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Factors Associated with the Incidence of Obesity among College Students at Fakultas Ilmu Kesehatan Universitas Pembangunan Nasional "Veteran" Jakarta

Faktor-Faktor yang Berhubungan dengan Kejadian Obesitas pada Mahasiswa Fakultas Ilmu Kesehatan Universitas Pembangunan Nasional "Veteran" Jakarta

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ABSTRACT

Background: Obesity is a nutritional issue with an escalating prevalence. Riskesdas 2018 indicates that the adult obesity rate has reached 21,8%. College students are in a transitional phase from adolescence to adulthood, which necessitates adaptation to the academic environment that often lead to the development of unhealthy lifestyles. This issue causes college students susceptible to obesity due to risk factors, such as eating patterns, eating behavior, physical activity, and stress.

Objectives: Analyzing factors associated with the incidence of obesity among college students at Fakultas Ilmu Kesehatan Universitas Pembangunan Nasional (FIKES UPN) "Veteran" Jakarta.

Methods: Observational analytic research with a cross-sectional design, conducted from February-April 2024, involving 232 respondents. Respondents were selected using the stratified random sampling. Data were obtained using questionnaires and anthropometric measurements then analyzed using the Chi-Square Test.

Results: The statistical analysis indicate that the frequency of sweet food consumption has a p-value of 0.111, sweet beverages frequency (p-value=0.733), high-fat food frequency (p-value=0.036), sweet intake (p-value=1.000), high-fat intake (p-value=0.426), fiber intake (p-value=0.819), emotional eating (p-value=0.057), external eating (p-value=0.871), physical activity (p-value=0.271), and stress (p-value=1.000).

Conclusions: The frequency of consuming high-fat foods has been significantly associated with obesity among college students. Consequently, students are recommended to be more mindful of the frequency of high-fat foods, such as fast food and fried food, to minimize factors contributing to obesity. In contrast, obesity is not associated with the frequency of sweet foods and beverages consumption, sweet intake, high-fat intake, fiber intake, emotional eating, external eating, physical activity, and stress.

INTRODUCTION

College students represent a population transitioning from late adolescence to early adulthood, typically ranging between the ages of 18 and 25 years[1]. During this phase, students are required to adapt to a new environment that significantly contrasts with their prior educational levels. The substantial differences in environment and culture, combined with distinct academic demands during university life, are known to lead to the development of unhealthy lifestyles, such as suboptimal eating patterns, changes in eating behavior, and poor sleep quality[2]. Based on these factors, college students are particularly vulnerable to nutrition-related issues, especially overweight and obesity[3].

Obesity is defined as a condition characterized by the excessive accumulation of fat in the body, generally due to and imbalance between calorie intake and energy expenditure[4]. Obesity is a critical public health concern in Indonesia, as its prevalence continues to rise, particularly among adults. According to the Riset Kesehatan Dasar (Riskesdas) data, the prevalence of adult obesity was previously only 14.8%[5], it increased to 21.8% in 2018[6]. Specifically, college students within the adult age group are reported to have a relatively high prevalence of obesity. A prior study conducted at a university in Jakarta reported that 33.3% of students were classified as obese[7].

Obesity significantly impacts health due to its association with various Non-Communicable Diseases (NCDs), including cardiovascular disease, cancer, and type 2 diabetes[4]. Additionally, obesity can also lead to short-term problems for students, such as decreased concentration and difficulties in academic performance[8]. Students with a high Body Mass Index (BMI) are often easily fatigued and excessively drowsy[9]. These factors ultimately lead to a decrease in the student's daily productivity, both academically and non-academically.

One of the primary factors contributing to obesity is the consumption of high-risk foods. According to Riskesdas 2018 data, Indonesians commonly consume high-risk foods, such as sugary foods (40.1%), sugary beverages (61.27%), and high-fat foods (41.7%)[6]. The tendency of college students to consume unhealthy foods may be influenced by the availability of fast food outlets and street vendors near campuses[3].

