RELATIONSHIP BETWEEN BREAKFAST AND THE LEVEL OF ANXIETY ON GRADE 6 FEMALE STUDENTS OF PATRANG III, IV, AND V PUBLIC ELEMENTARY SCHOOL JEMBER WHEN EXPERIENCING MENARCHE

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ABSTRACT

The purpose of this study is to see whether there is a relationship between breakfast and the level of anxiety on the female students when they experience menarche.

The design of this study was quantitative correlation with cross sectional data collection. The sample was taken by using "purposive sampling" of 24 female students, while the data was analysed by using chi square.

The result of the study is P = 0.006 so that P < 0.05 which means that there is a significant relationship between breakfast and the level of anxiety on the female students of grade 6 elementary school who experience menarche. It shows that breakfast can reduce the level of their anxiety. Girls who will step into adolescence are characterised by menarche, and this change is one of the triggering factors for anxiety. There is a significant relationship between breakfast and the level of anxiety on female students in Patrang III, IV and V Public Elementary School when experiencing menarche.

Keywords: tryptophan, tyrosine, serotonin, noreephinnefrin, anxiety.

INTRODUCTION

Teenagers are adolescence, derived from the Latin word *adolescere* which means "to grow or grow to reach maturity". In the subsequent development, adolescence actually has a broad meaning, including mental, emotional, social and physical maturity [1]. The puberty is marked by the presence of major physiological changes from the genitals. At this time, the genitals have begun to work, so that the child is in the period of adolescence psychologically. It is initially marked by menarche [2]. Menarche usually starts at the age of 11 to 13 years, but in its development, the age of menarche has shifted to a younger age. The rapid physical growth in adolescence often results in surprises for the adolescents themselves. For female adolescents, there is a feeling as if they have not been able to accept the fact that without previously imagined, now their body shape has changed. Therefore, often their movements become awkward and not free. Therefore, the rapid physical growth in adolescents is in need of building substances that are obtained from food [3]. The rapid growth is usually accompanied by increased physical activity, so that the need for nutrients increases. Female adolescents usually attach importance to their appearance. They do not want to be fat, so they limit themselves from choosing foods that contain high amount of carbohydrates. Some researchers show that adequate food has an effect on improving brain function[4].

The habit of having breakfast is very important for the body because the stomach will refill after being empty for 8-10 hours. Breakfast causes the blood sugar level to rise again. This situation is related to the work of the brain [5]. Our body is actually controlled by numerous chemicals in the brain or called neurotransmitters. It is under the influence of dozens of connective substances between brain cells, that the nature, characteristics, temperament, and human behavior from time to time during their lives are controlled [6].

Noreepinephrine and serotonin are the two most prominent brain neurotransmitters in our lives, both of which build sadness or joy in our daily life. Anxiety makes the body physiology tends to increase. On the contrary, people become calm if the brain serotonin increases [7]. When noreephinephrine escalates, the heart will beat stronger, the blood flows quickly, the breathing frequency increases, the body will sweat and tremble, etc. All of these are psychosomatic symptoms of anxiety [7].

Anxiety disorders are physically not visible, but they are very disturbing for the sufferers of the anxiety. Every second of the lives of the sufferers of anxiety disorders is filled with worry, fear, and horror. Although new medicines are found to overcome the problem of anxiety, their effectiveness on each patient is different. On the other hand, their side effects are often dangerous. Actually, the nature has provided the medicine. Various types of foods that contain

certain nutrients can improve mood and alleviate anxiety disorders [8]. Anxiety is included in non-specific symptom and is usually called normal emotion [9]. In a study conducted by the Australian Center of Adolescence Health on the relationship between menarche towards the onset of depression and anxiety states that usually psychiatric disorders begin at adolescence (puberty). The anxiety level can increase and girls tend to have higher level of anxiety increase than boys. Menarche is one of the causes of anxiety. The found pattern is fixed, with the mediation of biology in the relationship between menarche and anxiety [10].

