Survey on Factors Contributing to Healthy Life Style among Adolescence (10 - 19yrs)

Department of Nutrition
Medical Research Institute
In collaboration with
Mahidol University, Bangkok
And
WHO, SEARO

Chapter 1

Introduction

Adolescence is a period of sexual maturity that transforms a child into a biologically mature adult capable of sexual reproduction. World Health Organization (WHO) described as the period of sexual development from the initial appearance of secondary sex characteristics to sexual maturity, psychological development from child to adult identification, and socio-economic development from dependence to relative independence (WHO, 1975). Adolescence starts with a period of very rapid physical growth accompanied by the gradual development of reproductive organs, secondary sex characteristics and menarche in girls. Boys' adolescence is generally longer than girls.

Rapid changes in diets and lifestyles resulting from industrialization, urbanization, economic development and market globalization have accelerated during the last decade. This is having a significant impact on the health and nutritional status of populations, in particular in developing countries and countries in transition. While such changes have resulted in improved standards of living and greater access to services, there have also been significant negative consequences in terms of inappropriate dietary patterns and decreased physical activities, along with increased tobacco use, and a corresponding increase in diet-related chronic diseases, not only among the rich but also among the poor.

"Diseases of modernity", the Non Communicable Diseases namely, Cancer, Diabetes, Heart Diseases, Stress related mental illnesses, etc. are in increasing number: with the increasing life expectancies and economic development of the country. These diseases have risen much more rapidly than, can be accounted for, by the demographic shift and follow a strong parallel trend with the agro-industrial production of wealth. Changes in dietary and life style patterns are increasingly significant causes for these diseases leading disability and premature deaths in developing countries and newly developed countries.

Non communicable diseases are largely preventable diseases. More basic research on these is needed on some aspects relative to the mechanisms that link diet and life styles to health.

Justification

Adolescents are tomorrow's adults and 85% of them are living in developing countries. And they have been given little health and nutrition attention except for reproductive health concerns.

Obesity among young people is a growing problem in South East Asian countries, may be due to eating patterns and their life styles. Common likings for fast foods and repeated access to same commercial outlets, among school adolescents in urban areas are a contributory factor too.

Adolescents undergo dramatic physical, cognitive, social, and emotional changes in a relatively short period of time. These changes affect their eating practices and health. The rapid increase in growth and development results in increased demand for food and energy and nutrients. The consumption of food to match this demand is impacted by numerous psychosocial factors including newly acquired feelings of independence, peer acceptance, search for self identity, need for sociability and enjoyment, busy life style, concern for appearance, and availability of foods to match their economic status. Their health can be greatly compromised if these needs conflict.

Deficiencies or poor diets are associated with poverty; or as a result of unhealthy eating behaviors as seen in every society of any country. In a given culture adolescents are not a homogeneous group, with wide variation in development, maturity and life style. Therefore their problems are malnutrition, micro nutritional deficiencies and nutrition related chronic diseases.

Objectives of the Survey

General

To obtain evidence on adolescent diet and lifestyle for development of programme interventions

Specific objectives:

1. To obtain baseline information on adolescent's dietary habits and lifestyle - practices on hygiene and exercise, use of alcohol and tobacco among adolescents.
2. To determine how these parameters vary according to their Gender, Sector, Age group, Grade in school.
3. To identify determinants affecting adolescent dietary habits and lifestyle behaviour - the genuine problems among the adolescents.
4. Recommendations to minimize adolescent problems by intervening as early as possible and providing them a secure healthy life style aiming for a healthy adult society.

Organization of the Report

Chapter 2

Methodology

Medical Research Institute in collaboration with Institute of Nutrition, Mahidol University, Thailand was primarily responsible for designing, planning and implementing the survey while World Health Organization (SEARO) provided the required funding.

Survey Organization

2.1 Study Design

A descriptive cross sectional study design was employed on a representative sample at national level.

representative of the schools selected from four provinces (7 districts).

