Differences of Anxiety Levels between Students of Natural Sciences and Social Studies Major Based on School Environmental Factors in Senior High Schools with *Rintisan Sekolah Bertaraf Internasional* Scheme

Arviana Adamantina Putri¹, Leonardo Lubis², Tatang Muchtar Sutaryan³

¹Faculty of Medicine, Universitas Padjadjaran, ²Department of Anatomy, Faculty of Medicine, Universitas Padjadjaran, ³Department of Psychiatry, Faculty of Medicine, Universitas Padjadjaran/Dr. Hasan Sadikin General Hospital, Bandung

Abstract

Background: Senior High Schools with Rintisan Sekolah Bertaraf Internasional (RSBI) scheme are senior high schools that pilot international standards in learning methods and high curriculum targets. This factor may lead to a rise of anxiety amongst students, both for students in Natural Sciences major and Social Studies major. There are three factors which cause anxiety in the school environment, namely: dissatisfaction towards the curriculum, the teacher, and the school management.

Methods: This study used retrospective cohort design. Subjects were selected using the convenience sampling method. Natural Sciences students (n=32) and Social Studies students (n=14) had their anxiety level measured using the Taylor Manifest Anxiety Scale. The dissatisfaction towards the school environment factors was assessed using a school evaluation questionnaire.

Results: The anxiety measurement showed that students in both Natural Sciences and Social Studies major experienced severe anxiety (Natural Sciences vs. Social Studies: 75% vs. 86%). The study results based on the school evaluation questionnaire showed dissatisfactions towards the three school environmental factors (curriculum factor, Natural Sciences vs. Social Studies: 59% vs. 64%; teacher factor, Natural Sciences vs. Social Studies: 3% vs. 43%; school management factor, Natural Sciences vs. Social Studies: 3% vs. 14%). The chi-square test results showed that the difference in the anxiety levels between the students of Natural Sciences and Social Studies majors was insignificant (p>0.05).

Conclusions: Students of Natural Sciences and Social Studies majors of senior high schools with RSBI scheme experienced severe anxiety. However, there is no strong evidence that the school environment causes this severe anxiety. [AMJ.2014;1(2):65–9]

Keywords: Anxiety Level, natural sciences, senior high school with rsbi scheme, school environment factors, social studies

Perbedaan Tingkat Kecemasan antara Siswa Kelas Ilmu Pengetahuan Alam dan Siswa Kelas Sosial Berdasarkan Faktor Lingkungan Sekolah di Sekolah Menengah Atas Rintisan Sekolah Bertaraf Internasional

Abstrak

Latar Belakang: Sekolah Menengah Atas Rintisan Sekolah Bertaraf Internasional (SMA RSBI) adalah sekolah menengah atas yang menggunakan standar internasional dalam metode pembelajaran dan kurikulum. Faktor ini dapat menyebabkan kenaikan kecemasan di kalangan siswa, baik bagi siswa kelas Ilmu Pengetahuan Alam dan siswa kelas Ilmu Sosial. Ada tiga faktor yang menyebabkan kecemasan di lingkungan sekolah, yaitu: ketidakpuasan terhadap kurikulum, guru, dan manajemen sekolah.

Metode: Penelitian ini menggunakan desain kohort retrospektif. Subjek dipilih dengan menggunakan metode *convenience sampling.* Tingkat kecemasan siswa kelas Ilmu Pengetahuan Alam (n = 32) dan siswa

Correspondence: Arviana Adamantina Putri, Faculty of Medicine, Universitas Padjadjaran, Jalan Raya Bandung-Sumedang Km.21, Jatinangor, Sumedang, Indonesia, Phone: +6285223880048, Email: p_arviana@yahoo.com

kelas Ilmu Sosial (n = 14) diukur dengan menggunakan Skala Kecemasan Taylor Manifest. Ketidakpuasan terhadap faktor lingkungan sekolah dinilai menggunakan kuesioner evaluasi sekolah.

