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**Introduction**

Cardiovascular diseases are often associated with large amount of adipose tissue which is largely determined by inadequate nutrition and other unhealthy lifestyle factors. Recent studies show that not only the amount of adipose tissue but also its distribution is important for the risk of cardiovascular diseases. Visceral adipose tissue is associated with higher risk than subcutaneous adipose tissue. Studies have revealed that visceral adipose tissue depots on the heart known as epicardial adipose tissue (EAT), due to their direct relation to myocardium and coronary arteries, have predominant local effects and seem to play a key role in the development of coronary artery and other cardiovascular diseases. In addition, measurement of VAT depots has been found to provide information above and beyond easily obtainable clinical anthropometric measurements such as body mass index (BMI) and waist circumference which have been used in a majority of studies, especially in public health.

**The aim of the study**

To assess abdominal and cardiac adipose tissue depots among adults with various cardiovascular diseases.

**Material and Methods**

The total number of 313 adults aged 30 to 65 years with various cardiovascular diseases was involved. The sample consisted of 38.0% females and 62.0% males. Medical records were used to define disease profiles and form groups of individuals with diagnosed myocardial infarction (MI), coronary artery disease (CAD) without MI, and hypertension (HT) without CAD or MI (respectively, 65, 53 and 114 adults). Control group consisted of 94 individuals with none of these diseases. Weight and height for BMI calculation, physical activity at work, leisure-time physical activity and consumption of vegetables, fruits, grain products, eggs, fish, meat, milk (and their products) were assessed using a questionnaire. MI, CAD, HT and control groups were formed so that distribution by gender, nutritional habits and physical activity among them was similar (p=0.05). Volume of EAT, also abdominal visceral and subcutaneous adipose tissue (respectively, VAT and SAT) were measured on magnetic resonance tomography images. Short-axis end-diastolic images of the heart from the basal plane to cardiac apex were used for measurement of EAT volume. Five transverse abdominal images centered at gender-specific lumbar intervertebral levels (females, L3–L4; males, L2–L3) were used for VAT and SAT volume calculation.

**Results**

Median age of the individuals with diagnosed MI, CAD or HT was 54(48–68) years, BMI - 25.4(24.8–31.5) kg/m². Median SAT, VAT and EAT volumes were 54±2.2(39.8–87.47) cm³, 56±2.9(38.8–107.0) cm³ and 11±1.0(5.7–16.9) cm³ respectively. All these variables were lower among controls (p<0.05). Respectively, their medians in the control group were: 64(50–73) years, 24(21–27) kg/m², 4±4(3–6) cm³, 54±2.4(45–67) cm³ and 11±1.0(5–16) cm³. BMI, also SAT and VAT volumes were similar in MI, CAD and HT groups (p>0.05). Age and EAT volume were similar in MI and CAD groups (respectively, 50±59 years, 15±4(13.9–17.8) cm³, p>0.05) but were lower in HT group (respectively, 53(45.5–67) years, 129.0(109.1–157.0) cm³, p<0.05).

**Conclusions**

Larger depots of EAT, also abdominal SAT and VAT are associated with HT, CAD and MI. Measurement of EAT volume may be most beneficial in stratification of adults by the risk of various cardiovascular diseases.

**Main message**

EAT volume may be more beneficial than BMI, VAT or SAT volume in stratification of adults by the risk of various cardiovascular diseases.
THE PREVALENCE AND ECONOMIC BURDEN OF OBESITY IN HUNGARY

International Symposium on Understanding the Double Burden of Malnutrition for Effective Interventions
Vienna, December 10-13, 2018 (organized by: IAEA, WHO, UNICEF)

Imre RURIK, Timea UNGVÁRI, Csilla SEMANOVA, Gabriella ISKI
University of Debrecen, Department of Family and Occupational Medicine, Debrecen, Hungary
Hungarian Society of Nutrition, Budapest, Hungary

Introduction
1. Since 1988, when the first professional wide-range evaluation was performed in Hungary, only limited data were available.
2. Obese patients usually need more health care services.

Methods
1. Anthropometric parameters were measured, presence of metabolic diseases were questioned in primary & community care settings and in workplaces. Age, BMI, waist circumference, educational level, presence of hypertension or and diabetes were analyzed statistically and compared with previous data from 1988.
2. Yearly data of the Hungarian National Health Insurance Fund Administration (NHIFA) were collected, regarding finances of secondary care, hospital services and health insurance reimbursement for medications, based on the International Classification of Diseases codes of selected morbidities linked to obesity. In the calculation of direct medical costs, 100% of the medical expenses was coded as leading diagnoses, while estimated costs of other morbidities were based on population-attributable fraction (PAF), using the following equation: PAF % = [P(RR-1)] / [1 + P(RR-1)], where P is the population prevalence proportion of obesity (gender specific, aged 20 and over) and RR is the summary relative risk of developing a certain disease among obese individuals.

Results
1. Data of 0.55 percent of the population above 18 year were registered in all geographical regions of Hungary close to the proper national representativeness. The overall prevalence rate of overweight among men was 40%, while obesity 32%, by women both was close to 32%. See distribution below. Compared to the data of survey in 1988, ratio of obesity was tripled in the younger and doubled in the middle aged groups. The highest ratio of overweight was registered among men with the highest educational level, while highest ratio of obesity among women having the lowest education. Obesity according to BMI and abdominal obesity was the highest in the villages, especially among females. Registered metabolic morbidities were strongly correlated with BMIs and both were inversely related to the level of urbanization.

<table>
<thead>
<tr>
<th>Distribution of BMI</th>
<th>MEN[%]</th>
<th>WOMEN[%]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>age</strong></td>
<td><strong>BMI [kg/m²] mean</strong></td>
<td><strong>BMI [kg/m²] mean</strong></td>
</tr>
<tr>
<td>18-34</td>
<td>3.7</td>
<td>45.8</td>
</tr>
<tr>
<td>35-59</td>
<td>0.8</td>
<td>24.6</td>
</tr>
<tr>
<td>60-69</td>
<td>0.7</td>
<td>18.9</td>
</tr>
<tr>
<td>Total</td>
<td>1.3</td>
<td>26.7</td>
</tr>
</tbody>
</table>

Results 2.
In the Hungarian hospitals 2,031,193 admissions were reported in 2013.

