Journal of Nutrition Explorations
Vol. 2, No. 4, November 2024, pp. 459~469
e-ISSN: 2987-761X
DOI: https://doi.org/10.36568/jone.v2i4.545

The Relationship of Stress Level and Eating Patterns with Nutritional Status in Class X Adolescents at SMA Negeri 1 Surabaya Post Implementation of The Independent Curriculum

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ARTICLE INFO

Article History:
Received August, 18th, 2024
Accepted October, 25th, 2024
Published online November, 1st, 2024

Keywords:
Stress Level;
Eating Patterns;
Nutritional Status;

ABSTRACT

Indonesian adolescents are at risk of stress due to the implementation of the Merdeka Curriculum. An unbalanced diet is also a common problem among adolescents, affecting their nutritional status and health. To determine the relationship between stress levels and dietary patterns with nutritional status in grade X adolescents at SMA Negeri 1 Surabaya after the implementation of the Merdeka Curriculum. This study is included in observational analytical research, with survey and questionnaire interview. data was conducted through filling out consent forms by respondents and anthropometric measurements and questionnaire interviews with grade X students at SMAN 1 Surabaya who have agreed to be respondents. The study shows that nutritional status is not related to a person's stress level, that stress does not cause a person's nutritional status to be problematic. However, there is a relationship between diet and status. Based on the results, there is no relationship between stress levels and nutritional status, while diet and nutritional status show a relationship in grade X adolescents at SMAN 1 Surabaya after the implementation of the Merdeka Curriculum. It is recommended that both students and schools emphasize balanced diets tailored to nutritional needs and foster stress management practices both at school and home.

INTRODUCTION

Education is one way for humans to adapt to the rapid changes of the times, and every individual has the right to quality education. In achieving this goal, often changing the curriculum can cause confusion and obstacles in the education process. One of the significant changes is the change from the 2013 Curriculum to the MBKM (Merdeka Belajar Kampus Merdeka) Curriculum in 2019, which was initiated by the Minister of Education and Culture Nadiem Makarim[26].

The World Health Organization (WHO) (2014) states that adolescence is a period of transition from early childhood to early adulthood, which means that at approximately 12 years of age and ending at 18 to 22 years of age. Along with increasing academic pressure, social demands, and emotional changes, many adolescents experience significant levels of stress[26]. Adolescent stress can appear in various forms, namely academic stress, social stress, and emotional stress[6].

According to Basic Health Research in Indonesia (2018), the prevalence of emotional mental disorders in the form of stress, depression and anxiety in adolescents in Indonesia is 9.8% of the total number of adolescents in Indonesia.

One eating behavior that may impact one's nutritional status is diet. When the body gets enough food in the right amounts, types, and qualities to fulfill its needs for each nutrient, it can attain a condition of adequatenutrition[22]. Adolescent nutritional status, along with other factors including family dynamics, environment, motivation, and school-provided amenities and infrastructure, can all have an impact on diet and lower learning attainment[7].

According to the Ministry of Health 2018, the problems that can occur in adolescents with low nutritional status include anemia, Chronic Energy Deficiency, and the problem of excessive nutritional status, namely obesity. According to IDAI (Indonesian Pediatrician Association, 2013), providing nutrition from food sources and nutrition during adolescence is needed to maximize physical growth, cognitive development, and adolescent reproductive organs[18].

Based on a preliminary study conducted by researchers on 20 adolescent students at SMAN 1 Surabaya according to Body Mass Index, the results obtained were a percentage of 14 adolescent students with normal nutrition of 70%, 2 adolescent students with malnutrition of 10%, and 4 adolescent students with excess nutrition of 20%. Therefore, researchers want to examine the relationship between stress levels and eating patterns with nutritional status that occurs at SMA Negeri 1 Surabaya after the implementation of the Merdeka curriculum learning.

MATERIALS AND METHODS

Using survey and questionnaire interview techniques, observational analytical research is an approach used to determine whether two variables are related through hypothesis testing. This study was conducted between October 2023 and May 2024 and was conducted at SMAN 1 Surabaya JL. Wijaya Kusuma No. 48, Ketabang, Genteng District, Surabaya, East Java 60272. A total of 271 grade X students from SMA Negeri 1 Surabaya were included in the study population. 73 samples were randomly selected from this population using the Simple Random Sampling method with the Slovin formula calculation, namely n = N / 1 + N (d) 2. Measurements using weight scales and height meters, then there is a stress level questionnaire paper (DASS 42) and eating patterns (SQ-FFQ) which are carried out by interviewing respondents are the methods used in the data collection process. The data obtained were subjected to univariate analysis to determine the frequency distribution of each variable.

