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The relationship between sedentary lifestyle, fruit and vegetable consumption, and nutritional status of female students in the dormitory of Universitas Andalas

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ABSTRACT

Background: Nutritional issues among adolescents are prevalent in developing countries and worldwide. The primary causes of adolescent nutritional problems are the imbalance between calorie intake and physical activity, which can impact nutritional status (malnutrition, overnutrition, and obesity) as well as NCDs (Non-Communicable Diseases). The aim of this study is to determine the characteristics of respondents and the relationship between breakfast habits, fruit and vegetable consumption, sedentary behavior, and the nutritional status of female students in the dormitory.

Methods: This cross-sectional study involved 124 female students residing in the dormitory of Andalas University, selected through simple random sampling. Nutritional status data were calculated using Body Mass Index (BMI), while food intake data were obtained through semi-quantitative food frequency questionnaire (SQ-FFQ) interviews. Data analysis was performed using the Chi-square test with a confidence level of 95% ($\alpha<0.05$).

Results: The study revealed that the majority of respondents had a normal nutritional status (62.9%), with the majority having a good breakfast habit (45.2%). The average monthly consumption of fruits and vegetables by respondents mostly fell into the sufficient category (36.3%), and the majority exhibited high sedentary behavior (64.5%). Statistical analysis showed a significant relationship between breakfast habits and nutritional status ($p<0.05$). However, there was no significant relationship between fruit and vegetable consumption, sedentary behavior, and nutritional status ($p>0.05$).

Conclusion: There is a significant relationship between breakfast habits and nutritional status. However, there is no significant relationship between fruit and vegetable consumption, sedentary behavior, and the nutritional status of female students residing in the dormitory.

KEYWORDS

Breakfast Habits; Fruit and Vegetable Consumption; Sedentary Behavior; Nutritional Status.

INTRODUCTION

Nutritional status is the condition of the body resulting from food consumption and the utilization of nutrients[1]. Nutritional issues among adolescents are widespread in developing countries and globally. According to WHO data (2019), approximately 1.9 billion individuals aged >18 years experience overweight or obesity, while 462 million are underweight[2]. In Indonesia, based on the Basic Health Research (Riskesdas) data from 2018, the prevalence of nutritional status among individuals aged >18 years includes categories such as underweight (9.3%), overweight (13.6%), and obesity (21.8%). In West Sumatra, the prevalence is underweight (13.4%), overweight (10.6%), and obesity (12.6%). Additionally, the proportion of the population not consuming fruits/vegetables per day in a week in West Sumatra is 19.4%. The proportion of those not consuming fruits/vegetables per day in a week based on the age group 20-24 years is 10.4%, with a deficiency of 95.7%[3].

The main cause of nutritional issues among adolescents, particularly obesity, is the imbalance between calorie intake and physical activity[4]. Generally, the factors contributing to nutritional status issues in adolescents are multifactorial, with genetic factors accounting for 10-30%, and behavioral and environmental factors contributing 70%. The shift in adolescents' lifestyle from traditional to sedentary (lack of move-

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ment) influences an increase in high-calorie, high-fat, high-carbohydrate, high-cholesterol, and high-sodium dietary patterns, while low fiber intake, such as the consumption of fast food, is a risk factor for obesity in adolescents[5]. Moreover, a significant number of adolescents aged 16-20 years tend to skip breakfast[6]. Adolescents who skip breakfast are 17 times more likely to have abnormal nutritional status[7].

Risk factors for nutritional issues (obesity) in adolescents can arise from genetic factors, behaviors (frequent consumption of fast food >= 2 times a week), psychological and emotional stress (8,9), environmental factors (home, school, and community), family preferences (related to types of food, meal times, meal quantities, dining out, and lifestyle)[10,4]. Biological factors, physical activity levels, eating patterns (quantity, meal duration, and regularity), increased fat intake, advertisements (high glycemic index foods, sweetened beverages, snacks, large portion-sized fast food containing excessive fat). Fast food is relatively cheaper than vegetables or fruits[4].