<table>
<thead>
<tr>
<th>Distribution of waist circumference</th>
<th>MEN [%]</th>
<th>WOMEN [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>age group</strong></td>
<td><strong>&lt; 94 cm</strong></td>
<td><strong>94-102 cm</strong></td>
</tr>
<tr>
<td>18-34</td>
<td>66.4</td>
<td>16.9</td>
</tr>
<tr>
<td>35-59</td>
<td>36.8</td>
<td>25.1</td>
</tr>
<tr>
<td>60 &lt;</td>
<td>27.3</td>
<td>26.5</td>
</tr>
<tr>
<td>Location</td>
<td>Budapest</td>
<td>43.5</td>
</tr>
<tr>
<td>City</td>
<td>38.7</td>
<td>24.3</td>
</tr>
<tr>
<td>Villages</td>
<td>38.6</td>
<td>23.8</td>
</tr>
<tr>
<td>Education under</td>
<td>39.9</td>
<td>23</td>
</tr>
<tr>
<td>primary</td>
<td>38.4</td>
<td>23.8</td>
</tr>
<tr>
<td>secondary</td>
<td>38.4</td>
<td>23.4</td>
</tr>
<tr>
<td>high</td>
<td>41.2</td>
<td>25.7</td>
</tr>
</tbody>
</table>

The estimated total obesity related health care expenditures were 58,986 Million HUF (190.3 Million EUR) and the financial contribution of patients was calculated as 25,316 Million HUF (82 Million EUR). Financial data regarding diabetes care resulted in a 40,311 Million HUF (129 Million EUR) national fund expenses, including direct service payments and reimbursements, besides a 7,173 Million HUF (23 Million EUR) contribution from patients. The sums of the estimated obesity related data listed in the tables represent a 9.3 % of the whole national health services budget (908,011 Million HUF ≈ 2901 Million EUR) and 30% of the whole drug-reimbursement budget (296,024 Million HUF ≈ 946 Million EUR).

Expenditures for all obesity related pathologies could be estimated between 0.5 - 1 % of the national GDP.

Conclusions
Over the previous decades, the ratio of the overweight and even the obese persons increased significantly, it was most prominent among males, mainly in younger generation. Obesity means a serious medical, public health and economic problem, requires higher public awareness and political support.

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Physical activity (PA) has been identified as an important agent in the prevention of chronic diseases such as obesity, cardiovascular diseases, and metabolic syndrome. Children’s physical fitness has decreased and obesity has increased globally over the past few decades. The knowledge on levels and patterns of PA in children is limited, due to the difficulty of precisely measuring this complex behavior in normal daily living.

The first specific purpose of the present study is to provide preliminary data on physical activity among Tunisian public school children using two commonly methods, PAQ-C (Physical Activity Questionnaire for Older Children) and accelerometer. The second purpose is to correlate the PA with weight status and body composition determined by deuterium dilution analysis.

**Subjects/Methods**

- A total of 40 children aged between 8 and 11 years and attending Tunisian schools were recruited.
- The protocol was approved by the Ethic Committee on Human Research of the National Institute of Nutrition and authorized by the Ministry of Education.
- Body composition was determined by the Deuterium oxide dilution technique.
- PA was determined by the PAQ-C.
- An objective monitoring of PA and sedentary time was achieved by use of ActiGraph GT3X + accelerometers.

**Results**

### General characteristics

- The characteristics of the children are presented in Table 1.
- Body fat mass (FM) determined by the D2O technique is significantly higher in girls compared to boys (p<0.001).
- The deuterium dilution technique showed that 42.5% (17/40) of children was overweight/obese.

### PA Level assessed by PAQ-C Questionnaire

- PA characteristics are summarized in Table 2.
- PA score determined by the PAQ-C was significantly higher in boys than in girls (p=0.004).
- The proportion of children engaged in light and moderate PA didn’t differ significantly according to sex.

### PA variables assessed by Accelerometer

- Table 2 shows that average MVPA (moderate and vigorous physical activity) was significantly higher in boys than girls (p<0.005).
- The proportion of boys who spent more than 60 min per day in MVPA was significantly higher compared to that found in girls (p=0.014).
- No correlation was observed between mean score of PAQ-C and average MVPA between the two methods of assessment of PA (r= 0.119).

### Comparison of physical activity level between normal-weight and overweight children

- Average MVPA was significantly higher in normal weight than overweight and obese group (p=0.007).
- The proportion of overweight children who spent more than 60 min per day in MVPA was significantly higher than that of normal-weight (p=0.049).

### Conclusion

This preliminary study indicates that only half the school children comply with health-based guidelines for PA and sedentary behavior. This study shows also difference in accelerometer and PAQ-C for the assessment of PA in children and suggests that obesity was associated with decreases of PA in Tunisian children.

**References**


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**Table 1. General characteristics of children**

<table>
<thead>
<tr>
<th></th>
<th>Total subject (n=40)</th>
<th>Boys (n=21)</th>
<th>Girls (n=19)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (year)</td>
<td>9.34±0.94</td>
<td>9.27±0.88</td>
<td>9.41±1.01</td>
<td>0.635</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>33.82±7.76</td>
<td>31.59±2.24</td>
<td>36.05±8.61</td>
<td>0.056</td>
</tr>
<tr>
<td>Height (cm)</td>
<td>138.39±7.67</td>
<td>137.14±6.90</td>
<td>139.64±8.35</td>
<td>0.285</td>
</tr>
<tr>
<td>BMIz</td>
<td>16.95±5.67</td>
<td>16.77±4.58</td>
<td>16.34±6.48</td>
<td>0.170</td>
</tr>
<tr>
<td>WC(cm)</td>
<td>0.41±1.32</td>
<td>0.22±1.38</td>
<td>0.60±1.25</td>
<td>0.343</td>
</tr>
<tr>
<td>HAZ</td>
<td>0.39±0.79</td>
<td>0.23±1.17</td>
<td>0.55±0.91</td>
<td>0.181</td>
</tr>
<tr>
<td>% FM D2O</td>
<td>26.52±6.01</td>
<td>22.69±5.11</td>
<td>31.14±8.24</td>
<td>&lt;0.001 **</td>
</tr>
</tbody>
</table>

W: Waist circumference; BMIz: Body Mass Index z-score; HAZ: Height-for-age z-scores; %FM D2O: percentage of fat mass determined by deuterium dilution technique.

