disorders

Methods We conducted a cross-sectional study from August to September 2009 in 12–18 year-old adolescents from 3 junior high schools and 3 senior high schools in Secanggang Subdistrict, Langkat District, North Sumatera Province. We screened 960 adolescents. Subjects were selected by consecutive sampling and instructed to fill the child behavior checklist (CBCL) and children's depression inventory (CDI) forms. Those with suspected anxiety/depression (CBCL score ≥ 12 for boys and ≥ 14 for girls) and those with suspected depression (CDI score ≥ 13) were then examined by a psychiatrist. Adolescents diagnosed with anxiety or depression disorders were instructed to fill the RAP questionnaire based on Apley and Naish criteria.

Results From the CBCL and CDI forms, 250 students were suspected of having anxiety and/or depression. From these, 144 students participated in this study. Of the 84 students with anxiety disorders, 60 (71.4%) students suffered from RAP. Of the 60 students with depression disorders, 31 (51%) suffered from RAP.

Conclusion Adolescents with anxiety or depression are more likely to have recurrent abdominal pain. [Paediatr Indones. 2013;53:16-20.]

Keywords: anxiety disorders, depression disorders, recurrent abdominal pain

Anxiety and depression disorders are the most prevalent mental disorders during adolescence. Prevention is important because their onset is rapid, often persist into later childhood, and may impair their academic functioning and health.^{1,2} Anxiety and depression often occur in early adolescence up to 20 years of age, and are found more often in female adolescents than in males.^{3,4} An epidemiological study reported that the prevalence of anxiety disorders and depression disorders in children and adolescents ranged from 2.6% to 41.2%.² Using the diagnostic interview schedule for children (DISC) with Asian/Pacific Islander adolescent subjects, Hishinuma *et al.* found that the prevalence of anxiety was 9.1% in adolescents in the Asia Pacific region.⁵

Children with anxiety disorders may be tense, apprehensive, easily exhausted, have difficulty in concentrating, and sleeping difficulty (somatic

This study was presented at the National Congress of Badan Koordinasi Gastroenterologi Anak Indonesia (BKGAI IV), Medan, Indonesia, December 4th-7th, 2010.

From the Departments of Child Health¹ and Psychiatry², University of North Sumatera Medical School, H. Adam Malik Hospital, Medan, Indonesia.

Reprint requests to: Fastralina, Department of Child Health, University of North Sumatera Medical School/H. Adam Malik Hospital, Jl. Bunga Lau No. 17 Medan 20138. Tel. +62-618-361721, +62-618-36663, Fax. +62-618-361721. E-mail: lady_faster@yahoo.com

complaints).⁵ Emotions, cognitive processes, and other central nervous system influences may modulate the perception of pain to produce an altered awareness of discomfort from visceral sensation, such as abdominal pain.⁶ It has long been suspected that psychological factors play a role in the development or exacerbation of abdominal pain. There is evidence of an association between psychological and physical problems in children and adolescents.⁷ A recent meta-analysis showed that withdrawn behavior, somatic complaints and anxiety/depression were more likely to occur in children with recurrent abdominal pain (RAP).⁸ The association between anxiety disorders and depression disorders to RAP needs to be examined, while controlling for somatic symptoms and features of anxiety/depression that may artificially inflate this association. If recurrent bouts of abdominal pain are criteria for an anxiety/depression disorder, the apparent association between RAP and anxiety/depression may result in an overlap in the symptoms.⁹ This study was designed to assess the occurrence of RAP in adolescents with anxiety and depression disorders.

Methods

We conducted a cross-sectional study from August to September 2009 on 12–18 year-old adolescents from 3 junior high schools and 3 senior high schools in Secanggang Subdistrict, Langkat District, North Sumatera Province. We included adolescents with suspected anxiety disorders based on CBCL scores (anxious/depressed category score of ≥ 12 for boys

and ≥ 14 for girls) and suspected depression disorders based on CDI score ≥ 13 . Informed consent from subjects and their parents was obtained. We excluded students undergoing psychiatric treatment for anxiety and major depression disorders, those with recurrent abdominal pain because of organic disorders, and those with organic diseases that may cause anxiety and depressive disorders. Based on the formula for determining sample size, we calculated 59 to be the minimum number of subjects needed. Subjects were selected by consecutive sampling technique.