Based on the explanation, several research questions are formulated: 1) Is there anxiety on the 6th grade female students of Patrang Public Elementary School who experience menarche? 2) What is the level of anxiety of grade 6 female students of Patrang Public Elementary School who experience menarche? 3) Is there any influence between breakfast and the level of anxiety on grade 6 female students of Patrang Public Elementary School when experiencing menarche?. This study was conducted to determine the effect of breakfast on the anxiety level for grade 6 female students of Patrang III, IV and V Public Elementary School when experiencing menarche.

CONCEPTUAL FRAMEWORK

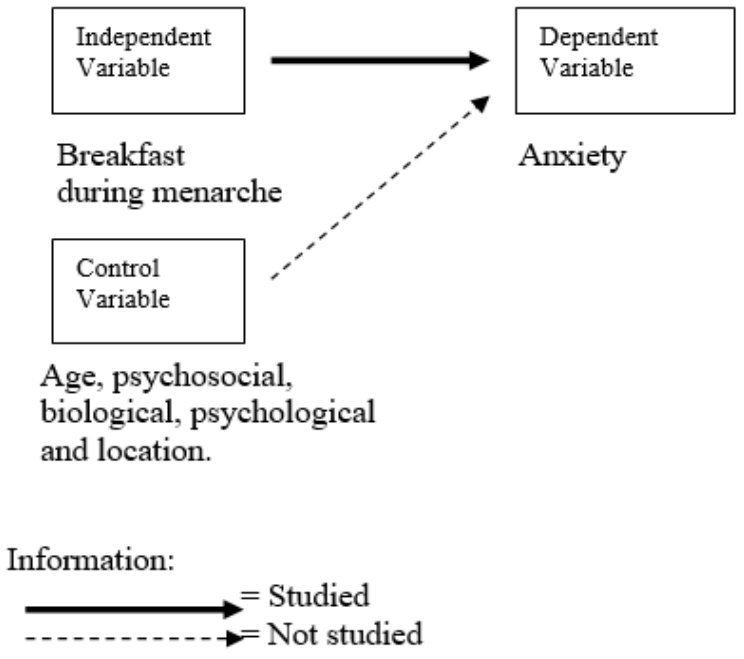

Figure 1. Conceptual Framework Scheme

Humans are never free from change. Changes that occur in individuals can cause stress, which later can cause anxiety. Psychosocial stressors can be in the form of family problems, interpersonal relationships, financial growth, and the development of physical illness. Menarche is one of the psychosocial developmental stressors in adolescents that can cause anxiety.

Anxiety is defined as an unpleasant emotion that is characterised by worries and fears that are sometimes experienced in varying degrees. The level of anxiety can be classified into various levels, namely mild, moderate, and severe anxiety. To assess anxiety level, Hamilton's anxiety scale (HARS: Hamilton Anxiety Rating Scale) is used. Eating patterns and types of food we choose can help to improve chaotic moods and improve brain function.

RESEARCH METHOD

This research used quantitative correlation method. The approach used in this study was cross sectional. The variables used were the level of anxiety and breakfast on the female students of grade 6 when experiencing menarche. The population in the study was the 6th grade female students of Patrang III, IV and V Public Elementary School who experienced menarche, that were restricted by inclusion criteria. The inclusion criteria were female students of grade 6 in Patrang III, IV and V Public Elementary School who experienced menarche and were willing to fill in the provided questionnaire as a sign of approval to be the research sample. The population in this study was 40 female students. The sampling technique used in this study was purposive sampling. The sampling method with consecutive sampling was used. The total of the study sample was 24 female students. Data collection instrument on independent variables. The measuring instrument in this study was the Hamilton Anxiety Rating Scale (HARS). In this measuring instrument, there were 14 groups of symptoms with each group was broken down with more specific symptoms. This measuring instrument has been standardised, so it did not need a validity test again. Data collection instrument on the dependent variable. The measuring instrument in this study used a questionnaire with 33 questions for the measurement of the dependent variable. In each question, several answers have been provided in accordance with the answers of the female students.

