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Growth Pattern and Relation with Age at Menarche

Kankana De

Vidyasagar University, Medinipur, West Bengal, India

Corresponding author: Kankana De, Vidyasagar University, Medinipur, West Bengal, India, Tel: 9474714273; E-mail: dekankana@gmail.com**Rec date:** March 21, 2017; **Acc date:** April 25, 2017; **Pub date:** April 27, 2017**Citation:** Kankana De. Growth Pattern and Relation with Age at Menarche. Ped Health Res 2017, 2: 1.

Abstract

Back ground: Body composition assessment helps to growth pattern in adolescent, for body composition measurement research measures weight, height, different kind of circumferences. Chronic Energy Deficiency (CED) has been defined as a state of 'steady' or body energy stores. A BMI < 18.5 kg/m² is widely used as a practical measure underweight.

Methodology: This study is carried out in outpatient of sub-centre of a rural hospital of Medinipur district; some girls are school dropout and some are regular school goers, Study group girls are 10-19 years old, 100 girls in each group, Anthropometry are used to take measurement of height (Anthropometry rod) weight (weighing machine), harpendent to take skinfold measurement.

Results: **Table 1** represents that mean height, weight, MUAC of study group is 151.02 cm (4.81), 44.56 (5.07), weight (kg) MUAC 21.71 cm (2.85). **Table 2** represent comparison of anthropometric value of pre-menarcheal and menarcheal girls. The **Figures 1-3** represent age wise pre-menarcheal, post-menarcheal, combined status of adolescent girls, whereas the **Table 3** represent age wise standard deviation and mean of height, weight and BMI. Results revealed that boys were significantly heavier than girls from age 16 onwards.

Conclusion: Girls have poor knowledge on hygiene, they take bath in pond, which causes reproductive health related issues, like white discharge; they have poor concept on menstrual hygiene. To overcome all this they need counselling on their health, nutrition hygiene, how to cure reproductive tract infection.

as a scientific discipline, however, began with Johann Friedrich Blumenbach and Singh and Bhasin. Body composition assessment helps to growth pattern in adolescent; for body composition measurement research measures weight, height, and different kinds of circumferences. For adults, as for example, Body Mass Index (BMI) expressed as body weight (in kilogram) divided by height (in meter²) is widely used as a study of body fat in both developed and developing countries.

Chronic Energy Deficiency (CED) has been defined as a state of 'steady' or body energy stores. A BMI < 18.5 kg/m² is widely used as a practical measure underweight in which an individual is in energy balance irrespective of a loss in body weight. Different kind of morbidity factors is associated with underweight. CED is happens due to inadequate protein and energy intake even it happens when subjects suffer from different infectious disease.

Materials and Methods

Area of study

This study is carried out in outpatient of sub centre of a rural hospital of Medinipur district, some girls are school dropout and some are regular school goers, study group girls are 10-19 years old, 100 girls in each group, Anthropometry are used to take measurement of height (anthropometre rod) weight (weighing machine), harpendent to take skinfold measurement.

Methods of the study

The present research investigation was cross-sectional in nature and fieldworks were carried out during the period of January-December 2011. The requisite data were collected by structured and scheduled methods. Separate pre-tested" interview-schedule (form is utilized for participant. socio-demographic status.

Keywords: Body mass index; Nutritional status; Diet; Hygiene

Introduction

The word 'anthropometry' was first used in the seventeenth century by a German physician, Sigismund Elsholtz in his graduation thesis entitled "Anthropometrica". Anthropometry,

Methodology

This study is done in rural hospital of Salboni block of Paschim Medinipur, to complete this study different anthropometry measurements are taken Anthropometre rod is used to measure height; weight is measured by weighing machine, Harpenden Caliper help in measuring skinfold of triceps and biceps and different circumferences are measured

by measuring tape. To complete this study verbal consent of subjects are taken.

Sample size: To complete this study 1009 adolescent girls are interviewed; those girls are regular visitors of adolescent health centre; age range varies from 10-19 years girls. In every age group, there are 100 girls in every group. With help of software package for social science 19 analysis of data is done.

Results

Table 1 represents that mean height, weight, MUAC of study group is 151.02 cm (4.81), 44.56 (5.07), weight (kg) MUAC 21.71 cm (2.85). **Table 2** represents comparison of anthropometric value of pre-menarcheal and menarcheal girls. **Figures 1-3** represent age wise pre-menarcheal, post-menarcheal, combined status of adolescent girls, **Table 3** represents age wise standard deviation and mean of height, weight, and BMI.



Figure 1 Age wise comparison of mid upper arm circumference Pre-menarcheal, Post-menarcheal Combined Adolescent girls.



Figure 2 Age wise comparison of waist circumference (cm) pre-menarcheal, post-menarcheal age combined adolescent girls.



Figure 3 Age wise comparison of waist circumference (cm) pre-menarcheal, Post-menarcheal age combined adolescent girls.