Research findings indicate that the risk of obesity increases by 1.6 times for each additional serving of sugary drinks[11]. Research by Amrynia and Prameswari (2022) also suggests that factors related to excess nutrition in adolescents include eating patterns, sedentary lifestyle (≥ 6 hours/day), and sleep duration (< 8 hours/day)[12]. Research by Ani and Masnina (2022) reveals that 74.1% of students have insufficient fruit and vegetable consumption[13].

Low fruit and vegetable consumption is considered an unhealthy eating habit associated with Non-Communicable Diseases (NCDs) and is common among adolescents worldwide. The World Health Organization (WHO) recommends that adolescents consume at least five servings of fruits and vegetables daily. According to the Global School-Based Student Health Survey, the majority of adolescents worldwide consume less than the recommended amount of fruits and vegetables, opting instead for carbonated drinks and processed fast food rich in lipids. The Global Alliance for Improved Nutrition (GAIN) notes that in Bangladesh, approximately half of school-aged adolescents consume fruits less than once a day. Obesity among Bangladeshi adolescents has been steadily increasing in recent years, highlighting the urgent need to promote healthy lifestyles in this age group to avoid potential NCDs[14].

Adolescence is a crucial period for developing healthy eating habits, as it has long-term implications for nutritional status, health, and lifestyle. Eating habits leading to NCDs often begin during adolescence and tend to persist into adulthood. Interventions to develop healthy eating behaviors, especially the consumption of fruits and vegetables, are essential during adolescence to prevent NCDs and prepare for a healthy old age[15].

Adolescents, being a vulnerable age group, require special attention as their nutritional choices impact growth, development, and adult nutritional issues[16]. University students, undergoing the transition from late adolescence to early adulthood, represent a crucial target group for improving fruit and vegetable consumption[17]. Some students reside in university dormitories, and Andalas University is one such institution with dormitories for its students. Based on the information above, the researchers are interested in conducting a study with the objectives of: (a) understanding the frequency distribution of characteristics of female dormitory students at Andalas University; (b) exploring the relationship between breakfast habits and nutritional status among female dormitory students at Andalas University; (c) examining the relationship between fruit and vegetable consumption and nutritional status among female dormitory students at Andalas University; and (d) investigating the relationship between sedentary behavior and nutritional status among female dormitory students at Andalas University in 2023.

METHOD

This research employs a cross-sectional design conducted in May-June 2023 at the Andalas University dormitory in Padang. The population includes all female dormitory students at Andalas University aged 19-22 years, with a sample size of 124 respondents selected using simple random sampling.

The study uses both primary and secondary data. Primary data include respondent characteristics, breakfast habits, and nutritional status, while secondary data encompass general dormitory information and the number of female dormitory students at Andalas University. Respondent characteristics and breakfast habits are obtained through questionnaire interviews. Nutritional status data are calculated based on Body Mass Index (BMI) by comparing direct measurements of weight and height. Food intake data are collected through interviews using a validated semi-quantitative food frequency questionnaire (SQ-FFQ). Data processing involves univariate and bivariate analysis, including the Chi-square test with a confidence level of 95% ($\alpha<0.05$).

RESULTS

Table 1 indicates that the majority of respondents have normal nutritional status (62.9%), most respondents have a "not good" breakfast habit (54.8%), and the majority have insufficient fruit and vegetable consumption (63.7%). Additionally, the sedentary behavior of most respondents falls into the "high" category (64.5%) among female students in the dormitory of Andalas University.

Table 2 illustrates the diverse monthly consumption of various fruits and vegetables by respondents. The most consumed fruits and vegetables per month are cucumber (63.7%) and papaya (59.7%).

Table 3 shows that the majority of respondents engaged in various sedentary behaviors in the last 7 days. The most com-

Table 1. The frequency distribution of respondent characteristics (nutritional status, breakfast habits, fruit and vegetable consumption, and sedentary behavior) among female students in the dormitories of Universitas Andalas in 2023

