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Stress Levels and Charecteristics of Medical Faculty Students Undergoing Premenstrual Syndrome and its Association with Academic Achievements

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Abstract
This research was conducted in order to determine the association between stress levels and charecteristics of Medical Faculty Students of University Sumatera Utara with Premenstrual Syndrome events reflected by academic achievements, which started on December 2011 until 2012 after obtaining a letter of consent issued by the the Ethical Comittee of the Health Section, Medical Faculty of Univeristy Suymatera Utara. The research used a "cross sectional design" by means of an analytical observational approach. The data were collected at one certain time from one subject group. The sample filtering procces were concluded by an interview and a specified lie test, conducted by using the L-MMPI scale, due to the *self-rating* nature of the instruments involved. The L-MMPI scale is an integrated part of the MMPI (*Minnesota Multiphasic Personality Inventory*) validity scale to assess honesty. If the results obtained from the L-MMPI scale questioner assessment concluded that the subjects tends to be dishonest, the subject would not be included furthermore in this research, which would be followed by the recruitment of another subject. The sample category were extracted based on the divison stated on the PSST *standard reference* according to the Montreal 2010 Consensus that includes Mild Premenstrual Syndrome and moderate-severe premenstrual syndrome, which finally observed an absence of PMDD. In this research, an amount of 50 subjects were obtained, 30 subjects were categorized as Mild Premenstrual Syndrome and the remaining 20 subjects into moderate-severe premenstrual syndrome, which was followed by conducting a statistical analysis on the obtained data. The author also attempted to present the variables of this research and test the association between the dependent and independant variables in order to obtain a comprehensive understanding concerning the relationship between stress levels, charecteristic factors that include age, BMI, Menarche age, menstrual cycle and menstrual lenghth to premenstrual events and its relation to academic achievements as a dependenmt variable. By using stress levels as a trigger to the occurence of Premenstrual Sydrome in Medical Faculty Students, *chi*-square tests obtained a p value of 0,000, showing a significant association between stress levels based on the adrenal stress degree on Premenstrual Syndrome. A *p*-value of 0,005 was obtained when determining the association betweem Premenstrual with Academic Index achievement of students undergoing Premenstrual Syndrome, which indicated a significant relationship between Premenstrual Syndrome and academic achievement. The obtained BMI charecteristic *p*-value was 0,203, obtained menarche age charecteristic *p*-value was 0,243, obtained menstrual length charecteristic *p*-value was 0,140, indicating the absence of a significant relationship between all the charecteristics stated above with Premenstrual Syndrome. By means of *Spearman's Correlation*, an association between BMI and adrenal stress levels of Medical Faculty students in University Sumatera Utara with academic index achievements was obtained, with the *p*-value of 0,048 and 0,000 respectively. Whereas the menstrual length charecteristic *p*-value obtained was 0,448. This study concluded an association between stress levels and Medical Faculty students charecteristics to Premstrual Syndrome, and between Premenstrual Syndrome with Academic achievement indexes of students undergoing Premenstrual Syndrome.
Key words: Premenstrual Syndrome, *Adrenal Stress Levels*, Academic achievements, L-MMPI scale.

1. Introduction

Menstruation usually begins between the ages of 10 and 16 years, depending on various factors that may influence it. General factors that inlcude health, nutritional status and the body weight relative to height index of a woman may cause the onset of several menstrual problems (Sumodarsono, 1998).

But in several women, the menstrual period is a series of unpleasant events, due to disturbances present within the menstrual cycle in the form of symptoms that range from menstrual pain, a sense of abdominal fullness,

breast pain, to the events of emotional changes that occur in approximately 80-95% of reproductive aged women. (Abraham & Head, 1997; Kraemer, 1998, Lutan & Pujiastuti, 2007).

The cause of this syndrome is unclear, presumably occuring due to hormonal changes in the phases of the menstrual cycle and disappears when menstruation occurs or until a few days after the menstrual cycle is completed. Several theories state that a certain estrogen and progesterone imbalance occurs in women with premenstrual syndrome (Manuaba, 2004).

Another well developed theory states that these events are due to vitamin and mineral deficiency, that include calcium and magnesium (Khine et al, 2006). Magnesium deficiency in patients with premenstrual syndrome have also been studied in the Department of Obstetrics and Gynecology, Faculty of Medicine, University of Sumatera Utara in 2010. This particular study states that magnesium serum levels are associated with the incidence of premenstrual syndrome. In addition, apparently mothers and sisters of women who suffer from premenstrual syndrome also have a history of premenstrual syndrome (Siregar, et al 2010).

