Clinical Assessment of Teens based on BMI, Anthropometric Measurement in Champua Town of Keonjhar District, Odisha

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ABSTRACT

Anthropometric measurements are quantitative and evaluate an individual's size, shape, and composition. Weight, height, length, circumference, and skinfold thickness measures are among them. Food consumption trends and anthropometric measurements are related. Every person has a fundamental need for health. BMI range and anthropometric measurements are dependent on weight and height. Teenagers need to eat healthily during this period of growth and development because it is a time of development. From the highest level (general appearance) to the elementary level, an individual's overall level of physical fitness is determined by their lifestyle, eating habits, and BMI range. **Objective:** Examination of the socioeconomic status of the Keonjhar district's Champua town, to find out the anthropometric measurement of teenage girls, to find out young girls' BMI status, and to know the health condition of teens using ICMR's clinical assessment Scale. **Methodology**: For the study, the researcher gathered primary data herself. The method of purposive random sampling was employed to collect data. 120 samples in all were extracted from my investigation. The ICMR Scale was used to gather the data. The age range of all responders was 15–16. **Results:** The findings indicate that teenage girls' height, weight, and BMI are shown. The socioeconomic condition of the family is directly impacted by the BMI range. Teenage girls' health status is directly displayed by the ICMR clinical evaluation scale.

Keywords: Clinical assessment (ICMR Scale), BMI, Anthropometric Measurement, socio-economic status, Teenage girls

INTRODUCTION

Quantitative evaluations of the body are called anthropometric measures.Anthropometry measures the human body's size, shape, and physical attributes to assess a person's nutritional status (Das and Gautam, 2022). It can detect malnutrition and evaluate growth. Anthropometry is a crucial tool for determining a child's or adult's nutritional statusaccording to the Centers for Disease Control and Prevention (CDC) (Gavriilidou *et al.,* 2015).

Body measurements can evaluate dietary status, health, and the risk of developing adult diseases. These measurements can also calculate adult body composition to identify obesity and assess underlying nutritional status (Fryar *et al.,* 2016). Children's and teenagers' anthropometric measurements can determine their nutritional status and obesity risk. Some typical measurements are as follows: One typical metric for kids and teenagers is height and weight: BMI is a metric that uses height and tissue mass (bone, muscle, and fat) to determine body size and health. The body mass index (BMI), a common measure for children and adolescents, is a sign of nutritional status and the risk of obesity. You may figure out your BMI manually or with a BMI calculator. BMI is not always a reliable indicator of health, particularly for those with high muscle mass, low stature, and abdominal fat. A person with a BMI below 18.5 may be more susceptible to infertility, osteoporosis, anemia, malnutrition, and weakened immunity(Bhuyan *et al.,* 2021).

METHODOLOGY

The aforementioned introduction served as the basis for the current investigation. This section contains the

following subheadings, which provide the specifics of the research technique.

Objective:
1. Examination of the socio-economic status of the teenagers in Keonjhar district's Champua town.
2. To find the anthropometric measurement of teenage girls.
3. To find out teen girls' BMI status.
4. To know the health condition of teens by using ICMR's clinical assessment Scale.

Hypothesis:
1. There will be significant differences in the socioeconomic status of Keonjhar's Champua area.
2. Eating habits of teenagers may lead to poor BMI range.

Limitations:
1. The study is limited to only teens in the age group of 15-16 years.
2. The geographical area of sample selection is limited to Champua Town of, Keonjhar District, Odisha.

Source of data:
The study was conducted in Champua town of Keonjhar district. The researcher collected primary data using the purposive random sampling method.

Sample of the study:
A total of 120 samples were taken from my study. The data was collected using a self-constructed questionnaire and using ICMR Clinical Assessment Scales. All the respondents were between 15-16 years old.

RESULTS AND DISCUSSION

Socio-economic status and BMI class of the family:
H0 -There is a significant difference between the BMI level of teenagers and the Socioeconomic class of family Heads.

The chi-square test shows (P<0.10) so the null hypothesis is rejected at the 1% level. It reveals that there is a highly significant association between the BMI level of Subjects and the Socioeconomic class of family Heads.

In this study majority of the family heads belong to the Lower middle class (49%), (31%, 11%,9%) Upper lower class, the Upper middle class, and only a few belong to the upper class, respectively. There is no lower class found in my study of Champua town of Keonjhar District (Table 1).

Since the P value is less than 0.10, the null hypothesis is rejected at the 1% level. It reveals that there is a highly significant association between the weight and Anthropometric Measurement of the subject.

