Quality of Life and Physical Activities of Overweight Adolescents

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Abstract

Adolescent health and well-being must be at the centre of efforts to achieve the Sustainable Development Goals (SDGs) adopted by the World Health Organization in 2030. Another approach is needed by first looking at the quality of life of overweight adolescents and their physical activity behaviour to suggest health interventions for overweight adolescents. This study contributed to knowing the significant difference in the level of involvement in participants' physical activity with the quality of life. Uses a quantitative, cross-sectional design. The sample is 80 overweight adolescents (13-19 years). The data was measured through a questionnaire tested for validity with a value of 0.9. The sample was selected using the snowball method according to the inclusion criteria and data analysis using the Chi-square test. The result of this study is that overweight adolescents are in the low quality of life category 68 adolescents (85%). The most adolescent physical activity in the moderate group was 46 adolescents (57.5%), high physical activity 14 (17.5%), and low physical activity 20 (25.0%). There is no significant difference between the level of physical activity and the quality of life variable for overweight adolescents, p-value (0.3). Recommendations from this study are that various health programs need to be proposed by involving peers through programs increasing adolescents' abilities and skills in quality of life and adolescents' interest in doing physical activity regularly.

Keywords: Adolescent; Physical Activity; Quality of Life

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1. Introduction

World Health Organization noted that from 1975 to 2021, the prevalence of overweight or obese adolescents aged 13-19 has more than quadrupled from 4% to 18% globally. Alarmingly, rates of overweight and obesity continue to grow in adolescence in Indonesia. Data survey by the rate of overweight adolescents increased from 2007: 18.8 %, in the year 2013: 26.6%, and in the year 2018, 31.0%. This percentage increased by 4.4 % in 2023 and 12.2 % 11 years later (WHO, 2021).

The percentage of overweight adolescents in the province of Yogyakarta from 2020 to 2022 is 1% higher than the national average. The total number of adolescents who were overweight at the time of the health survey in the Yogyakarta area was 99 adolescents out of 950 adolescents, who weighed about 10.42%. The COVID-19 pandemic has exacerbated these trends, as restrictions have made it more difficult for adolescents to access healthy foods and remain physically active. A survey conducted among low-income urban households in Yogyakarta found that children consumed less nutritious foods such as fruits and vegetables, meat and fish, and legumes during the pandemic than in 2018.

The Covid-19 pandemic also minimizes activities at school, and this impact showed that the impact of school closures without a plan on the health and behaviour of adolescents during the Covid-19 pandemic were poor diet and lack of physical activities. The impact of COVID-19 on stay-at-home orders on weight-related behaviour found that 69.6% of children and adolescents experienced more difficulty in achieving weight loss goals, had less exercise time (47.9%), and intensity (55.8%), increased food hoarding (49.6%) and stress eating (61.2%). The purpose of the study is a contribution to know how the demographic profile of the participants in terms of Age, Gender, and Adolescent current medical condition; what is the quality of life of the adolescent participants in terms of Happiness, Self-esteem, and Self-reported Health complaints? To what extent is the participants' physical activity in terms of activity at school/home/work, Traveling, Recreation, and Sedentary behaviour, and to know a significant difference in the quality of life of the participants with physical activity?

2. Method

The research design used quantitative and cross-sectional approaches. Non-probability sampling technique, the researcher uses the snowball sampling method. The researcher asks the participants to identify other people as members of the sample, with a total sample of 80 overweight adolescents. Data gathering in the community area of Yogyakarta city, Indonesia. Inclusion criteria of sample: Adolescents aged 13 – 19 years, adolescents living in the Yogyakarta region, Indonesia, Adolescent overweight with BMI-for-age greater than one standard deviation above the WHO Growth Reference median (BMI value of 25 Kg/m2 and above).

Quality of life is measured by accumulative between Measuring Happiness (OHQ), adapted from Rosenberg. Self-esteem Instrument, adapted from Ravens-Sieberer, And Self-reported Health Complaints, adapted from (Geneva, 2022). Variable Physical activity measured by Physical activity questionnaire (GPAQ Version 2), adapted from (WHO, 2022), with a score of validity and reliability is 0,81 (Keating, X.D., et al. 2019). Data gathering, such as: 1. Submit a letter of approval for Ethical clearance from SPUP. This research already has ethics certification from Commite Ethics SPUP with number 022/EC.SPUP/7/2022. 2. Selection of participants based on inclusion criteria. 3. Preparing questionnaires. 4. Checking for response bias if questionnaires are used. 5. Preparing the data for analysis by coding the information from the instruments into a computer file. Analysis univariate: Analysis of demographic data profile, and Bivariate analysis: To test the hypothesis of a variable, use the chi-square test.