However, a woman may also experience symptoms that vary from one month to the next (Burns, 2000).

A person is said to have premenstrual syndrome if they have 1 of 6 symptoms of affective disorder and 1 of 4 somatic disorders described in the table 1 below (ACOG, 2006, Knaapen & Weisz, 2008).

An epidemiological study concluded that 20-40% of adolescnet aged women feel unwell during the late luteal phase and early menstrual phase (Greenspan et al., 1998), whereas other studies indicate approximately 20% of adolescents aged women experiencing moderate to severe symptoms of premenstrual syndrome (Freeman, 2005).

In a study conducted on 384 women, 14% of women aged 15 and older were reported to suffer from premenstrual syndrome, and one large study sponsored by the WHO in 1981 showed that symptoms of premenstrual syndrome were experienced by 23% of Indonesian Women (Essel, 2007).

The high incidence of premenstrual syndrome in adolescents, and the number of complaints caused by the female adolescent onset of symptoms such as somatic disorders and affective (emotional) prior to the menstrual period, increases the suspectibility that an adolescent woman with premenstrual syndrome is associated with a complete transition adapting process occuring during adolescence. The process of the General Adaptation Syndrome (GAS) experienced by a adolescent woman occurs physiologically to achieve a stabil homeostatic state in the face of all forms of pressure (stress) (Seyle, 1978).

Stress includes physical and psychological stress confronted by an adolescent woman is actually a developmental transition. Life development in adolescents occur in various aspects. There are three aspects of the development proposed by Papalia and Olds, which are subsequently: physical development, cognitive development, and the development of personality or social aspects (Papalia and Olds, 2001). According to Piaget's and Santrock, cognitive maturity is present when an adolescent is motivated to understand the environment because of the behavior of their biological adaptation (Piaget & Santrock, 2001).

Cognitive development in adolescents can also be observed from the ability of an adolescent to think more logically. Adolescents already have a pattern of widespread and systematic thinking, with the ability to construct further plannings as an attempt to achieve certain goals in the future (Santrock, 2001). Cognitive development cannot be separated from the development of personality and social meaning of an adolescent. Personality development is changing the way young people to adapt to a particular environment on the pattern of activity or daily routine. While the social development of an adolescent charecterized by how an adolescent communicates with others (Papalia & Olds, 2001).

In addition, Erikson stated that an adolescent is prone to "identity versus identity confussion". Identity crisis often becomes a problem in the psychosocial developmental stages of an adolescent. This stage of development inludes a period to find a certain identity in order for an adolescent to be an adult who has a "sense of self" that successfully achieved the goal in the future with a useful role and value to society (Erickson 1968 in: Papalia, Olds & Feldman, 2001).

Development in adolescence is charecterized by certain changes quantitatively expressed in body shape changes, whereas qualitative change is represented by a more enhanced pattern of thinking (cognitive). Conditions of physical and psychological changes that occur rapidly in young adolescents have made the hallmark of "storm and stress", indicating that adolescents are very sensitive and frequently change attitudes due to the adaptation process that they must undergo (Mappiare, 1992; Hurlock, 2004).

In medical terms, stress will affect the body's homeostatic system resulting in the emergence of changes in somatic and psychological symptoms that can interfere with daily activities, and could even also be a predisposing

factor for productivity decline. It is also associated with decreased learning concentrations, academic achievements and increased rate of absenteeism in education (Brunner & Suddarth, 2001).

A study examining the impact of premenstrual syndrome in adolescence, also conducted on high school students in Yogyakarta, Indonesia, Upper Advanced Level in 2008, with results showing the prevalence of premenstrual syndrome with severe symptoms in girls is as much as 39.2%, while those experiencing mild symptoms as much as 60.8% (Dasuki, Olive, 2008). Other studies have also been conducted in Solo, Indonesia on the impact of premenstrual syndrome in midwifery academy student. Results showed that students who experience premenstrual syndrome will experience physical symptoms and emotional disturbances (Anggraini, 2007)

Premenstrual syndrome symptom severity were grouped into categories: no symptoms, mild, moderate to severe and very severe symptoms. Symptoms are often experienced by most women in the form of mild to severe symptoms, such as feeling irritable (irritable) as much as 17.4%, back pain or muscle pain and a feeling of swelling 14.2% 13.2% (Deuster, 2011).