We screened 960 subjects to find the suspected subjects of having anxiety or depression. After that, the suspected subjects would be examined by a psychiatrist, based on PPDGJ III criteria, for determining anxiety or depression disorders. Subjects with anxiety or depression disorders were instructed on filling questionnaires about RAP. Routine blood and urine tests were done to exclude organic abdominal pain, according to the Apley and Naish criteria. Data from the questionnaires were collected, analyzed and presented using SPSS for Windows 16.0. We used Chi square test to analyze associations between anxiety and depression disorders to RAP. Statistical significance was considered to be $P < 0.05$ with a 95% confidence interval (CI).

Results

From the 960 students who underwent screening, we found that 250 (26.04%) students were suspected of having anxiety and/or depression. However, only 144 suspected students were willing to participate.

Table 1. Characteristics of subjects

Characteristics	Anxiety disorders n=84	Depression disorders n=60
Mean age (SD), years	14.4 (1.34)	14.0 (1.36)
Mean weight (SD), kg	38.9 (7.80)	37.7 (8.26)
Mean height (SD), cm	145.1 (7.71)	146.3 (7.64)
Sex, n (%)		
Males	37 (44.0)	28 (46.7)
Females	47 (56.0)	32 (53.3)
Nutritional status, n (%)		
Obese	2 (2.4)	2 (3.3)
Overweight	14 (16.7)	7 (11.7)
Normal weight	59 (70.2)	36 (60.0)
Underweight	9 (10.7)	15 (25.0)
Monthly parental income, n (%)		
< Rp 300,000	0	0
Rp 300,000 – 1,000,000	62 (73.8)	36 (60.0)
> Rp 1,000,000	22 (26.2)	24 (40.0)

Table 2. CBCL scale and CDI of subjects

Parameters	Recurrent abdominal pain (n=91)	No recurrent abdominal pain (n=53)
CBCL, n (%)		
Summary measure		
Internalizing	89 (61.8)	55 (27.0)
Externalizing	77 (53.5)	67 (46.5)
Total score	73 (50.7)	71 (49.3)
Individual CBLB scale, n (%)		
Withdrawn	78 (54.2)	66 (45.8)
Somatic complaints	88 (61.1)	56 (38.9)
Anxious/depressed	91 (63.2)	53 (36.8)
Social problems	74 (51.4)	70 (48.6)
Thought problems	69 (47.9)	75 (52.1)
Attention problems	68 (47.2)	76 (52.8)
Delinquent behavior	67 (46.5)	77 (53.5)
Aggressive behavior	74 (43.1)	70 (56.9)
CDI, n (%)		
Depression	91 (63.2)	53 (36.8)

Based on PPDGJ III, subjects were comprised of 84 students with anxiety disorders and 60 students with depression disorders. The mean age of children with anxiety disorders was 14.4 (SD 1.34) years, while that of children with depression disorders was 14 (SD 1.36) years. There were more females than males in both groups. Most subjects had normal weight. Subjects' characteristics were similar in the anxiety and depression groups. Majority of parents whose children suffered from anxiety and depression disorders had monthly income of Rp. 300,000 - 1,000,000 (Table 1).

As shown in Table 2, the CBCL summary measure for internalizing, 61.8% is likely to have RAP. From the individual CBCL scales, the categories of withdrawn, somatic complaints, anxious/depressed, social problems, and aggressive behavior were also give the same overview. As well as from the CDI questionnaire showed that more than a half of subjects with depression having RAP.

Table 3 shows subjects with anxiety disorders are more likely to have recurrent abdominal pain as well as subjects with depression disorders.

