



Research Article

Comparison Body Image and Physical Activity of Overweight and Non-Overweight Female Adolescents

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ABSTRACT

Adolescents, as human resources assets of a country, are vulnerable to health and nutrition problems, one of which is overweight. The prevalence of overweight in teenagers increases every year. Overweight during adolescence can increase the risk of non-communicable diseases and musculoskeletal disorders. Female adolescents are the key to the chain of life because they will become mothers in the future and pass on genetics to their descendants. Behaviour, lifestyle, nutritional adequacy, and sleep habits are determinants of adolescent overweight. This study aimed to examine the differences in body image and physical activity between overweight and non-overweight adolescent groups. The research design was a case-control study with 160 respondents aged 15-17 years in the city of Jambi in May 2023. Sample selection used a multistage sampling technique with inclusion criteria. BSQ and IPAQ are questionnaire scales used to measure individual body image and physical activity. Statistical tests used the Mann-Whitney test and Chi-Square. The Mann-Whitney test shows a difference in body image between overweight and non-overweight adolescents ($p < 0.05$). However, there is no difference in physical activity between overweight and non-overweight adolescents. There is a significant relationship between body image and physical activity with overweight ($p < 0.05$). Overweight adolescents have a negative body image; it is hoped that adolescents will exercise regularly and pay attention to their diet by consuming more nutritious and healthy foods.

Keywords: Adolescent, body image, overweight, physical activity

INTRODUCTION

The health of female adolescents plays a key role in ensuring the well-being of future generations. The health condition of female adolescents is highly significant, considering their future roles as mothers expected to give birth and raise children effectively, thus shaping a high-quality human resource. One of the factors that can threaten the health of female adolescents is being overweight, which can cause non-communicable diseases such as cardiovascular disease, diabetes, musculoskeletal disease and cancer (Lugina et al., 2021). The prevalence of overweight in Indonesia continues to rise, reaching 11.2% in adolescents aged 13-15 years and 9.5% in adolescents aged 16-18 years in 2018 (Romadona & Afifah, 2022).



Female adolescents are at twice the risk of experiencing overweight compared to boys (Sitaula et al., 2023). The primary factor causing overweight is the imbalance between daily energy intake and energy expenditure.

Body image is an individual's perception of body shape, which can influence eating patterns. Emerging trends in beauty and ideal body image can alter individual perspectives, triggering comparisons between actual body appearance and the ideal body image. Dissatisfaction with body image can also drive female adolescents to choose unhealthy diets (Niswah et al., 2021). Negative body image in adolescents, such as dissatisfaction with body shape, size, or specific body parts, can directly impact unhealthy dieting and disordered eating patterns in an effort to achieve the ideal body (Rounsefell et al., 2020). The availability of various modern snacks with high calorie content and high levels of sodium, sugar, and fat supports this change in eating habits. Body image concerns did not promote healthy behaviour in adolescents (Jankauskiene & Baceviciene, 2019). Adolescents dissatisfied with their bodies are 29 times more likely to be overweight than those satisfied with their body image (Mini et al., 2019).

Several studies have shown that adolescents with excess weight have high dissatisfaction with body image (Escrivá et al., 2021). In line with these findings, overweight female adolescents tend to have negative perceptions of body image. Dissatisfaction with body image poses a high risk of depression, low self-esteem, poor quality of life, and eating disorders. In contrast, a positive body image can support individuals in accepting all aspects of their bodies; higher body appreciation can decrease the risk of disordered eating behaviours (Baceviciene & Jankauskiene, 2020). Adolescence is crucial when individuals begin to pay attention to their appearance and follow prevailing trends. Adolescents with a negative body image tend to employ various methods to achieve the desired body shape, including extreme dieting or using supplements without a doctor's guidance.

Energy expenditure from body movement is vital for daily physical and mental health. A sedentary lifestyle results in decreased physical activity in children, adolescents and adults. Sedentary lifestyle is defined as sustainable activities that only use energy expenditure of less than 600 METs so that it becomes a habit (Rahayu & Donny, 2022). This is one of the triggers for the increase in overweight rates in Indonesia. Unhealthy eating habits with a sedentary lifestyle lead to significant increases in excess body weight (Gao et al., 2022). The full-day school system increases 42,04% fatigue of adolescents (Devy et al., 2020); therefore, physical activity tends to decrease, especially on weekends (Martin-Smith et al., 2020). Common light activities, such as playing on mobile phones/computers and sitting leisurely, can cause an imbalance in body energy (Suraya et al., 2021). Physical activity is needed in the energy expenditure process to achieve negative energy and fat balance in the body, especially in the fat oxidation process (Eli, 2022). Adolescents with low physical activity are at risk of being overweight (Rukmana et al., 2018).