The effect of stress on women and its manifestations on the incidence of premenstrual syndrome are supported by the theory of some literature, namely involvement in the incident psychoneuroendocrine aspects of premenstrual syndrome, one of which mainly known as adrenal stress conditions, proposed as by Hompes. He underlined that the psychoneuroendocrine aspects involved are closely linked to the activation of HPA axis (hypothalamic-pituitary-adrenal), CRH and ACTH. these subsequent events eventually lead to changes in the adrenal glands secrete the hormone cortisol. His research ended in attempt to find a measuring instrument such as Adrenal Stress Questionnaire that has been tested to assess the validity and reliability due to the influence of the adrenal gland to secrete the stress hormone cortisol (Hompes, 2009).

Adrenal Stress Questionnaire consists of 20 item questions, where each question is filled with a score of 0 for "no right", a score of 3 to answer "undecided" and a score of 5 for the answer "very true". Total score of the assessment questionnaire showed the degree of adrenal stress, with interpretation as follows:

0-30 = good health
> 30-40 = slightly stressful
> 40-50 = adrenal gland tends to increase cortisol secretion
> 50 – 60 = the adrenal glands have increased cortisol secretion
> 60 = the adrenal glands secrete cortisol excess

(Hompes, 2009).

In addition, there is also activation of noradrenergic sympathetic nerve also has a complex mechanism in the form of specific hormonal cascade (Demers, 1999; Lathe, 2001; Cohen, 2003; Collins & Emeroth, 2005; Stewart, 2008).

With the support of basic scientific aspects of such pshyconeuroendocrine involvement and incidence of premenstrual syndrome, the problem formulated in this study as follows: Is there a correlation between stress and the characteristics of Medical Faculty students, University of Sumatra Utara, Medan, Indonesia, on the incidence of premenstrual syndrome that manifests on academic achievement?

The objective of this reseaerch is to determine the correlation between stress and student characteristics Faculty of Medicine, University of North Sumatra on the incidence of premenstrual syndrome that manifests toward academic achievements.

L-MMPI scales are part of the MMPI validity scales to assess honesty. This scale consists of 15 items of questions to be answered "Yes" or "No". "Raw Score" is taken from the number of "no" answers should be <5. When the "Raw Score"> 5 means that respondents tends to be dishonest. This concludes that the respondent cannot be trusted, thus cannot be included in the study. L-MMPI scales have been used and published internationally. In this study, due to the instruments used in this research which are "self-rating" in nature, the validity of this study is strongly affected by the honesty of respondents (Gordon, 2011).

2. Method

This study hypothesized a correlation between stress and the characteristics of the student of the Faculty of Medicine of the premenstrual syndrome and between premenstrual syndrome with student academic performance index experiencing premenstrual syndrome.

The study used a "cross-sectional" method observational analytic approach. Data were collected on only one occasion from a group of subjects. Researchers also sought to describe the study variables and examined the relationship between the independent and dependent variables to gain a deep understanding of the relationship of

stress levels, characteristic factors including age, BMI, age of menarche, menstrual cycle on the incidence and duration of menstrual premenstrual syndrome as the independant variable and its relation to academic achievement as the dependent variable.

The study was conducted at the Faculty of Medicine, University of Sumatra Utara. The study began in December 2011 - February 2012 after receiving approval from the Research Ethics Committee of the Faculty of Medicine, University of Sumatra Utara.

Population study included the entire medical students including: set of units / unit which conducted the study sample, the medical student of the Faculty of Medicine, University of Sumatra Utara.

Research samples include part of the population considered affordable for measurement, namely: student of the Faculty of Medicine, University of North Sumatra within the 7th and 8th cemester, by simple random sampling with sampling by first obtaining informed consents in the study.

The samples of this research were calculated using the formula:

$$n = \frac{Z\alpha 2\ p(1-p)}{d2}$$

Where:

n = The sample size

d = deviation of the population or the desired degree of accuracy (15%)

Z = normal standard deviation set at 1.96 according to the level of 95%

p = proportion of the state of the search, if the previous proportion is unknown
a subject is then selected by simple random sampling with a p value = 0.50

q = 1.0 - p

$$n = \frac{(1.96)^2 \text{ x } 0.5 \text{ (1 to } 0.5)}{(0,15)^2}$$

n = 43 people → The sample size

Primary data were obtained from study subjects who have previously passed the honesty test by using the Scale-L MMPI. Honesty tests are required, because in this study, all primary data unless the data grade point average (GPA), are self-rating, which explains why honesty is expected from all study subjects to complete the study instruments. Descriptive data inlude primary data, the data of stress levels assesed using adrenal stress questionnaire, data characteristics include age, BMI, age of menarche, menstrual cycle and long periods, a questionnaire to determine the diagnosis of premenstrual syndrome, premenstrual syndrome diagnostic criteria according to ACOG (2006) and Index Data Grade Point Average (GPA) student.