3. Results and Discussion

Based on Table 1 regarding the age profile of overweight adolescents, the most categories of late adolescents with an age range of 17 to 19 years old with a total of 58 (72.3%). Adolescence is a stage that develops and changes biologically, psychologically, and socially and has the potential to be able to live independently. Adolescence has a developmental task in the formation of identity and the achievement of autonomy. Late adolescence has the characteristics of good adjustment, optimism about the future, success in studies, selection in leisure activities, and awareness of social obligations. This line of development reflects high self-control and a strong orientation to reality and its demands (Icenogle, G., Cauffman, E. 2021).

In terms of decision-making that the characteristics of late adolescence are not as good as adulthood, where risk-taking is adaptive. That is, the characteristics of late adolescents in decision-making include impulsiveness and preferring peers' views so that, in this case, it manifests in negative

things that endanger health (Kumar, Mm. et al. 2020). Adolescents must find a good strategy for impulsive behaviour and difficulty making decisions. Strategies in the Covid-19 Pandemic era to overcome various problems in adolescents, it can be done by building a peer educator system in disseminating awareness about healthy lifestyles, involving them in a smooth public distribution system, and acting as a potential liaison for families who are in difficulty (Vieira, C. E. N. K., et al., 2018).

Table 1. Frequency and Percentage Distribution of the Adolescent Participants Grouped According to Age Range

Age Range (years)	Frequency	Percentage (%)
13 to 16	22	27.70
17 to 19	58	72.30
Total	80	100.00

Table 2 describes the gender category of adolescent females who are overweight more than males, with 47 adolescents (58.7%). Being overweight in adolescents is caused by multifactor, the biggest factor being an unhealthy lifestyle (Banik, R. et al. 2020). Another research found a significant association between fast food consumption with a higher prevalence of overweight (29.9% in fast food consumers vs 9.1% in non-consumers, $p < 0.05$) (WHO, 2021). The leading cause of children getting fat faster is eating foods high in sugar and fat that contain excess calories and lack activity that requires active movement.

Table 2. Frequency and percentage distribution of the adolescent participants grouped according to gender

Adolescents' Gender	Frequency	Percentage (%)
Male	33	41.25
Female	47	58.75
Total	80	100.00

The result of this study is why there are more overweight females that females can still be at risk of getting fat faster because of other factors that the male may not experience. In females, the normal amount of fat is about 20-25% of the total body weight, while the male body only contains an average of 10-15% fat. The estrogen hormone possessed by females affects the ability to store fat in their bodies, while the testosterone hormone owned by males makes the ability to store fat less than females.

Adolescent profiles based on Table 3 of overweight adolescents who have health problems are only seven adolescents (8.75%), while overweight adolescents are physically healthier

(91.25%). Adolescents who are overweight do not always have health problems at this time, but health problems usually appear later.

Table 3. Frequency and Percentage Distribution of the Adolescent Participants Grouped According to Current Medical Condition

Adolescent's current medical condition	Frequency	Percentage (%)
Healthy condition	73	91.25
Back Pain	1	1.25
Dizzy	5	6.25
Tired of breath	1	1.25
Total	80	100.00

Significant risk factors that will appear later in life in overweight adolescents are visceral obesity in adulthood, hypertension, dyslipidemia, insulin resistance and the possibility of impaired glucose regulation, cardiovascular disease, and type 2 diabetes mellitus with various complaints that can be felt at this time such as dizziness, aches, and fatigue (Liu, Y., Xu, L., & Hagedorn, A. 2022).

Based on the results of Table 4, the level of adolescent happiness between adolescents with Greater happiness and low happiness is the same (50%: 50%). States that happiness combines acceptance, compassion, and achievement. Acceptance of others is influenced by self-acceptance in social adjustment, while in social adjustment, it is necessary to have a physical attraction that will cause a sense of love and acceptance from others, while love results from an attitude of acceptance from others in the environment.