Variable	f	%
Nutritional Status		
Underweight (BMI <18.5 kg/m2)	22	17.7
Normal (BMI 18.5-24.9 kg/m2)	78	62.9
Overweight (BMI 25.0-27.0 kg/m2)	17	13.7
Obesity (BMI >27.0 kg/m2)	7	5.6
Breakfast Habits		
Good (total score ≥ 3)	56	45.2
Not good (total score < 3)	68	54.8
Fruit and Vegetable Consumption		
Adequate (fruit and vegetable intake ≥400g/day)	45	36.3
Insufficient (fruit and vegetable intake <400g/day)	79	63.7
Sedentary Behavior		
Light (< 6 hours/day)	44	35.5
High (≥ 6 hours/day)	80	64.5
Total	**124**	**100**

monly performed sedentary behavior by respondents is chatting on the phone/sending messages (96.8%), followed by watching TV/videos (94.4%), sitting and chatting with friends (94.4%), and lying down (94.4%). The least common sedentary behavior reported by respondents is doing handcrafts (knitting), puzzles, playing cards (29%).

Table 4 shows that good breakfast habits are more prevalent among those with normal nutritional status (76.8%) compared to those with not good breakfast habits (51.5%). There is a significant relationship between breakfast habits and the nutritional status of female students at Andalas University (p< 0.05). Adequate fruit and vegetable consumption is more common among those with normal nutritional status (73.3%) compared to those with insufficient consumption (57%). There is no significant relationship between fruit and vegetable consumption and the nutritional status of female students at Andalas University (p> 0.05). High sedentary behavior is more prevalent among those with normal nutritional status (65%) compared to those with light sedentary behavior (59.1%). There is no significant relationship between sedentary behavior and the nutritional status of female students at Andalas University (p> 0.05).

Table 2. Frequency distribution of fruit and vegetable consumption per day among female dormitory students at Universitas Andalas in one month

Type	f	%	Mean ± SD
Spinach	39	31.5	2.92 ± 6.71
Water spinach	76	61.3	6.95 ± 9.80
Mustard greens	49	39.5	2.94 ± 5.92
Carrot	56	45.2	2.25 ± 4.09
Tomato	61	49.2	4.29 ± 10.97
Green beans	45	36.3	1.59 ± 3.79
Jackfruit	26	21.0	1.20 ± 4.18
Mushroom	30	24.2	0.79 ± 2.58
Long beans	32	25.8	0.84 ± 2.40
Cassava leaves	45	36.3	2.34 ± 5.36
Cabbage	69	55.6	4.50 ± 6.12
Chayote	29	23.4	1.61 ± 5.48
Bean sprouts	67	54.0	3.53 ± 6.36
Cucumber	79	63.7	6.95 ± 13.12
Broccoli	32	25.8	1.05 ± 4.60
White mustard greens	54	43.5	2.41 ± 4.35
Cauli flower	34	27.4	1.12 ± 3.50
Eggplant	47	37.9	1.58 ± 3.63
Watermelon	71	57.3	14.02 ± 22.34
Papaya	74	59.7	17.49 ± 28.58
Banana	60	48.4	10.53 ± 22.80
Orange	70	56.5	6.12 ± 9.16
Apple	42	33.9	4.49 ± 12.00
Melon	51	41.1	7.54 ± 16.45
Snake fruit	37	29.8	2.11 ± 5.29
Avocado	61	49.2	6.69 ± 15.68
Guava	29	23.4	4.15 ± 12.21
Water guava	36	29.0	3.05 ± 8.60
Jicama	46	37.1	1.60 ± 3.34
Grapes	30	24.2	1.16 ± 3.68
Mango	41	33.1	3.34 ± 6.80
Strawberry	28	22.6	0.90 ± 2.40
Dragon fruit	42	33.9	5.30 ± 13.77
Pineapple	68	54.8	13.27 ± 24.02
Pear	37	29.8	2.22 ± 5.55

Table 3. Frequency distribution of sedentary behavior among female dormitory students at Universitas Andalas for 7 days in 2023

