Quality of Life Difference between Children with Obesity and Children without Obesity

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ABSTRAK
Metode Penelitian: Penelitian observasional analitik dengan pendekatan cross sectional melibatkan 66 siswa yang dibagi menjadi 2 kelompok. Masing-masing kelompok terdiri dari 33 siswa yang ditentukan dengan teknik purposive sampling. Pengukuran berat badan dilakukan untuk mendapatkan data status obesitas, sedangkan kualitas hidup siswa diukur dengan skor Pediatric Quality of Life Inventory (PedsQL) versi 4.0. Data yang diperoleh dianalisis dengan uji t tidak berpasangan.
Hasil: Kelompok anak dengan obesitas dan non obesitas berturut-turut memiliki rerata skor PedsQL 78,385, dan 83,807. Uji t tidak berpasangan pada kedua kelompok menunjukkan nilai p sebesar 0,056.
Kesimpulan: Tidak ada perbedaan kualitas hidup antara siswa yang mengalami obesitas dengan siswa yang tidak obesitas.
Kata Kunci: anak; kualitas hidup; obesitas; remaja

ABSTRACT
Introduction: Obesity has become a global health problem because obesity is widespread in many countries and needs to be addressed immediately. Obesity can happen to anyone, including children and adolescents. Obesity in children can affect physical and mental conditions that can affect the quality of life. This study aims to determine whether there are differences in the quality of life of obese and non-obese children in Warga Junior High School Surakarta.
Research Methods: An analytical observational study with a cross-sectional approach involved 66 students who were divided into 2 groups. Each group consisted of 33 students who were determined by the purposive sampling technique. Weight measurement was carried out to obtain data on obesity status, while the quality of life of students was measured by the Pediatric Quality of Life Inventory (PedsQL) score version 4.0. The data obtained were analyzed by unpaired t-test.
Results: The obese and non-obese children had a mean PedsQL score of 78,385 and 83,807, respectively. The unpaired t-test in both groups showed a p-value of 0.056.
Conclusion: The quality of life of obese and non-obese students Warga Junior High School Surakarta was not significantly different.
Keywords: children; quality of life; obesity; adolescent

INTRODUCTION
According to WHO, quality of life is individual perception towards their position in life, in the context of their culture and value, related to goal, expectation, living standard, and concern¹. Quality of life becomes an important indicator for everybody, including school children.

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Assessment of quality of life in children include physical health, emotion, social, and academic performance\textsuperscript{2,3,4}.

According to WHO, the definition of overweight or obesity is abnormal or excessive fat accumulation which can cause harm towards health\textsuperscript{5}. Obesity prevalence is increasing fast in the last decade both in developed or underdeveloped country. Hence, it makes a global health problem that should be managed immediately\textsuperscript{5,6}.

In 2013, WHO reported there were about 42 millions children under 5 years old with overweight. In 2014, the prevalence of overweight in children under 18 was 39\% and obese was 13\%. Obesity prevalence in children increase eight fold between 1975 to 2016 in age group of 5-19 years. There were more than 340 million overweight or obese children in 2016. Prevalence of children under 5 with overweight of obesity was more than 38,2 million children in 2019\textsuperscript{7}.

According to Riset Kesehatan Dasar (Riskesdas) in 2013, prevalence of excessive weight in adolescents aged 13-15 years was 10,8\% which consisted of 8,3\% overweight and 2,5\% obese. In age group of 16-18, the prevalence was 7,3\%, consisted of 5,7\% overweight and 1,6\% obese\textsuperscript{8,9}. Prevalence of obesity in Central Java province was higher than national prevalence for the age group of 16-18 years\textsuperscript{7,8}. According to Riskesdas (basic health research) of Central Java province in 2013, prevalence of excessive weight in adolescents aged 13-15 years is 9,5\%, consisted of 7,1\% overweight and 2,4\% obese while in age group of 16-18, the prevalence is 7,1\% (5,4\% overweight and 1,7\% obese)\textsuperscript{8,10}. The prevalence tend to increase over the years. National prevalence in 2018 was 20,0\% in age group of 5-12, consisted of 11,2\% overweight and 4,8\% obese, 7,3\% in age group of 16-18, consisted of 9,5\% overweight and 4,0\% obese\textsuperscript{11}. The effect of obesity is not only physical health disturbance but also psychosocial one. Thus, obesity can greatly affect quality of life. The problem caused by obesity have both short term and long term impact, including cardiovascular diseases, diabetes mellitus, cancer, breathing disturbance (asthma and sleep apnea), growth disturbance, depression, and anxiety\textsuperscript{12,13,14}.