RESULTS

Patrang III, IV and V Public Elementary School are located in Patrang sub-district in a school complex. Each of this public elementary school has Usaha Kesehatan Sekolah (UKS) or a School Clinic room. The School Clinic has three programs, namely: school health education, environmental hygiene, and health services. The total number of the female students in the

6th grade of Patrang III, IV and V Public Elementary School in the 2005-2006 school year is 40 students. There are 8 female students in Patrang III Public Elementary School, 22 female students in Patrang IV Public Elementary School, and 10 female students in Patrang V Public Elementary School. It needs to recognise that there is only one class of grade 6. After screening of exclusion and menarche criteria was done, from a population of 40 female students, 24 female students were chosen as the research sample. This was because there were 11 female students who had experienced menarche before the study was conducted, 4 students who have not experienced menarche until the study was completed, and 1 female student who came out of the inclusion criteria because her father died.

DISTRIBUTION OF RESPONDENTS

Distribution of Respondents According to Parents' Livelihood. The parents' livelihood of the majority of the respondents are as entrepreneur and labourer, with the total of 9 people respectively. There are also 2 people who work as civil servants and 4 people as sellers.

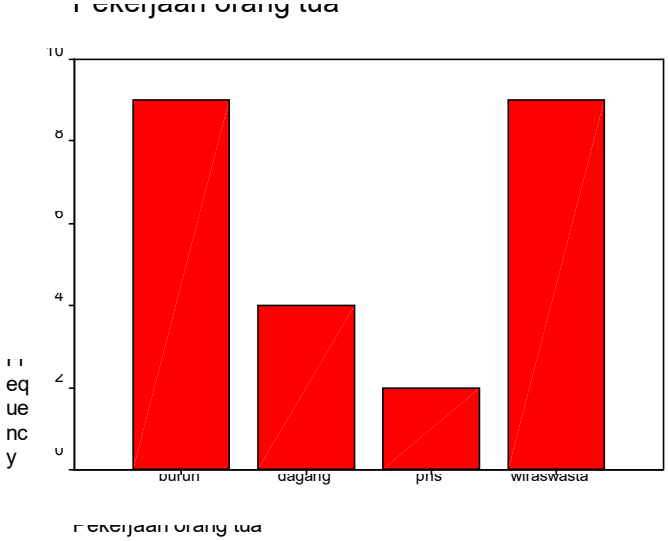

Figure 2. Distribution Bar Chart According to Parents' Livelihood

Distribution of Respondents According to Parents' Education. The majority of the parents' education level is senior high school with the total number of 8 heads of families. Further, the next level of education is junior high school and elementary school with the total of 7 people respectively. There are left 2 people who did not graduate from the lementary school level.

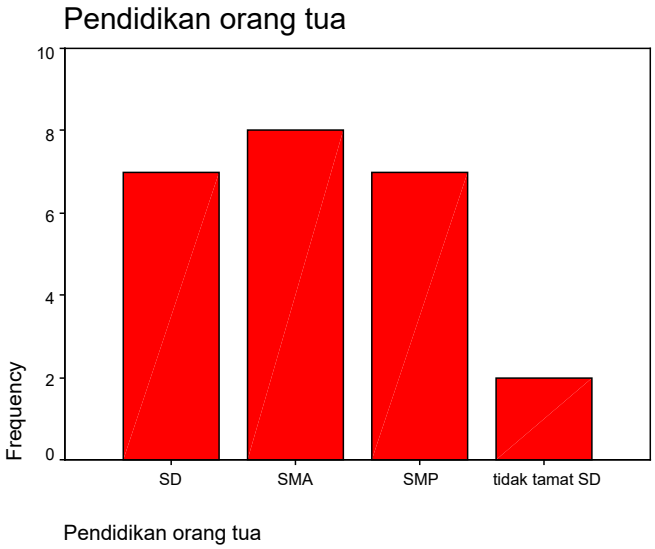

Figure 3. Distribution Bar Chart According to Parents' Education Level

Distribution of Respondents by Ethnic Group. The results of the study show that the respondents who have Javanese ethnicity are 18 students, and Madurese ethnicity are 6 students.

