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Comparative study of nutritional status of hostelite and non-hostelite girls of Udaipur city

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Abstract

The present study assessed and compared the nutritional status of 180 hostelite and non-hostelite girls of Udaipur city using anthropometric measurements, dietary assessment, clinical examination, and food frequency pattern. The findings showed that most girls had a normal BMI, although underweight was more common among hostelite girls and overweight was higher among non-hostelite girls. Dietary assessment revealed excessive cereal consumption but inadequate intake of pulses, green leafy vegetables, other vegetables, and fruits. Hostelite girls had higher intakes of energy, protein, fat, dietary fibre, carbohydrates, folate, iron, magnesium, and zinc compared to non-hostelite girls. Non-hostelite girls had slightly higher calcium intake. Both groups consumed insufficient amounts of calcium, iron, and zinc compared to the recommended dietary allowances. Energy and protein intake were also lower than recommended, particularly among non-hostelite girls. The results indicate the coexistence of undernutrition and overnutrition among college-going girls. Overall, hostelite girls had relatively better nutrient intake than non-hostelite girls. The study highlights the need for nutrition education and dietary interventions to improve the nutritional status of college-going girls.

Keywords: Nutrition assessment, hostelites, non-hostelites, dietary patterns, anthropometric measurements, physical activity, food frequency

Introduction

Nutrition is a key determinant of physical health, mental development, and overall quality of life, especially during the college years. Young women require adequate nutrition to support growth, maintain hormonal balance, enhance academic performance, and prevent future health complications. India continues to face the dual challenge of undernutrition and rising overweight and obesity among women. Residential status plays an important role in shaping students' dietary habits, food choices, and nutrient intake. Hostelite students mainly depend on institutional meals, whereas non-hostelite students generally have greater flexibility in food selection but may also consume more convenience foods. A comprehensive evaluation of nutritional status can be achieved through anthropometric measurements, dietary assessment, and analysis of socio-demographic characteristics. Earlier studies have highlighted unhealthy eating habits, meal skipping, and widespread micronutrient deficiencies among college students. Socio-demographic factors such as age, family income, parental education, and lifestyle significantly influence dietary behavior and nutritional health. Comparing hostelite and non-hostelite girls helps identify nutritional differences and provides evidence for designing effective nutrition education and dietary improvement strategies. Therefore, the present study was conducted to compare the nutritional status, dietary practices, nutrient intake, and socio-demographic characteristics of hostelite and non-hostelite girls studying at MPUAT, Udaipur.

The following objectives were proposed to be accomplished

- To determine the Anthropometric measurement of hostelite and non-hostelite girls of Udaipur city.
- To compare the nutritional status of hostelite and non hostelite girls of Udaipur city.

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Materials and Methods

The present study entitled “Comparative Study of Nutritional Status of Hostelite and Non-Hostelite Girls of Udaipur City” was conducted at Maharana Pratap University of Agriculture and Technology (MPUAT), Udaipur, Rajasthan, to assess and compare the nutritional status, dietary practices, and food consumption patterns of hostelite and non-hostelite girl students. A purposive sampling technique was adopted for selecting the respondents. The total sample comprised 180 female students, including 90 hostelite and 90 non-hostelite girls aged between 18 and 29 years. The respondents were selected based on their residential status, willingness to participate, and age criteria to ensure meaningful comparison between the two groups.

A self-structured and pre-tested questionnaire was developed as the primary tool for data collection. The questionnaire was validated by subject experts and included questions related to socio-demographic characteristics, dietary habits, nutritional awareness, and physical health indicators. Information collected included age, accommodation, caste, family type, educational level, marital status, and food habits, enabling a comprehensive assessment of factors influencing the nutritional status of the respondents.

The nutritional status of the respondents was assessed using anthropometric measurements, 24-hour dietary recall, and a Food Frequency Questionnaire (FFQ). Anthropometric assessment included measurements of height, weight, Body Mass Index (BMI), waist circumference, hip circumference, and Waist-to-Hip Ratio (WHR) using standard methods and calibrated instruments. BMI was calculated using the standard formula (weight in kilograms divided by height in meters squared) and classified according to WHO guidelines. Waist and hip circumferences were measured to assess body fat distribution and related health risks.