RESULTS

The results of this study obtained the characteristics of respondents, namely gender and

age, stress levels, eating patterns, and nutritional status of respondents at SMA Negeri 1 Surabaya.

Table 1. Frequency Distribution of Respondent Characteristics, Stress Level, Amount, Type, and Frequency of Meals, Eating Patterns, Nutritional Status of Grade X Adolescents at SMA Negeri 1 Surabaya in 2024

Variable	Frequency (n)	Percent (%)
Gender		
Male	31	42.5
Female	42	57.5
Age		
15	15	20.5
16	58	79.5
Stress Level		
Normal	24	32.9
Mild	13	17.8
Moderate	18	24.7
Severe	18	24.7
Very Heavy	0	0
Amount of Food		
Weight Deficit	8	11
Moderate Deficit	7	9.6
Mild Deficit	11	15.1
Normal	40	54.8
Excessive	7	9.6
Type of Food		
Diverse	31	42.5
Quite Diverse	26	35.6
Less Diverse	16	21.9
Eating Frequency		
Good	39	53.4
Not Good	34	46.6
Dietary Pattern		
Good	16	21.9
Not Good	57	78.1
Nutritional Status		
Malnutrition	0	0
Underweight	2	2.7
Good Nutrition	49	67.1
Overweight	9	12.3
Obesity	13	17.8

Source: Primary Data 2024

According to the above table data, 42 students (57.5%) and 58 students (79.5%) at SMAN 1 Surabaya, respectively, are the majority of student respondents, and the majority of respondents are 16-year-olds. According to the statistics, the majority of respondents—24 students, or 32.9% of the sample—have normal stress levels. Additionally, 40 students, or 54.8% of the sample, fall into the normal group in the energy consumption table, Moving on to the eating frequency table, it is known that 39 students, or 53.4% of the sample, are in the good category; similarly, 57 students, or 78.1% of the sample, are in the less good category; and 49 students, or 67.1% of the sample, are in the good nutrition category with respect to nutritional status.

Table 2. Cross Tabulation of Stress Levels and Nutritional Status of Grade X Adolescents at SMA Negeri 1 Surabaya in 2024

Stress Level	Nutritional Status										Total	%	*P value*
	Malnutrition		Underweight		Normal		Overweight		Obesity				
	n	%	n	%	n	%	n	%	n	%			
Normal	0	0	0	0	16	69.6	3	13.0	4	17.4	23	100	0.553
Mild	0	0	0	0	10	71.4	2	14.3	2	14.3	14	100	
Moderate	0	0	0	0	11	61.1	4	22.2	3	16.7	18	100	
Severe	0	0	2	11.1	12	66.7	0	0	4	22.2	18	100	
Verry Heavy	0	0	0	0	0	0	0	0	0	0	0	0	
Total	**0**	**0**	**2**	**2.7**	**49**	**67.1**	**9**	**19.2**	**13**	**17.8**	**73**	**100**	

Source: Primary Data 2024

Based on the data above, the results of the Spearman Rank statistical test with a p value of 0.553 ≥ α (0.05), then H_1 is rejected and H_0 is accepted, which states that there is no significant relationship between stress levels and nutritional status in grade X adolescents at SMA Negeri 1 Surabaya in 2024.

Table 3. Cross Tabulation of Dietary Patterns and Nutritional Status of Grade X Adolescents at SMA Negeri 1 Surabaya in 2024

Dietary Pattern	Nutritional Status										Total	%	*P value*
	Malnutrition		Underweight		Normal		Overweight		Obesity				
	n	%	n	%	n	%	n	%	n	%			
Good	0	0	1	6.3	15	93.8	0	0	0	0	16	100	0.002
Not Good	0	0	1	1.8	34	59.6	9	15.8	13	22.8	57	100	
Total	**0**	**0**	**2**	**2.7**	**49**	**67.1**	**9**	**12.3**	**13**	**17.8**	**73**	**100**	

Source: Primary Data 2024

Based on the data above, the results of the Spearman Rank statistical test with a p value of 0.002 ≤ α (0.05), then H_1 is accepted and H_0 is rejected, which states that there is a significant relationship between eating patterns and nutritional status in class X adolescents at SMA Negeri 1 Surabaya in 2024.