---

**Table 2. Physical activity and sedentary behaviors by sex**

<table>
<thead>
<tr>
<th></th>
<th>Overall (n=40)</th>
<th>Boys (n=21)</th>
<th>Girls (n=19)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean score (min/day)</td>
<td>2.35±0.67</td>
<td>2.92±0.71</td>
<td>2.24±0.47</td>
<td>0.004</td>
</tr>
<tr>
<td>% PA level</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Light level (score=2)</td>
<td>20% (8/40)</td>
<td>14.3% (3/21)</td>
<td>26.3% (5/19)</td>
<td>0.348</td>
</tr>
<tr>
<td>Moderate (score=3-4)</td>
<td>80% (32/40)</td>
<td>85.7% (18/21)</td>
<td>73.7% (14/19)</td>
<td></td>
</tr>
<tr>
<td>Average MVPA (min/day)</td>
<td>59.77±22.01</td>
<td>68.82±17.30</td>
<td>49.76±22.71</td>
<td>0.005</td>
</tr>
</tbody>
</table>

% Met 60 min MVPA daily: 47.5% (19/40) for Boys and 66.7% (14/21) for Girls.

---

**Table 3. Physical activity and sedentary behaviors by weight status according D2O methods**

<table>
<thead>
<tr>
<th></th>
<th>Normal weight (n=23)</th>
<th>Overweight/Obese (n=17)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average MVPA (min/day)</td>
<td>67.68±20.98</td>
<td>49.07±19.09</td>
<td>0.007</td>
</tr>
<tr>
<td>% Met 60 min MVPA daily, (n=19)</td>
<td>60.9% (14/23)</td>
<td>29.4% (5/17)</td>
<td>0.049 **</td>
</tr>
</tbody>
</table>
The Association of the Dietary Approaches to Stop Hypertension (DASH Diet) with Obesity in Chinese Schoolchildren

Liubai LI, Xulong WU, Jun MA
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Background and Objectives: Obesity prevention and control is one of the work priorities in the prevention of the non-communicable chronic diseases (NCDs). The effect of the Dietary Approaches to Stop Hypertension (DASH diet) in child obesity is unknown.

Objective: To study the association between the DASH diet pattern and the risk of child obesity.

Methods: A cross-sectional study was conducted in 10-18-year schoolchildren (n=3868, 51.5% were boys) recruited with clustered sampling in 21 suburb or urban schools across China in 2012. A self-filling structured Food Frequency Questionnaire (FFQ) was used to collect the frequencies and portion size of DASH Diet components (fruits, vegetables, meat, high fiber grains, milk, nuts, and desserts), physical activity, and leisure screen time. The DASH Scores was calculated according to literatures and revision, with the higher DASH Score represented a healthier dietary pattern (ranged 0-7). Overweight and obesity were defined according to the Cutoff Values of Body Mass Index (BMI) for Chinese Children. Logistic Regression Analysis was used to test the association between the DASH Score and the obesity indicators.

Results: 36.5% of the participants were overweight or obese. The average BMI (kg/m²) was 21.0 ± 4.3 (kg/m²), and the BMI-Z score was 0.54 ± 1.38.

Table 1. The Association of the DASH Score and overweight/obesity -Logistic Regression Models

<table>
<thead>
<tr>
<th>Models</th>
<th>Quartiles of the DASH Score (OR; 95%CI) **</th>
<th>P-trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crude OR</td>
<td>Q1: 0.847 (0.704, 1.021)</td>
<td>0.758* (0.829, 0.913)</td>
</tr>
<tr>
<td>Model 1</td>
<td>Q2: 0.897 (0.718, 1.122)</td>
<td>0.795* (0.634, 0.997)</td>
</tr>
<tr>
<td>Model 2</td>
<td>Q3: 0.919 (0.731, 1.157)</td>
<td>0.849 (0.672, 1.072)</td>
</tr>
</tbody>
</table>

* P<0.05 **Odds Ratio (95% Confidence Interval)

Model 1: adjusted child age, gender, parents’ education levels, family SES, and the urban/rural areas; Model 2: based on Model1, adjusted physical activity frequency per week and the leisure screen time per day.

Conclusions: The DASH diet is negatively associated with the risk of child obesity in Chinese children.

KEYWORDS: Dietary Approaches to Stop Hypertension (DASH Diet), China, Schoolchildren, Obesity
PREVALENCE OF ADOLESCENT OVERWEIGHT AND OBESITY DERIVED FROM SCHOOL MEDICAL RECORDS IN BAGUIO CITY: OBSERVATIONAL STUDY

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• Department of Radiotherapy, Jose R. Reyes Memorial Medical Center, Manila, Philippines

ABSTRACT

Introduction:
Childhood obesity is a rising global health problem including the Philippines. The Philippines is an archipelago which is highly diverse and food accessibility from one region to another. Baguio City is situated in the north of Manila within the mountainous region of the Cordilleras. Although rich in agricultural industry in the region, food accessibility and active lifestyle are critical factors for adolescent nutrition. However, limited studies were conducted on Filipino adolescent population health monitoring and surveillance in Baguio City, Philippines.

Objectives:
This study primarily aimed to determine the prevalence of adolescent overweight and obesity using objective measures derived from school medical records in Baguio City. Also, this study aimed to determine if there is a significant difference in the nutrition status of adolescents between public and private secondary schools.

Methods:
Observational data included all height and weight records for enrolled male and female adolescents between 10 to 19 years old from school year 2016-2017. For this study, data will be extracted from selected public and private secondary schools in Baguio City. This study included 8,129 Filipino adolescents in both private (n=2667) and public (n=5462) secondary schools.