Focus group discussion (FGD) was conducted among sub sample of children to obtain in-depth information on concepts, perception and ideas of the group.

2.2 Study Population

School children aged 10-19 years from both gender groups who are studying in secondary schools were included.

2.3 Study location and sampling

Sample size for the survey was determined using the previous study results of deviation of fruit and vegetable consumption among school adolescents. Therefore, the size of the sample required to interview was calculated as 350 per strata with 95% confidence interval. The total sample size for two areas was 700.

Lists of eligible schools with students aged 10-19 years taken from the data base of department of education served as the basic sampling frame. Stratified sampling technique followed in selecting the required number of study subjects by applying the following sampling methods.

Stratified cluster sampling technique was adopted to achieve the sample of 700 children from ages 10 years to 19 years. The best stratification to

determine critical risk behaviours among adolescents was identified as the location of the school, whether it is in urban sector or rural sector in Sri Lanka. Hence, stratification was done at sector level and probability proportionate to the size (PPS) sampling technique (total students of 10-19 years in schools) was considered to select five schools in each sector.

All selected schools were listed out with the number of students in the grade 6 -13 classes by urban and rural strata separately. 350 students from each stratum was selected using probability proportional to the size of the students. Then all grade 6 -13 classes were listed out by number of students in the grade and required number of students from each grade was selected using probability proportional to the size of the students in each grade. Students to be interviewed from each grade were selected from the attendance register by using computer generating random number.

2.4 Study instruments

A comprehensive structured questionnaire consisting of five critical risk factors of adolescent health behaviour was developed to collect data.
The data collected consist of the following:

- General characteristics of school adolescence
- Critical risk factors of adolescent health behaviour that research shows contribute to the leading causes of death and disability among adults and youth.
    - Dietary Behaviour
    - Hygiene practices
    - Exercise or physical Activity
    - Experiences and knowledge on Alcohol, Tobacco and Drugs and
    - Anthropometry

Questionnaire was pre-tested at a location out side the study sample. Necessary alterations were made following pretest ensuring smooth implementation of the survey.

2.5 Training of the interviewers

Nutrition assistants and Public Health Inspectors with experience in conducting field surveys (attached to the MRI), were recruited as field interviewers to collect data in the schools. They were trained to understand all the questions and a manual of instructions was provided to each investigator.

Standardized equipments were used to collect anthropometric measurements and height was measured with a precision of 0.1 cm. Solar powered Seca electronic weighing scales were used to measure weight to the nearest 100g.

2.6 Ethical considerations

Ethical clearance was obtained from the ethical and research committee of the Medical Research Institute.

2.7 Data Collection

All questionnaires were checked for completeness and other errors by the supervisors the same day. Interviewers were supervised by Medical Officers of the Nutrition Division of the MRI. Crosschecks and independent re-interviews were carried out by the supervisors.

All selected study subjects were measured by the interviewers and data were recorded immediately after the measurements.

2.8 Data entry and analysis

All completed questionnaires were edited and coded manually and data entered using Epi info software. Cleaning of entered data was done by the chief investigator and corrections effected. BMI is computed by dividing weight in kilograms by the square of height in meters. Classification by WHO expert committee on physical growth (WHO, 1995) has been used to identify prevalence of Thinness (underweight), overweight and obesity considering age appropriate cut off levels for BMI values.

Statistical analyses were done by using SPSS statistical package for descriptive statistics and Pearson Chi square test.

Chapter 3

Demographic Characteristics of the study population

Adolescence is best viewed in schools in their peer groups. And there life style patterns differ accordingly. This study Selected schools student population represented a cross section of the adolescents in the country.