Another factor associated with obesity among college students is the intake of dietary fiber. High-fiber foods typically have low calories and are known to possess properties that can retain water and are difficult for the human body to digest, thus creating a longer-lasting feeling of fullness. Therefore, if an individual does not consume sufficient fiber intake, it will increase the potential for excessive food consumption, ultimately leading to obesity[10].

Overeating is categorized as a form of eating behavior. According to the theory by Van Strien et al.[11], eating behaviors include emotional eating and external eating. Emotional eating refers to overeating in response to negative emotions[12]. A higher tendency for emotional eating is associated with an increased BMI[13]. External eating, on the other hand, occurs when individuals consume food based on external stimuli, such as smell, sight, or taste, without considering internal hunger or satiety signals[14]. This behavior is prevalent among college students due to ease of accessing food, the proliferation of fast-food restaurants, and extensive food advertising in mass media[15].

Physical activity is another determinant of obesity among college students. The demanding academic schedules and advancements in technology contribute to a sedentary lifestyle and reduced physical activity[16]. Low levels of physical activity hinder the effective burning of consumed calories, leading to fat accumulation and subsequent obesity[17].

Stress also contributes to the occurrence of obesity among college students[18]. Research by Adilah et al. identifies that high stress levels can influence food intake through the production of cortisol, a hormone that stimulates appetite[19]. Furthermore, stress can alter eating behaviors, manifesting as overeating or the consumption of nutritionally imbalanced foods, such as those high in fat and sugar[20].

Referring to the issues outlined above, it can be understood that the prevalence of obesity among adults still continue to rise. The prevalence of obesity in adults over 18 years old in the Special Region of Jakarta ranks second highest with a figure 29.8%[6]. Furthermore, a preliminary study conducted by the researcher on 58 students of FIKES UPN "Veteran" Jakarta found that 24.13% of the students had a BMI exceeding normal values, with 6.89% classified as overweight and 17.24% classified as obese. Therefore, the researcher is motivated to explore the factors associated with the occurrence of obesity among FIKES UPN "Veteran" Jakarta" students through this research.

METHODS

This research is an observational analytic using a cross-sectional design. This approach aims to examine the relationship between independent and dependent variables at the same time or at a single point in time. The research was conducted from February to April 2024 at the Faculty of Health Sciences, UPN "Veteran" Jakarta. The research involves all active students at the Faculty of Health Sciences, totaling 1,856 as the population. The sample size was determined using a two-proportion difference test, resulting in a required sample size of 240 students. Respondents were selected through stratified random sampling, based on the research's inclusion and exclusion criteria. The inclusion criteria were as follows: 1) active students at the FIKES UPN "Veteran" Jakarta, 2) aged ≥19 years, 3) in a good health condition, and 4) willing to participate in the study by signing an informed consent form. The exclusion criteria included: 1) students currently undergoing a specific diet program 2) magister's program students and students engaged in fieldwork practice (PKL) or internship, 3) individuals with diseases causing weight gain due to edema or ascites, and 4) students who did not participate in the entire phases of the research.

Data for this study were collected through anthropometric measurements and questionnaires. BMI data were obtained using direct anthropometric measurements with instruments such as a digital weighing scale and a GEA Medical microtoise. Respondent characteristics, including age, residential status, gender, and allowance, were collected via a characteristic questionnaire. Physical activity levels were assessed using the International Physical Activity Questionnaire Short Form (IPAQ-SF), eating behavior was measured with the Dutch Eating Behavior Questionnaire 23 items (DEBQ-23), stress levels were assessed using the Depression, Anxiety, Stress Scale 14 items (DASS-14), and dietary intake of high-risk foods and fiber was evaluated using a Semi-Quantitative Food Frequency Questionnaire (SQ-FFQ).

