Associated Risk Factors and Prevalence of Overweight Among Pre-school Children of Bhaktapur, Nepal

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ABSTRACT

Background: Rapidly changing dietary practices and increasing sedentary lifestyle predispose to Obesity-related non-communicable diseases both in children and in adults. In Nepal, childhood obesity is one of the most serious rapidly growing public health concern especially in the cities like Bhaktapur. Many studies have focused on the relationship between overweight and its determinant factors. However, it has not been exhaustively documented in the study area.

Aims and Objective: The objective of this study was to find the prevalence of overweight including obesity and its associated risk factors in pre-school children aged 3-4 years in Bhaktapur, Nepal.

Materials and Methods: A community-based cross-sectional survey was conducted from November 2016 to February 2017 with systematic random sampling technique. Total 444 pre-school children both males and females of age between 3-4 years were enrolled in the study. A structured questionnaire was used to obtain information on socioeconomic characteristics and lifestyle factors of children. WHO Anthro Software V3.2.2. Was used for analyzing anthropometric parameters of the children and Statistical package for social sciences (SPSS) Windows version 21 was used to analyze the data.

Result: The prevalence of overweight in pre-school children was 4.1%. The prevalence of overweight was significantly higher among male children (5.3%) than female children (2.8%). The study revealed that overweight was significantly associated with sedentary lifestyles of children and higher socio-economic status of the family.

Conclusion: The magnitude of overweight although not big as compared to developed countries but increasing rapidly in Nepal due to sedentary lifestyles and improper dietary habits among children especially in the cities. Thus, proper attention should be given for the intervention on causes of overweight among pre-school children in order to avoid further risks in future.

Keywords: Overweight; Pre-school children; Bhaktapur

1. INTRODUCTION

Rapid modification in dietary practices and increasing sedentary lifestyle patterns predispose to Obesity-related non-communicable diseases both in children and in adults. The WHO has categorized obesity as a ‘Global Epidemic.’ Traditionally, overweight/obesity used to be considered a problem in developed countries. However, this problem is being on the rise in developing countries, particularly in urban areas due to change in sedentary lifestyles and food habits. According to World Health Organization, obesity is defined as being at or above the 95th percentile of body mass index for age and sex and Overweight as being between the 85th and 95th percentiles of body mass index for age and sex. WHO defines Body mass index (BMI) as being weight in kilogram per height in square meter is recommended for use in children and adolescent. Overweight and obesity are attributed to an enlargement or increased number of fat cells or a combination of both, which occurs when energy intake exceeds energy expenditure.
In 2010, forty-three million children (thirty-five million in developing countries) were estimated to be overweight and obese; ninety-two million were at risk of overweight. The worldwide prevalence of childhood overweight and obesity increased from four percent in 1990 to six percent in the year 2010. This trend is expected to reach nine percent or approximately sixty million, in 2020(6). Although the prevalence is comparatively lower in Asia (4.9% in 2010), the number of afflicted children are greater. The community-based studies in the neighboring countries like China and India found the increased incidence of childhood overweight and obesity(7,8).

The prevalence of childhood overweight and obesity has increased dramatically worldwide in recent decades. In the past, a fat child meant a healthy child, and the concept “bigger is better” was widely accepted globally(9,10).

Hence this study was conducted to evaluate a number of risk factors commonly associated with childhood obesity as well as to find the prevalence of childhood obesity using BMI as an indicator as per WHO. Knowing the extent of the problem and identifying the risk factors related to nutritional status of children in the study area will enable to guide public health policy makers in designing appropriate and effective nutritional intervention programs to address the problem and its associated consequences in the future.

2. METHODS

A cross-sectional community-based study was conducted in pre-school children of Bhaktapur. The study was carried out from November 2016 to February 2017. Five trained volunteers were actively involved in collecting the data from different pre-school and homes of the children. Informed written consent was taken from the parents/guardian and school authority, and Helsinki guidelines were followed. A self-designed structured questionnaire regarding lifestyle factors of a child, economic status of the family, etc was given to them. Anthropometric assessment was done, their weight, height, head circumference, Mid-upper arm circumference were measured three consecutive times. Later on, mean was taken as their actual weight and height, which helped in calculating the BMI (body mass index). The anthropometric measurement was done by LG digital weighing machine (with a difference of only 20 gram), Stadiometer and non-stretchable measuring tape. The condition of weighing machine was checked then was kept on firm flooring (Heavy clothing and shoes was removed). Children were told to stand with both feet in the center of the scale, and weight was recorded. Height measurement was done by Stadiometer; children were asked to stand up straight with feet and heels together keeping the heels back against the upright section of the stadiometer (arms relaxed by sides). Children were asked to look straight ahead at the marker. Three standard indices of physical growth given by WHO-Height-for-age (Stunting), Weight-for-age(Underweight) and weight-for-height(Wasting) - that described the nutritional status of children was considered in this study.

WHO Classification(11):
Overweight: Weight for Height > + 2 Standard Deviations (SD) of the WHO growth standard Median.
Underweight: Weight for age < -2 Standard Deviations (SD) of the WHO growth standard Median.
Stunting: Height for age < -2 Standard Deviations (SD) of the WHO growth standard Median.
Wasting: Weight for Height < -2 Standard Deviations (SD) of the WHO growth standard Median.