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DISCUSSION

Respondent Characteristics

In table 1. it is found that most of the samples are 16 years old, amounting to 58 students with a percentage of 79.5% and female gender amounting to 42 students with a percentage of 57.5%.

The remaining students are 15 years old, amounting to 15 students with a percentage of 20.5% and male gender amounting to 31 students with a percentage of 42.5%.

Respondents' Stress Level

Stress is an unpleasant feeling caused by environmental demands, social relationships, and perceptions of problems that are interpreted differently by one individual to another (National Association of School Psychologists, 2004). Individual assessments of stressors can influence individuals to take action against stressors that can cause stress[16].

There are two causes of stress, namely internal causes of stress including health conditions, inability to manage time, decreased motivation, and external causes of stress including parental circumstances, failure, learning difficulties, academic and social environment, learning processes and financial problems[4,14].

Based on the results of the study, it shows that most of the stress levels of class X students at SMAN 1 Surabaya are in the normal category, amounting to 24 students (32.9%) and the least are in the mild category, amounting to 13 students (17.8%). The assumptions of each teenager can affect the level of stress, namely if the teenager considers the stressor as a challenge (eustress) then the stress level is low, conversely if the teenager considers the stressor as a threat (distress) then the stress level is higher[23].

There are several ways that are usually done as stress coping methods, such as praying, talking to parents or close friends, spending time browsing social media for a long time, listening to music, doing hobbies, exercising and sleeping. Another effort that is used as a stress coping method is eating which can be called emotional eating[24].

Respondents' Dietary Patterns

Eating patterns can be assessed based on the amount, type, and frequency with good and less good categories. It is said to be good if the amount, type, frequency are in the good or normal category. And it is said to be less good if one of the amount, type, and frequency is in the category less or more than the standard.

Based on the research findings, it was discovered that 16 students, or 21.9% of the sample, had good eating habits, whereas 57 students, or 78.1% of the sample, had bad eating patterns. This is consistent with studies by Seri Murni, which found that up to 39 adolescents had poor eating patterns (a percentage of 65%) and up to 21 adolescents had excellent eating patterns (a percentage of 35%). The majority of adolescents had poor eating patterns.

The results of the amount, type, and frequency in this study if averaged can be said to be normal overall, but this cannot be associated with those listed in tables 4, 5, 6 and 7 which are

known from the type, amount, and frequency of eating where if one of the three categories is missing then it cannot be stated as a good diet. The majority of teenagers have very low energy intake. This is related to the consumption of snacks or snacks that are low in nutrients, such as school snacks. Teenagers during breaks at school more often consume school snacks. Most snacks or snacks contain very little nutrients, are empty of calories, and interfere with appetite 15.

Another factor is that the portion or amount consumed by adolescents is still not in accordance with the nutritional needs required so that adolescent energy intake is still in the very low category 25. In general, male energy intake is higher than female, but the fulfillment of male energy intake is lower than female. This is because male energy needs are higher than female because males experience greater increases in weight, height, and body mass 1,9. Female adolescents change their diet to lose weight or prevent weight gain, while males to gain weight (bulking) 5.

The frequency of eating in women is higher than in men. This is associated with the behavior of skipping meals in men which is higher than in women. This is consistent with Otsuka's research, which indicates that males are more likely than women to miss meals and breakfast 13 Eating patterns can be assessed based on the amount, type, and frequency with good and less good categories. It is said to be good if the amount, type, frequency are in the good or normal category. And it is said to be less good if one of the amount, type, and frequency is in the category less or more than the standard.

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Another factor is that the portion or amount consumed by adolescents is still not in accordance with the nutritional needs required so that adolescent energy intake is still in the very low category [25]. In general, male energy intake is higher than female, but the fulfillment of male energy intake is lower than female. This is because male energy needs are higher than female because males experience greater increases in weight, height, and body mass [1,9]. Female adolescents change their diet to lose weight or prevent weight gain, while males to gain weight (bulking) [5].

The frequency of eating in women is higher than in men. This is associated with the behavior of skipping meals in men which is higher than in women. This is consistent with Otsuka's research, which indicates that males are more likely than women to miss meals and breakfast[13].