This study was conducted following approval from the Health Research Ethics Committee of UPN "Veteran" Jakarta, as evidenced by the ethics approval letter No. 55/II/2024/KEP, issued on February 22, 2024. The collected data were processed using IBM SPSS Statistics 23 with univariate and bivariate analysis. Univariate analysis was conducted to examine the frequency distribution of each variable, including respondent characteristics (age, residential status, gender, allowance), obesity incidence, consumption of high-risk foods, fiber intake, eating behavior, physical activity, and stress levels. Bivariate analysis was performed using the Chi-Square test to identify the relationship between independent and dependent variables and the Mann-Whitney test to determine significant differences in the mean of independent

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variables between obese and non-obese individuals, with a significance level of 0.05.

RESULTS AND DISCUSSIONS

The respondents in the study consisted of students from the FIKES UPN "Veteran" Jakarta, who met the inclusion criteria. Two respondents were excluded from the analysis due to incomplete participation in all stages of the questionnaire. Furthermore, due to time constraints, the research was unable to recruit the additional number of respondents (10%) initially calculated to account for potential dropouts. Consequently, the final number of respondents included in the study was 232 students.

The age range of the respondents in this research was between 19 and 23 years, with the majority being 19 years old, accounting for 126 respondents (54.3%) (Table 1). The respondents ages fall within the transitional period from late adolescence to early adulthood[1]. During this developmental phase, college students are prone to adopting unhealthy lifestyles, such as low physical activity levels, inadequate sleep duration, irregular eating patterns, and high levels of academic stress, which increase the risk of obesity in this population[2]. Nearly all respondents in this research were female, totaling 212 respondents (91.4%). This finding reflects the predominance of females in the research population. Consistent with the 2018 Riskesdas report, obesity prevalence in the adult age group was higher among females (29.3%) compared to males (14.5%)[6]. Gender is recognized as a risk factor obesity, as the female body tends to store more fat than the male body[21]. Additionally, hormonal factors in females, such as estrogen, influence serotonin production, which in turn affects appetite regulation[22].

The analysis of residence status revealed that the majority of respondents lived with their parents (65.9%). The findings aligns with research conducted by Saifudin et al., which reported that most college students lived with their parents or families (65.7%)[23]. Residence status is a determinant of an individual's eating habits[24]. Students who reside with their parents during university tend to consume nutritious home-prepared meals, including fruits and vegetables. In contrast, students living independently are more likely to develop poor eating habits due to limited access to nutritious foods and greater autonomy in food choices[3]. Consequently, they are more prone to consuming high-fat and high-sugar foods, skipping breakfast, and neglecting fruits and vegetables, all of which contribute to obesity.

Monthly allowance was categorized into two groups based on the median value, as the data were not normally distributed. Most respondents had a higher monthly allowance, comprising 62.9% of the total. The amount of allowance correlates with the risk of obesity among college students due to tendency toward consumption behavior. Similar findings were reported in another study, which allowed that the majority of college students (63.2%) had relatively high monthly allowances[25]. A higher allowance increases the likelihood of students accessing large quantities of food, ultimately raising their risk of obesity[26].

Table 1. Distribution of characteristics of students at FIKES UPN "Veteran" Jakarta

Characteristics	n	%
Age		
19 Years	126	54.3
20 Years	58	25.0
21 Years	36	15.5
22 Years	11	4.7
23 Years	1	0.4
Gender		
Male	20	8.6
Female	212	91.4
Residential Status		
Living Alone	60	25.9
Living with Parents	153	65.9
Living with Friends/Relatives	19	8.2
Allowance		
High (≥Rp1,000,000)	146	62.9
Low (<Rp1,000,000)	86	37.1

The nutritional status in this research was assessed using indicators for the adult age group (>18 years), namely Body Mass Index (BMI). The categorization applied the modified thresholds for the Indonesian population, as stated in the Ministry of Health Regulation No. 41 of 2014 on Balanced Nutrition Guidelines: severely underweight (BMI <17 kg/m^2), underweight (17-<18.5 kg/m^2), normal (18.5-25 kg/m^2), overweight (>25-27 kg/m^2), and obese (>27 kg/m^2). The data analysis of respondents' nutritional status revealed that over half of the respondents were classified as having normal nutritional status (52.2%) (Table 2). Within the obesity category, 48 respondents (20.7%) from the FIKES UPN "Veteran" Jakarta, were identified as obese. This percentage indicates that obesity among college students represents a nutritional concern.