Activity	Ever		Never		Mean ± SD
	f	%	f	%	
Watching TV/videos	117	94.4	7	5.6	1.7 ± 1.0
Playing laptop or video games	80	64.5	44	35.5	0.5 ± 0.5
Doing assignments/studying with a computer/laptop	113	91.1	11	8.9	1.0 ± 0.7
Doing assignments/studying without a computer/laptop	116	93.5	8	6.5	0.9 ± 0.6
Sitting and chatting with friends	117	94.4	7	5.6	0.9 ± 0.7
Lying down	117	94.4	7	5.6	1.3 ± 0.8
Reading novels/comics/magazines	58	46.8	66	53.2	0.3 ± 0.4
Listening to music (without doing anything)	89	71.8	35	28.2	0.3 ± 0.3
Chatting on the phone/sending messages	120	96.8	4	3.2	0.8 ± 0.6
Doing handicrafts (knitting), playing puzzles, playing cards	36	29	88	71	0.1 ± 0.2
Driving a car/motorcycle/sitting on a bus/train	112	90.3	12	9.7	0.4 ± 0.3

Table 4. Relationship between breakfast habits, fruit and vegetable consumption, and sedentary behavior with the nutritional status of female students in the dormitory of Universitas Andalas

Variable	Category	Nutritional Status						*p-*value*
		Not normal		Normal		Total		
		f	%	f	%	f	%	
Breakfast Habits	Not good (total score < 3)	33	48.5	35	51.5	68	100	0.004
	Good (total score ≥ 3)	13	23.2	43	76.8	56	100	
Fruit and Vegetable Consumption	Insufficient (<400g/day)	34	43.0	45	57.0	79	100	0.070
	Adequate (≥400g/day)	12	26.7	33	73.3	45	100	
Sedentary Behavior	High (≥ 6 hours/day)	28	35.0	52	65.0	80	100	0.515
	Light (< 6 hours/day)	18	40.9	26	59.1	44	100	

Nutritional status = (Underweight (BMI < 18.5), Normal (BMI 18.5-25.0), Overweight (BMI 25.1-27.0), Obesity (BMI >27). *The Chi-Square test is significant at p<0.05.

DISCUSSION

Respondent Characteristics

The characteristics of respondents encompass various aspects that describe the group of individuals who are the subjects of the study. Respondent characteristics in this research include nutritional status, breakfast habits, fruit and vegetable consumption, and sedentary behavior.

Nutritional status is a depiction of the nutritional condition of respondents obtained from anthropometric measurements (weight and height), then categorized based on Body Mass Index (BMI)[18]. The findings of this study indicate that the majority of respondents have a normal nutritional status (62.9%). This aligns with the research by Saputra (2023), which shows that respondents with normal nutritional status are more prevalent (86.67%) compared to those with abnormal nutritional status (13.1%)[19].

Breakfast habits represent the description of respondents' food consumption habits in the morning[20]. The results of this study show that more than half of the respondents have a category of not good breakfast habits (54.8%). This corresponds to the research by Al-faida (2021), where 55.6% of the respondents never had breakfast, while 44.4% had breakfast frequently[21]. This is in line with the study by Masleni (2021), which indicates that the majority of dormitory students skip breakfast (27%)[22].

Fruit and vegetable consumption is the average amount of fruit and vegetable consumption by respondents in one day over a month[23]. The findings in this study reveal that the majority of respondents have insufficient fruit and vegetable consumption (63.7%). This result is consistent with the research by Purwita, Kencana, and Kusumajaya (2018), where respondents with insufficient vegetable and fruit consumption are more prevalent (85.37%) than those with sufficient consumption (14.63%)[24].

Sedentary behavior is a lifestyle characterized by little physical activity, involving prolonged activities such as watching television, playing video games for hours, and using laptops or other electronic devices in this advanced era[25,26]. The research findings also show that the majority of respondents have high sedentary behavior (64.5%). This is consistent with the study by Luthfiati (2021), where students with high sedentary behavior are more prevalent (83.6%) than those with light sedentary behavior (16.4%)[27].