3.1 Distribution of sample

Table

Distribution of children by sector of the school and gender

		Gender				
		Male		Female		
		n	%	n	%	N
School sector	Urban school	242	68.8%	110	31.3%	352
	Rural school	195	54.5%	163	45.5%	358
Total		437	61.5%	273	38.5%	710

Altogether 710 children were recruited from both sectors (Table) and whether the school are in an urban area or rural area the majority were males compared to the females. This disparity occurred due to type of the selected schools; some of the selected schools were mixed schools and some were girls or boys schools. However, the female population in the selected sample was more in rural areas while the male population was more in urban areas.

Considering their residential areas of urban or rural, above parameter was applied equally without much variation. (not clear)

Table

Distribution of children by location of the residence and gender

	Gender		
	Male	Female	N

		n	%	N	%	
Location of residence	Urban	241	68.5	111	31.5	352
	Rural	196	54.7	162	45.3	358
Total		437	61.5	273	38.5	710

3.2 **Ethnicity and Religion**

Distribution of children according to the ethnicity and religion is shown in Table ---. Majority are Sinhalese (83.2%) and 75% affiliated to the religion of Buddhisum.

Table

Distribution of children by Ethnicity and Religion

		N	%
Ethnicity	Sinhalese	591	83.2
	Tamil	32	4.5
	Muslim	81	11.4
	Burgher	5	.7
	Other	1	.1
Religion	Buddhism	532	74.9
	Hindu	24	3.4
	Islam	80	11.3
	Catholic/Christians	74	10.4
Total		710	100.0

3.3 **Father's Occupation and Mother's Education**

Table

Fathers' occupation and Mothers' level of education

		N	%
Occupation of Father	Proffessional/ Technical and related workers	36	5.1
	Clerical and buisness	199	28.0
	Service workers/ Agriculture/Labour	358	50.4
	Not classified/ No job	48	6.8
	Abroad	17	2.4
	Father has left mother	52	7.3
Mothers' level of education	No schooling	32	4.5
	Grade 1-5	67	9.4
	Grade 6-11	337	47.5
	Grade 12-13	159	22.4
	Diploma/Degree/Higher	9	1.3
	Dont know	106	14.9
Total		710	100.0

Fathers of these adolescents were mostly manual workers with an average of 50.4%, while 6.8% had no proper designated job as such. Apart from that 7.3% of adolescents were looked after by their mothers only, as father has left the family.

Around 22% of mothers educated up to grade 12-13 and majority (56.9%) have educated up to secondary schools (grade 5-11). Only a few (4.5%) mothers have not to school. Although 4.5% of mothers have not gone to school, they had good faith of sending their children to school. It is sad to say that 56.9% of mothers of adolescents have left school before they reach grade 11 in the school. Out of that 16.5% have left school at grade 5 or even before that. (Children in Sri Lanka are legally required to remain in school until the age of 14 years.) Mothers' education status was not known by 14.9% of the children.

3.4 **Age group and Gender**

Table (Percentage should be other way)

Distribution of children by age and gender

		Gender		
		Male	Female	N
Age group	10 yrs	64.4%	35.6%	87
	11 yrs	66.3%	33.7%	89
	12 yrs	69.1%	30.9%	94
	13 yrs	69.8%	30.2%	96
	14 yrs	59.8%	40.2%	97
	15 yrs	61.3%	38.7%	106
	16 yrs	66.7%	33.3%	15
	17 yrs	47.4%	52.6%	57
	>18 yrs	43.5%	56.5%	69
Total		61.5%	38.5%	710

Medical Research Institute, 2006

Table ---shows the age distribution of the sample in relation to the gender. The sample was equally distributed among all ages except in 15 and 16 years. The children were selected from particular classes not according to the age which may overlap with this age group.

Male to Female ratio of the selected sample was almost 2:1. Except the age group of 17 and above all the other categories were dominated by the Male population. Probably male adolescents may have left schools after the age of 16 years.

? (The reason for N=15 at the age group of 16 compared to N=106 in 15yrs.)