Data were processed by a computerized statistical analysis. Data analysis includes descriptive statistics and analytical statistics. Descriptive statistics were used to show the distribution of the data being assessed stress levels of Adrenal Stress Questionnaire, data characteristics include: age, BMI, age of menarche, menstrual cycle and long periods, premenstrual syndrome sufferers proportion of the data as well as data grade point average (GPA) student.

In this case the data is displayed in the form of frequency, with a confidence level of 95% (CI 95%). Inferential statistics used are univariate, bivariate chi square test, and the correlative analytic form of Spearman's correlation test to assess the association of independent variables on the dependent variable. Strength of the correlation between stress and subject characteristics: age, BMI, age of menarche, menstrual cycles and long menstruation with student achievement index categories (dependent variable), expressed by the correlation coefficient (r).

3. Results

This study conlcuded that out of 50 samples, 30 were found positive for mild premenstrual syndrome and with the remaining 20 subjects positive for severe PMS, which was subsequently followed by a statistical analyzes after all the data were obtained. The results are reported in the tables below.

In table 2, after a univariate analysis, we concluded that all of the age characteristics over 21 years, the highest body mass index characteristics is a group with a BMI Normoweight, which is as much as 66% (33 samples), for a menstrual period characteristic that the most is group with menstrual period 3-7 days is as much as 92% (46 samples), for the menarche age the largest group is menarche age 13-16 years as much as 58% (29 samples), while the menstrual cycle characteristics for the entire sample is at 24 - 35 days (100%).

From the chi-square test results that for body mass index characteristics obtained p-value of 0.203, indicating that with 95% confidence level (alpha = 5%) there is no significant relationship between body mass index and premenstrual

syndrome.

For menarche age characteristics obtained p-value of 0.243, indicating that the 95% confidence level (alpha = 5%) there is no significant relationship between menarche age and premenstrual syndrome.

For menstrual period characteristics with an obtained p-value of 0.140, indicating that the 95% confidence level (alpha = 5%) there is no significant relationship between the menstrual period and premenstrual syndrome.

In table 3 after bivariate analysis, showed that for stress levels with a score of 0-30 is not found in the studied sample, for the level of stress with a score of> 30-40 who experienced mild premenstrual syndrome, which is as much as 48% (24 samples) and no one had moderate-severe premenstrual syndrome, for the level of stress with a score of> 40-50 who experienced mild premenstrual syndrome, which is as much as 8% (4 samples) and those with moderate-severe premenstrual syndrome approximately 2% (1 sample), for the level of stress with a score of> 50-60 who experienced mild premenstrual syndrome, which is 4% (2 samples) and those with moderate-severe premenstrual syndrome is 14% (7 samples), for the level of stress with a score of> 60 none of them have mild premenstrual syndrome, and those with moderate-severe premenstrual syndrome is 24% (12 samples).

From chi-square test we obtained p-value of 0.000, indicating that the 95% confidence level (alpha = 5%) there was a significant relationship between the level of stress on premenstrual syndrome.

In Table 4 it can be seen that the mild premenstrual syndrome with good academic achievement is 44% (22 samples) and with excellent academic achievement is 16% (8 samples), while experiencing moderate-severe premenstrual syndrome with poor academic performance is 6% (3 samples), with sufficient academic achievement is 4% (2 samples), with good academic achievement is 30% (15 samples) and no one has a excellent academic achievement.

From the results of chi-square test we obtained p-value of 0.005, indicating that the 95% confidence level (alpha = 5%) there was a significant relationship between premenstrual syndrome on student's academic achievement.

From Table 5, there are relationship between the variables thought to have an influence on students' academic achievement can be seen from the magnitude of Spearman's correlation coefficients for the age, menarche age, BMI, menstrual period, menstrual cycle, and the degree of stress variables. Data from 50 samples examined in this study, results obtained that the relationship between menarche age to academic achievement is -0.051 with a p-value of 0.724, indicating no significant relationship between these two variables.