Breakfast habits, fruit and vegetable consumption, and sedentary behavior have an impact on nutritional status. Good breakfast habits can contribute to optimal nutritional status. A balanced breakfast, containing protein, carbohydrates, healthy fats, and fiber, can provide the necessary nutrients for optimal bodily functions. Sufficient consumption of fruits and vegetables tends to be associated with better nutritional status. Insufficient consumption of fruits and vegetables can increase the risk of vitamin and mineral deficiencies. Balanced breakfast habits, high fruit and vegetable consumption, and maintaining adequate levels of physical activity tend to contribute to optimal nutritional status. Conversely, poor breakfast habits, low consumption of fruits and vegetables, and sedentary behavior can contribute to nutritional problems, such as overweight, nutritional deficiencies, or other nutrition-related health issues[4]. Top of Form

Relationship between Breakfast Habits and Nutritional Status

The results of this study indicate a significant relationship between breakfast habits and the nutritional status of female students at the University of Andalas Dormitory, with a p-value of 0.004 (p-value < 0.05). These findings are consistent with the research by Arista et al., (2021), which demonstrated a connection between breakfast habits and nutritional status (p-value=0.030). Respondents with normal nutritional status tend to have good breakfast habits (76.8%), while those with abnormal nutritional status have a higher proportion of poor breakfast habits (48.5%) compared to good habits (23.2%). Generally, respondents consume breakfast (63.7%), with 52.3% having a complete menu consisting of carbohydrates, protein, and fats[28].

Consuming breakfast to meet 15-30% of the body's daily nutritional needs contributes to a healthier, more productive, and active life. A balanced breakfast, including protein, carbohydrates, healthy fats, and fiber, provides essential nutrients for optimal bodily functions. Skipping breakfast can lead to a gradual decrease in body glucose levels, stimulating the hypothalamus to induce excessive hunger, resulting in overeating later in the day. Coupled with a lack of physical activity and rest, this can lead to the accumulation of fat tissues, contributing to weight gain and an increase in body mass index (BMI)[28].

Rohmah (2021) also mentions that skipping breakfast tends to reduce physical activity, contributing to weight gain due to an imbalance between energy intake and expenditure. Failing to consume breakfast and not increasing intake in subsequent meals poses a risk of weight loss. If this happens continuously, it can lead to chronic energy deficiency (CED) and negatively impact health, increasing the risk of infectious diseases[29].

Relationship between Fruit and Vegetable Consumption and Nutritional Status

The study findings suggest no significant relationship between fruit and vegetable consumption and respondents' nutritional status (p-value > 0.05). These results align with the research by Noerfitri (2022), stating that there is no relationship between fruit and vegetable consumption and nutritional status in students at STIKes Mitra Keluarga (p-value=0.853). Respondents with normal nutritional status generally consume an adequate amount of fruits and vegetables (73.3%), while those with abnormal nutritional status have a higher proportion of insufficient fruit and vegetable consumption (43.0%) compared to those with sufficient consumption (26.7%)[30].

The research results (Table 3) show that respondents consume 18 types of vegetables and 17 types of fruits. The most favored vegetables are cucumber (63.7%), water spinach (61.3%), cabbage (55.6%), and bean sprouts (54.0%). The most consumed fruits are papaya (59.7%), oranges and watermelon (57.3%), and pineapple (54.0%) (Table 2). Generally, respondents only consume vegetables and fruits available around the dormitory, with limited availability. This is in line with the research by Purwita, Kencana, and Kusumajaya (2018), which identified insufficient availability of vegetables and fruits in the living environment as one of the factors contributing to low consumption[24].

Nutritional status is not only influenced by micronutrient intake such as vitamins and minerals but also by macronutrient intake such as carbohydrates, protein, and fats. Nutritional status is multifactorial, and fruit and vegetable consumption is one of the factors affecting nutritional status among various other factors. The body requires all nutrients (macronutrients and micronutrients) to meet nutritional needs and maintain normal nutritional status[4].

Relationship between Sedentary Behavior and Nutritional Status

The study results (Table 3) reveal that the most prevalent sedentary behaviors among respondents are chatting on the

phone/sending messages, watching television/videos, sitting and chatting with friends, and lying down. The least practiced sedentary behaviors include doing handcrafts (knitting), playing puzzles, and playing cards. Statistical tests in this study show no significant relationship between sedentary behavior and nutritional status in female students at the University of Andalas Dormitory ($p > 0.05$).