The consumption of high-risk foods was categorized into "frequent" and "infrequent" using the median as the cut-off value. The results showed that 50.9% of respondents frequently consumed sweet foods, 53% frequently consumed sugary beverages, and 52.2% frequently consumed high-fat foods. The most commonly consumed sweet foods among respondents were candies and Ultra High Temperature (UHT) milk, while fried

chicken was the most frequently consumed high-fat food. In terms of quantity, the intake of high-risk foods was divided into two categories: excessive intake and adequate intake, based on the Ministry Health of the Republic of Indonesia's recommendations for daily sugar and fat consumption[27]. The findings indicated that over half of the respondents (56.5%) had an adequate intake of sweet foods, while the majority (89.7%) had an adequate intake of high-fat foods.

Furthermore, it was identified that 50.4% of respondents had an adequate fiber intake. In terms of

eating behavior, more than half of the respondents exhibited a tendency toward emotional eating (51.3%), while an equal proportion of respondents showed and did not show a tendency toward external eating (50%). For physical activity, the majority of respondents were classified as having adequate physical activity (72%). Additionally, the stress level characteristics of the respondents revealed that the majority were categorized as experiencing stress (52.6%).

Table 2. Overview of obesity prevalence, high-risk food consumption frequency, high-risk food intake, fiber intake, eating behavior, physical activity, and stress levels among FIKES UPN "Veteran" Jakarta students

Variable	n	%
Nutritional Status		
Severely Underweight	9	3.9
Underweight	29	12.5
Normal	121	52.1
Overweight	25	10.8
Obese	48	20.7
Obesity Incidence		
Obese (>27 kg/m^2)	48	20.7
Non-obese (≤27 kg/m^2)	184	79.3
Frequency of Consuming Sweet Foods		
Frequent	118	50.9
Infrequent	114	49.1
Frequency of Consuming Sweet Beverages		
Frequent	123	53
Infrequent	109	47
Frequency of Consuming High-Fat Foods		
Frequent	121	52.2
Infrequent	111	47.8
Sweet Food Intake		
Excessive (>50 g/day)	101	43.5
Adequate (≤50 g/day)	131	56.5
High-fat Food Intake		
Excessive (>67 g/day)	24	10.3
Adequate (≤67 g/day)	208	89.7
Fiber Intake		
Inadequate (<2.79 g/day)	115	49.6
Adequate (≥2.79 g/day)	117	50.4
Emotional Eating		
Yes	119	51.3
No	113	48.7
External Eating		
Yes	116	50
No	116	50
Physical Activity		
Low (<600 MET-min/week)	65	28
Adequate (≥600 MET-min/week)	167	72
Stress Levels		
Stressed	122	52.6
Not Stressed	110	47.4

MET (Metabolic Equivalent for Task)

Table 3. Analysis of factors associated with obesity among college students of the FIKES UPN "Veteran" Jakarta

Variable	Obesity Incidence		p-value	
	Obese	Non-Obese		
Frequency of Consuming Sweet Foods				
Frequent	19	99	0.111	0.027**
Infrequent	29	85		
Frequency of Consuming Sweet Beverages				

