

Research Article



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HEALTH PARAMETERS IN COLLEGE-GOING INDIAN FEMALES

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ABSTRACT

Background: Physiological health indicators, such as height, weight, and BMI (body mass index), show the general growth of a population and are strongly associated with dietary patterns. Blood pressure and PEFR (Peak Expiratory Flow Rate) measurements aid in determining the health state associated with the illness.

Aim: The purpose of this study was to assess the physiological health indices and nutritional condition of Indian female college students.

Methods: 222 randomly chosen female college students, ages 18 to 22, were evaluated for the study. Handgrip strength, PEFR, respiration rate, body temperature, pulse rate, diastolic and systolic blood pressure, body mass index, weight, and height were measured in each female. Clinical examinations for anaemia and vitamin A deficiency were performed on all females. Dietary habits of these participants were also evaluated.

The mean BMI and PEFR of the study participants were 315.5 ± 61.04 l/min and 21.21 ± 3.92 kg/m², respectively. In comparison to the dominant hand, the non-dominant hand's mean handgrip strength was lower at 16.20 ± 3.98 kg and 18.38 ± 4.74 kg. The average height and weight were marginally higher than those seen in the normal ICMR statistics. A more nutrient-dense diet must be a part of the usual diet since Grade I goiter and anaemia were observed in 3.6% and 6.3% of cases, respectively. 33% of Indian female college students are underweight due to different dietary inadequacies, whereas almost half are of a healthy weight.

Conclusion: With frequent exercise, PEFR's low respiratory fitness might be addressed. To evaluate health trends and nutritional status across many geographic regions, further research is required.

Keywords: Blood pressure (BP), Body Mass Index (BMI), Peak Expiratory Flow Rate (PEFR), Handgrip strength, Indian females

INTRODUCTION

Anthropometric assessment is now the method used to evaluate body dimensions and composition in order to measure growth and nutritional health. This method, which compares development and nutritional status to a defined growth curve, is popular because it is easy to apply and inexpensive. The health state of a certain national population or section is shown by anthropometric statistics, especially height and weight, which are influenced by genetics and the environment.¹

Endocrine profiles and nutritional status have a major impact on growth patterns as determined by these quantifiable factors. Women are essential to society, but they are particularly vulnerable since they typically do not receive enough nourishment and medical treatment. In addition to guaranteeing healthy children and families, the nutritional and health condition of women is essential for enabling global economic growth.

Inadequate awareness and information, domestic abuse, lack of access to excellent healthcare, gender inequality, early pregnancy and marriage, poverty, malnutrition, and lack of nutritional facilities are some of the issues that impact women's health. In order to improve women's health and advance the welfare of society overall, it is imperative that these concerns be taken into consideration. 3- The current study was to evaluate the nutritional status, perform clinical evaluation, and evaluate physiological health indicators in college-bound Indian females in light of this new problem.

MATERIALS AND METHODS

The current study sought to evaluate the nutritional status, perform clinical evaluation, and evaluate physiological health indicators in Indian female college students. The research participants were drawn from the Institute's outpatient branch. Prior to their involvement, each subject gave their written and verbal informed consent.

The present study assessed 222 female college-going students who were selected randomly for the study. The exclusion criteria for the study were alcoholics, smokers, on treatment for any respiratory diseases/conditions, subjects with chest wheezing, persistent cough, chest surgeries or chest injuries, pneumonia, chronic bronchitis, or asthma history.

Female students between the ages of 19 and 22 were chosen at random to participate in the study. Handgrip strength, peak expiratory flow rate (PEFR), respiration rate, body temperature, pulse rate, diastolic and systolic blood pressure, body mass index (BMI), weight, and height were among the physiological and anthropometric measures tested. The study participants' eating habits were also evaluated.

A common weighing machine and stadiometer were used to measure the subjects' height and weight while they were barefoot and wearing light clothes. A regular sphygmomanometer and stethoscope were used to measure blood pressure. Wright's peak flow metre was used to measure PFER while the patient was standing with their nose clipped. The results were shown as BTPS (body temperature and pressure saturated with vapor).