Hasil: Pengukuran kecemasan menunjukkan bahwa siswa di kelas Ilmu Pengetahuan Alam dan Ilmu Sosial sama sama pernah mengalami kecemasan yang berat (Ilmu Pengetahuan Alam vs Studi Sosial: 75% vs 86%). Hasil penelitian berdasarkan kuesioner evaluasi sekolah menunjukkan ketidakpuasan terhadap tiga faktor lingkungan sekolah (faktor kurikulum, Ilmu Pengetahuan Alam vs Studi Sosial: 59% vs 64%; faktor guru, Ilmu Pengetahuan Alam vs Studi Sosial: 3% vs 43 faktor manajemen sekolah, Ilmu Pengetahuan Alam vs Ilmu Sosial;%: 3% vs 14%). Hasil uji chi-square menunjukkan bahwa perbedaan tingkat kecemasan antara siswa kelas Ilmu Pengetahuan Alam dan siswa kelas Ilmu Sosial jurusan tidak signifikan (p> 0,05).

Simpulan: Siswa kelas Ilmu Pengetahuan Alam dan kelas Ilmu Sosial di SMA RSBI mengalami kecemasan yang berat. Namun, tidak ada bukti kuat yang menunjukkan bahwa lingkungan sekolah sebagai penyebab kecemasan yang berat ini. [AMJ.2014;1(2):65-9]

Kata kunci: Tingkat Kecemasan, ilmu pengetahuan alam, sma rsbi, faktor lingkungan sekolah, ilmu sosial

Introduction

Teenage period is the transition into adulthood, a time to seek identity, as well as the period when biological, cognitive, and moral developments occur. Teenager characteristic of identity searching may cause anxiety, which is a common psychological disorder in teenagers.1 In a previous study, it was found that 47.7% of teenagers experienced anxiety.²

This anxiety may arise from, among others, problems arising from the school environment.3 Anxiety caused by the school environment can be due to three factors: curriculum, teacher, and school management.4 An example of the curriculum factor that may trigger anxiety is a learning target which is too high, as well as non-conducive learning climate. The attitude and behavior of teachers, for example unfriendly teachers, can become a trigger of anxiety caused by the teacher factor. Anxiety may also be induced by the school management factor such as the limited facilities and infrastructures in the school.4 If those factors are not well-managed, the rise of anxiety among students is unavoidable.

Anxiety is an uncomfortable feeling without any clear cause. Anxiety is often accompanied by autonomic symptoms such as headache, palpitation, dyspnea, anxious, and sweating.5 Aside from the autonomous nervous system, three main neurotransmitters also play some roles in anxiety, namely norepinephrine (NE), serotonin, and gamma-aminobutyric acid (GABA).5,6 These three neurotransmitters can affect the limbic system and the emotional behaviors.5,7 Anxiety can also affect the way of thinking, perception, and learning of the afflicted, which may lead to confusion and reversion of perception and may affect learning through decreased concentration, memory, and abilities to connect one thing to another.⁵ These effects can deprive the students from

participating in the learning process, especially for students of schools with RSBI scheme. Schools with RSBI scheme include schools that pilot international standards in all learning activities and have high curriculum targets.8 As such, the pressure and competition are higher. This may easily trigger anxiety among the students.

In Senior High Schools with RSBI scheme, when students started the eleventh grade, they arere assigned to two majors, the Natural Sciences (Ilmu Pengetahuan Alam, IPA), and Social Studies (Ilmu Pengetahuan Sosial) IPS. In Natural Sciences class, the learning emphasized on theleft brain, such as logic, reasoning, numbers, and lists. This is contrary to the class of Social Studies, which put emphasis on communication and social functions, using more of the right brain.^{9,10} Likewise, the study burden in both Natural Science and Social Studies majors may trigger anxiety among students.¹¹ However, there is no certain description yet on the difference in anxiety level between the students of Natural Sciences and Social Studies major based on a survey of brain functional area. Therefore, this study aimed at assessing the difference in the level of anxiety between students of Natural Sciences and Social Studies majors in Senior High Schools with RSBI scheme.

