AN OBSERVATIONAL STUDY ON BODY COMPOSITION ANALYSIS AMONG FEMALE HEALTH CARE PROFESSIONAL STUDENTS

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ABSTRACT

Background: Recent pandemic has affected general health and quality of life among the population. It has disrupted many regular activities of life including sports, recreation and physical activity. Hence, to evaluate the optimal levels of percentage body fat, visceral fat percentage and skeletal muscle mass, this study has been chosen.

Objectives: To evaluate the percentage body fat, visceral fat percentage and skeletal muscle mass among health care professional students.

Methodology: An observational study of young female health care professional students of age group 20-25 years. 398 subjects were included in the study and body composition was done using portable body composition analyser.

Result: Among 398 subjects, 178 subjects were having high visceral fat percentage and 182 subjects were having high skeletal muscle mass.

Conclusion: Majority of (44.72%) subjects were having higher visceral fat percentage (45.72%) were having higher skeletal muscle mass.

Key words: BMI, obesity, physical activity, percentage body fat, visceral fat percentage, skeletal muscle mass.
INTRODUCTION

- Health care professionals maintain health in humans through the application of the principles and procedures of evidence based medicine and caring. They assess, diagnose, treat and prevent human illness and other physical and mental impairments in accordance with the need of population they serve.
- The recent pandemic has affected general health and quality of life among the people. It has disrupted many regular activities of life including sport, reactional activities and physical activity due to education as well as work in online mode among majority of the population.
- One of the important preventive aspect to maintain normal health is to keep body composition in optimal level. Body composition is the proportion of fat to nonfat mass is our body. Fat mass is the body fat existing in the body in healthy or excess amounts, nonfat mass includes muscle, water, bone tissue and organs.\(^1\)
- It reveals the parameters such as lean body mass, fat mass, fat free mass, visceral fat percentage, percentage body fat, skeletal muscle mass. It describes an individual healthy weight more accurately and provides a better glimpse into ones overall health rather than traditional methods such as body mass index (BMI).\(^1\)
- Many techniques are available for body composition assessment which range from simple indirect measures to more sophisticated direct volumetric measurements. Bioelectric impedance analysis (BIA) is a relatively simple, quick and non-invasive technique to measure body composition. It is based on the principle that electric current flows at different rates through the body depending upon its composition.\(^1\)
- In large epidemiologic studies simpler surrogate techniques such as BMI, waist hip ratio are frequently used instead of BIA to measure body fatness. However, these techniques other than BIA do not precisely characterize person by body composition so, the study has been done using BIA.(1)
- This study may be helpful in finding the prevalence of body composition parameters so that it can help in motivating those subjects with excess fat percentage and enlighten them about the physical activity.
NEED OF THE STUDY

• There is a lacunae that need to be fulfilled in regard to the analysis of body composition in female health care professional students.
• Hence this study has been taken up for analysis of body composition in female health care professional students.

AIM AND OBJECTIVES OF THE STUDY

AIM OF THE STUDY

• To determine the body composition among female healthcare professional students.

OBJECTIVES OF THE STUDY

• To evaluate the percentage body fat, skeletal muscle mass and visceral fat percentage by using body composition analyser.

MATERIALS AND METHODS

Materials used

• Portable body composition analyser:
• Stadiometer

METHODS

An observational study was conducted on 398 female health care professional students aged 18-25 years.
The subjects were selected according to their acceptance to participate in the test.
The students were initially explained about the objectives and methodology of the study.
Subjects were asked to follow the instructions before stepping on to the machine:

• Maintain normal fluid intake the day before and stand upright for atleast 5 minutes
• Remove all accessories like jewellery, watches.
• Warmup for atleast 20minutes in cold weather.
• Shouldn’t eat or exercise for atleast 3 hours.
• Shouldn’t consume alcohol or excess caffeine.
• Shouldn’t use lotion ointment on hands and feet.
Subjects were not to have practiced vigorous physical activity in last 12 hours and instructed to wear light clothing for the test. Subjects were able to decline participation at any time if they didn’t feel comfortable getting their measurements taken using the BIA method.

After obtaining written informed consent, individual’s demographic data such as age, gender and height was taken.

They would stand on the metal plates located at the bottom of the scale.

Ideally subjects should be measured in a fastened state and well hydrated when using BIA to produce the most accurate results.

Subjects were asked to clean their feet before stepping on to the machine in order to increase the conductivity in the tissues.

The subject stood on bare foot in the orthostatic position with neck and head in normal alignment and weight was measured.

Subjects were asked to grab the electrodes and maintain 90° of shoulder flexion, 15° of horizontal abduction with elbows in complete extension for a period of around 30-40 seconds during the test.

Once the test is completed the values of percentage body fat, skeletal muscle mass, visceral fat percentage will be displayed on the screen and these values will be noted down.