There is no significant difference between Height and BMI measurement in the Anthropometric Measurement of the subject. Since the P-value is greater

Table 1 : Percentage distribution observed socioeconomic status and BMI class of the teen

Socio-Economic Status or Class	Underweight	Normal Range	Overweight	Obese	Total		Chi-square value	P value
Upper (I)	3	7	1	0	11	9%		
Upper Middle (II)	2	7	3	1	13	11%		
Lower Middle (III)	9	45	4	1	59	49%	8.84	0.345*
Upper Lower (IV)	5	31	0	1	37	31%		
Lower (V)	0	0	0	0	0	0%		
Total					120	100%		

Note: ** Significant at 1% level

Table 2 : Mean SD and P Value of Anthropometric Measurement among Teens

	City	N	Mean	Std. Deviation	P value
Weight			47.44	7.70	0.00**
Height	Keonjhar	120	2.29	0.19	0.26
BMI			20.74	3.11	0.47

Note:** Denote significant at 1% level

than 0.50 hence, the null hypothesis is accepted at the 5% level.

In this study, in Champua town of Keonjhar District, 15-16 yr girls have a very good weight (47.44), height (2.29), and BMI (20.74) (Table 2).

Table 3 depicts the Body Mass Index (BMI) categories: **Underweight**: BMI is less than 18.5 kg/m^2; **Normal weight**: BMI is greater than or equal to 18.5 to 24.9 kg/m^2; **Overweight**: BMI is greater than or equal to 25 to 29.9 kg/m^2; and **Obesity**: BMI is greater than or equal to 30 kg/m^2.

Table 3 : Frequency and Percentage distribution of BMI class among teens

City	BMI category	Frequency	Percentage
	BMI		
	<18.5	28	23.33
	18.5-24.9	82	68.33
Keonjhar	25.0-29.9	8	6.67
	(More than or Equal to) >30	2	1.67
	Total	120	100.00

In my study, the majority of the respondents belonged to the Normal weight range (68.33 %), 23.33% were underweight, 6.67% were Overweight and only fewer than 1.67% obesity were obese.

ICMR's Clinical Assessment Scale:

In Champua town of Keonjhar District, 15–16-year-old teenage girls had an average appearance of 87.50%, 7.50% were fair, 3.33% were poor, and only 1.67% were abysmal (Table 4).

Table 4 : Percentage distribution of General Appearance

	Symptom	Frequency	Percentage
General	Good	105	87.50
Appearance	Fair	9	7.50
	Poor	4	3.33
	Very poor	2	1.67
	Total	120	100.00

In 15-16 yrs teen girls, most respondents (94.17%) had normal conjunctiva. 3.33% had Slightly dry on exposure for ½ minutes, lack of luster, and 2.50% had dry and wrinkled eyes. Bitto's Spots were not reported in the subjects (Table 5).

Xerosis was absent in (97.50%) of subjects. Haziness was found in only 1.67% and only one person (0.83%) found Slight dryness in vision (Table 6).

Table 5 : Percentage distribution of Eyes (Conjunctiva)

	Symptom	Frequency	Percentage
	Absent, glistening, and moist	113	94.17
	Slightly dry on exposure for ½ minutes, lack of luster	4	3.33
EYES (Conjunctiva)	Conjunctiva dry and wrinkled	3	2.50
	Conjunctiva very dry and Bitto's Spots present	0	0.00
	Total	120	100.00

Table 6 : Percentage distribution of Eyes (Xerosis)

	Symptom	Frequency	Percentage
	Absent	117	97.50
	Slight dryness and diminished sensibility	1	0.83
EYES (Xerosis)	Haziness and diminished tangibility	2	1.67
	Ulceration	0	0.00
	Total	120	100.00

None of the children in Champua town of Keonjhar District had Night blindness (Table 7).

Table 7: Percentage distribution of Eyes (Night Blindness)

	Symptoms	Frequency	Percentage
EYES (Night Blindness)	Absent	120	100.00
	Present	0	0.00
	Total	120	100.00

The majority of the respondents (98.33%) were normal lip conditions. Mild Angular stomatitis was predominant in (1.67%) of the subjects in 15-16 years of teen girls. No one found angular stomatitis marked (Table 8).

Table 8 : Percentage distribution of mouth (Lip Condition)

	Symptoms	Frequency	Percentage
	Normal	118	98.33
MOUTH (Lip Condition)	Angular stomatitis, mild	2	1.67
	Angular stomatitis, marked	0	0.00
	Total	120	100.00

In teenage girls, tongue color was observed to be normal (94.17%). 1.67% had Pale tongue, 3.33% had red and 0.83% had Red and raw tongue (Table 9).

Table 9 : Percentage distribution of mouth (Tongue Colour)

	Symptoms	Frequency	Percentage
MOUTH (Tongue Colour)	Normal	113	94.17
	Pale but not coated	2	1.67
	Red	4	3.33
	Red and raw	1	0.83
	Total	120	100.00

All (100%) girls had normal tongue surface (Table 10).

Table 10 : Percentage distribution of mouth (Tongue Surface)

	Symptoms	Frequency	Percentage
MOUTH (Tongue Surface)	Normal	120	100.00
	Fissured	0	0.00
	Ulcered	0	0.00
	Glazed and atrophic	0	0.00
	Total	120	100.00

It was good to note that most of the subjects (85.83%) showed normal gum condition. 6.67% had only bleeding gum, 7.50% had Pyorrhoea, and no one there had retracted gums (Table 11).