Chapter 4

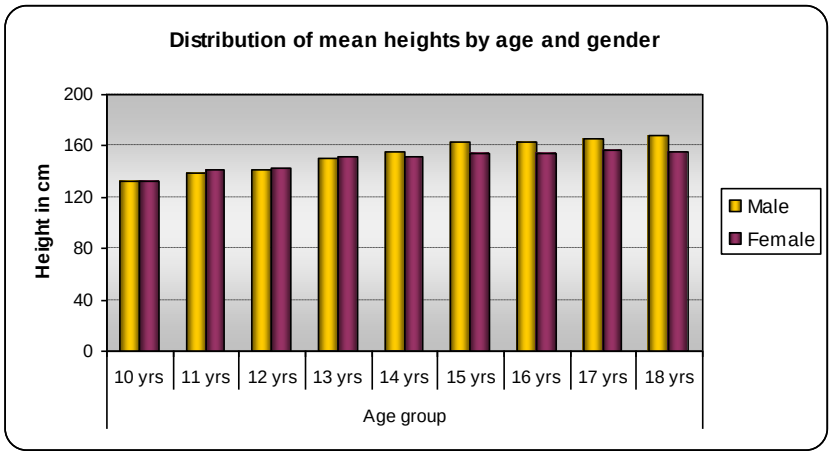
Nutritional Status of Children

Suggested tables

1. Mean height, weight, BMI in relation to age, gender and sector
2. Prevalence of stunting in relation to age, gender and sector with Z score values
3. Prevalence of thinness and overweight in relation to age, gender and sector with Z score values

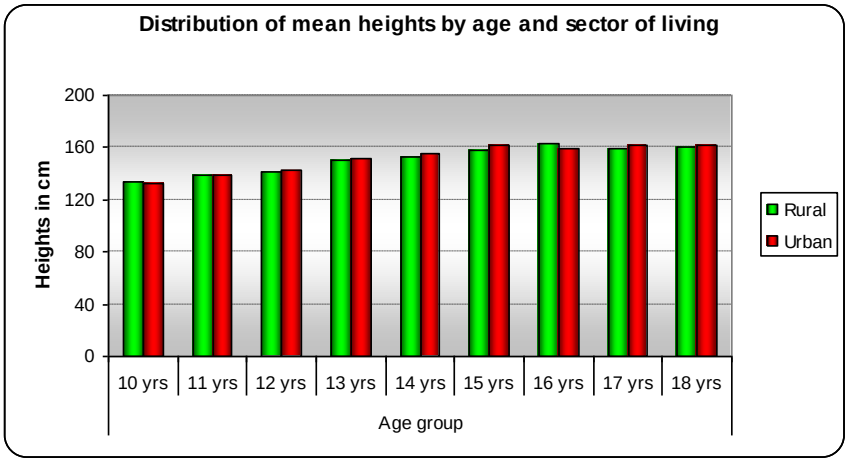
4.1 Mean heights of children by age and gender **(Table will be more appropriate)**

Figure:



In early adolescence (11 years) evidence of growth spurt was seen; mean height for female children was 141.1+_5.45 cm compared to 138.1 +-7.7 cm for male children and after the age of 14 years boys had lower mean height compared to girls.

Figure:



Table

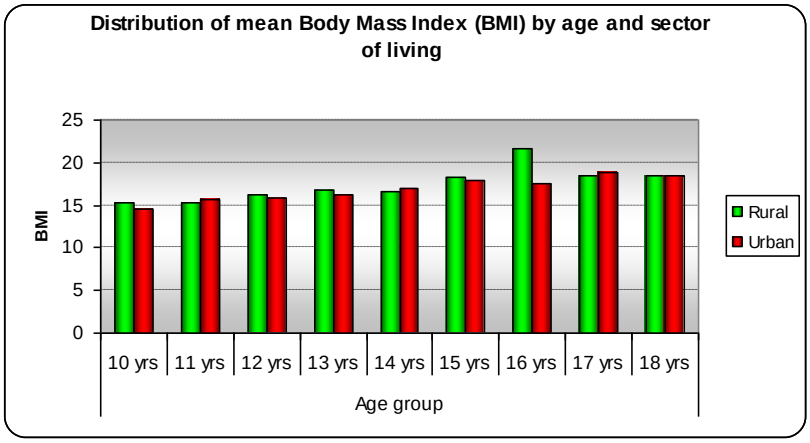
Mean weight, height and BMI of the sample by age, gender and sector