Some studies documented the difference in quality of life between children with or without obesity. The lower average score was found in obesity group. This score can be measured using Pediatric Quality of Life Inventory (PedsQL). The lower score in quality of life can be caused by depression in children with obesity. There were at high risk to have anxiety and discrimination from their peers\textsuperscript{4,15,16,17}. Based on the previously mentioned, this study aims to assess the difference between quality of life in children with and without obesity in SMP Warga Surakarta.

**METHOD**

This study is a cross sectional study that was done in SMP Warga, Surakarta city. Sample was gathered from population of Warga Junior High School that fulfilled the inclusion criteria and didn’t have any of the exclusion criteria. There were 66 subjects in this study, consisted of 33 teenagers with obesity and 33 children without obesity. Samples were gathered using purposive sampling technique. The inclusion criteria are students from class VII to IX and signing informed consent form. The exclusion criteria are students with edema and visible congenital defect, consuming long term medicine, post surgery with hyphema, and students with chronic disease such as asthma, heart disease, kidney disease. All data in this study were taken using several instruments, such as informed consent form, identity form, PedsQL questionnaire 4.0 version, microtoise, scale with accuracy of 0,1 kg, and CDC growth chart (2000).

Children with obesity and without obesity is independent variable with nominal scale. Children with percentile ≥ 5 to < 85 were categorized as normal weight, meanwhile children with
percentile $\geq 95$ were categorized as obese$^4$. Measurement was done by calculating Body Mass Index (BMI) then plotting it in CDC growth chart (2000). There were two different charts: for boys and for girls. Quality of life is dependent variable with interval scale, with range of 0-100. It’s considered low if physical health, psychosocial health, emotional functioning, school functioning, and social functioning $< 80$. Measurement of quality of life was performed using PedsQL questionnaire 4.0 version$^5$.

Data was processed using Statistical Product and Service Solution (SPSS) for Windows. Data obtained in this study was analysed using independent t-test, which was used to find out whether there was significant difference in quality of life of children with obesity and without obesity in SMP Warga, Surakarta city.

RESULT AND DISCUSSION

Subjects in this study are 66 respondent with age range of 12 to 15 years, consisted of 33 obese children and 33 non obese children. This study used purposive sampling method to choose sample. Samples were taken on September 21st to 30th, 2013. Data was obtained by asking some direct questions towards respondents. The questions were related to PedsQL questionnaire. PedsQL questionnaire is consisted of questions about physical function, emotional function, social function, and school function. The questions asked were general and easy to understand for both researcher and the subjects.

<table>
<thead>
<tr>
<th>Quality of Life</th>
<th>Children with Obesity</th>
<th>Children without obesity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good (80-100)</td>
<td>n=18; %54,5</td>
<td>n=24; %72,7</td>
</tr>
<tr>
<td>Poor (0-80)</td>
<td>n=15; %45,5</td>
<td>n=9; %27,3</td>
</tr>
</tbody>
</table>

Table 1. Quality of life

<table>
<thead>
<tr>
<th>Quality of life domain</th>
<th>BMI status</th>
<th>Physical function</th>
<th>Emotional function</th>
<th>Social function</th>
<th>School function</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Obese</td>
<td>Obese</td>
<td>Obese</td>
<td>Obese</td>
</tr>
<tr>
<td>Good n(%)</td>
<td>n(93,9)</td>
<td>19 (57,6)</td>
<td>14 (42,4)</td>
<td>25 (75,8)</td>
<td>16 (48,5)</td>
</tr>
<tr>
<td>Poor n(%)</td>
<td>2 (6,1)</td>
<td>31 (93,9)</td>
<td>19 (57,6)</td>
<td>23 (69,7)</td>
<td>17 (51,5)</td>
</tr>
</tbody>
</table>

Table 2. Percentage of quality of life domain
Tabel 3. Average of quality of life domain