Table 4. Level of Happiness of the Adolescent Participants

No	Education	Frequency	Percentage (%)
1	Class of 2018	75	60.0
2	Class of 2019	50	40.0
	Total	125	100

In this study, the happiness category was assessed from the average score of the questions answered by adolescents. A happiness score is high if the respondent's score is more than average, and happiness is low if the respondent's score is less than average. For obese adolescents who feel unhappy, being overweight is not beneficial for human happiness. Society is urged to try to lose weight; being too thin is not a good way to achieve happiness. On the other hand, a BMI score in the normal range is a very good condition because it is associated with higher physical scores, good appearance, good health, optimal income, and

finally, higher levels of happiness as well (Herdman, H., & Kamitsuru, S. 2018).

Based on the results of Table 5 regarding the level of self-esteem of obese adolescents, most of them are in the moderate self-esteem category, namely as many as 44 adolescents (55%), but also found adolescents with low self-esteem. The self-esteem of as many as 20 adolescents (25%). The causes of adolescents experiencing self-esteem problems are exposure to traumatic situations, repeated failure, lack of recognition from others, ineffectiveness in dealing with loss problems, psychiatric disorders, repeated negative reinforcement, and hopelessness.

On the other hand, during the Covid-19 pandemic, it was undeniable that it also had an impact on the self-esteem of obese adolescents, which stated that an increase in the level of emotional symptoms (for example, sadness and frustration) occurred due to school closures and home quarantine during the pandemic, thereby causing anxiety and loneliness in young people.

Table 5. Level of Self-esteem of the Adolescent Participants

Adolescent self-esteem	Frequency	Percentage (%)
High self-esteem	16	20.00
Moderate self-esteem	44	55.00
Low self-esteem	20	25.00
Total	80	100

Based on the result of Table 6 regarding health complaints reported by adolescents, the most severe categories were 42 adolescents (52.5%), although the number of adolescents with low complaints was almost the same as 38 (47.5%). Severe health complaints reported in this study, such as complaints (dizziness, etc.), can be felt every month, every week, or even every day. From these results, it can be stated that frequent dizziness and back pain, for example, are indicators of severe physical health complaints, while mild or moderate health complaints are most likely to occur, marked by the absence of all complaints except feelings of nervousness or irritability.

The assessment to reveal the level of health complaints must be consistent with the history/culture of the same country (Weihrauch-Blüher, S., Schwarz, P., & Klusmann, J. H. 2019). The worrying impact of frequent health complaints due to obesity is that obesity remains a significant risk factor for metabolic and cardiovascular disease; even when metabolic health is maintained over a long period of time, weight normalization aims to slow the progression of the risk of type 2 diabetes

and cardiometabolic disease as well as the risk of cancer in adulthood (Bonomi, A. E., et al. 2020).

Table 6. Level of Adolescent Self-reported health complaint

Adolescent Self-reported health complaint	Frequency	Percentage (%)
Low category	38	47.50
Severe category	42	52.50
Total	80	100.00

Based on the results of Table 7 regarding the quality of life of overweight adolescents as a whole are in the category of low quality of life, most of them are 68 adolescents (85%). Quality of life is adolescents' perception of their position in life in the context of the culture and value system in which they live and regarding their goals, expectations, standards, and concerns (Urchaga, J.D.et al., 2020). Adolescents' quality of life depends on many factors that can determine their health-related quality of life.

In this study, more adolescents with low quality of life were found; low quality of life can be caused because adolescents with obesity feel disturbed by their quality of life, as evidenced by difficulties in doing physical exercise and buying clothes (Banik, R. et al. 2020). Who is fashionable and relates to his schoolmates, the quality of life in children is high at the age of 11-12 years, and the percentage decreases at the age of 17-18 years (Elagizi, A. et al. 2020).

Previous research on the determinants of teenagers' quality of life found that demographic factors such as age are major predictors of quality of life. However, the findings of this study are consistent with those of the quality of life of adolescents is often low; apart from being overweight, it is also due to the complexity of analyzing the adverse effects of socioeconomic difficulties (Green, K.H. et al. 2023).

Table 7. Level of total cumulative quality of life

Variable	Freq	Percentage (%)
Quality of life:		
Good Quality of life	12	15.00
Low Quality of life	68	85.00
Total	80	100.00

Based on the results of Table 8 regarding the overall physical activity of adolescents, the most in the medium physical activity category were 46 adolescents (57.5%), although it was also found that adolescents with physical activity in the low category were 20 adolescents (25%). The MET value of obese adolescents indicated the low physical activity in this study in the last week of daily activities carried out by adolescents of less than 600 MET.