Three consecutive tries were done following two practices, with a minimum of three to five minutes of rest in between. The greatest values were observed after two consecutive exhalations. Four By using a normal hand grip, body temperature was determined. dynamometer for both hands, dominant and non-dominant. Every girl in the particular age range had a clinical evaluation for anaemia, including symptoms like beta spots, and vitamin A insufficiency. Along with other iodine deficient conditions such squints and gait abnormalities, these people were evaluated for goiter. The WHO/ UNICEF/ ICCIDD recommendations were used while grading the goiter.⁵

Additionally, verbal data was gathered on the length and regularity of their menstrual cycle. Students' eating behaviours were also evaluated through dietary habits. Students often ate two meals per day. Food consumption information was collected for 14 meals over 7 days.

SPSS (Statistical Package for the Social Sciences) software version 24.0 (IBM Corp., Armonk, NY, USA) was used to statistically analyze the collected data. The student t-test, ANOVA (analysis of variance), and chi-square test were used to quantify descriptive measures. The findings were presented as percentages, frequency, and mean and standard deviation. There was a p-value of less than 0.05.

RESULT

The current study sought to evaluate the nutritional status, perform clinical evaluation, and evaluate physiological health indicators in Indian female college students. The study evaluated 222 randomly chosen female college students, ages 18 to 22.

The mean height of study subjects was 154.53 ± 5.05 cm, the mean weight was 50.77 ± 9.89 kg, and the mean BMI was 21.21 ± 3.92 kg/m². The mean pulse rate was 86.79 ± 13.81 beats/min. The SBP and DBP in the left hand were 105.65 ± 10.79 and 69.90 ± 8.92 mmHg, whereas the mean SBP and DBP in the right hand were 105.55 ± 10.03 and 70.00 ± 9.02 mmHg. They were 315.75 ± 61.04 L/min, 24.54 ± 7.17 /min, and 96.24 ± 1.70 °F, respectively, for mean body temperature, RR 9 respiratory rate, and PEFR. The dominant and non-dominant hands' respective hand grip strengths were 18.39 ± 4.74 kg and 16.21 ± 3.98 kg (Table 1).

Upon evaluating the PEFR distribution among the participants, it was observed that 47.7% (n=106) of the participants had a PEFR of less than 320 L/min, 52.3% (n=116) had a PEFR between 320 and 470 L/min, and none of the participants had a PEFR more than 470 L/min (Table 2).

Among the trial participants, there were no clinical evidence of hypomenorrhea, squint, gait abnormality, grade 2 goiter, or vitamin A insufficiency. However, Table 3 shows that anaemia, Grade 1 goiter, and menorrhagia were observed in 4.5% (n=10), 3.6% (n=8), and 6.3% (n=14) of the research participants, respectively.

When comparing the diastolic and systolic blood pressure of the study participants' right and left hands using Pearson's correlation, a substantial left-hand connection was seen in the left hand's systolic blood pressure as well as the diastolic and systolic blood pressure from the right hand. Significant correlations were seen between the right hand's DBP and SBP and left-hand DBP.

Additionally, a noteworthy correlation was seen between the SBP of the right hand and the SBP and DBP of the left hand. Significant relationships between BP and DBP in the left hand and DBP in the right hand were seen for DBP in the right hand (Table 4).

When it came to the overall amount of food consumed, 84% of it came from rice, 15.7% from wheat, and 72% from pulses. Intake of eggs was found to be greater than that of fish (22% and 20%, respectively). Just 2.38 percent of participants consumed red meat, while 12 percent consumed chicken. 41% of the individuals reported consuming solely vegetables, and they did not include any non-vegetarian foods in their main meal. Of all the meals, 29% of the individuals ate leafy veggies, with cucumbers being their favoured choice.

DISCUSSION

222 randomly chosen college-bound females between the ages of 18 and 22 were evaluated in this study. Study participants' average height was 154.53 ± 5.05 cm, their average weight was 50.77 ± 9.89 kg, and their average BMI was 21.21 ± 3.92 kg/m².

86.79 ± 13.81 beats per minute was the mean pulse rate. While the mean SBP and DBP in the right hand were 105.55 ± 10.03 and 70.00 ± 9.02 mmHg, the SBP and DBP in the left hand were 105.65 ± 10.79 and 69.90 ± 8.92 mmHg. The average body temperature, respiratory rate (RR), and PEFR were 315.75 ± 61.04 L/min, 24.54 ± 7.17 /min, and 96.24 ± 1.70 /min, respectively. Both dominant and non-dominant hands had hand grip strengths of 18.39 ± 4.74 kg and 16.21 ± 3.98 kg, respectively.