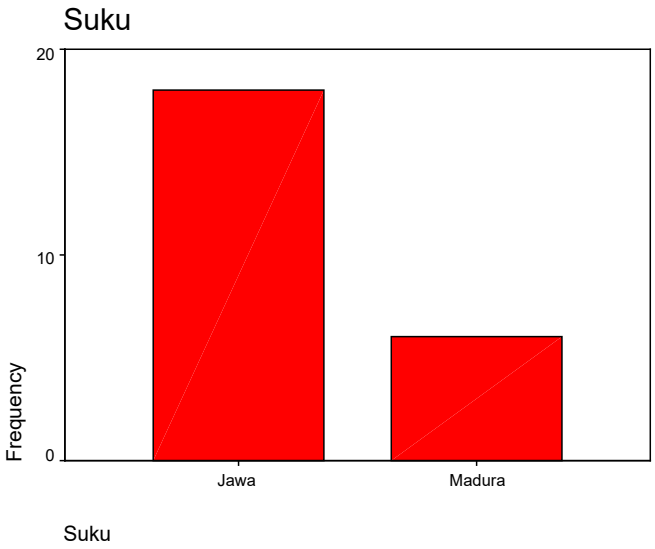

Figure 4. Distribution Bar Chart According to Ethnic Group

Distribution of Respondents by Age. From the results of the study, it is obtained that the respondents aged 12 years old are 8 respondents, while those aged 13 years are 16 respondents.

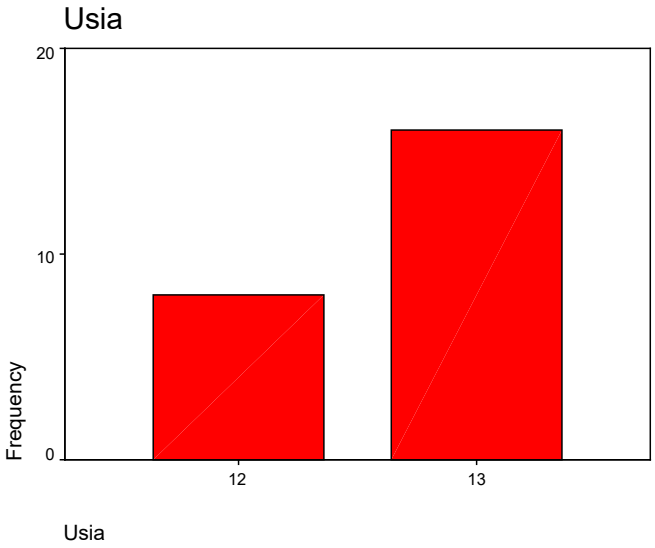

Figure 5. Distribution Bar Chart by Age

Distribution of Respondents by Breakfast. From the results of the study, it is identified that the total of the respondents who have breakfast with a combination of protein and carbohydrate is 22 female students, while those who do not have such combination in their breakfast are 2 female students.