Methods

There were 4 Senior High Schools with RSBI scheme in the city of Bandung at the time of the study. Those were SMA Negeri 3 Bandung, SMA Negeri 5 Bandung, SMA Negeri 1 Baleendah Bandung, and SMA Krida Nusantara Bandung. This study used convenience sampling to select respondents with SMAN 3 Bandung as the study site. This school was selected because it applied RSBI scheme and ranked the highest in

the city of Bandung.8

This study was conducted in SMAN 3 Bandung during the period of October to December 2012, with students in grade XII as the study population. The subjects consisted of students of Natural Science Major (n = 32; 56% male, and 44% female), and students of Social Studies Major (n= 14; 29% male and 71% femalewho were enrolled in the school during the academic year of 2012-2013 and willing to fill out the questionnaire. Students who were absent at the time of study and those who did not complete the questionnaire were excluded.

This study was an analytic descriptive study with retrospective cohort design. Independent variables of the study were Natural Science or Social Studies students and the environment of SMAN 3 Bandung School. The dependent variable was the anxiety level measured by Taylor Manifest Anxiety Scale (TMAS). The TMASscore of \leq 9 represents the category of mild anxiety, score of 10-15 represents moderate anxiety, and score of \geq 16 represents severe anxiety

At the beginning of the study, convenience sampling was used to obtain respondents. The respondents then completed their biodata, informed consent form, TMAS questionnaire, and school evaluation questionnaire, which was a questionnaire to measure the degree of satisfaction towards the school.

Data obtained were then tested using the chi-square method in SPSS 20.0. This study has gained approval from the Ethic Committee of Health Research, Faculty of Medicine, Universitas Padjadjaran.

Results

The results of the TMAS questionnaire completed by the respondents, i.e.32 Natural Sciences students and 14 Social Studies students, were categorized into not anxious, mild anxiety, moderate anxiety, and severe anxiety with most students, both in the Natural Sciences and Social Studies majors, were assigned to the severe anxiety group (Table 1).

A certain disatisfaction degree towards factors in the school among students with severe anxiety (Table 2). Of the three factors, the curriculum was the most disliked factor by the majority of students, both from the Natural Sciences major and the Social Studies major. For the other two factors, the level of dissatisfaction was not significant, except for the teacher factor in the Social Studies major, which was quite high.

Table 1 Comparison of Anxiety Levels between Students of Natural **Sciences and Social Studies Majors**

	Classifica			
Majors	Mild Anxiety	Moderate Anxiety	Severe Anxiety	Total (%)
	n (%)	n (%)	n (%)	
Natural Sciences	3 (9)	5 (16)	24 (75)	32 (70)
Social Studies	1 (7)	1 (7)	12 (86)	14 (30)
Total	4 (9)	6 (13)	36 (78)	46 (100)

Table 2 Comparison of Satisfaction Level on School Factors between Students of Natural Sciences and **Social Studies Majors with Severe** Anxiety

		Majors	
		Natural Sciences	S o c i a l Studies
		n (%)	n (%)
Satisfaction	Moderate	8(33)	4(33)
towards the Curriculum	Unsatisfied	15(63)	8(67)
Garricaram	Very Dissatisfied	1(4)	0(0)
	Total	24(100)	12(100)
Satisfaction	Satisfied	6(25)	4(33)
towards the Teachers	Moderate	18(75)	8(67)
	Dissatisfied	0(0)	0(0)
	Total	24(100)	12(100)
Satisfaction	Satisfied	3(13)	0(0)
towards the School	Moderate	20(83)	7(58)
Management	Dissatisfied	1(4)	5(42)
	Total	24(100)	12(100)