APPENDIX:

TABLE 1. Overall Prevalence of Nutrition Status in both Private and Public Secondary Schools, by Age Group

<table>
<thead>
<tr>
<th></th>
<th>Severely Wasted</th>
<th>Wasted</th>
<th>Normal</th>
<th>Overweight</th>
<th>Obese</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Students n= 8129</td>
<td>63</td>
<td>257</td>
<td>7402</td>
<td>351</td>
<td>56</td>
</tr>
<tr>
<td>Prevalence</td>
<td>0.78%</td>
<td>3.16%</td>
<td>91.06%</td>
<td>4.32%</td>
<td>0.69%</td>
</tr>
</tbody>
</table>

Conclusion:
Baguio City is a highly urbanized city with geographically rich in resources for healthy food. Despite this, there is an existing prevalence of double burden malnutrition in the city. Socioeconomic and cultural factors contribute to this nutrition transition as shown by the statically significant difference for overall prevalence for combined overweight and obesity between public and private secondary schools on both genders and majority of the adolescent age group. Awareness, surveillance and timely intervention from both local authorities and international counterparts are necessary to address this problem.

TABLE 2A. Prevalence of Overweight and Obesity in Public Schools, By Gender

<table>
<thead>
<tr>
<th></th>
<th>PUBLIC (n=5,462)</th>
<th>PRIVATE n=2,607</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEX</td>
<td>MALE</td>
<td>FEMALE</td>
<td>MALE</td>
</tr>
<tr>
<td>Severe Wasted</td>
<td>98</td>
<td>84</td>
<td>16</td>
</tr>
<tr>
<td>Wasted</td>
<td>3.89</td>
<td>2.85</td>
<td>0.63</td>
</tr>
<tr>
<td>Normal</td>
<td>84</td>
<td>2.85</td>
<td>9</td>
</tr>
<tr>
<td>Overweight</td>
<td>2.85</td>
<td>4.52</td>
<td>0.30</td>
</tr>
<tr>
<td>Obese</td>
<td>84</td>
<td>93</td>
<td>9</td>
</tr>
<tr>
<td>Overw + Obese</td>
<td>182</td>
<td>207</td>
<td>25</td>
</tr>
</tbody>
</table>

TABLE 3. Comparison of Prevalence rates of Overweight+Obese Adolescent Males and Females in Public and Private Schools

<table>
<thead>
<tr>
<th></th>
<th>PUBLIC</th>
<th>PRIVATE</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>MALE</td>
<td>114/2518 or 4.52%</td>
<td>115/1200 or 9.58%</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Female</td>
<td>93/2944 or 3.15%</td>
<td>85/1467 or 5.79%</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Both</td>
<td>207/5462 or 3.79%</td>
<td>200/2667 or 7.50%</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>

TABLE 5. Prevalence of Overweight and Obesity in Public and Private Schools, By Age Group

<table>
<thead>
<tr>
<th></th>
<th>PUBLIC n</th>
<th>Prevalence n (%)</th>
<th>PRIVATE n</th>
<th>Prevalence n (%)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-12.99</td>
<td>1416</td>
<td>845(59.3%)</td>
<td>865</td>
<td>581(68.2%)</td>
<td>0.862</td>
</tr>
<tr>
<td>13-15.99</td>
<td>3397</td>
<td>113(3.32)</td>
<td>1424</td>
<td>110(7.72)</td>
<td>&lt;0.0001</td>
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<tr>
<td>16-19</td>
<td>649</td>
<td>10(1.54)</td>
<td>1157</td>
<td>85(7.34)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>All Ages</td>
<td>5462</td>
<td>207(3.79)</td>
<td>2667</td>
<td>200(7.50)</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>
DIETARY PATTERN ASSOCIATION WITH OVERWEIGHT AND OBESITY IN URBAN UKRAINIAN POPULATION

Mariana Romanenko¹, Dmytro Krasnenkov¹, Mykola Khalangot²

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ID number 117

Background. Because of economic and social crisis in Ukraine nutrition of many people is unbalanced and deficient for some nutrients, especially for protein. The diet studies in different age groups with or without metabolic risk factors is of interest due to possible nutritional risks.

Aim. To study the nutrition in urban Ukrainian population and its relationship to anthropometric indicators of obesity.

Methods. 60 middle aged people (35-59 years) were examined. Body weight, body mass index (BMI) and waist circumference (WC) were measured. The food intake was evaluated by the method of the 24 hour food diary for three days augmented by weighing method. For statistical analysis non-parametric methods were used. The Spearman correlation coefficients were considered significant at p level < 0.05.

Results. In middle age people positive correlations of meat products consumption with body weight (r = 0.43), BMI (r = 0.35) and WC (r = 0.47) were found; and, correspondingly, higher consumption of animal protein was associated with higher body weight (r = 0.39), BMI (r = 0.29) and WC (r = 0.38).

The important is an association of processed meat intake with WC (r = 0.28) in middle age people, its consumption was about 1/3 of the total meat food amount. Additionally, fat and energy consumption were associated with body weight (r = 0.38 and r = 0.31) and WC (r = 0.40 and r = 0.35). Men consumed significantly more meat food than women (153.3±16.4 g/day vs 103.5±9.5 g/day; p=0.009). So in men the relationship between anthropometric indicators of obesity and animal protein intake became stronger but it was not revealed in women.

A very low (2016 -1.34%), but growing (2003 - 0.83%) level of childhood obesity in Ukrainian population and the high level (2016 - 22%) of adulthood obesity are existing simultaneously. Traditionally children, especially of early age, have more balanced diet and have more physical activity than adults do, which determine such a large gap. Nevertheless, the question about validity of childhood obesity data is raised due to used methods for obesity assessment. In addition, analysis of young people diet showed nutritional risks such as low level of protein and fiber, high level of mono- and disaccharides, which indicates an increased risk of metabolic disorders in later life and we suggest the same situation with children and adolescents nutrition. Therefore, the RER/6/034 project could help to clarify situation about childhood obesity in Ukraine and help to fight against the growing obesity in adolescence and adulthood.