Table 3. Proportion of recurrent abdominal pain on anxiety and depression disorders

Variables	Recurrent abdominal pain, n (%)	No recurrent abdominal pain, n (%)
Anxiety disorders (n=84)	60 (71.4)	24 (28.6)
Depression disorders (n=60)	31 (51.7)	29 (48.3)

Discussion

In this study, we found prevalence of anxiety disorders was 8.7% and depression disorders was 6.25%. In contrast, Hofflich *et al.* reported that the prevalence of anxiety disorders in adolescents was 10% and that of depression disorders was 2.6-18% in American subjects.⁹ This distinction may be due to Western and Eastern cultural differences. In Western societies, parents are more willing to seek help for children with anxiety and depression disorders. On the contrary, in Eastern societies these disorders are considered to be socially stigmatizing, so parents often ignore their children's behavior and emotions.²

We found that the mean age of students with anxiety disorders was 14.4 (SD 1.34) years while that of depression disorders was 14 (SD 1.36) years. A Dutch study showed that gender and age significantly predicted anxiety and depressive disorders. Adolescents aged 12-16 years at initial assessment were more likely to have depressive disorders than younger children (4-11 years).¹⁰ Factors that increased the risk of developing depression included age and lower socioeconomic status.¹¹

In the United States, anxiety and depression disorders occurring in children aged 9 to 16 years may be due to their increased use of drugs and alcohol.⁹ Anxiety disorders and depression disorders are reportedly more common in girls than boys, similar to our findings. Girls are more likely to develop

anxiety and depressive disorders possibly because they experience more stress during the adolescent transition.¹⁰

A common symptom of anxiety and depressive disorders is loss of appetite, which may affect the nutritional status of the child. In our subjects, normal weight nutritional status was most common in both disorders. These adolescents may have had only minor anxiety and depression disorders that did not influence their weight. It was noted that lack of appetite was the symptom that eventually most influenced children's nutritional status.¹²

Low socioeconomic factors also increase a person's risk for experiencing anxiety and depressive disorders. In Pakistan, the prevalence of anxiety and depression disorders was higher in people of low economic status.¹³ We observed that the majority of parents whose children suffered from anxiety and depression disorders had monthly incomes of Rp 300,000 - 1,000,000, and most were plantation workers.

Children with anxiety and depressive disorders reportedly have more somatic complaints, such as abdominal pain, headaches, nausea, and vomiting than children with non-anxious disorders.⁹ We found that adolescent with anxiety and depression disorders were more likely to have RAP. Furthermore, adolescents with anxiety disorders had more incidence of RAP than depressive disorders, 71.4% and 51.7% respectively. Similarly, a Pennsylvania study found that children presenting with functional RAP had more anxiety disorders than depressive disorders.⁷

Adolescents who suffer from RAP tend to be more withdrawn than adolescents without RAP. Avoidance and withdrawn behavior is common where adolescents tend to be aloof to their peers to avoid embarrassment if their school friends knew their real condition.¹⁴ Adolescents with RAP often miss school, also disturbing their relationship with friends. Ultimately, they lose self-confidence and withdraw from their community, resulting in even more stress.¹⁵

Clinical studies have shown that adolescents with RAP described their behavior as obedient and having a low capacity compared to teens who did not suffer from RAP.¹⁷ Furthermore, children with RAP demonstrate more symptoms of anxiety and depression (internalizing symptoms), but do not have higher levels of conduct disorders or oppositional

behavior (externalizing symptoms).^{17,18}

Recurrent abdominal pain was also more happened on the internalization subscale in adolescents. Subscales of withdrawn and somatic complaints was similarly result with RAP, although to a lesser degree. These categories can be used to distinguish the need for psychological therapy. Recurrent abdominal pain may be caused by organic or non-organic disorders, with 10-15% of RAP reportedly caused by organic disorders.^{9,19} A limitation of this study was the lack of parents' involvement in observing their children's behavior, especially in confirming the symptoms of RAP.

In conclusion, we find that adolescents with anxiety and depression disorders are more likely to have RAP. Recurrent abdominal pain happens more in adolescents with anxiety disorders than depression disorders.