Variable	Obesity Incidence		p-value	
	Obese	Non-Obese		
Frequent	27	96	0.733	0.917
Infrequent	21	88		
Frequency of Consuming High-fat Foods				
Frequent	32	85	0.036*	0.382
Infrequent	16	95		
Sweet Food Intake				
Excessive	21	80	1.000	0.991
Adequate	27	104		
High-fat Food Intake				
Excessive	3	21	0.426	0.105
Adequate	45	163		
Fiber Intake				
Inadequate	25	90	0.819	0.488
Adequate	23	94		
Emotional Eating				
Yes	31	88	0.057	0.112
No	17	96		
External Eating				
Yes	23	93	0.871	0.757
No	25	91		
Physical Activity				
Low	17	48	0.271	0.449
Adequate	31	136		
Stress Levels				
Stressed	25	97	1.000	0.894
Not Stressed	23	87		

*) Chi-Square Test, significant if p-value<0.05
**) Mann Whitney Test, significant if p-value<0.05

Relationship between the Frequency of High-Risk Food Consumption and Obesity

High-risk foods are defined as those that, when consumed excessively and consistently, increase an individual's susceptibility to developing degenerative diseases, examples include sweet and fatty foods[28]. This study examined three types of high-risk foods. For the variable of sweet foods, the relationship test revealed no significant association between the frequency of sweet food consumption and the incidence of obesity among college students (p-value=0.111) (Table 3). Interviews with respondents indicated that the obese group reported a lack of preference for sweet foods and tended to opt for savory foods instead. As a result, sweet food consumption appeared to have little impact or association with obesity in this group. These findings align with the results of Asriati's research in 2023, who stated that frequent consumption of sweet foods is not necessarily associated with obesity or weight gain if the portions consumed are small[29]. The study identified that the most commonly consumed sweet foods among respondents were candies, chocolates, and biscuits, which do not contain significant amounts of sugar per serving. Although the Chi-Square test did not reveal a significant relationship between the variables, the Mann-Whitney test showed a difference in the mean frequency scores of sweet food consumption between obese and non-obese groups, with a p-value of 0.027 (Table 3).

For the variable of sweet beverages, the study found no significant association between the frequency of sweet beverage consumption and obesity among college students (p-value=0.733). Additionally, no

difference in the mean frequency scores of sweet beverage consumption was observed between the obese and non-obese groups (Table 3). Similar findings were reported by Hardiansyah et al., who concluded that there was no relationship between the frequency of sweet beverage consumption and obesity among college students[30]. The lack of association may be attributed to the generally low portion sizes of sweet beverages consumed. It is important to consider not only the frequency of consumption but also the portion size. Frequent consumption of sweet foods and beverages in small portions may not necessarily lead to weight gain[29].

Regarding high-fat foods, the study identified a significant association between the frequency of high-fat food consumption and obesity among college students (p-value=0.036) (Table 3). This finding is consistent with research by Hidayat, which demonstrated a relationship between the frequency of high-fat food consumption and nutritional status among college students in Kediri[31]. Frequent consumption of high-fat foods may contribute to obesity among college students, as these individuals often choose easily accessible and affordable food options. The campus environment often features unhealthy snacks high in fat, sugar, and salt. Increased consumption of high-fat foods leads to excess fat accumulation in the body, thereby increasing the risk of health issues such as obesity[32]. High-fat food consumption can result in the enlargement of adipose tissue and an associated increase in leptin levels, potentially leading to leptin resistance[33]. Leptin resistance disrupts energy balance and contributes to obesity.

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Relationship between High-Risk Food Intake and Obesity

In this research, sweet intake was defined as foods and beverages high in sugar content. The analysis results presented in Table 3 indicate no significant association between sweet intake and obesity among college students (p-value= 1.000). Furthermore, no differences were observed in the mean sweet intake between obese and non-obese groups (p-value= 0.991). This outcome may be attributed to the limited variety of sweet foods and beverages available around the campus environment, resulting in relatively similar sweet intake levels among respondents. Another contributing factor to the lack of association is that most respondents were found to have sweet food and beverage consumption within the recommended daily limits, regardless of their obesity status[34]. This finding aligns with other studies, which reported no significant relationship between sweet food intake and obesity due to respondents' general lack of preference for sweet foods, leading to controlled sugar consumption[35].

