Correlation of Anthropometric and Lipid Markers in GMC Jammu Medical Students

Soobia Rashid¹, Gurmeet Kaur², Gazala Abbas³, Retash Shan⁴, Fiza Shahid⁵, Sheetal Kotwal⁶, Mamta Sharma⁷

¹,⁵-⁷Third year PG student, ²Associate Professor, Department of Physiology, ³Lecturer, Department of Biochemistry, ⁴Senior Resident, Department of Physiology, GMC Jammu.

How to cite this article: Sonavane Vikram, Sankalecha S.C, Khairnar Karan et. al. Retrospective Comparative Study of Analgesia and Complications between Particulate (Triamcinolone) v/s Non-Particulate (Dexamethasone) Steroid in Transforaminal Epidural Injection at Tertiary care Hospital. Indian Journal of Public Health Research and Development 2023;14(3).

Abstract

Background: The prevalence of cardiovascular diseases are likely to rise as a result of lifestyle-related risk factors. Due to their hectic schedules and lack of time for extracurricular activities, medical students were chosen for the study because they are more likely than other populations to develop lifestyle illnesses.

Objectives: To explore the connection of anthropometric and biochemical lipid profile markers to assess obesity risk in medical students.

Materials and methods: 180 MBBS students from Government Medical College, Jammu, participated in the study. The body mass index (BMI) was calculated using anthropometric measurements of body weight (BW), body height (BH), together with waist circumference (WC), and hip circumference (HC), as well as the waist-to-hip ratio (W/H ratio). Using blood samples, a lipid profile was calculated.

Results: According to the survey, 16.11% of Group 2 students were overweight, and 3.89 % were obese. Group 1 consisted of 80% normal subjects. Between two BMI groups and Lipid profile, a statistically significant difference was discovered. There was a negative correlation between Waist circumference and HDL cholesterol. The BMI was negatively correlated with HDL-cholesterol and positively correlated with triglyceride.

Conclusion: The prevalence of cardiovascular risk factors such as obesity, hypertension, and elevated triglycerides is high among medical students. Therefore, it may be deduced that healthy lifestyles should be adopted at a young age because medical students are the future medical professionals.

Keywords: Anthropometric measures, Lipid profile, Medical students, Obesity.

Introduction

There has been an upsurge in lifestyle problems in India as a result of increased urbanization and the effects of Westernization. Teenagers and younger age groups are increasingly affected by these diseases. Physical inactivity, technological stress, increased computer usage, and rising youth junk food intake have all contributed to an alarming rise in lifestyle problems. Different metabolic illnesses as hypertension, diabetes, hypercholesterolemia, overweight, and obesity are brought on by lifestyle problem. Anthropometric measurements, such as body mass index (BMI), waist circumference (WC), hip circumference (HC), and waist-to-hip ratio (WHR), have the advantage of being simple to measure and
reproducible in daily clinical practice, especially in developing countries such as India. Although the BMI indicates lean mass and fat mass, it does not reveal the distribution of fat mass. As replacements to BMI, additional anthropometric indices such as WC, HC, and WHR have been utilized. The WC is becoming recognized as the most accurate anthropometric measure of abdominal fat and metabolic risk. While some prior research published globally claim there are no such statistically significant relationships between the aforementioned anthropometric factors and lipid markers, others disagree. Numerous Indian research have linked anthropometric measurements to lipid profiles in type 2 diabetes patients as well as hypothyroid ones.

Due to their hectic schedules and lack of time for extracurricular activities, medical students were chosen for the study because they are more likely than other populations to develop lifestyle illnesses.

This study was conducted to examine the link between anthropometric and biochemical parameters of lipid profile in order to determine the risk of obesity among young medical undergraduates.

Materials and Methods

Type of study: A Cross-sectional research.

Study setting: Physiology department of GMC Jammu.

Duration of study: 3 months w.e.f. June to August 2022.

Sample Size: 180 MBBS students (males & females) pursuing first phase MBBS and BDS in the academic year 2021-22 were selected as subjects. The participants were provided with a concise summary of the study and methodology, and their informed consent was acquired. This research was authorized by the Institutional ethics committee (IEC) of GMC Jammu (IEC/GMCJ/2022/1076 dated May 23, 2022).

Inclusion Criteria: Participants between the ages of 18 and 25 who gave their consent and appeared to have a healthy cardio-metabolic disposition were included in the study.

Exclusion Criteria: Diabetes mellitus, cardiovascular disease, cancer, liver or kidney disease, or the use of lipid-lowering medications disqualified participants from the study.

