GENDER DIFFERENCES IN FASTING SERUM LEPTIN LEVEL AMONG MALAYSIAN POPULATION
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OBJECTIVE

- Serum leptin increases with progressive obesity in both genders. However, for any given measure of obesity, leptin levels are higher in women than men.
- This research is to study the gender differences of the fasting plasma leptin concentration in Malaysian people from east coast Malaysia with a background knowledge of ethnic variation¹.
- So that can establish a baseline for future research, and to consolidate our knowledge regarding leptin and its correlation with fertility issues and endocrine disorders.
METHOD

This was a cross sectional study included 100 consented Malaysian people (50 male and female) were recruited from Kulliyyah of dentistry, International Islamic University Malaysia and medical department, Hospital Tengku Ampuan Afzan, Kuantan, those with endocrine, diabetic illness, abnormal BMI, chronic illness and any patient on hormonal treatment were excluded from the study. Individual venous blood was taken between 0800–0900 am after an overnight fasting. Determination of serum leptin was done by enzyme linked immune-sorbent assay (ELISA) and measured in ng/ml. Data were analyzed using SPSS 18.
RESULT

- Mean age were, 34.5±6.4 and 31.2± 4.3 for male and female respectively, there was no significant difference between the age of both groups. Mean body mass index for male was 23 ± 1.91 Kg / m2 which were not significantly different from the female BMI which was 22 ± 0.87 Kg / m2.

- data were analysed by nonparametric Mann-Whitney U-test, found that serum leptin levels in females are significantly higher (= 6.0, p<0.001) than those in males, 7.29 ng/ml vs 3.94 ng/ml respectively. Correlation coefficient of serum leptin level with female body mass index (kg/m²) is 0.693 in a value of <.0001
### Leptin

<table>
<thead>
<tr>
<th>Gender</th>
<th>Sample size (N)</th>
<th>Mean</th>
<th>Standard deviation (SD)</th>
<th>Standard error of the mean (SEM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>50</td>
<td>3.94*</td>
<td>±2.31</td>
<td>±0.33</td>
</tr>
<tr>
<td>Female</td>
<td>50</td>
<td>7.29</td>
<td>±2.46</td>
<td>±0.35</td>
</tr>
</tbody>
</table>

Tab 1: serum leptin and gender

### Leptin

<table>
<thead>
<tr>
<th>Test</th>
<th>Statistic</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mann-Whitney U</td>
<td>372.000</td>
<td>.000</td>
</tr>
<tr>
<td>Wilcoxon W</td>
<td>1649.000</td>
<td>.000</td>
</tr>
<tr>
<td>Z</td>
<td>-6.054</td>
<td>.000</td>
</tr>
<tr>
<td>Asymp. Sig. (2-tailed)</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>Exact Sig. (2-tailed)</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>Exact Sig. (1-tailed)</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>Point Probability</td>
<td>.000</td>
<td></td>
</tr>
</tbody>
</table>

Tab 2: Mann-Whitney test
Fig 1: serum leptin level with gender
Our study showed significantly higher serum leptin level in women compared to man of the same BMI which is agree with results of many studies\textsuperscript{2,3,4}.

It is known that the percentage of body fat differs between men and women. Adult women have 22-26\% fat weight and men have 13-16\%\textsuperscript{5}.

Estrogen is responsible for the greater amounts of body weight fats in women and testosterone is responsible for the higher lean weight mass in men\textsuperscript{6}.

Nicklas BJ et al\textsuperscript{2} found that, despite serum leptin is correlate well with fat mass in both gender, but leptin is higher by three fold in women compared to men of a given fat mass.

A novel part in a future study is to measure the fat and lean mass and to find if there is another possible hormonal factors play part in this significant difference, and a comparison study of fasting serum leptin between Malaysian and chinese population living in Malaysia to find out is it the ethnic origin with the genetic influence or is it the environmental factors that play the main role?
CONCLUSION

- Serum leptin is significantly affected by gender, with women having significantly higher serum leptin levels than men. Further study is required to measure the fat mass and lean mass in addition to serum leptin in both genders to find out hidden factors influencing this difference.
- Comparison study of serum leptin is required between Malaysian and Chinese populations settled in Malaysia as it is the second highest race in Malaysia, to study the effect of genetic and environmental factors on the ethnic origin and its relation with serum leptin.
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3. Adele Kennedy, Thomas W. Gettys, Patricia Watson, The Metabolic Significance of Leptin in Humans: Gender-Based Differences in Relationship to Adiposity, Insulin Sensitivity, and Energy Expenditure. doi: 10.1210/jc.82.4.1293 The Journal of Clinical Endocrinology & Metabolism, April 1, 1997 vol. 82 no. 4 1293-1300