Conclusion. Thus, sex differences between dietary pattern and anthropometric indicators of obesity were revealed for middle age people which concern the consumption of meat. The nutritional risk for middle age obese persons is higher animal protein consumption associated with higher fat and energy intake. It raises a question to quality of animal protein source consumed and to overall energy intake that should be considered while composing diet recommendations. Metabolic and nutritional risks studying in childhood and adolescence is important for preventing the growing obesity prevalence in adulthood.
Emerging life style factors related to rising obesity and noncommunicable diseases in Sri Lanka, a qualitative study

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Base Hospital, Dambadeniya, Sri Lanka.

INDICO /Abstract ID: 149

Introduction

Sri Lanka is considered as having a long tradition of agriculture, with mainly Buddhism based spiritual background, and people with active lifestyles in a geography of favorable climatic conditions round the year. However, many such optimistic attributes appear threatened, with changing lifestyles, attitudes, fast growing economy accompanied by improvised work settings, resulting in many health issues. Life style is well known to be associated with health and disease. However general advice on improving the life style disregarding the specific factors affecting a community does not yield intended benefits

Objectives

• To identify factors that contribute to NCDs, overweight/obesity and undernutrition in Sri Lanka.
• To identify vulnerable communities
Further, to suggest
• Introduction of nuclear study based techniques to identify and guide individuals considered likely to gain excessive weight.
• Introduction of systems approach in handling these interdependent problems in Sri Lankan community, since singular approaches considering the health care as an independent environment with linear dynamics do not yield the intended results.

Method

Initial stage: Observation were made on life styles of patients who were newly diagnosed as having diabetes, malignancy, cardiovascular disease, hypertension, and some psychosomatic conditions. Observed cohort were patients admitted to the medical wards in several hospitals scattered throughout the country. Namely, Nawalaipitaya, Kegalle, Klinochchi and Dambadeniya. Hypotheses were made based on these observations as to the possible lifestyle factors.

Second stage: Patients who were diagnosed with such diseases were studied employing a one-on-one semi-structured interview, based on hypotheses made during the first stage

276 patients participated at this stage.
Selection of patients were random ie. the patients with such illness who presented during the duty hours of two authors.

Pie charts and Venn diagrams drawn to demonstrate the frequency and co incidence of lifestyle factors with the diseases

Ethical approval was obtained from the ethical review committee, Provincial health Directors office, Kurunegala.

Results

(Numbers in the diagrams relate to patients with clinical conditions)

Many incidents of above noncommunicable diseases were observed in individuals who were overseas employees, returned from overseas especially from Middle East, with no such illness on departure from Sri Lanka.

Professional drivers, including three-wheeler drivers, demonstrated an unhealthy lifestyle, with the development of non communicable diseases, and a tendency to smoke and abuse alcohol, despite the popular belief that they are undernourished and poor.

Many employees working on shift basis had disrupted sleep patterns. In commercial work settings, shift work schedules are increasingly being applied.

Stress of continuous after/before school classes and tuition classes, and disrupted, inadequate sleep, was identified as a factors downgrading nutrition and the quality of life of school children.

Somatisation was detected in school children with above exposures.

Suggestions and Discussion

• Recognition of formation of patterns which are destructive, earlier than latter before they become established in a community will help in devising strategies minimizing the cost, time and energy required to sustain development and health.

• In a forced or externally imposed development process or a financial benefit, for example overseas employment with higher wages without mutual integration, at least as a great a force needs to be applied in maintaining the stability of the system.

• We suggest, making it available to measure body composition, of overseas employees using stable isotope techniques on departure and repeated on pre specified time intervals,

• This will make the individual aware of body fat, thus, motivated to resort to appropriate diet and physical activity, since such a measurable value can have a lasting impact on the individual psyche than body weight or abdominal girth. Further, such measure will make, the targeted individuals who hold the socio economic myth of assessing the quality of life solely on the rising figure in the bank account, aware, that the same occurs to the fat content in the body, while reverse happens to the health.

• Implementing early preventive tests / techniques will initially require greater investment, but application of measures such as these on vulnerable groups a permanent reduction in long term cost and a higher quality of life should follow.

• Health status of an individual or a community being a function of a complex adaptive system, interventions need to be multi pronged.

• Awareness of the non linearity of the systems needs encouragement rather than, for example, categorizing diseases in to non communicable or communicable and dividing the work to authorities with no interrelatedness. All ailments have interrelated pathways of embodiment.

References

• Conceptualizing population health: from mechanistic thinking to complexity science. Sans Jayasinghe. Emerging themes in epidemiology 2011: 82
Clinical Markers of the Metabolic Syndrome and Insulin Resistance in Youth from Northern Mexico


1Department of Chemical and Biological Sciences, University of Sonora, México;
2Nutrition Department, Research Center for Food and Development, CIAD; Sonora, México.

Funding: This research was supported by the IAEA CRP E4.30.19. on “Body fat and its relationship with metabolic syndrome indicators in overweight pre-adolescents and adolescents”, under the contract MX-14113.

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Background

In Mexico, almost 4 of every 10 children/adolescents are overweight or obese (1). Obesity is associated with cardiometabolic alterations, such as insulin resistance (IR), that could initiate more complex scenarios such as the metabolic syndrome (MS). Some studies show that clinically useful markers of IR, such as Acanthosis nigricans (AN) might detect early glucose metabolism alterations, but its association with IR has been inconsistent (2).

Objective

To find the best predictors of insulin sensitivity (ISI0,120) in youth (9-17 y) from Northern Mexico, including possible new markers such as leptin and adiponectin. Additionally, we aimed to develop a useful BIA equation to calculate body fat % in the clinical setting.

Subjects and methods

Study design: Cross-sectional study, carried out in 2 visits within 2-3 days: (1) Biochemical measurements, (2) Deuterium dilution for body composition. Approved by CIAD Ethics Committee.

Sample: A total of 131 male and female youth 9-17 y from the urban area of Hermosillo, Sonora, Mexico; invited by radio/newspaper advertisement.

Biochemical measurements

- Venous blood draw (glucose, insulin, lipid profile)
- Glucose load (75 g)
- Blood pressure
- Anthropometry
- Acanthosis nigricans assessment
- Waist circumference
- DXA Scan
- BIA

Body composition by deuterium dilution (D2O)

Dose:
- 30 g D2O 99.8% to participants ≥60 kg body weight
- 0.5 g D2O 99.8% per kg of body weight for participants <60 kg

Baseline
- Saliva sample (5 mL)
- Body weight and height

Equilibrium time: 2 saliva samples were taken at 3 hrs and 4 hrs post-dose (5 mL each)

Sample Analysis: Fourier Transform Infrared Spectroscopy (FTIR)

Table 1. Participant’s characteristics by presence of Acanthosis nigricans (n=131).