Respondents' Nutritional Status

Nutritional status, according to Sunita Almatsier (2009), is the condition of the body as a function of nutrient use and food consumption. The only way to get optimal nutritional status is through a healthy diet, namely one that is built on the ideas of a natural, balanced, and nutritious diet [2]. Sulistyoningsih (2016) claims that the recommended nutritional adequacy values (AKG) show the dietary requirements for each age group. based on gender and age. Irianto (2014) states that eating habits common in teenagers include snacking on high-calorie foods, missing meals, particularly breakfast, eating at irregular times, frequently consuming fast food, and infrequently consuming fruits and vegetables. These behaviors can lead to an imbalanced intake and malnutrition [20].

Table 1 shows that 49 students (67.1%) have good nutritional status, which is the group in which the majority of respondents fall. Still, 2 students (2.7%), 9 students (12.3%), and 13 students (17.8%) who fall into the obesity group, overnutrition category, and undernutrition category, respectively, are among the responders with these nutritional statuses. This is consistent with study by Aisyah Nurkhopipah, which shows that a tiny percentage of respondents 6% have an overnutrition status, whereas the majority of respondents 65.6% have a body mass index in the normal range.

Relationship Between Stress Levels and Nutritional Status

Stress arises from a mismatch between physiological and psychological demands depending on an individual's biological, psychological, and social circumstances. Stress is a condition of gaps. Stress might arise from the perception of danger or threat in the scenario[17]. Stress can be a change in life events that occur, both in the school environment, residence or society. Psychosocial stress that occurs in adolescents requires its own adjustment. If the adjustment fails, the individual can experience several disorders, one of which is an eating disorder[21].

With a p-value of 0.553 ≥ α (0.05) in the Spearman Rank statistical test, H_1 which claims that there is no correlation between stress levels and nutritional status among grade X teenagers at SMA Negeri 1 Surabaya in 2024 is rejected. This is consistent with research by Meisye Novitasari and Meilani Kumala that shows no connection between dietary status and stress. Stress in students can be caused by several factors, namely academic factors, competition, environmental factors, organizations, physical activity, and others. Academic factors such as the implementation of the

latest curriculum, namely the Independent Curriculum, which is a period of change from the 2013 curriculum. In this independent curriculum, the curriculum structure as referred to in Article 2 letter b is the organization of competencies, learning content, and learning load. With Competence as referred to in paragraph (1) being a unity of attitudes, skills, and knowledge that shows the abilities of students as a result of the learning process[8].

Each student has different levels of stress for different reasons and the differences in the results of this study are due to the individual's ability to adapt to the environment and how they deal with stress that arises in each individual (stress coping). Gender, intelligence, age, nature, and heredity have a role in stress coping[19].

According to researchers, there is no relationship between stress and nutritional status because in a state of individual stress, a person tends to forget to fulfill the body's basic needs, such as the need for food and drink, personal hygiene and rest. Food choices during periods of stress can also affect nutritional status in both directions. Some tend to eat more and some tend to eat less.

Relationship Between Diet Patterns and Nutritional Status

The body's capacity to use the nutrients included in food is essentially what determines a person's nutritional status. A normal nutritional status means that the body's demands have been satisfied by the type and amount of food consumed. An individual under normal weight is susceptible to infectious disorders[3].

Based on the Spearman Rank statistical test findings, which show a p value of 0.002 ≤ α (0.05), H_1 which asserts that eating habits and nutritional status are related is acceptable for grade X teenagers at SMA Negeri 1 Surabaya in 2024. This is consistent with research by Merlin Farlina, et al., which found that the Chi-square statistical test produced a P-value = 0.021 where the P-value <α (0.05) which means H0 is rejected, indicating a significant relationship between eating patterns and nutritional status of adolescents at MA Nida Bahari Jampangkulon in 2021. Based on the results of the bivariate analysis of the relationship between eating patterns and nutritional status of adolescents at MA Nida Bahari Jampangkulon in 2021.

Researchers have found that a healthy diet consists of four components: sources of staple foods, sources of plant and animal protein, and fruit and vegetables. This is because all nutrients are necessary for the body's growth and maintenance, as well as the development of the brain and productivity at work, and they should be consumed in sufficient amounts based on needs.

CONCLUSION

Most students in grade X have normal stress levels, which means they are still able to adjust to the existing curriculum. They also generally have normal nutritional status, as measured by BMI/U by measuring weight and height and determining the Z-Score. However, the eating patterns of students in grade X are still not optimal because many of them do not meet the recommended standards for the number of types and frequency of food. Research shows that there is no significant relationship between stress levels and nutritional status. On the contrary, there is a relationship between eating patterns and nutritional status of adolescents in grade X.

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