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DIETARY STATUS AND PHYSIOLOGICAL HEALTH IN FEMALE COLLEGE STUDENTS

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ABSTRACT

Background: BMI, weight, and height are examples of physiological health indicators that show the population's overall development and are strongly associated with dietary patterns. Evaluation of blood pressure and PEFR (Peak Expiratory Flow Rate) aids in determining the health status related to a disease. There is a dearth of anthropometric data on respiratory fitness in Indian women attending college.

Aim: The objective is to assess the physiological health parameters and nutritional status of Indian female college students.

Methods: 222 randomly chosen female college students, ages 18 to 22, were evaluated. Handgrip strength, PEFR, respiratory rate, body temperature, pulse rate, DBP (diastolic blood pressure), SBP (systolic blood pressure), BMI, weight, and height were measured in each female. Every female was clinically examined for anemia and vitamin A deficiency.

Dietary habits were also evaluated in these individuals.

Results: The study participants' mean BMI and PEFR were 21.21±3.92 kg/m2 and 315.5±61.04 l/min, respectively. The non-dominant hand's mean handgrip strength was 16.20±3.98 kg, while the dominant hand's was 18.38±4.74 kg. The study participants' mean height and weight were marginally higher than the typical ICMR data. Given that 3.6% and 6.3% of study participants, respectively, had Grade I goiter and anemia, a regular diet must include more nutrients.

Conclusion: 33% of Indian women attending college are underweight due to various nutritional deficiencies, while nearly half of them have a healthy weight. Regular exercise could improve PEFR's poor respiratory fitness. To evaluate health patterns and nutritional status across different regions, more research is required.

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

INTRODUCTION

Anthropometric assessment is currently the method used to evaluate body composition and dimensions in order to assess growth and nutritional status. This method is widely used because it is inexpensive and easy to use, allowing growth and nutritional status to be compared to a standardized growth curve. Anthropometric data, especially height and weight, show the health status of a particular national population or segment that is influenced by heredity and the environment.[1]

Endocrine profiles and nutritional status have a major impact on growth patterns as determined by these quantifiable parameters. Despite playing an important role in society, women are particularly vulnerable because they typically do not receive proper nutrition and healthcare. In addition to ensuring healthy children and families, women's nutritional and health status is essential for promoting global economic growth.[2]

Female health is impacted by a number of factors, such as poverty, malnutrition, early pregnancy and marriage, inadequate healthcare facilities, domestic violence, lack of awareness and knowledge, and gender inequality.[3] Taking these concerns into account is essential to enhancing female health and advancing societal well-being.3 In light of this new problem, the

current study sought to evaluate the physiological health parameters, clinical evaluation, and nutritional status of Indian female college students.

MATERIALS AND METHODS

The current study sought to evaluate the physiological health parameters, clinical evaluation, and nutritional status of Indian female college students. The Institute's Outpatient Department provided the study participants. Prior to participation, each subject provided both written and verbal informed consent.

222 female college students who were chosen at random for the study were evaluated. Alcoholics, smokers, people receiving treatment for any respiratory illnesses or conditions, people with a history of asthma, pneumonia, chronic bronchitis, chest surgeries or injuries, persistent coughing, or wheezing in the chest were all excluded from the study. The study included female students between the ages of 19 and 22 at random. Handgrip strength, PEFR (peak expiratory flow rate), respiration rate, body temperature, pulse rate, DBP (diastolic blood pressure), SBP (systolic blood pressure), BMI (body mass index), weight, height, and other physiological and anthropometric parameters were measured. The study participants' eating habits were also evaluated.

A standard weighing machine and stadiometer were used to measure the body weight and height while the subjects were barefoot and wearing light clothing.

A standard sphygmomanometer and stethoscope were used to measure blood pressure. Wright's peak flow meter was used to measure PFER while the subject was standing and had their nose clipped. The results were shown as BTPS (body temperature and pressure saturated with vapor).