Dietary intake was evaluated using the 24-hour dietary recall method for three consecutive days, during which respondents provided detailed information about meal timings, food items consumed, ingredients, quantities, and place of consumption. Standardized household measuring cups and spoons, as recommended by the National Institute of Nutrition (NIN, 2017), were used to estimate food intake accurately. The foods consumed were categorized into energy-rich, protein-rich, protective, and processed food groups to determine dietary adequacy. In addition, a Food Frequency Questionnaire (FFQ) was administered to assess

the frequency of consumption of various food items, including cereals, pulses, milk products, vegetables, fruits, and fast foods, using seven response categories ranging from "never" to "three or more times a day."

Data were collected through face-to-face interviews conducted within the university campus and hostel premises, ensuring accurate responses and complete information. Anthropometric measurements were recorded during the interview process using standard procedures. After data collection, the information was systematically coded, classified, tabulated, and analyzed using appropriate statistical techniques. Frequency and percentage were used to describe socio-demographic characteristics and food consumption patterns, while mean and standard deviation were calculated to evaluate anthropometric and dietary variables. An independent sample z-test was applied to compare the nutritional and dietary parameters of hostelite and non-hostelite girls and to determine the statistical significance of differences observed between the two groups. These methods provided a comprehensive evaluation of the nutritional status and dietary practices of the respondents.

Results and Discussion

The present study compared the nutritional status, dietary pattern and health profile of hostelite and non-hostelite girls of Udaipur city. The findings are summarized under major themes with concise interpretations and comparison tables.

Anthropometric Data of Participants

S. No.	Variable	N	Mean	SD	z	p-value
1.	Height	180	161.29	7.55	287.441	<0.001
2.	Weight	180	60.26	31.75	25.534	<0.001
3.	BMI	180	21.99	3.12	94.728	<0.001

The mean height of the respondents was 161.29 ± 7.55 cm, with a statistically significant z-value of 287.441 ($p < 0.001$). The average height was within the normal range for Indian female university students aged 18-29 years. The mean body weight was 60.26 ± 31.75 kg, with a significant z-value of 25.534 ($p < 0.001$). The high standard deviation indicates considerable variation in body weight among the respondents. The mean BMI was 21.99 ± 3.12 kg/m², which falls within the normal WHO range, with a significant z-value of 94.728 ($p < 0.001$). However, the variation in BMI indicates differences in nutritional status among the respondents.

BMI (kg/m²) Classification of participants

S. No.	BMI	Type of malnutrition	Hostelite girls (n = 90)		Non-hostelite girls (n = 90)	
			Frequency	Percentage	Frequency	Percentage
1.	<18.5	Underweight	17	18.89	11	12.22
2.	18.5-24.9	Normal	64	71.11	53	58.89
3.	25-29.9	Overweight	9	10.00	26	28.89
4.	30-34.9	Obese Class-I	0	0	0	0
5.	35-39.9	Obese Class-II	0	0	0	0
6.	40 and above	Severe obesity	0	0	0	0

Table reveals the Body Mass Index (BMI) of hostelite and non-hostelite girls of Udaipur city. Among the hostelite girls, 71.11 percent had a normal BMI, followed by 18.89 percent who were underweight and 10.00 percent who were overweight. None of the hostelite girls were found in the obese categories (Class I, Class II, or severe obesity).

Among the non-hostelite girls, 58.89 percent had a normal BMI, while 28.89 percent were overweight and 12.22 percent were underweight. Similar to the hostelite group, no non-hostelite girls were classified under any obesity category.

The findings indicate that a higher proportion of hostelite girls (71.11%) had a normal BMI compared to non-hostelite girls (58.89%). In contrast, the prevalence of overweight was considerably higher among non-hostelite girls (28.89%)

than hostelite girls (10.00%), whereas underweight was slightly more common among hostelite girls (18.89%) than non-hostelite girls (12.22%).

WHR classification of the hostelite and non-hostelite girls of Udaipur city

S. No.	WHR	Remarks	Hostelite girls		Non-hostelite girls	
			Frequency	Percentage	Frequency	Percentage
1.	<0.80	Normal	16	17.78	12	13.33
2.	80-85	Increases risk	53	58.89	55	61.11
3.	85	High risk	24	26.67	23	25.56

The waist to hip ratio of hostelite and non-hostelite girls of Udaipur was presented in Table. The findings revealed that the majority of the respondents, irrespective of their place of residence, fell within the "increased risk" category defined as a WHR of 0.80-0.85. In the hostelite group, 53 girls (58.89%) were placed in this band, whereas the corresponding figure for non-hostelite girls was marginally higher at 55 (61.11%). A sizeable proportion of the respondents were further placed in the high-risk category (WHR > 0.85), with 24 hostelites (26.67%) and 23 non-hostelites (25.56%) exceeding the cut-off.