Using standard protocols, anthropometric measurements such as height (Ht) in centimeters, weight (Wt) in kilograms, waist circumference (WC), and hip circumference (HC) were taken on the same morning that blood samples were collected. BMI and WHR have been determined. The BMI was computed by dividing weight in kilogram by height in meter squared. Those with a BMI of less than 25 were considered healthy. Those with a BMI between 25.0-29.9 kg/m$^2$ were categorized as overweight, and those with a BMI exceeding 30 kg/m$^2$ were categorized as obese. In the supine posture, the hip circumference is measured at the widest point of the hips, whereas the waist circumference is measured at the umbilicus. The WHR was computed by dividing WC by HC. Version 26.0 of SPSS was utilized for statistical analysis. Comparing the lipid profiles of two BMI groups using the unpaired t-test. A p value less than 0.05 was considered statistically significant. The Pearson correlation coefficient between anthropometric variables and each lipid parameter was determined and displayed.

Observation and Results

In present study, 180 medical students were divided into two groups depending upon their BMI less than 25 as Group 1 & BMI equal or more than 25 as Group 2. 144 (80%) students were found in Group 1 whereas 36 (20%) students were found in Group 2. Out of 36 students 29 (16.11%) & 7 (3.89%) were found to be overweight & obese respectively. The analyzed data is presented in table 1-2.

<table>
<thead>
<tr>
<th>BMI groups</th>
<th>TC</th>
<th>TG</th>
<th>LDL</th>
<th>VLDL</th>
<th>HDL</th>
<th>LDL/HDL</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI&lt;25</td>
<td>175.5</td>
<td>137.0</td>
<td>97.3</td>
<td>24.6</td>
<td>48.48</td>
<td>2.01</td>
</tr>
<tr>
<td>BMI ≥25</td>
<td>189.23</td>
<td>188.7</td>
<td>119.3</td>
<td>32.6</td>
<td>39.2</td>
<td>3.04</td>
</tr>
<tr>
<td>P-value</td>
<td>0.047</td>
<td>0.029</td>
<td>0.034</td>
<td>0.048</td>
<td>0.04</td>
<td>0.045</td>
</tr>
</tbody>
</table>

Table 1: Comparison of two BMI groups and lipid profile (mean levels)
Table 2: Correlation of anthropometric variables with lipid profile

<table>
<thead>
<tr>
<th>Anthropometric Variables</th>
<th>TC</th>
<th>TG</th>
<th>LDL</th>
<th>VLDL</th>
<th>HDL</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI</td>
<td>0.305</td>
<td>0.387</td>
<td>0.369</td>
<td>0.394</td>
<td>-0.340</td>
</tr>
<tr>
<td>WC</td>
<td>0.325</td>
<td>0.445*</td>
<td>0.350</td>
<td>0.510</td>
<td>-0.667*</td>
</tr>
<tr>
<td>WHR</td>
<td>0.322</td>
<td>0.310</td>
<td>0.150</td>
<td>0.180</td>
<td>-0.340*</td>
</tr>
</tbody>
</table>

In the present study, a significant difference was observed between two BMI groups and lipid markers. BMI was most strongly linked with Total cholesterol, TG, LDL, and VLDL (positively) and HDL (negatively) among the anthropometric variables.

**Discussion**

Obesity refers to the condition of being overweight. It can be characterized as an excess of body fat that significantly impairs a person’s health. Obesity is usually associated with hypertension, atherosclerotic heart disease, diabetes, arthritis, etc. Alterations in leptin, brown fat, insulin secretion, hypothalamic food intake center and physical activity all may cause obesity. Anthropometric measurements are frequently employed in studies to evaluate a population’s susceptibility to non-communicable diseases. Dyslipidemia has long been related to a number of noncommunicable disorders, including diabetes, hypertension, and other CVDs.

The current study's purpose is to investigate the relationship between anthropometric characteristics and lipid parameters in order to determine which anthropometric markers can be used consistently as the best predictor of an altered lipid profile in clinical practice and epidemiological studies. In addition to measures of abdominal fat distribution such as waist circumference (WC) or waist-to-hip ratio (WHR), the World Health Organization considers BMI measurement to be a universal criterion for overweight (more than 25 BMI) and obesity (more than 30 BMI). Waist circumference and body mass index had a significant positive association with blood pressure, according to a study conducted by Kurian S et al., and Deshmukh PR et al. Gupta V et al., observed a substantial positive association between anthropometric measures in their study (BMI, WC, WHR). Several anthropometric variables, including waist circumference, waist-to-hip ratio, and body mass index (BMI), have also been demonstrated to correctly predict cardiovascular risk. Prashant V et al., found a connection between total cholesterol, triglycerides, and LDL cholesterol, as well as BMI, waist-hip ratio, and waist circumference, which lends support to our findings.

**Limitations of the study**

The gender effect on anthropometric variables and lipid profile was not examined.

**Conclusion**

Even though it is difficult to evaluate the available data definitively, it is possible to draw a number of accurate conclusions. Although not all studied anthropometric parameters are associated with the lipid condition of the body, the waist circumference is one of the most straightforward and accurate indicators of the lipid profile. In a developing nation such as India, where it is still challenging to analyze cardiovascular risk indicators such as body fat saturation and lipid profile in the rural population, WC may be used as a supplement but not as a replacement.

**Conflict of Interest:** Nil

**Source of Funding:** Nil.

**Ethical Clearance:** Received.

**References**