The relationship of body mass index on academic achievement is -0.281 with a p-value of 0.048, indicating a significant relationship between these two variables. The correlation between the two is a negative correlation has meaning when there is a rise in body mass index, the index of academic achievement decreased.

The relationship of Menstrual period on academic achievement is 0.110 with a p-value of 0.448, indicating no significant relationship between these two variables.

Adrenal test relationship to academic achievement is -0.581 with a p-value of 0.000, indicating a significant relationship between these two variables. The correlation between the two is a negative correlation has meaning when there is a rise in adrenal test score there will be a decline in the academic achievement index. A high value of the correlation coefficient indicates a strong relationship between the two variables.

4. Discussion

The study was conducted from December 2011-February 2012 with a sample of 50 patients with premenstrual syndrome.

From age, BMI (Body Mass Index), menstrual period and menarche age characteristics was found most samples with over 21 years of age as much as 100%, BMI normoweight 66%, 3-7 days menstrual period 92% and menarche age 13-16 58%, and the menstrual cycle for the entire sample is at 24-35 days (100%) as shown in the table. From this description we concluded that the sample in this study was homogeneous.

From the chi-square test results for body mass index characteristics obtained p-value of 0.203, indicating that the 95% confidence level (alpha = 5%) there is no significant relationship between body mass index on premenstrual syndrome. This result is the same as the results obtained by the research Setyowati 2006 in Semarang, that there is no significant relationship between BMI and premenstrual syndrome, where the stress is considered as a "trigger" of the premenstrual syndrome and stress levels can be assessed based on their effects on the adrenal gland as depicted on adrenal stress questionnaire. Distinct from studied from Bertone-Johnson et al, 2010, which found a linear relationship between BMI and the degree of premenstrual syndrome, and suggests that maintaining a healthy body mass may be important to prevent the development of premenstrual syndrome. Additional studies are needed to assess whether

weight will give an advantage on women with overweight and obese whose experiencing premenstrual syndrome. (Bertone-Johnson, et al 2010).

For menarche age characteristics obtained p-value of 0.243, indicating no significant relationship between menarche age on premenstrual syndrome. In line with the research dissertation Siregar 2012 in the Department of Obstetrics and Gynecology, Faculty of Medicine, USU, showed a p-value of 0.275 and 0.623, which means there is no difference in mean of age and the mean of menarche age in each group of the degree of stress that is a way to predict adrenal gland involvement in premenstrual syndrome, or it could also be said that the mean of menarche age and age is approximately the same for each group (Siregar, 2012)

For menstrual period characteristics obtained p-value of 0.140, indicating no significant relationship between menstrual period on premenstrual syndrome.

From the distribution of the level of stress (adrenal stress), for stress levels with a score of 0-30 is not found in the sample studied, for stress levels with a score of> 30-40 who experienced mild premenstrual syndrome, which is as much as 48% (24 samples) and no premenstrual syndrome who experienced moderate to severe, for the level of stress with scores> 40-50 who experienced mild premenstrual syndrome, which is as much as 8% (4 samples) and those with moderate-severe premenstrual syndrome 2% (1 sample), for the stress levels with a score of > 50-60 who experienced mild premenstrual syndrome, which is 4% (2 samples) and those with moderate-severe premenstrual syndrome 14% (7 samples), for the stress levels with a score> 60 there is no experienced mild premenstrual syndrome and moderate to severe premenstrual syndrome 24% (12 samples). From the chi-square test results obtained p-value of 0.000, indicating a significant relationship between the level of stress based on the degree of adrenal stress on premenstrual syndrome. This is consistent with research that claimed a collection of physical and psychological symptoms associated with pre-menstrual period occurs in approximately 80-95% in women with reproductive age. They experienced premenstrual symptoms called premenstrual syndrome, and can interfere some aspects of his life. The symptoms are usually predictable and occur regularly at least two weeks before the menstrual period. It can be lost in the beginning of menstruation, but it can also continue after it (Abraham & Head, 1997; Lutan & Pujiastuti, 2007). In medical terms, stress will affect the body's homeostatic system leading to the emergence of changes in somatic and psychological symptoms that can interfere daily activities (Rippetoe-Kilgore, 1998).