Physical activity in adolescents is crucial as it can boost self-concept, improve physical perceptions and body satisfaction (Fernández-Bustos et al., 2019), improve the body's cognitive and motor functions, improve blood circulation, increase neutrophilic levels (Martin et al., 2018). Adolescents with light physical activity are 3 times more likely to be overweight than those with moderate or heavy physical activity (Wahyuningsih & Pratiwi, 2019). Excessive fat accumulation in overweight adolescents can be prevented through regular physical activity. There is not much research comparing the body image value and physical activity of overweight and non-overweight female adolescents in Jambi City, even though this comparison is necessary to analyse the mediating factors behind differences in body image and physical activity. Therefore, we can obtain a solution

for preventing overweight in female adolescents. This research aims to compare body image and physical activity in overweight and non-overweight female adolescents.

MATERIAL AND METHODS

The design of this observational study is a case-control that divides respondents into two groups: the control group (good nutritional status) and the case group (overweight) in May 2023 in the city of Jambi. The sample size was determined using the hypothesis test formula for odds ratio (Lwanga & Lameshow, 1991). A total of 160 respondents were selected as research samples, with a distribution of 80 female students with good nutritional status (not overweight) and 80 female students with overweight nutritional status. Nutritional status screening is determined based on BMI per age values by measuring the weight and height of respondents and comparing them with the anthropometry table. The sample selection used a multistage sampling technique with inclusion criteria for female adolescents aged 15-17 years, not currently following a specific diet, not having mental health disorders, and not taking appetite-enhancing medications. Respondents have received explanations regarding the research's purpose, procedures, benefits, and risks and have agreed to be research subjects by providing informed consent.

The measurement of the body image variable used the Body Shape Questionnaire (BSQ) questionnaire. This questionnaire is a scale that measures individuals' dissatisfaction with their body shape, feeling it is not ideal and being overweight. The questionnaire consisted of 34 questions covering four assessment indicators: self-perception of body shape, comparing perspectives on body image with others, self-attitude towards body image, and drastic changes in body perception. The questionnaire has been tested for validity and reliability and is declared valid for research involving the Indonesian population (Sitepu et al., 2020). Measurement of respondents' physical activity used the International Physical Activity Questionnaire (IPAQ), aiming to measure the level of physical activity for individuals aged 15-59 based on metabolic equivalent tasks (METs) in the seven days preceding the survey. METs scores compare the magnitude of metabolism during work to the magnitude of metabolism during rest, thus evaluating an individual's level of physical activity (Dharmansyah & Budiana, 2021). Statistical tests used to examine the differences in body image and physical activity variables between the control and case groups are the Mann-Whitney test and the Chi-Square test used to assess the significance of the relationship between body image and physical activity with overweight incidents in adolescents. The researcher has an ethical clearance certificate for this research issued by the Health Research Ethics Commission (KEPK) Faculty of Medicine, Muhammadiyah University of Surakarta (No.4869/B.1/KEPK-FKUMS/VI/2023) as a reference in upholding integrity, honesty and justice in conducting research.

RESULTS AND DISCUSSION

Sample Characteristics

The majority of respondents in the control group were 16 years old (21%), while in the case group, the majority were 17 years old (20%). The most common occupation for fathers in both the control and case groups was entrepreneurship, with percentages of 16.88% and 23.13%, respectively. The majority of respondents' mothers were homemakers. In the control group, 72.5% of respondents were satisfied with their body image, while in the case group, 35% assessed dissatisfaction with their body image. About 55% of respondents in the case group had light physical activity, and 52.5% in the control group had moderate physical activity, as seen in Table 1.

Table 1. Distribution of Respondents Based on Characteristics

Characteristics	Nutritional Status				Total
	Good Nutritional		Overweight		
	n	%	n	%	
Age					
15 years	25	16,25	20	12,5	45 (28,12%)
16 years	35	21,88	28	17,5	63 (39,37%)
17 years	20	18,87	32	20	52 (32,50%)
Occupation of father					
Entrepreneur	27	16,88	37	23,13	64 (40,00%)
Private Employees	12	7,50	17	10,63	29 (18,12%)
Government Employees	5	3,13	5	3,13	10 (6,25%)
Farmer	14	8,75	15	9,38	29 (18,12%)
Labourer	22	13,75	6	3,75	28 (17,50%)
Occupation of Mother					
Homemakers	55	34,38	71	41,38	126 (78,75%)
Entrepreneur	9	5,63	1	0,63	10 (6,25%)
Private Employees	-	-	2	1,25	2 (1,25%)
Government Employees	6	3,75	1	0,63	7 (4,37%)
Farmer	6	3,75	5	3,13	11 (6,87%)
Labourer	4	2,50	-	-	4 (2,5%)
Body Image					
Satisfied	58	72.5	12	15.0	70 (43,75%)
Mild Dissatisfaction	15	18.8	18	16.5	33 (20,62%)
Moderate Dissatisfaction	6	7.5	22	27.5	28 (17,50%)
Severe Dissatisfaction	1	1.3	28	35.0	29 (18,12%)
Physical Activity					
Low	17	21.3	44	55.0	61 (38,12%)
Moderate	42	52.5	26	34.0	68 (42,50%)
High	21	26.3	10	12.5	31 (19,37%)