Table 2. Resulting predictors of insulin sensitivity (ISI0,120) in our study.

Conclusions

The best predictors of insulin sensitivity were BMI-Z, abdominal fat, leptin and adiponectin. Even though Acanthosis nigricans was not a predictor of insulin sensitivity, it was a good marker of some cardiometabolic alterations in Mexican youth, which might make it useful for screening of early cardiometabolic alterations in this population.

Nutritional Status and Prevalence of Diabetes among Artisans in Abeokuta Local Government Area, Ogun State

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Federal University of Agriculture Abeokuta

(Oladoyinbo C.A. cathbadejo@gmail.com; oladayinbo@funaab.edu.ng)

INTRODUCTION

• It is reported that by 2020, developing countries will contribute 77.6% to the total number of diabetic cases in the world and Africa has the highest morbidity and mortality of all non-communicable diseases due to the growing urbanization, lifestyle changes and nutrition transition.
• Nigeria has the largest number of people (1,702,950 new cases in 2013) with diabetes in Africa and there has been a continued rise in the disease and its complication.
• The rate of lower limb amputation as a complication of diabetes has increased significantly in Nigeria.
• Modifiable factors that increases the risk for diabetes include, excess weight, poor dietary habits, lifestyle (alcohol and tobacco smoking).
• More data are needed on the prevalence of diabetes in all local groups in order to plan and prioritize health programs.

METHODS

The cross sectional study was conducted among 300 artisans selected by simple random sampling technique from five communities in Abeokuta South Local Government Area, Nigeria. Respondents who were selected ave never been diagnosed of diabetes or hypertension. Ethical Approval was obtained from State Hospital Sokenu Abeokuta Ogun State with ethical approval number SHA/RES/VOL2/193. A structured questionnaire was used to gather information on their personal characteristics. Dietary habits (food preference, meal skipping and snacking pattern) was assessed using an adapted questionnaire. Physical activity was assessed using the adapted WHO global activity questionnaire. Lifestyle (smoking and alcohol consumption) was also assessed using an adapted questionnaire. A random blood glucose check was done using an Allegra Plus glucometer and anthropometric measurements (weight, height, waist and hip circumference) were taken using standard instruments. Statistical analysis (means, standard deviation, frequencies, percentages, chi-square and correlations) was done using SPSS version 20

RESULTS

The mean age of the respondent was 34.8±9.87, 55.7% skip meals, 29% skips breakfast, 61.3% snacks, 47% snack on fried foods, 31% snacks daily and 20.7% consume fried foods daily. More than half (61.3%) consume alcohol and 18.3% of the respondents smokes. Tobacco was the most preferred cigarette and only 8.3% uses marijuana. Prevalence of overweight is 24% and obesity is 4.3% among the respondents. About 12.7% have high waist circumference and 52.7% have abdominal obesity using the waist-to-height ratio as a criteria determining abdominal obesity. Few (5.3%) and 29.0% of the respondents had low and moderate physical activity respectively. Results showed that age was significantly associated with the occurrence of diabetes (P=0.02), as prevalence of diabetes was higher among respondents 41-50 years and pre-diabetes among respondents 21-40 years. Although, general and abdominal obesity was significantly higher among the female artisans (P=0.04), there was no significant association with diabetes. There was also no significant association between physical activity, dietary habits, lifestyle and the occurrence of diabetes. Also, a positive significant correlation was found between age and BMI as overweight and obesity was more prevalent among respondents 41-50 years.

CONCLUSIONS

Both undernutrition and overnutrition exist among this group of respondents. Age is a risk factor diabetes and excess weight gain among the respondents. Although there was no significant difference in the prevalence of diabetes among male and female artisans, general and abdominal obesity that are risk factors for obesity is higher among the females.

REFERENCES


ACKNOWLEDGEMENT

International Atomic Energy Agency

Federal University of Agriculture, Abeokuta

International Symposium on Understanding the Double Burden of Malnutrition for Effective Interventions Vienna, Austria from 10-13 December, 2018. Vienna, Austria
INTRODUCTION
Cardiovascular diseases (CVDs) are the largest contributor to global deaths compared to other causes and it is anticipated to continue to dominate mortality trends in the future (WHO, 2016; Lu et al, 2016). Currently, CVD is the leading cause of death worldwide, accounting for 31% global death and 37% deaths in developing countries (WHO, 2016). The risk of CVD is increasing among younger age groups and there are few studies conducted on the risk factors of CVDs and their implication among this population group. This study assessed the behavioural risk factors for cardiovascular diseases and nutritional anthropometry of students in public tertiary institutions in Abeokuta.

METHODS
A descriptive and cross-sectional study design was adopted. A total of 350 respondents were recruited for this study using a stratified random sampling. Data on socio-economic characteristics and behavioural risk factors (smoking, alcohol consumption and physical activity status) of respondents were collected using a semi-structured questionnaire. Dietary habit was assessed using a validated structured questionnaire, scored and classified as poor (<54%), fair (55-69%), good (70-84%), excellent (85 – 100%) dietary habit while nutritional anthropometry (body weight, height, waist and hip circumferences) were measured using standard procedures. Body mass index (BMI), waist-to-hip (WHR) and waist-to-height ratios (WHtr) were calculated. Abdominal obesity (AO) was assessed using WHR. BMI-for-age of respondents below age twenty was analysed using WHO anthropo-plus. Data were analysed for descriptive statistics and Chi-square was used to test for association among variables using statistical package for social science, version 20.