From table subjects relationships between premenstrual syndrome on academic achievement, it can be seen that mild premenstrual syndrome with good academic achievement is 44% (22 samples) and with excellent academic achievement as much as 16% (8 samples), moderate-severe premenstrual syndrome with poor academic achievement as much as 6% (3 samples), with sufficient academic achievement as much as 4% (2 samples), with good academic achievement by 30% (15 samples) and no one has a excellenty academic performance. From the chi-square test results obtained p-value of 0.005, indicating a significant association between premenstrual syndrome on student's academic achievement. In this study, we assume that the stress is a "trigger" of the occurrence of premenstrual syndrome, and obtained the same results as proposed by Brunner and Studdarth, that stress may also be a predisposing factor in declining productivity, which is associated with a reduced ability in concentration to learn, decreased achievement academic performance and absenteeism in education (Brunner & Suddarth, 2001). Other researchers also said that premenstrual syndrome affects the student's learning achievement, seen from decreased learning concentration, increased absenteeism in the classroom, to the absence of the exam (Dasuki, Olive, 2008). Anggraini studied in Solo obtained that midwifery student experiencing premenstrual syndrome will experience physical changes and psychological changes such as decreased motivation to learn (Anggraini, 2007).

From the study relationship between variables believed to have an influence on students' academic achievement can be seen from the magnitude of Spearman's correlation coefficients for the age, menarche age, BMI, duration of menstruation, menstrual cycle, and the degree of stress variables. Data from 50 samples examined in this study, obtained results that the their menarche age relationship to academic achievement is -0.051 with a p-value of 0.724, indicating no significant relationship between these two variables.

The relationship of body mass index on academic achievement is -0.281 with a p-value of 0.048, indicating a significant relationship between these two variables. The correlation between the two is a negative correlation meaning when there is a rise in body mass index, a decreased academic achievement index is present.

Menstrual period relationship to academic achievement is 0.110 with a p-value of 0.448, indicating no significant relationship between these two variables.

The relationship of the adrenal stress test on academic achievement is -0.581 with a p-value of 0.000, indicating a significant relationship between these two variables. The correlation between the two is a negative correlation

indicating that a rise in adrenal test scores there will subsequently follwed by a decline in the academic performance index. Correlation coefficient values indicates a strong relationship between the two variables.

5, Conclusion

There is a correlation between stress as a "trigger" in occurrence of premenstrual syndrome in student of the Faculty of Medicine. From the chi-square test resulted in this study obtained a p-value of 0.000, indicating a significant relationship between the level of stress based on the degree of adrenal stress on premenstrual syndrome. There is a relationship between premenstrual syndrome with student academic performance index that experienced premenstrual syndrome. From the chi-square test resulted in this study obtained p-value of 0.005, indicating a significant association between premenstrual syndrome on students' academic achievement. There is no relationship between the characteristics of the student of the Faculty of Medicine, University of North Sumatra on the incidence of premenstrual syndrome. Chi-square test results in this study concluded an obtained p-value body mass index characteristics of 0.203, for the menarche age characteristic the obtained p-value was 0.243, for long menstrual characteristics the obtained p-value reached 0.140, all of which do not have a significant relationship with the incidence of premenstrual syndrome. In this study, the Spearman's correlation test characteristics obtained relationship of body mass index and degree of adrenal stress student of the Faculty of Medicine, University of North Sumatra on academic performance index, with a p-value 0.048 and 0.000. While long menstrual characteristics were unrelated to academic performance indexes, as this study obtained a p-value of 0.448.

6. Recommendation

It is necessary to conduct further study on the relationship of stress levels and characteristics of women especially students who are experiencing premenstrual syndrome to the achievement of academic performance index in various places of education (multi center) in improving the quality of education. In this case the need to involve the Ministry of Education.

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Born in Medan, Indonesia on May, 30 th, 1964. Graduated from the Faculty of Medicine, University Sumatera Utara, Medan, Indonesia in 1988. Afterwhich, continued his medical profession in the very remoted area of the Papua Province until 1993 as a General Practicioner. Further on, the author continued his studies in Obstetrics and Gynecology in order to be a specialist in Obstetrics and Gynecology, Faculty of Medicine, University Sumatera Utara, Medan, Indonesia and graduated in 1997.