Table 1 Mean, SD, percentiles of different anthropometric characteristics of adolescent Bengalee girls (n=1009).

Variable	Mean (SD)	25th Percentile	50th Percentile	95th Percentile
Height (cm)	151.02 (4.81)	147.9	151.3	158.2
Weight (kg)	44.56 (5.078)	42.8	44.7	53.45
Mid upper Arm Circumference (cm)	21.71 (2.851)	20.55	22.68	24.9

Chest Circumference (cm)	74.48 (7.07)	70	74.7	86.65
Waist Circumference (cm)	78.32 (6.35)	74.3	77.3	89.75
Hip Circumference (cm)	84.85 (6.57)	80.5	85.4	95

Table 2 Age wise comparison of anthropometric status of adolescence girls.

Age		Mean	N
10	Post-menarcheal	10.310000	50
	Pre-menarcheal	9.000000	2
	Total	10.259615	52
11	Post-menarcheal	10.734286	70
	Pre-menarcheal	9.000000	7
	Total	10.576623	77
12	Post-menarcheal	11.420000	80
	Total	11.420000	80
13	Post-menarcheal	11.939773	88
	Pre-menarcheal	9.000000	1
	Total	11.906742	89
14	Post-menarcheal	12.433696	92
	Total	12.433696	92
15	Post-menarcheal	11.985567	97
	Total	11.985567	97
16	Post-menarcheal	12.224000	100
	Total	12.224000	100
17	Post-menarcheal	11.955556	99
	Pre-menarcheal	9.000000	1
	Total	11.926000	100
18	Post-menarcheal	12.180808	99
	Pre-menarcheal	9.000000	1
	Total	12.149000	100
19	Post-menarcheal	12.741284	109
	Total	12.741284	109
Total	Post-menarcheal	11.921267	884
	Pre-menarcheal	9.000000	12
	Total	11.882143	896

Table 3 Age wise comparison of height, weight, BMI of adolescence girls.

Age	Mean	Std. Deviation
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10	Height	146.01	4.94
	weight	38.86	4.65
	BMI	18.23	2.034
11	Height	148.07	3.76
	weight	41.63	5.29
	BMI	18.96	2.19
12	Height	149.8	3.82
	weight	42.06	4.25
	BMI	18.72	1.7
13	Height	150.44	3.76
	weight	43.3	4.09
	BMI	19.125	1.57
14	Height	151.53	4.41
	weight	45.084	4.035
	BMI	19.65	1.76
15	Height	152.18	3.67
	weight	45.99	3.92
	BMI	19.86	1.6
16	Height	152.48	3.52
	weight	46.53	4.45
	BMI	20	1.68
17	Height	152.8	4.78
	weight	46.86	3.56
	BMI	20.02	1.21
18	Height	153.15	4.97
	weight	47.35	4.45
	BMI	20.16	1.29
19	Height	153.55	4.41
	weight	47.62	3.62
	BMI	20.17	1.0512
Total		151.02	4.81
		44.56	5.07
		19.5	1.752

Discussion

Results revealed that boys were significantly heavier than girls from age 16 onwards [1]. In earlier study of adolescence rural girls have shown that their nutritional status does not relate their parent's economic status the overall prevalence of under-nutrition was (48.3%) [2]. Menarcheal girls have shown higher anthropometric because of initiation menarche [3], santal girls of Bolpur 30.46% underweight previous study of

earlier study has shown Salboni girls are underweight 35.4% (3) but **Table 2** shows that BMI are under normal range, in this study upto 13 years anthropometric status is higher on post-menarcheal girls that's prove to initiation menarche girls need to reach optimal height, weight, BMI for their menarche. In Meghalaya girls menarche ranges between 11 years to 17 years, 1 in 7 girls has knowledge about menarche prior to their experience, study. Present study girls' mean age menarche is 12 years. Girls aware lack of aware about menstrual hygiene they do not clean public area scientifically use pond water to wash their underwear, this cause them more susceptible skin disease sexual infection, as time of men's they do not clean them it causes monthly white discharge, unhealthy body, unprotect premarital relation influence of abortion without proper medical help causes severe condition. Adolescent girls of 10 years of age are all underweight on basis of MUAC (mid upper arm circumference) [4]; in adolescence period mid upper arm circumference, triceps all increases with age [3]. Urgent nutritional intervention programme should be given to them which shows that skilled labour parents' girls mean weight is 44.54 (5.08) and mean height is 151.02 (4.82) [5]. Mean age at menarche is influenced by hip circumference and waist circumference [6,7]. Girls have poor knowledge on hygiene, they take bath in pond, which cause reproductive health related issue, like white discharge; they have poor concept on menstrual hygiene. To overcome all this, Government has taken initiative to start an adolescent friendly clinic where they get counselling on nutrition, health and hygiene.

Conclusion

In rural area nurse and counsellors do outreach programme where in a meeting with adolescents they deliver health talk which help them to fight against all difficulties. in respect to health, psychosocial issue.

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