RESULTS

Table 1: Socio-economic data and Behavioural risk factors among respondents

<table>
<thead>
<tr>
<th>Variables</th>
<th>F</th>
<th>%</th>
<th>Variables</th>
<th>F</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td>Number of cigarette’s stick smoked per day (N=17)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>130</td>
<td>37.1</td>
<td>One</td>
<td>5</td>
<td>29.4</td>
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<tr>
<td>Female</td>
<td>220</td>
<td>62.9</td>
<td>Two</td>
<td>8</td>
<td>47.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Three</td>
<td>4</td>
<td>23.5</td>
</tr>
<tr>
<td>Age range (N=450)</td>
<td></td>
<td></td>
<td>Alcohol consumption status (N=350)</td>
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<tr>
<td>15-19 years</td>
<td>38</td>
<td>10.9</td>
<td>Current consumers</td>
<td>143</td>
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<tr>
<td>20-24 years</td>
<td>230</td>
<td>65.7</td>
<td>Non-consumers</td>
<td>207</td>
<td>59.1</td>
</tr>
<tr>
<td>25-29 years</td>
<td>80</td>
<td>22.9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimated monthly stipend (N=350)</td>
<td></td>
<td></td>
<td>Bottles of alcohol consumed per day (N=350)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;40k</td>
<td>59</td>
<td>16.9</td>
<td>None</td>
<td>207</td>
<td>59.1</td>
</tr>
<tr>
<td>50-10k</td>
<td>141</td>
<td>40.3</td>
<td>One</td>
<td>60</td>
<td>17.2</td>
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<tr>
<td>10.1k-20k</td>
<td>111</td>
<td>31.7</td>
<td>Two</td>
<td>29</td>
<td>8.3</td>
</tr>
<tr>
<td>&lt;20,000</td>
<td>39</td>
<td>11.2</td>
<td>Three or more</td>
<td>54</td>
<td>15.4</td>
</tr>
</tbody>
</table>

Figure 1: Body mass index of the respondents

Figure 2: Abdominal Obesity among respondents

Figure 3: Waist Circumference of the respondents

Figure 4: Waist-to-hip ratio of the respondents

Mean Anthropometric Status of the respondents
The mean weight was 60.3kg and 57.2kg, average height was 160cm and 163cm, average WC was 76.0cm and 74.0cm while average hip circumference was 86.2cm and 88.1cm respectively for male and female respondents.

Association of socio-economic characteristics, behavioural risk factors and nutritional anthropometry of the respondents
Respondents’ monthly stipend was significantly associated with BMI (P=0.000), WC (P=0.006), WHR (P=0.000), AO (P=0.009) and dietary habit (P=0.020). Both smoking and number of cigarettes smoked daily had no significant association with nutritional anthropometry (P>0.05). Alcohol consumption was significantly associated with BMI (P=0.000) and AO (P=0.005) and number of bottles of alcohol consumed was significantly associated with dietary habit (P=0.008), BMI (P=0.000), WC (P=0.000), WHR (P=0.000) and AO (P=0.000). Physical activity was significantly associated with BMI (P=0.001) and duration of physical activity was significantly associated with BMI (P=0.00), WC (P<0.001), WHR (P=0.005). Dietary habit was significantly associated with WHR (P=0.042) and AO (P=0.040).

CONCLUSIONS
Undernutrition and overnutrition co-exist among the respondents. Socio-economic and behavioural risk factors significantly contribute to overweight, general obesity and abdominal obesity among respondents. Respondents are at increased risk cardiovascular diseases and many other non-communicable diseases.

REFERENCES
Obesity pattern in the middle-class population of an urban area of Dhaka city

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2Former Principal Scientific Officer, IEDCR,
3Former Medical Officer, IEDCR,
4Consultant, Infectious Disease Division, icddrb, Bangladesh; Former Director, IEDCR

Background
Obesity is a growing issue in urban middle class population. No prior population-based data on obesity are available for Dhaka, Bangladesh.

Objective
General: To estimate the qualitative pattern of obesity among adults aged 25 to 64 yrs from a selected area of Dhaka, Bangladesh.
Specific:
• To measure the anthropometry of the selected study population
• To measure the biochemical parameters related to obesity of the selected study population
• To relate epidemiological factors with the pattern of obesity

Methods
The study was conducted in Dhaka, Bangladesh, in an area representative of a broad range of age, gender, economic and demographic characteristics. Distributions of Body Mass Index (BMI) were determined for adults aged 25-64 yrs. The sample size was 2037, comprising at least 250 from each age group and sex. Standard data collection instruments were used as per the WHO STEPs guidelines. Biochemical testing was conducted at the national-level Institute of Epidemiology, Disease Control & Research (IEDCR) laboratory. Obesity was determined using a standard BMI cut-off of 30.

Results
Obesity among males was measured as 25-34 yrs, 12.89%, 35-44 yrs, 19.09%; 45-54 yrs, 21.36%, and 55-64 yrs, 22.05%. Among females 25-34 yrs, 15.98%, 35-44 yrs, 22.75%, 45-54 yrs, 21.96%, and 55-64 yrs, 20.59%. Mean BMI of male respondents were 33.63 (31.89-35.37), and that of female 36.41 (34.21-36.41). Among both sexes 78.34% was suffering from obesity.

- Daily serving of fruit was 0.75 (0.72-0.78)
- Vegetables was 1.66 (1.63-1.77)
- 10.54% of males performed heavy work for at least 10 minutes a day
- 16.57% females did the same
- More than half of the study population takes additional salt with meal
- Systolic blood pressure ≥ 140mmHg in both sexes (%)
- Systolic blood pressure ≥ 140mmHg was 6.40% in males and 8.43% in females
- Diastolic pressure ≥ 90 mmHg was 13.68% and 12.94% respectively
- Among both sexes, 18.18% had fasting blood sugar ≥ 7 mmol/L; 5.84% had Cholesterol > 6.50 mmol/L.

Conclusion
The urban middle class of Bangladesh are at risk for diseases resulting from obesity. Age-specific obesity rates were comparable across gender, with increases by age group. In the highest age group, more than 20% of the population were obese. This likely correlates with decreasing physical activity and less consumption of fruits and vegetables. There remains a need for targeted interventions for this population.