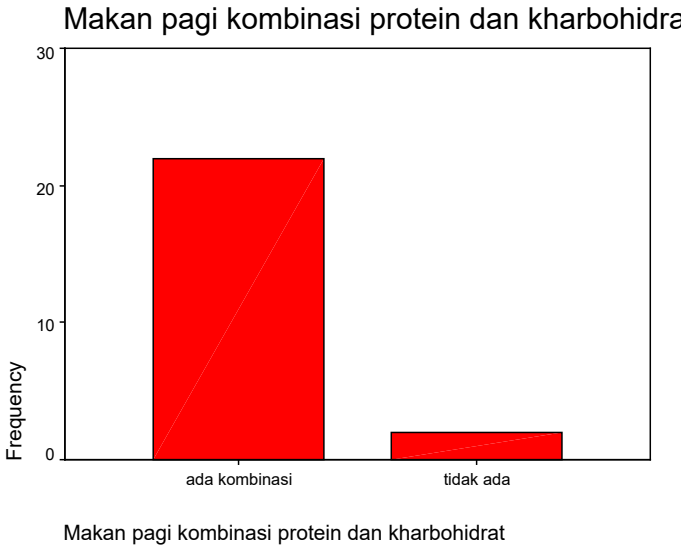

Figure 6. Distribution Bar Chart Based on the Presence or Absence of a Combination of Protein and Carbohydrate in Their Breakfast

Distribution of Respondents by Level of Anxiety. From the results of the study, it is found that 12 students do not experience anxiety, 9 students experience mild anxiety, 2 students experience moderate anxiety, and 1 respondent experience severe anxiety.

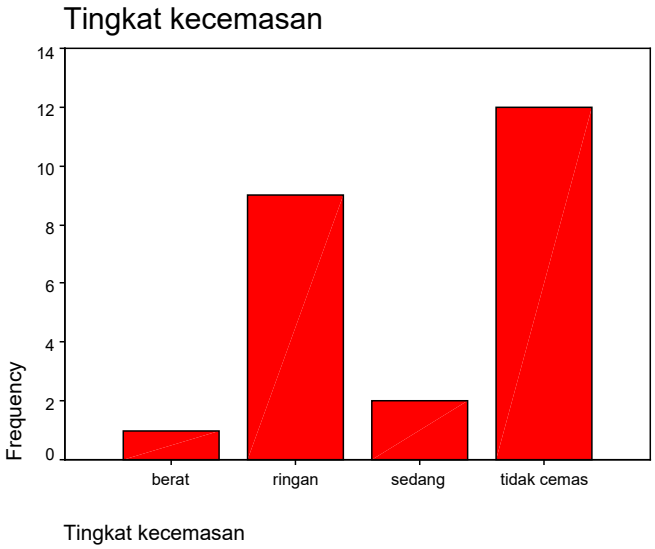

Figure 7. Distribution Bar Chart Based on Anxiety Level

DATA ANALYSIS

The influence of the parents' occupation on breakfast. From the results of the analysis table of the influence of the parents' occupation on breakfast, 2 (22.2%) respondents whose parents as laborer do not have a combination of protein and carbohydrate for breakfast and 7 (77.8%) respondents have such combination for breakfast. Meanwhile, 4 respondents (100%) whose parents as seller have a combination of protein and carbohydrate for their breakfast. For the respondents whose parents as civil servant, all respondents, involving 2 students (100%), also have a combination of protein and carbohydrate in their breakfast. Further, for the respondents with entrepreneur parents, all (100%) combine protein and carbohydrates in their breakfast. Statistical test results show that P = 0.304, so that P > 0.05. Hence, it can be concluded that there is no influence of the parents' occupation on having breakfast with protein-carbohydrate combination.

The influence of the parents' education towards breakfas. From the results of the analysis table on the influence of the parents' education towards breakfast, all respondents whose parents do not complete elementary school combine protein and carbohydrate in their breakfast, with the total of 2 respondents (100%). For the respondents whose parents graduate from elementary

school, there is 1 respondent who do not combine protein and carbohydrates in her breakfast (14.3%), and there are 6 respondents who combine them in their breakfast (85.7%). Meanwhile, for the respondents whose parents graduate from junior high school, there is 1 respondent (14.3%) who has no combination in her breakfast and there are 6 (85.7%) respondents who have the combination in their breakfast. Further, for the respondents whose parents graduate from senior high school, all in their breakfast uses a combination of protein and carbohydrate, with the total of 8 respondents (100%). Statistical test results show that P = 0.669, so that P > 0.05. Hence, it can be concluded that there is no influence between the education of parents with breakfast.