Following two practices, three consecutive attempts were made, with a minimum of three to five minutes of rest between each exhalation. The highest values were then recorded.4 Both dominant and non-dominant hands' body temperatures were recorded using a standard hand grip dynamometer. Every female in that age group was clinically evaluated for anemia and vitamin A deficiency, including symptoms like beta spots. Goiter and other iodine deficiency disorders, such as squints and gait abnormalities, were also evaluated in these subjects. Goiter was graded in accordance with WHO, UNICEF, and ICCIDD guidelines.5

Additionally, verbal information was gathered regarding the length and regularity of their menstrual cycle. In order to comprehend their dietary patterns, students' dietary habits were also evaluated. Students ate two meals a day on average. Food intake data was collected over the course of seven days and fourteen meals.

The collected data was statistically examined using the Student t-test, ANOVA (analysis of variance), Chi-square test, and SPSS (Statistical Package for the Social Sciences) software. The mean, standard deviation, frequency, and percentages were used to express the results. A p-value of less than 0.05 was taken into account.

RESULTS

The current study sought to evaluate the physiological health parameters, clinical evaluation, and nutritional status of Indian female college students.

222 randomly chosen female college students, ages 18 to 22, were evaluated. The average height, weight, and BMI of the study participants were 154.53±5.05 cm, 50.77±9.89 kg, and 21.21±3.92 kg/m2, respectively. The average heart rate was 86.79±13.81 beats per minute. The mean SBP and DBP were 105.65±10.79 and 69.90±8.92 mmHg in the left hand and 105.55±10.03 and 70.00±9.02 mmHg in the right. RR, PEFR, and mean body temperature were 24.54±7.17/min, 315.75±61.04 L/min, and 96.24±1.70 oF, respectively. The dominant and non-dominant hands had grip strengths of 18.39±4.74 kg and 16.21±3.98 kg, respectively (Table 1).

When the PEFR distribution was evaluated, it was found that 47.7% (n=106) of the study subjects had a PEFR of less than 320 L/min, 52.3% (n=116) had a PEFR of between 320 and 470 L/min, and none of the study subjects had a PEFR of more than 470 L/min (Table 2).

Clinical findings revealed that the study subjects did not exhibit hypomenorrhea, squint, gait defect, grade 2 goiter, or vitamin A deficiency. However, 4.5% (n=10), 3.6% (n=8), and 6.3% (n=14) of the research participants had menorrhagia, Grade 1 goiter, and anemia, respectively (Table 3).

According to the study's findings, there was a significant correlation between the right hand's diastolic and systolic blood pressure and the left hand's systolic blood pressure. DBP and SBP of the right hand were found to be significantly correlated with left-hand DBP. Additionally, a significant correlation between SBP and DBP in the left hand and SBP in the right hand was observed. BP and DBP in the left hand and DBP in the right hand showed a significant correlation (Table 4).

In terms of total meal intake, rice accounted for 84%, wheat for 15.7%, and pulses for 72%. Egg consumption was found to be higher than fish consumption (22% and 20%, respectively). 2.38% of participants had red meat, and 12% had chicken. Forty-one percent of participants reported consuming only vegetables, and they did not include any non-vegetarian items in their main meal. Of all the meals, 29% of participants consumed leady vegetables, with cucumbers being their preferred choice.

DISCUSSION

The current study evaluated 222 randomly chosen college-bound females between the ages of 18 and 22. The average height, weight, and BMI of the study participants were 154.53±5.05 cm, 50.77±9.89 kg, and 21.21±3.92 kg/m2, respectively. The average heart rate was 86.79±13.81 beats per minute. The mean SBP and DBP were 105.65±10.79 and 69.90±8.92 mmHg in the left hand and 105.55±10.03 and 70.00±9.02 mmHg in the right.

The average body temperature, respiratory rate, and PEFR were 96.24±1.70 oF, 24.54±7.17/min, and 315.75±61.04 L/min, respectively. The dominant and non-dominant hands had grip strengths of 18.39±4.74 kg and 16.21±3.98 kg, respectively. These findings were similar to those of earlier studies by Ranu H et al. (2011) and Walankar P et al. (2016) that evaluated the nutritional status of college-bound female subjects with similar demographics.