The research results by Syakirah, Diana, and Resmiati (2024) also indicate that respondents exposed to high electronic media (watching TV, playing video games, and using gadgets ≥1 hour/day, and exposure to food program ads ≥2 hours/day) with non-obese nutritional status are more prevalent (78.9%) than those exposed to low electronic media (watching TV, playing video games, using gadgets <1 hour/day, and exposure to food program ads <2 hours/day) at 81.5%. Statistical analysis shows no significant relationship between electronic media exposure and obesity incidence ($p > 0.05$)[31]. These results are consistent with the research by Susanti (2019), stating that most respondents with high sedentary behavior also have normal nutritional status (80.6%), and there is no significant relationship between sedentary behavior and nutritional status ($p = 0.116$, $p > 0.05$)[32].

High sedentary behavior is caused by technological advancements such as television, computers, and the internet, along with sedentary activities like reading, watching TV, doing tasks, playing games, using gadgets, or simply relaxing and lying down. This can lead adolescents to become less active, increasing the risk of excessive nutritional status. Respondents in this study generally engage in physical activity for approximately 30 minutes per day. The Ministry of Health (2019) states that physical activity for approximately 30 minutes per day can prevent diseases, burn calories, and prevent overweight. According to Amrynia and Prameswari (2022), physical activity can increase energy expenditure by 20-50% in weight loss efforts. Miko, as cited in Rahma (2020), also mentions that physical activity can reduce fat deposits in the body, lowering the risk of being overweight[12].

Nutritional status, influenced by high sedentary behavior, can be prevented by engaging in physical activity for a minimum of 30 minutes per day. Maidartati (2022) suggests that individuals engaging in a sedentary lifestyle for more than 8 hours/day but accompanied by moderate to high-intensity physical activity for 60-75 minutes can reduce the risk of death by 14-45% when replacing 30 minutes of sedentary behavior with physical activity. Sedentary behavior followed by low to moderate physical activity can lower systolic and diastolic blood pressure by 2-3 mmHg[33].

STUDY LIMITATIONS

Cross-sectional research involves data collection at a specific point in time, making it challenging to establish cause-and-effect relationships between observed variables. Causality relationships are often difficult to prove due to the absence of temporal measurements.

CONCLUSION AND RECOMMENDATIONS

The results of this study indicate that the majority of respondents have a normal nutritional status, with more than half of them having poor breakfast habits. Most respondents have insufficient fruit and vegetable consumption, and the majority exhibit high sedentary behavior. Statistical tests reveal a significant relationship between breakfast habits and nutritional status. However, there is no significant relationship between fruit and vegetable consumption and nutritional status. Similarly, no significant relationship is found between sedentary behavior and nutritional status. Therefore, it is recommended that future researchers explore causal relationships, requiring more complex research designs or the use of mixed-methods approaches to provide a deeper understanding of these connections.

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REFERENCES

1. Adha, C.N., Prastia, T.N. and Rachmania, W. (2019) 'Gambaran Status Gizi Berdasarkan Lingkar Lengan Atas Dan Indeks Massa Tubuh Pada Mahasiswi Fikes Uika Bogor Tahun 2019', Promotor, 2(5), pp. 340–350. Available at: https://doi.org/10.32832/pro.v2i5.2523.
2. World Health Organization. Malnutrition is a world health crisis. 2019.
3. Kemenkes (2018) 'Laporan Riskesdas 2018 Nasional.pdf', Lembaga Penerbit Balitbangkes, p. hal 156.
4. Lee, E.Y. and Yoon, K.H. (2018) 'Epidemic obesity in children and adolescents: risk factors and prevention', *Frontiers of Medicine*, 12(6), pp. 658–666. Available at: https://doi.org/10.1007/s11684-018-0640-1.
5. Guo, X., Zheng, L., Li, Y., Yu, S., Sun, G., Yang, H., Zhou, X., Zhang, X., Sun, Y. (2012). Differences in Lifestyle Behaviors, Dietary Habits, and Familial Factors Among Normal Weight, Overweight, and Obese Chinese Children and Adolescents. International Journal of Behavioral Nutrition and Physical Activity, 9, 1–9. https://doi.org/10.1186/1479- 5868-9-120
6. Adesola, O. A., Ayodeji, R. M., Akorede, Q. J., & Oluranti, O. (2014). Breakfast Habit and Nutritional Status of Undergraduates in Ekiti State, Nigeria. Science Journal of Public Health, 2(4), 252–256. https://doi. org/10.11648/j.sjph.20140204.11