The influence of the respondents' ethnicity towards breakfast. From the analysis table of the influence of the respondents' ethnicity towards breakfast, there is 1 Javanese respondent (5.6%) who does not combine protein and carbohydrate in her breakfast and 17 Javanese respondents (94.4%) who have the combination in their breakfast. Among respondents who are Madurese, there is 1 (5.6%) respondent who does not have the combination in her breakfast and there are 5 (83.3%) respondents who have the combination in their breakfast. Statistical test results show that P = 0.394, so that P > 0.05. Hence, it can be concluded that there is no influence between the respondents' ethnicity and breakfast.

The influence of breakfast with the level of anxiety. From the crosstab table regarding the effect of breakfast towards the anxiety level, the analysis results show that 1 respondent (50%) who does not have a combination of protein and carbohydrate in her breakfast experiences mild anxiety and 1 respondent (50%) experiences severe anxiety. For the respondents who have the combination of protein and carbohydrate in their breakfast, there are 12 respondents (54.5%) that do not experience anxiety, 8 respondents (36.4%) who experience mild anxiety, 2 respondents (9.1%) who experience moderate anxiety, and no one experiences severe anxiety. Statistical test results show that P = 0.06, so that P < 0.05. Hence, it can be concluded that there is a significant influence of breakfast towards the level of anxiety.

DISCUSSION

The anxiety level of grade 6 female students of Patrang III, IV and V Public Elementary School who experienced menarche

The results of the study show that from 24 respondents that meet the criteria, 12 respondents (50%) do not experience anxiety, while 12 respondents (50%) experience anxiety. Among the 12 respondents who experience anxiety, there are 9 respondents (37.5%) experience mild anxiety, 2 respondents (8.3%) experience moderate anxiety, and 1 respondent (4.2%)

experiences severe anxiety. The anxiety arises when the menarche stressor cannot be overcome by the ability to adapt, so conflicts will arise and so on, and those will be understood as anxiety. Seen from the process of anxiety occurance through the neuropsychiatric mechanism, it is an emotional affective disorder. The anxiety psychopathology through the work of hormones and neurotransmitters responsible for controlling feelings of anger, anxiety, joy, and integrating sympathetic and parasympathetic responses, is the hypothalamus [10]. Hence, the first element of emotion (anxiety) is the existence of something that stimulates, then the stimulus will stimulate the associative cortex, and then it will affect the limbic where there is an amygdala associated with the hypothalamus. With the stimulation of anxious stressor on the hypothalamus, the neurotransmitters that cause anxiety are released by the hypothalamus namely corticotrophin factor. Next, corticotrophin will stimulate the pituitary to excrete the adenocorticotropin hormone and then it will stimulate the adrenals to excrete the norepinephrine hormone. Norepinephrine is a hormone that causes anxiety, while the hormone that can reduce anxiety is serotonin (5HT1).

It is possible that 12 respondents (50%) do not experience anxiety since the average respondent is able to adapt a stressor, so that anxiety does not appear. This is in line with what Wibisono states, that the changes that occur during menarche are not problems, but the ability of individuals to adapt to menarche stressors that can cause anxiety.

Breakfast of the 6th grade female students of Patrang III, IV and V Public Elementary School when experiencing menarche

The pattern of the respondents' breakfast consumption is known, those who have breakfast in combination with protein and carbohydrate are 22 respondents (91.7%), and those who have no combination in their breakfast are 2 respondents (8.3%). Generally, a person's breakfast habit is not based on physical needs for nutrients contained in food, but it can come from the culture and habit of a family [5].