According to the study's findings, 47.7% (n=106) of the participants had a PEFR of less than 320 L/min, 52.3% (n=116) had a PEFR of between 320 and 470 L/min, and none had a PEFR of 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), who also reported PEFR results similar to the current study. Regarding the evaluation of the clinical findings in the research participants, none of them had hypomenorrhea, squint, gait defect, grade 2 goiter, or vitamin A deficiency.

However, 4.5% (n=10), 3.6% (n=8), and 6.3% (n=14) of study participants had menorrhagia, Grade 1 goiter, and anemia, respectively. These results were consistent with those of Mahajan D et al. (2010) and Ghosh J et al. (2011), whose clinical findings in female college students were similar to those of the current study.

Additionally, a significant correlation was observed in the systolic blood pressure of the left hand and both the diastolic and systolic blood pressure from the right hand for the Pearson's correlation of the study subjects' diastolic and systolic blood pressure. DBP and SBP of the right hand were found to be significantly correlated with left-hand DBP.

Additionally, a strong correlation between SBP and DBP in the left hand and SBP in the right hand was observed. BP and DBP in the left hand and DBP in the right hand were found to be significantly correlated. These findings were consistent with those of Nuttall FQ12 (2015) and Gupta A et al. (2012), whose authors reported similar correlations to the current study.

According to the study's findings, rice accounted for 84% of total meal intake, while wheat and pulses accounted for 15.7% and 72%, respectively. Egg consumption was found to be higher than fish consumption (22% and 20%, respectively).

Just 2.38% of subjects consumed red meat, and 12% consumed chicken. Forty-one percent of participants reported consuming only vegetables, and they did not include any non-vegetarian items in their main meal. Of all the meals, 29% of participants consumed leady vegetables, with cucumbers being their preferred choice. These results were consistent with those of Pandey S et al. (2013) and Harshala R. (2000), whose meal intake data were similar to those of the current study.

CONCLUSIONS

Taking into account its limitations, the current study finds that 33% of Indian female college students are underweight due to various nutritional deficiencies, while nearly half of them have a healthy weight. PEFR has poor respiratory fitness which could be improved with regular exercise.

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S. No	Parameters	Mean ± S. D
1.	Handgrip strength (dominant) Kg	18.39±4.74
2.	Handgrip strength (non-dominant) Kg	16.21±3.98
3.	PEFR (l/min)	315.75±61.04
4.	RR (per min)	24.54±7.17
5.	Body temperature (°F)	96.24±1.70
6.	DBP-RH (mmHg)	70.00±9.02
7.	SBP-RH (mmHg)	105.55±10.03
8.	DBP-LH (mmHg)	69.90±8.92
9.	SBP-LH (mmHg)	105.65±10.79
10	Pulse rate (per min)	86.79±13.81
11	BMI (kg/m2)	21.21±3.92
12	Weight (kg)	50.77±9.89
13	Height (cm)	154.53±5.05

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

S. No	PEFR (L/min)	Number (n)	Percentage (%)
1.	<320	106	47.7
2.	320-470	116	52.3
3.	>470	-	-

Table 2: PEFR distribution in study subjects

S. No	Clinical abnormalities	Number (n)	Percentage (%)
1.	Hypomenorrhea	-	-
2.	Menorrhagia	10	4.5
3.	Squint	-	-
4.	Gait defect	-	-
5.	Grade 1 Goitre	8	3.6
6.	Grade 2 goitre	-	-
7.	Vitamin A deficiency	-	-
8.	Anemia	14	6.3

Table 3: Clinical findings in study participants

S. No	Pearson correlation (r)	Left hand		Right hand	
		DBP (mmHg)	SBP (mmHg)	DBP (mmHg)	SBP (mmHg)
1.	Left hand				
a)	SBP	1	0.49	0.62	0.35
b)	DBP	0.49	1	0.45	0.53
2.	Right hand				
a)	SBP	0.62	0.45	1	0.55
b)	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