Sugar intake from sweet foods and beverages is a type of high-risk food that can lead to health issues, including obesity. Excess energy derived from sugar is converted into fat storage in adipose tissue through lipogenesis[36]. If sugar intake is excessive and not balanced with calorie expenditure, fat accumulation may occur, resulting in obesity.

Regarding high-fat food intake, this study found no significant association between the amount of high-fat food intake and obesity among college students (p-value=0.426) (Table 3). The absence of this association may be explained by the fact that most respondents reported consuming fat within normal or adequate levels. This can be attributed to the majority of respondents (65.9%) still living with their parents, whose influence on dietary choices promotes balanced nutrition and frequent consumption of home-cooked meals. These findings are consistent with research by Angesti & Manikam, which reported no relationship between fat intake and nutritional status among college students[37]. However, the Mann-Whitney test revealed that the mean high-fat food intake was still higher in the obese group compared to the non-obese group. This observation aligns with other studies showing that obese individuals tend to have higher fat intake[36].

Relationship between Fiber Intake and Obesity

According to Table 3, the Chi-Square test results indicate no significant association between fiber intake and obesity among college students (p-value=0.819). Similarly, the Mann-Whitney test results also show no significant difference in mean fiber intake between obese and non-obese groups (p-value=0.488). This finding is consistent with previous studies, which also reported no relationship between fiber intake and nutritional status among college students[38]. The small difference in the proportion of respondents with adequate and inadequate fiber intake between the obese and non-obese groups may explain the lack of association between these variables. Interviews revealed several reasons for inadequate fiber intake, including respondents' dislike for fiber-rich foods (fruits and vegetables), a lack of time to prepare fiber-rich meals when living independently and insufficient fiber portions per serving.

Although no significant relationship was found between fiber intake and obesity, it was observed that a higher proportion of obese respondents had inadequate fiber intake. This finding aligns with research by Jeser and Santoso, which reported that the majority of obese respondents had insufficient fiber intake due to difficulties in controlling their dietary habits[10]. High-fiber foods have a lower energy density and lower calories. Moreover, fiber affect digestive enzyme activity and slows gastric emptying, leading to earlier satiety signals. As a result, individuals are better able to control their food intake and prevent weight gain[39].

Relationship between Eating Behavior and Obesity

Eating behavior in this research consisted of two types: emotional eating and external eating. The research identified that emotional eating had no significant relationship with obesity among college students (p-value=0.057) (Table 3). This finding aligns with the research of Auliannisaa & Wirjatmadi, which also reported no significant relationship between emotional eating and obesity[40]. In this study, emotional eating was not associated with obesity, possibly due to other factors more directly influencing the occurrence of obesity. Additionally, previous studies have suggested that emotional eating is not significantly related to obesity because negative emotions experienced by individuals are generally short-term, leading to temporary emotional eating behaviors that do not substantially impact weight gain[41]. However, the majority of obese respondents in this study exhibited tendencies toward emotional eating, which may influence their dietary preferences toward higher fat and sugar intake, thereby increasing the risk of weight gain and obesity[42].

On the other hand, no significant relationship was found between external eating and obesity among college students (p-value=0.871), nor was there any significant difference in the mean scores between obese and non-obese groups (p-value=0.757) (Table 3). This result is supported by the study of Khottibudin, which also found no significant association between external eating and overweight status among college students[43]. This study hypothesizes that the lack of relationship between external eating and obesity may be due to time constraints faced by students with busy academic schedules. While individuals may experience stimuli or cravings to consume food triggered by external cues (such as smell or sight), they may not always have the opportunity to act on these cravings due to limited free time[44].

Although this study found no significant relationship or mean score difference between external eating and obesity among college students, it is worth noting the small margin between obese respondents with and without tendencies toward external eating (Table 3). External eating can occur due to external stimuli[14]. Sensory appeal, such as aroma, taste, and appearance, plays a role in food selection processes[45]. These sensory attributes act as stimulators, prompting individuals to consume specific foods even in the absence of internal

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hunger. This behavior can lead to the consumption of foods beyond the body's needs, increasing the risk of obesity.

