Gender difference in MET score and waist to hip ratio in young adults

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Abstract
Objectives: As per WHO, physical inactivity is one of the major risk factors for non communicable diseases. Physical activity can be easily and conveniently measured in terms of Metabolic Equivalent Task (MET) score. Present study was undertaken to observe gender differences in physical activity of young adults and to correlate it with waist to hip ratio.

Methods: It was a cross sectional observational study including 224 (94 males and 130 females) medical students aged between 18-25 years. In all participants MET score was calculated using IPAQ and WHR was measured.

Results: It was observed that more males were more physically active than females. Also, males show statistically significant higher MET score than females (< 0.0001). WHR was negatively correlated with MET in both males and females though it was not statistically significant.

Conclusion: It was observed that there exists a statistically significant gender difference in MET score. Hence, in planning strategies to enhance physical activity gender may be considered.

Keywords: Physical activity, IPAQ, MET score, WHR.

1. Introduction
Physical inactivity has been identified as one of the leading preventable causes of death and inverse linear relationship exists between volume of physical activity and mortality due to cardiovascular diseases, diabetes, colon and breast cancer and depression. Overall, it is estimated that lack of physical activity causes 1.9 million deaths globally.

Physical activity can be measured by administering IPAQ (International Physical Activity Questionnaire). Metabolic Equivalent Task (MET) is calculated by IPAQ evaluation which is one of the easiest methods for the recording of intensity of a physical activity. Waist to hip ratio (WHR) is a widely used indicator for measurement of central obesity.

Effective promotion of physical activity remains a key strategy in achieving a mass shift in activity levels. This is the need of the hour in young adults in order to become healthy individuals. Observation of gender difference in physical activity may change the plan of strategy for promotion of physical activity in young adults.

Therefore, this study was planned to find out gender differences in physical activity status using MET score in young adults and to correlate it with Waist to hip ratio.

2. Material and Methods
This study was conducted on the medical students studying MBBS course in medical college. It was a cross sectional observational study. Institutional ethics committee approval was obtained. 224 (94 males and 130 females) medical students aged between 18-25 years took part in the study.

Detailed history of physical activity was taken using IPAQ (International Physical Activity Questionnaire) so as to find out the type and quality of physical activity they were engaged in. In IPAQ (short) questionnaire, information was asked about three specific types of activities such as simple walking, moderate-intensity activities like brisk walk or regular sport and vigorous-intensity activities like jogging or gym. Metabolic Equivalent Task (MET) was calculated by IPAQ evaluation as follows:

\[
\text{Computation of MET} = \text{walking } + \text{moderate} + \text{vigorous}
\]

<table>
<thead>
<tr>
<th>Category and Score</th>
<th>MET-minutes/week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1 (Low)</td>
<td>&lt;600 MET-minutes/week</td>
</tr>
<tr>
<td>Category 2 (Moderate)</td>
<td>≥ 600 to &lt;3000 MET-minutes/week</td>
</tr>
<tr>
<td>Category 3 (High)</td>
<td>≥3000 MET-minutes/week</td>
</tr>
</tbody>
</table>

2.3 Anthropometric measurements
For waist to hip ratio (WHR), waist circumference (in cm) was measured at a point mid-way between the lower rib and iliac crest with the measuring tape centrally positioned 1cm below the umbilicus. Hip circumference was measured (in cm) over light clothing at the widest girth of the hip. For waist and hip circumferences readings were made at each site on a horizontal plane without compression of the skin.
Measurements were taken at the end of a normal expiration. WHR was calculated by dividing waist circumference by hip circumference. WHR of 0.9 was considered normal for males and 0.8 for females.

2.4 Statistical methods

The data analysis was done using the Statistical Package for Social Sciences version 10 (SPSS Inc, Chicago, IL, USA). For parameters recorded mean, standard deviation, t test and correlation coefficient were calculated. p value of ≤0.05 was considered as statistically significant.

3. Results

<table>
<thead>
<tr>
<th>Category and Score</th>
<th>MET-minutes/week</th>
<th>Male (n=94)</th>
<th>Female (n=130)</th>
<th>No of Subjects</th>
<th>%</th>
<th>No of Subjects</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1 (Low)</td>
<td>&lt; 600 MET-minutes/week</td>
<td>13</td>
<td>14</td>
<td>45</td>
<td>35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category 2 (Moderate)</td>
<td>≥ 600 MET-minutes/week</td>
<td>60</td>
<td>64</td>
<td>79</td>
<td>60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category 3 (High)</td>
<td>≥3000 MET-minutes/week</td>
<td>21</td>
<td>22</td>
<td>6</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total subjects</td>
<td></td>
<td>94</td>
<td>100</td>
<td>130</td>
<td>100</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2 shows distribution of males & females as per categorical score for IPAQ calculated from MET score.

4. Discussion

Table 2 shows that, males (86%) were more physically active than females (65%). In a study by Tanu Anand et al⁷ they found the attitude of the participants toward the physical activity was favourable, yet only one-third (32.3%) subjects adhered to the recommended guidelines. Boys (39.8%) were found to be significantly more active than girls (20.6%).

Table 3 shows statistically significant difference in MET score of males and females. Similar results were observed by Bengoechea et al⁸. Also, results suggest the possibility of differential interventions to increase physical activity based on factors associated with gender. Study also suggests that females were more concerned than males about safety of walking at night.

Table 4 shows negative correlation between MET score with WHR in males and females. But the correlation was not statistically significant in both the groups.

5. Conclusion

Study concludes that there is statistically significant difference in physical activity in males and females. Also, WHR shows negative association with MET though it was not statistically significant.

In planning strategies to promote physical activity gender differences may be considered.

References