On graduating his specialistic degree, the author returned to the West Papua Province, another very remoted area in Indonesia, and practiced as a Specialist at the Sorong General Hospital for 10 years. During his stay in West Papua, the author managed to complete several research and papers, afterwhich he was asked by the Department of Obstetrics and Gynecology Faculty of Medicine, University Sumatera Utara to return and serve as a lecturer as of 2008. Since then, apart from his academic activities in teaching both Medical Students and Obstetric & Gynecology residents, he also persued and graduated from the following academic degrees

- Obtained his Consultantship from the Indonesian Collegium of Reproductive Endocrinology and Fertility Medicine. The Final Examinations took place in Denpasar, Bali, Indonesia, on July 1012.
- Completed his Magister Degree in Obstetrics & Gynecology and finally graduating from his Doctoral Program on May 2012.

The author is currently active as a lecturer in the Department Obstetrics & Gynecology along with several other academic activites tht include independant research and supervising research conducted by the residents within the Department.

He is also active as a lecturer and a doctoral program examiner in other faculties such as the Faculty of Nursery, University Sumatera Utara (since 2012).

Table. 1. Diagnostic Criteria for Premenstrual Syndrome / PMS (ACOG, 2006)

American College of Obstetricians and Gynecologist diagnostic criteria for Sindroma premenstruasi
Patient reports **one** or **more** of the following affective and somatic symptoms during 5 days before menses in each of 3 prior menstrual cycles
Affective - Depression - Angry outbursts - Anxiety - Irritability - Confusion - Social withdrawal
Somatic - Breast tenderness - Abdominal bloating - Headache - Swelling of extremities Symptoms relieved within 4 days of menses onset without recurrence until at least cycle day 13. Symptoms present in absence of any pharmacologic therapy, hormone ingestion or drug or alcohol abuse. Symptoms occur reproducibly during 2 cycles of prospective recording. Patient suffers from identifiable dysfunction in social or economic performance.

Table 2. Characteristics Realationship Age, BMI (Body Mass Index), age menarche, menstrual cycles, and Menstrual Period on the incidence of premenstrual syndrome

STUDENT CHARACTERISTICS	Mild PMS		Moderate-Severe PMS		p-value
	N	%	N	%	
AGE					
- < 17 Years	-	-	-	-	
- 18 - 20 Years	-	-	-	-	-
- ≥ 21 Years	30	60	20	40	
BODY MASS INDEX					
- *Underweight*	8	16	1	2	
- *Normoweight*	18	36	15	30	
- *Overweight*	3	6	3	6	**0,203**
- *Obese* I	0	0	1	2	
- *Obese* II	1	2	0	0	
AGE OF MENARCHE					
- < 13 Years	15	30	6	12	
- 13-16 Years	15	30	14	28	**0,243**
- > 16 Years	-	-	-	-	
MENSTRUAL CYCLE					
- < 24 days	-	-	-	-	
- 24-35 days	30	60	20	40	-
- > 35 days	-	-	-	-	
Menstrual Period					
- < 3 days	-	-	-	-	
- 3 - 7 days	26	52	20	40	**0,140**
- > 7 days	4	8	0	0	

Table 3. Relationship between subjects' stress levels (adrenal stress) with mild and moderate-severe premenstrual syndrome

Stress Levels (Adrenal Stress Questionnaire)	Mild PMS		Moderate-Severe PMS		p* value
	N	%	N	%	
- Score 0 – 30	0	0	0	0	
- Score >30 – 40	24	48	0	0	
- Score >40 - 50	4	8	1	2	**0,000**
- Score >50 – 60	2	4	7	14	
- Score >60	0	0	12	24	

Table 4. Relationships between subjects with premenstrual syndrome and academic achievement

Premenstrual Syndrome	poor		sufficient		good		excellent		p value
	N	%	N	%	N	%	N	%	
-Mild Premenstrual Syndrome	0	0	0	0	22	44	8	16	0.005
-Moderate-Severe Premenstrual Syndrome	3	6	2	4	15	30	0	0	

Table 5 Relationship between Age, menarche Age, BMI, Menstrual Period, Menstrual Cycle and Degree of Stress (Adrenal Stress) Variable on the Grade Point Average (GPA) in Patients with mild and moderate-severe premenstrual syndrome Degree.

VARIABLE	Correlatioan Coefficient on GPA*	
	R	*P* Value
- Age	-	-
- *Menarche Age*	-0.051	0.724
- Body Mass Index (BMI)	-0.281	0.048
- Menstrual Period	0.110	0.448
- Menstrual Cycle	-	-
- Adrenal test Score	-0.581	0.000

** Spearman's Correlation Tes*

Lines of Inquiry