Source of data: COP, SPMC (W), Tirupati.

Study design: Observational study.

Sample size: Total number of samples 398.

Sampling design: Convenience sampling.

Study duration: 4 months (June-August 2022).

CRITERIA OF THE STUDY

INCLUSION CRITERIA

Age above 18 and below 25 years were included.

Only females were included.

EXCLUSION CRITERIA

Age below 18 and above 25 years were excluded.

Males were excluded.

STATISTICAL ANALYSIS AND RESULTS

The data was entered into Microsoft excel spread sheet, tabulated and subjected to statistical analysis using SPSS software 16.0 version.
Table 1: Body fat percentage among female subjects

<table>
<thead>
<tr>
<th>S.no</th>
<th>Number of subjects (Total:398)</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>307</td>
<td>Normal</td>
</tr>
<tr>
<td>2</td>
<td>57</td>
<td>High</td>
</tr>
<tr>
<td>3</td>
<td>34</td>
<td>Very high</td>
</tr>
</tbody>
</table>

Among 398 female subjects, 307 subjects (77.13%) were having normal body fat percentage, 57 subjects (14.32 %) were having high body fat percentage and 34 subjects (8.55 %) were having very high body fat percentage.

Figure 1: Graph showing body fat percent among female subjects
Table 2: Visceral fat percent among female subjects

<table>
<thead>
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<th>s.no.</th>
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<th>Range</th>
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<tbody>
<tr>
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<td>80</td>
<td>Normal</td>
</tr>
<tr>
<td>2</td>
<td>140</td>
<td>High</td>
</tr>
<tr>
<td>3</td>
<td>178</td>
<td>Very high</td>
</tr>
</tbody>
</table>

In this table 2, it depicts that (80 subjects) 20.1% of subjects were having normal visceral fat, (140 subjects) 35.17% of subjects were having high visceral fat percentage and (178 subjects) 44.72% of subjects were having very high visceral fat percentage.

Figure 2: Graph showing visceral fat percent among female subjects

Table 3: Skeletal muscle mass among female subjects

<table>
<thead>
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<th>S.no</th>
<th>Number of subjects (Total: 398)</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>Low</td>
</tr>
<tr>
<td>2</td>
<td>37</td>
<td>Normal</td>
</tr>
<tr>
<td>3</td>
<td>44</td>
<td>High</td>
</tr>
<tr>
<td>4</td>
<td>182</td>
<td>Very high</td>
</tr>
</tbody>
</table>
In this table 3, it depicts that (135 subjects) 33.9% were having lower skeletal muscle mass, (37 subjects) 9.29% were having normal skeletal muscle mass (44 subjects) 11% of subjects were having higher skeletal muscle mass and (182 subjects) 45.72% of subjects were having very high skeletal muscle mass.

**Figure 3: Graph showing skeletal muscle mass among female subjects**

DISCUSSION

In this study, table 1 shows that among 398 subjects, visceral fat percentage is very high in 178 subjects and table 2 shows that skeletal muscle mass is very high in 182 subjects. A study done by Syed Shahid Habib et.al, (2013) in Saudi adults that body composition analysis and estimation of physical fitness by scoring grades in Saudi Adults reported that poor fitness scoring was observed in adult population. The reasons of poor fitness scoring may be due to physical inactivity and high calorie intake. By calculating these parameters of body fat percentage, visceral fat percentage and skeletal muscle mass would encourage people to initiate an active lifestyle in their lives.

Another study Pantelis Theo Nikolaidis et.al, body mass index and body fat percentage are associated with decreased physical fitness in adolescent and adult female volleyball players (2013) they concluded that body fat percentage, BMI and physical fitness which in turn stresses the importance of weight control for sport performance, and the comparison between normal and overweight participants revealed differences in which normal participants scored better than those who are overweight.
Thus the use of BMI, body fat percentage was further recommended in volleyball players as a tool of overweight/obesity evaluation. The similar influence of BMI and body fat on physical fitness might be partially attributed to the strong correlation between BMI and body fat. It is reasonable to believe that volleyball players with high values of BMI and body fat will have lower scores in physical fitness.

Hence, emphasis has to be done on importance of physical activity and fitness levels among adult subjects by encouraging them to participate in sports activities. There is a need to improve interventions to promote the adoption and long term maintenance of physical activity which can lead to improved weight control and decreased abdominal adiposity. It appears that physical activity can be an important component for body weight regulation.

**CONCLUSION**

The present study was on evaluating the percentage body fat, visceral fat and skeletal muscle mass among female health care professionals. It concludes that in the majority of the subjects, body fat percentage were normal, 178 subjects were having high visceral fat percentage (44.72%) and 182 subjects were having high skeletal muscle mass (45.72%).

**REFERENCES**