Acknowledgement
Special thanks
• All respondents in the study
• Dr Ahmad Raihan Sharif, MO, IEDCR

Contact information
Dr M Mushtuq Husain, Coordinator, Coordination and Support Centre, DGHS, TB Gate, Dhaka 1212, Bangladesh E-mail: mushtuq@dr.com
Investigating the risk factors for low physical activity levels in preschool-aged children in a densely populated urban community in Bangladesh

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2 Centre for Global Child Health, The Hospital for Sick Children, Toronto, Canada
3 International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b), Dhaka, Bangladesh
4 Faculty of Kinesiology and Physical Education, The University of Toronto, Toronto, Canada
5 Division of Paediatrics Medicine, Department of Paediatrics, The Hospital for Sick Children, Toronto, Canada

INTRODUCTION

• The co-existence of under- and over-nutrition is predicted to become a major public health concern in low- and middle-income countries across all income classes in the next decade 1,2.
• Physical activity (PA) is a known determinant of health, promoting healthy growth and development, and decreasing risk of non-communicable diseases associated with overweight and obesity 3,4.
• The high population density in urban Bangladesh may not facilitate an adequate environment for PA in the early years.
• Evidence shows that iron-deficiency anaemia is a risk factor of low PA levels 5-7.

METHODS

• Cross-sectional, observational study of 65 preschool-aged children (34-38 months) in Dhaka, Bangladesh.
  • ActiGraph® GT3X accelerometers worn on the right hip for 7-14 days to objectively measure PA.
  • Only participants with ≥3 days of ≥10 hours of device wear time included in analyses 8,9.
• Accelerometry data were analyzed using the ActiLife® software to obtain average daily activity counts (per 15-second time period) in the vertical axis (Aix Y); cut-points established by Trost et al. 10 were used to obtain average time spent sedentary, lightly active and moderately-to-vigorously active.
• Available household area (m²) was measured using a laser measurement device, excluding the area taken up by obstructive furniture; open stairwells without railings were visually assessed and confirmed with photographs; play items were assessed without categorized using adapted validated tools 11,12.
• Blood samples were collected via finger prick; a HemoCue® device evaluated hb (g/L); anemia was identified as a hb <110 g/L.
• Socioeconomic factors (e.g., parental education, household food security status) and anthropometric measures (e.g., height, weight) were collected.
• Linear mixed models with random effects were used to account for clustering due to multiple PA observations at the child level.

RESULTS

<table>
<thead>
<tr>
<th>Table 1. Demographic characteristics of Bangladesh preschoolers in the study cohort</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Enrolled participants, n</strong></td>
</tr>
<tr>
<td><strong>Preschooler characteristics</strong></td>
</tr>
<tr>
<td>Age (months), median (min, max)</td>
</tr>
<tr>
<td>Male, n (%)</td>
</tr>
<tr>
<td>Height-for-age z-score 1, mean ± SD</td>
</tr>
<tr>
<td>Weight-for-age z-score 2, mean ± SD</td>
</tr>
<tr>
<td>BMI-for-age z-score 3, mean ± SD</td>
</tr>
<tr>
<td>Anemia (hb &lt;110 g/L), n (%)</td>
</tr>
<tr>
<td><strong>Maternal characteristics</strong></td>
</tr>
<tr>
<td>Level of education, n (%)</td>
</tr>
<tr>
<td>No schooling</td>
</tr>
<tr>
<td>Primary incomplete</td>
</tr>
<tr>
<td>Primary complete</td>
</tr>
<tr>
<td>Secondary incomplete</td>
</tr>
<tr>
<td>Secondary complete or higher</td>
</tr>
<tr>
<td>BMI (kg/m²) category, n (%)</td>
</tr>
<tr>
<td>Normal weight (18.5-24.9)</td>
</tr>
<tr>
<td>Overweight (25.0-29.9)</td>
</tr>
<tr>
<td>Obesity (&gt;30.0)</td>
</tr>
<tr>
<td><strong>Household characteristics</strong></td>
</tr>
<tr>
<td>Food security status, n (%)</td>
</tr>
<tr>
<td>Severely food insecure</td>
</tr>
<tr>
<td>Moderately food insecure</td>
</tr>
<tr>
<td>Food secure</td>
</tr>
</tbody>
</table>

• Three participants (5%) were classified as overweight (according to International Obesity Task Force cut-offs).
• Of the 64 preschoolers who provided a blood sample, 23 (36%) were identified as anemic (hb <110 g/L), one of which was also classified as overweight.
• On average, the preschoolers wore the device for 13h 24min ± 2min/day.
• All children had a minimum of 3 days of valid wear length, a median of 7 days, and a maximum of 10 days.

<table>
<thead>
<tr>
<th>Table 2. Average time the sample of Bangladesh preschoolers spent sedentary and in each activity level</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sedentary</strong></td>
</tr>
<tr>
<td>Hours, min, ±SD</td>
</tr>
<tr>
<td>% Daily wear time</td>
</tr>
</tbody>
</table>

• Sample’s average available indoor area was 18 m², with a minimum of 5 m² and maximum of 50 m².
• Of the 65 households that had a staircase, 30 (58%) did not have railings.
• 33 participants (51%) had access to at least one gross motor play item in the home.
• Weak association between available indoor area and preschooler PA level in the unadjusted model; however, this was attenuated after adjustment (Figure 2).

CONCLUSIONS & LIMITATIONS

• Weak association found between available indoor area and preschooler PA levels in the unadjusted model; effect sizes may be too small to have clinical relevance.
• No association between presence of open stairwells, presence of gross-motor facilitating items, or hb and average daily preschooler PA level.
• Due to study recruitment being from a larger parent trial, the participants included may be a select group of interested and cooperative individuals; therefore the results may be limited to the study population.
• High compliance to wearing the accelerometers indicates that there may be opportunities for future physical activity and sleep hygiene research within this population.
• The substantial day-to-day variability in PA within children establishes that there are opportunities to increase average PA in all children.

REFERENCES


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STUDY OBJECTIVES

Our primary aim was to describe the PA levels of 65 preschoolers in Dhaka, Bangladesh.

We also aimed to estimate the associations between preschooler PA levels and:
  (a) Characteristics of the built environment of the home
    (i) Available indoor area of the household (m²)
    (ii) Safety characteristics, specifically the presence of open stairwells
  (b) Presence of gross motor-facilitating play items in the household