Table 11 : Percentage distribution of mouth (Gums Condition)

	Symptoms	Frequency	Percentage
MOUTH (Gums Condition)	Normal	103	85.83
	Bleeding and/ or gingivitis	8	6.67
	Pyorrhoea	9	7.50
	Retracted	0	0.00
	Total	120	100

Teeth Fluorosis was not found in (88.33%) girls. 6.67% found Chalky teeth only 5% had Mottled and discolored teeth and teen girls did not show Pitting teeth (Table 12).

Table 12 : Percentage distribution of mouth (Teeth Fluorosis)

	Symptoms	Frequency	Percentage
MOUTH (Teeth Fluorosis)	Absent	106	88.33
	Chalky teeth	8	6.67
	Pitting teeth	0	0.00
	Mottled and discolored teeth	6	5.00
	Total	120	100

Among all the teenage girls, dental caries were not found (85%). Only 15% had marked caries (Table 13).

Table 13 : Percentage distribution of mouth (Caries)

	Symptom	Frequency	Percentage
MOUTH (Caries)	Absent	102	85.00
	Slight	18	15.00
	Marked	0	0.00
	Total	120	100

The reports showed 86.67% of girls with normal skin, 12.50% with dry and rough or crazy pavement skin, and only one person with Loss of luster skin (Table 14).

Table 14 : Percentage distribution of SKIN (General Appearance)

	Symptom	Frequency	Percentage
SKIN (General Appearance)	Normal	104	86.67
	Loss of luster	1	0.83
	Dry and rough or crazy pavement	15	12.50
	Hyperkeratosis	0	0.00
	Total	120	100

No edema was seen in all (99.17%) in the group. Only one person was found with edema on the face and dependent parts. No one is dependent on edema (Table 15).

Table 15: Percentage distribution of ODEMA (Distribution)

	Symptom	Frequency	Percentage
ODEMA (Distribution)	Absent	119	99.17
	Oedema on the dependent part	0	0.00
	Edema on the face and dependent parts	1	0.83
	Total	120	100

84.17% of girls were found normal appetite, 8.33% of girls had a very low appetite, 5.83% had a low appetite, and only 1.67% had a high appetite (Table 15).

Table 16: Percentage distribution of Alimentary System (Appetite)

	Symptom	Frequency	Percentage
Alimentary System (Appetite)	Normal	101	84.17
	Very low	10	8.33
	Low	7	5.83
	High	2	1.67
	Total	120	100

Major findings

– The majority of family heads in the socioeconomic class are from the lower middle

class. Another research that found a similar pattern in Champua town, Keonjhar District supports this conclusion. Sixty-nine percent of people are BPL (https://kendujhar.odisha.gov.in/about-district/economy; https://en.wikipedia.org/wiki/Champua).

– No lower class was identified in my research on Champua town in the Keonjhar District. The study of Dakua. A (2019) is similar to my study (Dakua *et al.,* 2019).

– The study found a highly significant correlation between the socioeconomic class of household heads and the subjects' BMI level. The study of Vijayeta (2023) is comparable to this one.

– Girls aged 15 to 16 in the Keonjhar District's Champua town had ideal BMI, height, and weight.

– The vast majority of those surveyed fell into the normal weight range.

– Adolescent girls aged 15 to 16 in the Keonjhar District's Champua town had a mediocre appearance.

– Nearly every subject had normal conjunctiva, and the majority of responses had no xerosis.

– No night blindness was discovered in any of the kids in Champua town, Keonjhar District.

– Lip conditions were normal for most of the interviewees. Subjects were adolescent girls aged 15–16 with mild angular stomatitis. There were no signs of angular stomatitis.

– The tongue color of adolescent girls was found to be normal.

– It was encouraging to see that the majority of the participants had healthy gums. Some experienced pyorrhoea fewer had bleeding gums, and nobody had retracted gums.

– Most of the girls had no tooth fluorosis.

– There were no dental caries in the teenage girls. According to the reports, the majority of the females had normal skin, a small percentage had dry, rough, or crazy pavement skin, and only one person had loss of luster skin.

– No edema was observed in nearly all of the group. Only a small percentage had noticeable caries.

– The majority of the girls had normal appetites, while a small number had very low appetites, two individuals had great appetites, and a few others had low appetites.

Conclusion:

The findings indicate that teenage girls aged 15 to 16 must meet certain dietary requirements to grow and develop. According to my study's ICMR Nutritional Scale, Teenage girls' health grew and developed at a normal pace. The teenage ladies excelled in every area, from general looks to the alimentary system. They look excellent overall, and they didn't have any dental cavities or issues with their mouth or tongue. Although it is excellent in terms of height and weight, teenage girls' BMI levels are directly impacted by the socioeconomic status of the family's head. By teaching teenagers about the many advantages of eating a nutritious diet and maintaining good health throughout their lives, anyone may encourage them to make healthy decisions. To foster a healthy lifestyle during adolescence, school- and community-based intervention strategies are required.

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