Inclusion criteria: The pre-school children aged between 3 to 4 years.

Exclusion criteria: The children who were not in good health and uncooperative. The analysis was done by universally accepted WHO Anthro Software Version 3.2.2 and SPSS Version 21. Z test was used to calculate the P-value. P-value of < 0.05 was considered as statistically significant.

3. RESULTS

A total of 444 pre-school children aged between 3-4 years were enrolled in the study. Of these 444 participants, 226 (50.9%) were males, and 218 (49.09%) were females (Fig 1). Among the mothers of participants, 87% (385) were literate, and 13% (59) were illiterate (Fig 2).

Prevalence of overall overweight was 4.1% (18). Males were more overweight as compared to females. The prevalence of overweight in male and female population compared to its counterpart was 5.3% and 2.8% respectively (Table 1).
Fig 1: Sex wise distribution of the pre-school children.

Fig 2: Literacy rate among mothers of pre-school children in the study population.

Table 1: Weight-for-height (Overweight) in the study population (95% CI).

<table>
<thead>
<tr>
<th>Participants</th>
<th>Total No</th>
<th>No of overweight Children ( &gt; +2SD)</th>
<th>Percentage Overweight ( &gt; +2SD)</th>
<th>Mean Z Score</th>
<th>SD</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>226</td>
<td>12</td>
<td>5.3%</td>
<td>-0.58</td>
<td>1.51</td>
<td>0.209</td>
</tr>
<tr>
<td>Female</td>
<td>218</td>
<td>6</td>
<td>2.8%</td>
<td>-0.64</td>
<td>1.25</td>
<td>0.243</td>
</tr>
<tr>
<td>Total</td>
<td>444</td>
<td>18</td>
<td>4.1%</td>
<td>-0.61</td>
<td>1.39</td>
<td>0.242</td>
</tr>
</tbody>
</table>

The prevalence of underweight and stunting of the study population was 30.2% and 23.9% respectively whereas wasting was among 16.7% of the study population (Fig 3).

Fig 3: Prevalence of overweight, underweight, stunting and wasting among study children (3-4 Years of age).

4. DISCUSSION

In developing countries like Nepal, overweight in children has become a public health concern in the recent times due to its bad impact on the health of the child in future. People are still unaware of the situation and may lead to epidemic causing increased risk of diabetes, hypertension and other diseases in future. In the present study, the average age of the child was 3.5± 0.4 years. The youngest child was 36 months whereas the oldest among the study population was 47.01 months. In similar type study done by Fatemeh et al. the mean age was 3.5 ± 0.5 years (12).

According to research done by Kumar et al. on pre-school children, Overweight including obesity was 4.25% (13). This was similar to our study. In the study done by Fatemeh et al. in Birjand, Iran the prevalence of overweight was 10.1% (11.7% in females and 9.6% in males) which is just opposite among males and females when compared my study (12).

The study clearly showed that the overweight was significantly associated with sedentary lifestyles of children and higher socio-economic status of the family (Table 2).

Table 2: Lifestyle factors of the children.

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>No of participant</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeding trends</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Usually, takes normal meals</td>
<td>308</td>
<td>69.34</td>
</tr>
<tr>
<td>Difficulty in taking normal meals</td>
<td>113</td>
<td>25.45</td>
</tr>
<tr>
<td>Overeating tendency</td>
<td>23</td>
<td>5.21</td>
</tr>
<tr>
<td>Junk foods</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Likes very much</td>
<td>230</td>
<td>51.80</td>
</tr>
<tr>
<td>Not so much</td>
<td>214</td>
<td>48.20</td>
</tr>
<tr>
<td>Eating habit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Watches TV/Tablets/Mobiles while eating</td>
<td>211</td>
<td>47.52</td>
</tr>
<tr>
<td>Doesn’t watch anything while eating</td>
<td>233</td>
<td>52.48</td>
</tr>
<tr>
<td>Sleeping habit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has normal sleep</td>
<td>402</td>
<td>90.54</td>
</tr>
<tr>
<td>Wakes up many times at night</td>
<td>42</td>
<td>9.46</td>
</tr>
<tr>
<td>Involvement in physical activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Usually, likes to play outdoors</td>
<td>266</td>
<td>59.90</td>
</tr>
<tr>
<td>Stays inside house watching TV/Playing games in mobiles</td>
<td>178</td>
<td>40.1</td>
</tr>
</tbody>
</table>

In this study, the prevalence of overweight including obesity was more in male children than in female children which show the trends of feeding more in a male child than a female child in Nepalese society (Table 3).

5. CONCLUSION

The prevalence of overweight found in this study is not big as in developed countries, but it is increasing rapidly in Nepal due to sedentary lifestyles and improper dietary habits among children especially in the cities. Thus, proper attention should be given for the intervention on causes of overweight among pre-school children in order to avoid the diseases like hypertension, diabetes, etc. in future.

6. LIMITATIONS

The trend of studies in developing countries is only focused on child underweight. The problem of overweight in children is increasing in these parts as well, so this type of study should be done covering wider areas.

ACKNOWLEDGEMENTS

I express my deep sense of gratitude to my participants who were very little children without their cooperation this study might not have been successful.

REFERENCES