7. Rosida, H., & Adi, A. C. (2018). Hubungan Kebiasaan Sarapan, Tingkat Kecukupan Energi Dan Gizi Makro Dengan Status Gizi Pada Siswa Pondok Pesantren Al-Fattah Buduran, Sidoarjo. Media Gizi Indonesia, 12(2), 116-122. https://doi.org/10.20473/ mgi.v12i2.116-122
8. Kim DM, Ahn CW, Nam SY. Prevalensi obesitas di korea. Aoabes Rev 2005; 15 (9): 769-779
9. Hemingsson E. Model baru peran tekanan psikologis dan emosional dalam mempromosikan obesitas: tinjauan konseptual dengan implikasi untuk pengobatan dan pencegahan. Obes Rev 2014; 15 (9): 769-779
10. Hill JO, peters JC, Kontribusi lingkungan terhadap epidemi obesitas. Sains 1998;280 (5368): 1371-1374
11. Ludwig DS, Peterson KE, Gortmaker SL. Hubungan antara konsumsi minuman berpemanis dan obesitas pada anak: analisis observasional prospektif. Lancet 2001; 357 (9255): 505-508
12. Amrynia, S.U. and Prameswari, G.N. (2022) 'Hubungan Pola Makan, Sedentary Lifestyle, dan Durasi Tidur dengan Kejadian Gizi Lebih Pada Remaja (Studi Kasus di SMA Negeri 1 Demak)', Indonesian Journal of Public Health and Nutrition, 2(1), pp. 112–121. Available at: https://doi.org/10.15294/ijphn.v2i1.52044.
13. Ani, S. and Masnina, R. (2022) 'Hubungan Ketersediaan Buah dan Sayur dengan Konsumsi Buah dan Sayur pada Mahasiswa Kesehatan Di Univertsitas Muhammadiyah Kalimantan Timur', Borneo Student Research (BSR), 3(2), pp. 1711–1718. Available at: https://journals.umkt.ac.id/index.php/bsr/article/view/2358.
14. Ahmed, M.S. et al. (2024) 'Prevalence, inequality and associated factors of overweight/obesity among Bangladeshi adolescents aged 15–19 years', International Health, 0, pp. 1–8. Available at: https://doi.org/10.1093/inthealth/ihae012.
15. Salwa, M. et al. (2021) 'Fruit and vegetables consumption among school-going adolescents: Findings from the baseline survey of an intervention program in a semi-urban area of Dhaka, Bangladesh', PLoS ONE, 16(6 June), pp. 1–13. Available at: https://doi.org/10.1371/journal.pone.0252297.
16. Corkins MR, Daniels SR, de Ferranti SD, Golden NH, Kim JH, Magge SN, et al. Nutrition in children and adolescents. Med Clin North Am.2016;100(6):1217-35.
17. Kementerian Kesehatan RI. (2017). Infodatin Reproduksi Remaja-Ed.Pdf. In Situasi Kesehatan Reproduksi Remaja
18. Par'i HM, Wiyono S, Harjatmo TP. Penilaian Status Gizi. 1 ed. 2017.
19. Saputra A, Kartika W. Pengaruh sarapan pagi terhadap status gizi remaja di SMA Negeri 1. Jurnal Ilmiah Kesehatan [Internet]. 2023 Feb 25 [cited 2023 Jul 13];2(1). Available from: https://jurnal.arkainstitute.co.id/index.php/florona/index
20. Kurniyanti I, Christianto E, Ismawati. Gambaran Sarapan dan Status Gizi Pada Mahasiswa Fakultas Kedokteran Universitas Riau Angkatan 2017. J Med Sci [Internet]. 2018 [dikutip 2 Maret 2023];12(2):108–12. Tersedia pada: http://jik.fk.unri.ac.id/index.php/jik/article/view/130
21. Al-Faida N. Pengaruh Kebiasaan Sarapan terhadap Konsentrasi Belajar Mahasiswa Stikes Persada Nabire Provinsi Papua. IKESMA. 2021 Sep 13;17(2):81–6.