References

1. Hoek W, Schuurmans J, Koot HM, Cuijpers P. Prevention of depression and anxiety in adolescents: a randomized controlled trial testing the efficacy and mechanisms of internet-based self-help problem-solving therapy. *Bio Med Cent*. 2009;1-13.
2. Cartwright-Hatton S, McNicol K, Doubleday E. Anxiety in a neglected population: prevalence of anxiety disorders in pre-adolescent children. *Clin Psychol Rev*. 2006;26:817-33.
3. Schapiro M. Anxiety disorders. In: Nevid JS, Rathus SA, Greene B, editors. *Abnormal psychology in a changing world*. 5th ed. Prentice Hall: Pearson Education; 2003. p. 162-253.
4. Khan MS, Mahmood S, Badshah A, Ali SU, Jamal Y. Prevalence of depression, anxiety and their associated factors among medical students in Karachi, Pakistan. *J Pak Med Assoc*. 2006;56:583-6.
5. Hishinuma ES, Miyamoto RH, Nishimura ST, Goebert GA, Yuen NC, Makini GK, *et al*. Prediction of anxiety disorders using the state-trait anxiety inventory for multiethnic adolescents. *J Anxiety Disord*. 2001;15:511-33.
6. Thiessen PN. Recurrent abdominal pain. *Pediatr Rev*. 2002;23:39-45.
7. Campo JV, Bridge J, Ehmann M, Altman S, Lucas A, Birmaher B, *et al*. Recurrent abdominal pain, anxiety, and depression in primary care. *Pediatrics*. 2004; 113:817-24.
8. Dufton LM. Anxiety and somatic complaints in children

- with recurrent abdominal pain and anxiety disorder. *J Pediatr Psychol*. 2009;34:176-86.
9. Hofflich AS, Hughes AA, Kendall PC. Somatic complaints and childhood anxiety disorders. *Int J Clin Health Psychol*. 2006;6:230-42.
 10. Roza SJ, Hofstra MB, van der Ende J, Verhulst FC. Stable prediction of mood and anxiety disorders based on behavioral and emotional problems in childhood: a 14-year follow-up during childhood, adolescence, and young adulthood. *Am J Psychiatry*. 2003;160:2116-21.
 11. Sadock BJ, Sadock VA. Generalized anxiety disorder. In: Sadock BJ, Sadock VA, editors. *Kaplan & Sadock's synopsis of psychiatry*. 9th ed. New York: Williams & Wilkins; 2000. p. 632-6.
 12. World Health Organization. *Pedoman penggolongan dan diagnosis gangguan jiwa di Indonesia*. 3rd ed. Jakarta: Depkes RI; 1993. p. 150-62.
 13. Shahraki T, Farahmand F, Khatami GR, Najafi M, Shahraki M. Recurrent abdominal pain: an etiological study among in a referral children's medical center in Iran. *Iran J Ped*. 2007;17:235-40.
 14. Greco LA, Freeman KE, Dufton L. Overt and relational victimization among children with frequent abdominal pain: links to social skill, academic functioning, and health service use. *J Pediatr Psychol*. 2007;32:320-29.
 15. Kaminsky L, Robertson M, Dewey D. Psychological correlates of depression in children with recurrent abdominal pain. *J Pediatr Psychol*. 2006;31:956-66.
 16. Levy RL, Langer SL, Walker LS, Feld LD, Whitehead WE. Relationship between the decision to take a child to the clinic for abdominal pain and maternal psychological distress. *Arch Pediatr Adolesc Med*. 2009;160:961-5.
 17. Galli F, D'Antuono G, Tarantino S, Viviano F, Borelli O, Chirumbolo A, et al. Headache and recurrent abdominal pain: a controlled study by the means of the child behaviour checklist (CBCL). *Cephalalgia*. 2007;27:211-9.
 18. Master KS. Recurrent abdominal pain, medical intervention, and biofeedback: what happened to the biopsychosocial model? *Appl Psychophysiol Biofeedback*. 2006;31:155-65.
 19. White KS, Farrell AD. Anxiety and psychosocial stress as predictors of headache and abdominal pain in urban early adolescents. *J Pediatr Psychol*. 2005;31:582-96.