<table>
<thead>
<tr>
<th>Quality of life domain</th>
<th>BMI status</th>
<th>Average</th>
<th>Maximum score</th>
<th>Minimum score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical function</td>
<td>Obese</td>
<td>80,97</td>
<td>100</td>
<td>43,75</td>
</tr>
<tr>
<td></td>
<td>Non obese</td>
<td>92,80</td>
<td>100</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>Obese</td>
<td>71,06</td>
<td>100</td>
<td>40</td>
</tr>
<tr>
<td>Emotional function</td>
<td>Non obese</td>
<td>76,67</td>
<td>100</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td>Obese</td>
<td>85,30</td>
<td>100</td>
<td>50</td>
</tr>
<tr>
<td>Social function</td>
<td>Non obese</td>
<td>86,97</td>
<td>100</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Obese</td>
<td>76,21</td>
<td>100</td>
<td>50</td>
</tr>
<tr>
<td>School function</td>
<td>Non obese</td>
<td>78,79</td>
<td>100</td>
<td>50</td>
</tr>
</tbody>
</table>

Tabel 4. Result of Independent t-test Analysis

<table>
<thead>
<tr>
<th>BMI status</th>
<th>n</th>
<th>Mean</th>
<th>Deviation standard</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obese</td>
<td>33</td>
<td>78,39</td>
<td>13,14</td>
<td>0.056</td>
</tr>
<tr>
<td>Non obese</td>
<td>33</td>
<td>83,81</td>
<td>9,06</td>
<td></td>
</tr>
</tbody>
</table>

Obesity was part of environment factor that can affect quality of life. In this study, the function domain that was disturbed the most in obese children was emotional function. There were 19 children with proportion of 57.6%. This result corresponds well with the study by Rankin et al\(^{13}\) that stated adolescents with obesity were more at risk in experiencing emotional dysfunction compared to adolescents without obesity. It is also mentioned that in average, adolescents with obesity have lower self esteem. Study by Rose et al\(^{17}\) states that in adolescents with severe obesity, this emotional dysfunction is related to emotional eating and food addiction. Moreover, according to Lindberg et al\(^{18}\), obesity in adolescents could cause the risk of depression and anxiety.

Quality of life domain that got disturbed after emotional function was school function. There were 17 children, with proportion of 51.5%. This is supported by study result by Herlina et al\(^{19}\) in 2013 which stated that academic performance in adolescents with obesity was lower than those ones without obesity. That study used mathematics and English as parameter.

Meanwhile, the biggest proportion of obese children with good quality of life domain could be found in social function domain. There were 25 children, with percentage of 75,8%. This result was supported by Tyler et al\(^{20}\), that only severe obesity had correlation with psychosocial function, especially social function.

From the study result, it was obtained that obese group and non obese group had the average score of PedsQL 78,385 and 83,807 respectively with the average gap 5,422. Using t-test analysis, the result is \(p=0.056\). Value of \(p>0.05\) shows that there is no significant difference between average score of quality of life in children with obesity and children without obesity in SMP Warga, Surakarta city. Thus, the study hypothesis that there is difference between quality of life in obese children and non obese children can’t be proven yet statistically.

Based on the quality of life assessment using PedsQL questionnaire 4.0 version that was translated to Indonesian language, it is known that among 33 obese children, there are 18 children with good quality of life (54,5%) and 15 children with poor quality of life (45,5%). Meanwhile,
among 33 non obese children, there are 24 children with good quality of life (72.7%) and 9 children with poor quality of life (27.3%).

Study Limitation and Suggestion

Basically, quality of life in children is not solely affected by obesity status. It is also affected by environment, economic, and other health factor\textsuperscript{21}. In health factor, poor quality of life could also be related to several chronic condition such as cancer, hypertension, and diabetes mellitus\textsuperscript{22}. Gender factor is not concerned in this study, meanwhile girls tend to give lower estimation than boys in regards of quality of life\textsuperscript{23}.

More studies should be done to look for other factors that haven’t been observed, that could affect quality of life in children with obesity and without obesity, with bigger sample number and larger research scope, in the hope of making stronger conclusion and minimizing bias.

CONCLUSION

There is no significant difference in quality of life score average between the group of obese and non obese children.

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REFERENCES