Statistical Analysis

The Mann-Whitney test results indicate a significant difference in body image between overweight and non-overweight respondents ($p < 0.05$). However, there is no significant difference in physical activity between overweight and non-overweight respondents ($p > 0.05$). Based on the frequency, overweight adolescents predominantly have low physical activity, while non-overweight adolescents predominantly engage in moderate physical activity. The significance test indicates a relationship between body image and activity with the occurrence of overweight in female adolescents ($p < 0.05$).

Table 2. Differences in Body Image and Physical Activity of Overweight and Not Overweight Adolescents

Variable	Nutritional Status		p-Value
	Good Nutritional	Overweight	
Body Image	75,18 ± 63,97	132,43 ± 116,69	0,001* 0,001**
Physical Activity	967,95 ± 745,87	934,55 ± 749,79	0,898* 0,001**

*Mann-Whitney test **Chi-square

Dissatisfaction with body weight is generally experienced by adolescents who are overweight, while adolescents who are not overweight tend to feel satisfied with their body image. Several studies have indicated that adolescents with excess weight are highly dissatisfied with their body image (Annahar & Hendrati, 2022). This research aligns with these findings, where overweight female adolescents tend to have a negative assessment of their body image (Ripta et al., 2023). The long-term impact of body image on the Body Mass Index (BMI) during adolescence can reflect an unsatisfactory body shape in young adulthood. Someone dissatisfied with their body image has a higher risk of experiencing depression, low self-esteem, poor quality of life, and eating behaviour disorders (Rounsefell et al., 2020). Conversely, a positive body image can support individuals in accepting all aspects of their bodies, appreciating themselves, and maintaining their health.

Adolescence is when individuals begin to pay attention to their appearance in line with prevailing trends. Adolescents with negative body images tend to adopt various methods to achieve the desired body shape, including implementing extreme diets or using supplements without medical guidance. Appreciating one's body and oneself is one aspect of forming a positive body image, which, in turn, can reduce unhealthy eating behaviours (Baceviciene & Jankauskiene, 2020). Increased emotional eating behaviour in overweight adolescents with a negative body image can trigger eating activities without hunger as a response to negative feelings (Shriver et al., 2021). The findings of this study show a significant relationship between body image and overweight incidence in adolescent girls. This is also reinforced by previous research indicating a correlation between body image and overweight indirectly through the mediation of adolescent eating disorders (Jalali-Farahani et al., 2022), psychosocial disorders, sleep, and a decrease in the quality of life (Kilpela et al., 2021).

This study, statistically, does not show a significant difference in the level of physical activity between overweight and non-overweight adolescents. Studies involving children and adolescents conclude that many do not achieve the recommended 60 minutes of physical activity per day (Guthold et al., 2020). A high level of physical activity reflects a condition where individuals have optimal body movement. Adolescents with low physical activity have a three times higher risk of being overweight (Utami et al., 2021). The benefits of regular physical activity in adolescents can impact cognitive function and academic performance through physiological mechanisms such as increased blood circulation, elevated neurotropic levels, and neurotransmitters (Martin et al., 2018). The practice of physical activity has a positive impact on adolescents by enhancing self-esteem and forming a more positive body image (Gualdi-Russo et al., 2022). Adolescents with imbalanced physical activity and nutritional intake tend to accumulate fat, leading to obesity (Suryadinata & Sukarno, 2019). Body image and physical activity are among the risk factors for adolescents experiencing overweight. The level of physical activity directly influences the daily energy balance, a key factor in causing overweight. Some examples of physical activities that adolescents can engage in maintaining body resilience include cycling, running, and swimming. Extracurricular activities at school can serve as a means for adolescents to increase the duration of regular physical activity. The more active an individual is, the higher the calorie burn, preventing fat accumulation as an energy reserve and increasing muscle mass.

CONCLUSION AND SUGGESTION

Overweight female adolescents tend to be dissatisfied with their body image, unlike non-overweight female adolescents who are more satisfied with their body shape. There is no significant difference in physical activity between overweight and non-overweight adolescent girls. Body image and physical activity are risk factors for overweight in adolescents, so it is hoped that female

adolescents will exercise regularly and pay attention to their diet by consuming more nutritious and healthy foods. Sustainable research can be carried out by analysing emotional eating disorders and body image as intervening variables of dietary intake with overweight adolescents.

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CONFLICT OF INTEREST

The authors declare no conflict of interest in the publication of this article.

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