22. Masleni SL, Yemina L, Siringo-Ringo L. Gambaran Kebiasaan Sarapan dengan Tingkat Konsentrasi Mahasiswa Di Asrama Akademi Perawatan RS PGI Cikini Jakarta Pusat. Keperawatan Cikini. 2021 Sep;2(2):19–25.
23. Sirajuddin STA. Survey Konsumsi Pangan. 1 ed. Jakarta: Kemenkes RI; 2018. 1–380 hlm.
24. Purwita NK, DD, Kencana IK, Kusumajaya NAA. GAMBARAN KONSUMSI SAYUR DAN BUAH DENGAN STATUS GIZI REMAJA DI SMP NEGERI 3 ABIANSEMAL KABUPATEN BADUNG. Jurnal Ilmu Gizi [Internet]. Agustus 2018 [dikutip 8 Februari 2023];7(3):57–63. Tersedia pada: http://ejournal.poltekkes-denpasar.ac.id/index.php/JIG/article/view/jig07302
25. Desmawati. (2019). Gambaran Gaya Hidup Kurang Gerak (Sedentary Lifestyle) dan Berat Badan Remaja Zaman Milenial di Tangerang, Banten. Jurnal Ilmiah Kesehatan Masyarakat, 11(4), 296–301
26. Bastiyan, N. M., & Nurhayati, F. (2019). Hubungan Antara Aktivitas Sedentari Dengan Kejadian Overweight (Pada Siswa Kelas Vii Dan Viii Smp Islam As Sakinah Sidoarjo). Jurnal Pendidikan Olahraga Dan Kesehatan, 7(2), 325–328.
27. Luthfiati N, Ligita T, Nurfianti A. Gambaran Perilaku Sedentari pada Mahasiswa Keperawatan Universitas Tanjungpura Akibat Adanya Kebijakan Social Distancing. Tanjungpura Journal of Nursing Practice and Education. 2021;3(1):57–66.
28. Arista, C.N. et al. (2021) 'Perilaku Makan, Kebiasaan Sarapan, Pengetahuan Gizi Dan Status Gizi Pada Remaja Sma Di Jakarta', Jurnal Pangan Kesehatan dan Gizi Universitas Binawan, pp. 1–15. Available at: https://doi.org/10.54771/jakagi.v2i1.206.
29. Rohmah MH, Rohmawati N, Sulistiyani S. Hubungan Kebiasaan Sarapan dan Jajan dengan Status Gizi Remaja di Sekolah Menengah Pertama Negeri 14 Jember. Ilmu Gizi Indonesia [Internet]. 2020 [cited 2023 Mar 2];4(1):39–50. Available from: ilgi.respati.ac.id
30. Noerfitri, Putri TW, Febriati RU. Hubungan antara Kebiasaan Melewatkan Sarapan, Konsumsi Sayur Buah dan Fast Food, Aktivitas Fisik, Aktivitas Sedentary dengan Kejadian Gizi Lebih. Jurnal Ilmiah Kesehatan Masyarakat. 2021;13(2):56–63.
31. Syakirah, A.D., Diana, F.M. and Resmiati (2024) 'Street food snacking habits, physical activity, and electronic media exposure in relation to obesity in elementary school students', nutricion clinica Dietetica Hospitalaria, 44(1), pp. 188–193. Available at: https://doi.org/10.12873/441diana.
32. Susanti H, Nurhayati F. Hubungan Antara Aktivitas Sedentari Dengan Status Gizi Siswa Kelas XI di SMA Negeri 1 Mojosari. Jurnal Pendidikan Olahraga Kesehatan [Internet]. 2019;7(2): 219–23. Available from: https://jurnalmahasiswa.unesa.ac.id//index.php/jurnal-pendidikan-jasmani/issue/archive
33. Maidartati, Hayati S, Anggraeni DE, Irawan E, Damayanti A, Ayu Rizkia Silviani D. Gambaran Sedentary Lifestyle pada Remaja di SMA Kota Bandung. Jurnal Keperawatan BSI [Internet]. 2022;10(2):250–65. Available from: https://ejurnal.ars.ac.id/index.php/keperawatan/index