Only 16 hostelite (17.78%) and 12 non-hostelite (13.33%)

girls were classified as normal (WHR < 0.80). It was thus observed that approximately four out of every five respondents registered a WHR at or above 0.80, indicating a high overall burden of central adiposity in both groups.

Comparison of Mean Daily Nutrient Intake between Hostelite and Non-Hostelite Respondents

Table presents a comparison of the mean daily nutrient intake of hostelite and non-hostelite respondents. The findings reveal noticeable differences in the intake of several nutrients between the two groups.

Variable	Ref. Value	Hostelite Girls		Non-Hostelite Girls			z-value	p-value
		(Mean ± SD)	% Intake	(Mean ± SD)	% Intake	Better Intake		
Energy (kcal)	1660	1353.31±301.96	81.52	1072.77±294.64	64.62	Hostelite	5.916	*<0.001
Protein (g)	46	43.45±9.49	94.46	35.74±10.59	77.69	Hostelite	4.82	*<0.001
total Fat (g)	20	38.43±15.56	192.15	28.77±13.99	143.87	Hostelite	4.129	*<0.001
Dietary Fibre (g)	25	32.14±7.41	128.57	28.05±8.24	112.21	Hostelite	3.724	*<0.001
Carbohydrate (g)	130	202.52±43.11	155.78	162.94±39.39	125.34	Hostelite	6.119	*<0.001
Folates B9 (µg)	220	221.55±71.80	100.71	194.56±113.08	88.44	Hostelite	2.002	**<0.048
Calcium (mg)	1000	403.02±187.25	40.30	416.88±206.04	41.69	Non-hostelite	-0.458	NS <0.648
Iron (mg)	29	12.87±3.44	44.37	10.81±4.34	37.26	Hostelite	3.636	*<0.001
Magnesium (mg)	370	349.58±93.01	94.38	298.08±122.31	80.56	Hostelite	3.179	*<0.001
Zinc (mg)	13.2	7.00±1.63	53	5.97±2.04	45.20	Hostelite	3.409	*<0.001

Hostelite girls had significantly higher mean intake of energy, protein, fat, dietary fibre, carbohydrate, folate, iron, magnesium and zinc than non-hostelite girls ($p < 0.05$), while calcium intake was slightly higher among non-hostelites. The better nutrient intake among hostelites may be attributed to regular hostel meals and structured eating patterns.

Conclusion

The findings of the present study indicate that both hostelite and non-hostelite girls experienced certain nutritional inadequacies despite the majority falling within the normal BMI range. The coexistence of underweight and overweight respondents reflects the dual burden of malnutrition among young adult females. Hostelite girls had a comparatively higher prevalence of underweight, whereas overweight was more common among non-hostelite girls. Dietary assessment revealed inadequate consumption of protective foods, particularly pulses, green leafy vegetables, fruits and milk products, in both groups. Consequently, the intake of essential nutrients such as calcium, iron and zinc was below the recommended dietary allowances. Hostelite girls demonstrated significantly higher intake of energy, protein, fat, carbohydrate, dietary fibre, folate, iron, magnesium and zinc, while non-hostelite girls had slightly higher calcium intake. Regular hostel meals and structured eating schedules

may have contributed to the better nutrient intake observed among hostelite respondents. However, neither group achieved adequate intake of all essential nutrients required for optimal health. The findings emphasize the importance of improving dietary diversity and promoting balanced food choices among college-going girls. Increasing the consumption of nutrient-rich foods, including pulses, green leafy vegetables, fruits and dairy products, is essential for preventing nutritional deficiencies. Regular nutrition education and periodic nutritional assessment should be encouraged to improve awareness and healthy eating practices. The results of this study provide valuable evidence for planning nutrition intervention programmes and developing effective strategies to enhance the nutritional status and overall well-being of both hostelite and non-hostelite girls.

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