Whereas sufficient physical activity will increase the level of cardiorespiratory fitness, which based on the results of other studies, will show the greatest improvement in health, regardless of the underlying comorbidities or achieving weight loss. Cardiorespiratory fitness, which is probably the single most important predictor of overall health, appears to be more important than weight loss alone.

Table 8. Level of Physical Activity of Adolescent

Physical activity category	Frequency	Percentage (%)
High Physical activity	14	17.50
Moderate Physical activity	46	57.50
Low Physical activity	20	25.00
Total	80	100.00

Based on Table 9 describe significant differences in the level of involvement in adolescent physical activity if grouped according to the type of quality of life of adolescents. It is known that the p-value is 0.3. The significant value in the table is that the null hypothesis fails to be rejected, which means that there is no significant difference between the level of physical activity and the variable of quality of life for overweight adolescents.

There is no difference, and it is indicated by the results that adolescents with low quality of life actually do more physical activity compared to adolescents with good quality of life. The results in this study are different from previous studies in that physical activity is related to the quality of life of adolescents; physical activity will improve the quality of life of obese adolescents (Cordero, M. et al. 2021).

Table 9. The significant difference in the extent of engagement in physical activity of the adolescents when grouped according to the type of adolescent quality of life

Physical Activity	Adolescent Quality of Life		Total	P-value	Decision at α ≤ 0.05
	Good Quality	Low Quality			
Low MET	1	19	20		
Moderate	9	37	46	0.3	Failed to reject Ho
High	2	12	14		
Total	12	68	80		

Including providing families with information about PA, helping them to create a supportive home environment for PA, and providing them with resources to help their adolescents to be more active. Behavioral change: PA interventions can focus on helping adolescents to change their behaviour and become more active. This can include setting goals, providing support, and tracking progress (Ahmad, N.F. et al. 2021).

Psychological factors: These include motivation, self-efficacy, and attitude towards physical activity. People who are motivated to be active are more likely to do so, and those who believe in their ability to be active are more likely to succeed. Cognitive factors: These include knowledge and understanding of the benefits of physical activity. People who are aware of the benefits of being active are more likely to make it a priority in their lives. Physical factors: These include motor skills and physical fitness. People with good motor skills are more likely to enjoy physical activity, and those who are physically fit are more likely to be able to do the activities they enjoy. Social and relational factors: Family: Family members can provide support and encouragement for physical activity. They can also model healthy behaviours, such as walking or biking instead of driving. Friends: Friends can also provide support and encouragement for physical activity. They can make it more fun to be active, and they can help to create a social norm of being active. Significant others: Significant others, such as spouses, partners, or romantic interests, can also provide support and encouragement for physical activity. They can help to make it a priority in the relationship, and they can provide companionship and support during physical activity (Martins, J. et al. 2021).

Environmental changes: PA interventions can focus on making changes to the environment to make it easier for adolescents to be active. This can include creating safe and accessible places to be active, providing transportation to and from activity locations, and offering incentives for being active. Policy changes: PA interventions can focus on changing policies to make it easier for adolescents to be active. This can include increasing the amount of physical education in schools, providing funding for community-based PA programs, and making it easier for adolescents to get to and from activity locations. By developing PA interventions that address the factors that contribute to the decline in PA during adolescence, we can help to ensure that adolescents are active and healthy (Kemp, B.J. et al. 2019).

This study is not merely an experimental study that examines whether physical activity can improve the quality of life of adolescents who are overweight, but this study examines whether there is a difference in the level of physical activity of adolescents who are overweight when viewed from the variable quality of life of adolescents.

The results, which illustrate that there is no significant difference, show that the two variables of good quality of life and low quality of life of obese adolescents both show physical activity, both low physical activity and high physical activity, but it appears that adolescents with low quality of life show do more physical activity (85%).

4. Conclusions and Suggestions

Based on the result, hypotheca null failed to reject, which means no significant difference between physical activity and quality of life of overweight adolescents. Even with no significant difference, this research shows adolescents overweight with low quality of life and low physical activity.

5. Acknowledgements

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