These findings were in line with earlier research by Ranu H et al. (2011) and Walankar P et al. (2016), who evaluated their subjects' nutritional health in college-bound girls with comparable demographics to the current study. According to the study results, 47.7% (n=106) of the study participants had a PEFR of less than 320 L/min. PEFR distribution was evaluated.

52.3% (n=116) of the study participants had a PEFR between 320 and 470 L/min, whereas none of the participants had a PEFR more than 470 L/min. These findings were in line with those of Massy-Westropp NM et al. (2011) and Bandyopadhyay A et al. (2007), whose authors likewise obtained PEFR results similar to the current study in their separate investigations.

Regarding the evaluation of the clinical results in the research participants, none of them had vitamin A insufficiency, hypomenorrhea, squint, gait abnormality, or grade 2 goiter. However, 4.5% (n=10), 3.6% (n=8), and 6.3% (n=14) of the trial participants had menorrhagia, Grade 1 goiter, and anaemia, respectively. These results were consistent with the findings of Ghosh J et al. (2011) and Mahajan D et al. (2010), who reported clinical findings among female college students that were similar to the findings of the current investigation.

Regarding the Pearson's correlation between the diastolic and systolic blood pressure in the study participants' right and left hands, it was also observed that there was a substantial link between the diastolic and systolic blood pressure from the right hand and the systolic blood pressure of the left hand. There was a strong association between the right hand's DBP and SBP and left-hand DBP. Furthermore, a noteworthy correlation was seen between the SBP of the right hand and the SBP and DBP of the left hand.

A strong association between DBP in the right hand and BP and DBP in the left hand was observed. These findings were consistent with those of Gupta A et al. (2012) and Nuttall FQ12 (2015), whose authors similarly observed a similar association to the current study in their separate investigations.

The study's findings also demonstrated that, of the total meals consumed, 84% came from rice, 15.7% from wheat, and 72% from pulses. The consumption of eggs was found to be greater than that of fish, at 22% and 20%, respectively. Just 2.38 percent of participants ate red meat, while 12 percent ate chicken.

41% of participants reported consuming solely vegetables, and they did not include any non-vegetarian foods in their main meal. Of all meals, 29% of participants ate leafy veggies, with cucumbers being their favored food. These results were consistent with those of Pandey S et al. (2014) and Harshala R15, whose meal intake statistics were similar to the current study's findings.

CONCLUSIONS

Taking into account its limitations, the current study finds that 33% of Indian female college students are underweight

due to different nutritional inadequacies, whereas almost half of them are of a healthy weight. Regular exercise might help PEFR improve their low respiratory fitness. To evaluate nutritional status and health trends across different regions, further research is required.

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Parameters	Mean ± S. D
Handgrip strength (dominant) Kg	18.39±4.74
Handgrip strength (non-dominant) Kg	16.21±3.98
PEFR (l/min)	315.75±61.04
RR (per min)	24.54±7.17
Body temperature (°F)	96.24±1.70
DBP-RH (mmHg)	70.00±9.02
SBP-RH (mmHg)	105.55±10.03
DBP-LH (mmHg)	69.90±8.92
SBP-LH (mmHg)	105.65±10.79
Pulse rate (per min)	86.79±13.81
BMI (kg/m ²)	21.21±3.92
Weight (kg)	50.77±9.89
Height (cm)	154.53±5.05

Table 1: Physiologic parameters in college-going Indian females (n=222)

PEFR (L/min)	Number (n)	Percentage (%)
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<320	106	47.7
320-470	116	52.3
>470	-	-

Table 2: PEFR distribution in study subjects

Clinical abnormalities	Number (n)	Percentage (%)
Hypomenorrhea	-	-
Menorrhagia	10	4.5
Squint	-	-
Gait defect	-	-
Grade 1 Goitre	8	3.6
Grade 2 goitre	-	-
Vitamin A deficiency	-	-
Anaemia	14	6.3

Table 3: Clinical findings in study participants

Pearson correlation (r)	Left hand		Right hand	
	DBP (mmHg)	SBP (mmHg)	DBP (mmHg)	SBP (mmHg)
Left hand				
SBP	1	0.49	0.62	0.35
DBP	0.49	1	0.45	0.53
Right hand				
SBP	0.62	0.45	1	0.55
DBP	0.35	0.53	0.55	1

Table 4: Pearson’s correlation of diastolic and systolic blood pressure in the right and left hand of study subjects