Relationship between Physical Activity and Obesity

This research identified that there was no significant relationship between physical activity and the incidence of obesity among college students (p-value=0.271). This result might occur because the data collected only reflected the respondents' physical activities over the past week, which may not accurately represent their habitual activity levels. Moreover, physical activity is not the sole factor causing obesity; other aspects such as genetics, dietary intake, and nutritional knowledge also play a role. Previous research similarly stated that physical activity is not directly related to the nutritional status of students, as other factors, such as dietary intake, may have a stronger correlation[46].

Although the statistical tests did not show any significant correlation or mean differences, it was observed that the majority of respondents with adequate physical activity levels had non-obese nutritional status (Table 3). This finding relates to the imbalance between calorie intake and expenditure. To prevent obesity, calorie intake must be balanced with physical activity. Students are often noted to have limited physical activity due to spending long hours sitting while completing assignments or studying. However, in the current era, many students balance this by engaging in weekend exercise as a way to relieve stress or as a coping mechanism[47]. Regular physical activity is essential to optimize the basal metabolic rate, enabling effective calorie expenditure and preventing obesity[48].

Relationship between Stress Level and Obesity

Based on Table 3, it can be interpreted that there is no significant relationship between stress levels and the incidence of obesity among college students (p-value=1.000). This result is supported by a study conducted by Taher et al., which also found no significant relationship between stress levels and the body mass index of students[49]. This finding might occur because stress levels are not a direct causal factor of obesity. Although stress conditions experienced by students may increase the desire for excessive eating, stress management approaches vary among individuals. According to Lazarus and Folkman's theory, as cited in Sukianto, stress-coping mechanisms are categorized into two types: problem-focused coping and emotion-focused coping[13]. Only individuals with emotion-focused coping are likely to use food consumption as an escape mechanism from stress. Therefore, the absence of a relationship between stress levels and obesity in this research could be attributed to differences in individual stress management methods.

Although the relationship test showed no significant association, approximately half of the obese respondents experienced stress (Table 3). The stress conditions commonly experienced by students are academic stress, which arises from the demands of academic activities such as exams or completing final assignments[50]. Stress is linked to obesity due to the increased cortisol levels triggered by the hormone Corticotropin-Releasing Factor (CRF) during stress. This hormonal increase impacts appetite stimulation[20]. Furthermore, stress conditions can lead to changes in the type and quantity of food consumed, potentially resulting in weight gain[51].

Strengths and Limitations of the Research

The strength of this research lies in its relatively large sample size. This allows the results to be more representative and provides a broader perspective on the population. On the other hand, this research has limitations related to the use of self-report methods for some data collection, which may lead to incomplete information from respondents.

CONCLUSIONS

This study identified that 20.7% of students from the Faculty of Health Sciences at UPN "Veteran" Jakarta were classified as obese. The majority of respondents were 19 years old, female, living with their parents, and had a relatively high allowance. The findings revealed a significant association between the frequency of high-fat food consumption and obesity. However, no significant relationships were found between other factors, such as the consumption of sugary foods and beverages, eating behavior, physical activity, and stress levels, with obesity. A significant difference was observed in the frequency of sweet food consumption between obese and non-obese groups, while no significant differences were noted for other factors. It is recommended that students monitor their body weight regularly and pay attention to high-risk dietary intake, particularly high-fat foods, to prevent obesity. Future research should prioritize interview-based methods to obtain more accurate data and explore other potential variables associated with obesity. This study is expected to serve as a reference for obesity prevention and contribute to the advancement of health sciences among college students.

AUTHOR CONTRIBUTIONS

FAR: conceptualization, investigation, methodology, formal analysis, writing–original draft, editing; UW: conceptualization, supervision, writing–review and editing; SFS: supervision, writing–review and editing.

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