Chi-square test was performed to reveal the significance of the difference between the level of anxiety of the Natural Science students and Social Studies students (Table 3). This test was also used to assess the correlation between anxiety and dissatisfaction towards school factors (Table 4, 5, 6). All test results with p>0.05 were considered insignificant, which was the case in the difference in anxiety level between the students Natural Science and Social Studies majors. The correlation

Table 3 Chi-square Analysis Results on the Difference in Anxiety Level between the Students of Natural Science and Social Studies Majors

	Classification of Anxiety Level		
Majors	Mild Anxiety + Average Anxiety	Severe Anxiety	p
	n(%)	n(%)	
Natural Sciences	8(18)	24(52)	0.60
Social Studies	2(4)	12(26)	0.69
Total	10(22)	36(78)	

Table 4 Chi-square Analysis Results on the **Correlation between Anxiety Level** and Satisfaction towards Curriculum

	Classification of Anxiety Level		
Curriculum Factor	Mild Anxiety + Average Anxiety	Severe Anxiety	p
	n(%)	n(%)	
Unsatisfied	6(13)	24(52)	
Moderate + Satisfied	4(9)	12(26)	0.72
Total	10(22)	36(78)	

between anxiety and dissatisfaction to the school factors was also unproven in this study.

Discussion

Severe anxiety was experienced by most of the Social Studies students, with 86% of them experienced severe anxiety. Meanwhile, 75% of the Natural Science students experienced severe anxiety. This may be due to the fact that the Social Studies students use more of their right brain, which functions include communication and other social functions. The right prefrontal cortex is the reservoir of anger, anxiety, and fear. 12,13 Hyperactivity on the right prefrontal cortex can cause imbalance between the two hemispheres, making anxiety harder to manage.¹⁴

Table 5 Chi-square Analysis Results on the Correlation between Anxiety Level and Satisfaction towards Teacher

	Classification of Anxiety Level			
Teacher Factor	Mild Anxiety + Average Anxiety	Severe Anxiety	р	
	n(%)	n(%)		
Unsatisfied	2(5)	5(11)		
Moderate + Satisfied	8(17)	31(67)	0.63	
Total	10(22)	36(78)		

Table 6 Chi-square Analysis Results on the **Correlation between Anxiety Level** and Satisfaction towards School **Facilities**

	Classification of Anxiety Level		
School Management Factors	Mild Anxiety + Average Anxiety	Severe Anxiety	р
	n(%)	n(%)	
Unsatisfied	0(0)	3(6)	
Moderate + Unsatisfied	10(22)	33(72)	1.00
Total	10(22)	36(78)	

Brain is not the only factor that influence anxiety since external factors can also have an important role in the rise of anxiety. One of those factors is the school environmental factors which consist of curriculum, teacher, and school management factors.4

Students with severe anxiety from both Natural Sciences and Social Studies majors were dissatisfied with the implemented curriculum. This is due to the target of the curriculum which was too high compared to the average National Exam (Ujian Nasional, UN) target. The learning process that used two different languages, very tight assignments, and high standard of scoring may also create the dissatisfaction.^{4,8} The pressure for students was great and may lead to a feeling of dissatisfaction towards the implemented curriculum, which is also a factor for the rise of anxiety in students. However,

the correlation between the anxiety level and dissatisfaction towards the curriculum had no statistical significance (p > 0.05), This can be due to the fact that this was a pilot study and the first one in Bandung City for this topic. The insignificant result of this study can also be due to the sample size that is too small. Ideally, the sample size for this study to represent the situation in Bandung City should be calculated based on the following formula:

$$n = \frac{N}{1 + Ne^2}$$

Information: n = Sample size N = Total Population e = error tolerance (0,05)

According to the formula, the total population size has to be known. There are 4 Senior High Schools with RSBI scheme in Bandung City. The total population of students in the 4 schools was not determined in this study due to the limited time for completing the study, which led to the use of convenience sampling for sample collection.

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