The effect of breakfast on the female students' level of anxiety in Patrang III, IV and V Public Elementary School when experiencing menarche

Among the students who have breakfast with combination of protein and carbohydrate, there are 2 respondents (9.1%) experiencing moderate anxiety, 8 respondents (36.4%) experiencing mild anxiety, and 12 respondents (54.5%) experiencing no anxiety. Meanwhile, among the students who have breakfast with no combination of protein and carbohydrate, there is 1 respondent (50%) experiencing severe anxiety, and 1 respondent (50%) experiencing mild anxiety. The results of statistical tests show that $P = 0.006$, so that $P < 0.05$. Hence, it can be concluded that there is a significant influence of the combination of protein and carbohydrate

in breakfast with the anxiety level of grade 6 female students of Patrang III, IV and V Public Elementary School who experience menarche.

The combination of protein and carbohydrate in their breakfast affects the chemical composition of the brain through the production and release of neurotransmitters. Neurotransmitters play a role in anxiety disorder, in this case norepinephrine, and the neurotransmitter that can relieve this disorder is serotonin. Its relationship with breakfast with combination of protein and carbohydrate is the presence of protein in food. The protein contains amino acids which are important for the body, in this case tryptophan and tyrosin, in which tryptophan is hydroxylated and decodoxylated into serotonin, while tyrosine when decarboxylated and hydroxylated is changed into noreephineprin. Norephinephrine will cause anxiety by activating the sympathetic nervous system and serotonin. It has a counter effect with noreephinephrine which can reduce anxiety. Protein-rich foods carry amino acids - including tryptophan and tyrosine, both of which compete with each other to enter the brain through the blood brain barrier, in which both will be converted to serotonin and noreephinephrine. Foods that contain carbohydrate will help tryptophan to the brain to form serotonin. The mechanism of which is carbohydrate foods will stimulate the pancreas to produce insulin where the insulin structure consists of various amino acids including tyrosine (norephinephrine), while tryptophan does not form insulin structure. Hence, tryptophan can easily go directly to the brain to form serotonin, so that anxiety can be reduced.

CONCLUSIONS AND SUGGESTIONS

Conclusions

Based on the results of the research that was conducted to find out The Relationshihp Between Breakfast and the Level of Anxiety on Grade 6 Female Students of Patrang III, IV, and V Public Elementary School Jember When Experiencing Menarche, some conclusions are identified:

1. Breakfast can reduce the anxiety level through the production and release of neurotransmitters (serotonin and norepinephrine). Further, from the questionnaire regarding breakfast with combination of protein and carbohydrate, it is obtained that 22 respondents (91.7%) have their breakfast with such combination.
2. Girls who reach adolescence are marked by their reproductive organs that start to be active, which are marked by menarche. This change is one of the triggering factors for anxiety. From the results of the questionnaire, it is found that the level of anxiety in the 6th grade female students of Patrang III, IV and V Public Elementary School in the 2005–2006 school year could be categorised as mild criteria.

3. There is a significant influence of the breakfast towards the anxiety level of Patrang III, IV and V Public Elementary School female students in the 2005–2006 school year who experience menarche with a significance level of 0.006 ($P < 0.05$).

Suggestions

Based on the conclusions above, some suggestions are proposed:

1. An attitude of openness and mutual trust between students, parents and teachers is needed to overcome anxiety, so that a true understanding of the student and her environment arises.
2. It is necessary to have nutrition counseling activities especially regarding the importance of varying food consumption to achieve good energy and protein consumption, so that the body's needs are fulfilled.
3. For the development of science and research in the field of nutrition, further research needs to be conducted on any nutrients that can affect psychiatrically.
4. For the development of science and research in the field of psychiatry, it is essential to conduct further research on what factors can affect anxiety.

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ACKNOWLEDGMENT

The researcher would like to express gratitude to Medical Faculty of Jember University, especially to dr. Sujono Kardis Sp.KJ and dr. Eva Rosita Dewi, who guided the researcher in this research. Thanks to Medical Faculty Muhammadiyah University Surabaya which funded for the publication.