Mean and median Height, weight and BMI by age

		Height in cm			Weight in kg			Body Mass Index		
		Mean	Median	SD	Mean	Median	SD	Mean	Median	SD
Age group	10 yrs	132.66	132.20	6.94	26.69	25.90	6.72	15.0	14.8	2.3
	11 yrs	139.26	139.60	7.14	30.25	28.90	6.79	15.5	15.1	2.4
	12 yrs	141.87	142.00	7.24	32.23	31.35	5.92	16.0	15.3	2.6
	13 yrs	150.85	150.50	7.65	37.93	36.60	7.75	16.5	16.3	2.3
	14 yrs	154.24	153.30	7.98	40.32	39.55	7.98	16.8	16.6	2.3
	15 yrs	159.78	160.85	8.07	46.39	45.25	8.50	18.1	17.8	2.6
	16 yrs	160.04	157.50	8.19	47.59	43.40	16.05	18.3	16.9	4.3
	17 yrs	160.90	160.50	7.95	48.55	47.60	9.26	18.7	18.0	3.0
	18 yrs	160.73	159.00	9.12	47.72	46.60	7.11	18.5	18.4	2.2
Total		149.74	149.90	12.62	38.44	38.15	10.90	16.8	16.3	2.8

And even more deviation was seen in mean weight at the age group 16 yrs of the female population.

Figure



Table

Mean and median Height, weight and BMI by age and sector

School sector Urban school

		Height in cm			Weight in kg			Body Mass Index		
		Mean	Median	SD	Mean	Median	SD	Mean	Median	SD
Age group	10 yrs	133.48	134.10	7.18	26.74	26.00	7.53	14.8	14.3	2.5
	11 yrs	139.65	140.45	8.88	31.15	29.35	8.53	15.8	15.2	2.9
	12 yrs	142.05	141.60	6.34	32.24	31.35	5.92	15.9	15.5	2.2
	13 yrs	150.96	150.35	8.38	37.73	37.00	6.58	16.5	16.4	1.9
	14 yrs	154.72	154.60	7.85	41.99	40.80	8.76	17.4	17.0	2.5
	15 yrs	162.49	163.70	7.99	47.79	48.20	7.63	18.0	17.8	2.2
	16 yrs	159.94	157.60	7.38	44.11	43.20	10.06	17.1	16.5	2.6
	17 yrs	164.26	165.30	7.38	49.22	50.05	7.39	18.2	17.6	2.2
	18 yrs	160.71	159.30	9.43	47.98	45.60	8.45	18.5	18.4	2.2
Total		150.75	150.50	13.22	39.07	39.05	11.03	16.8	16.5	2.6

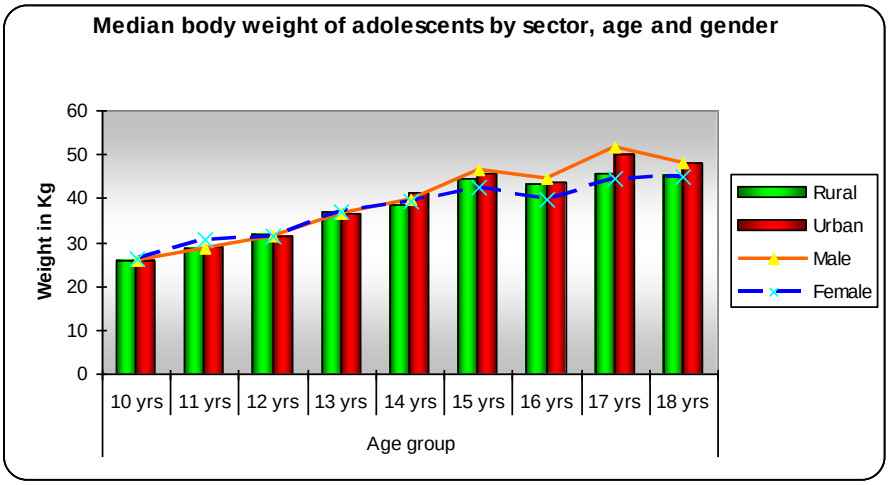
Table:

Mean and median Height, weight and BMI by age and sector

School sector Rural school

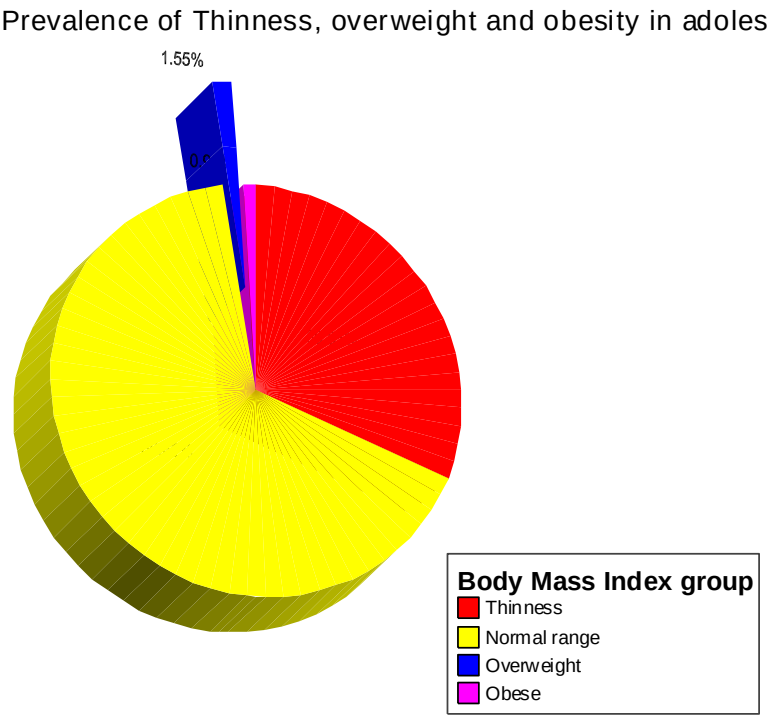
		Height in cm			Weight in kg			Body Mass Index		
		Mean	Median	SD	Mean	Median	SD	Mean	Median	SD
Age group	10 yrs	131.78	131.25	6.65	26.62	25.65	5.81	15.2	14.9	2.0
	11 yrs	138.94	138.80	5.42	29.51	28.50	4.92	15.2	15.0	1.8
	12 yrs	141.67	142.05	8.21	32.22	31.10	5.98	16.1	15.2	3.1
	13 yrs	150.76	151.30	7.10	38.09	36.40	8.63	16.6	16.1	2.5
	14 yrs	153.79	152.60	8.15	38.71	38.45	6.86	16.3	16.2	1.9
	15 yrs	157.54	158.55	7.50	45.23	44.45	9.06	18.1	17.5	2.9
	16 yrs	160.18	156.35	10.03	52.82	46.40	22.47	20.1	18.2	5.9
	17 yrs	156.60	155.50	6.56	47.70	45.70	11.33	19.3	18.1	3.8
	18 yrs	160.75	158.60	8.89	47.41	46.70	5.13	18.4	17.9	2.1
Total		148.75	149.55	11.94	37.82	37.10	10.75	16.8	16.2	2.9

Figure:



The standard deviation of mean height is higher in 18 year age group in both populations. There was wide variation of weight and heights at the age group of 16 yrs in rural population. This variation of weight has been reduced to11.3 in the mean weight of 17yrs in rural settings.

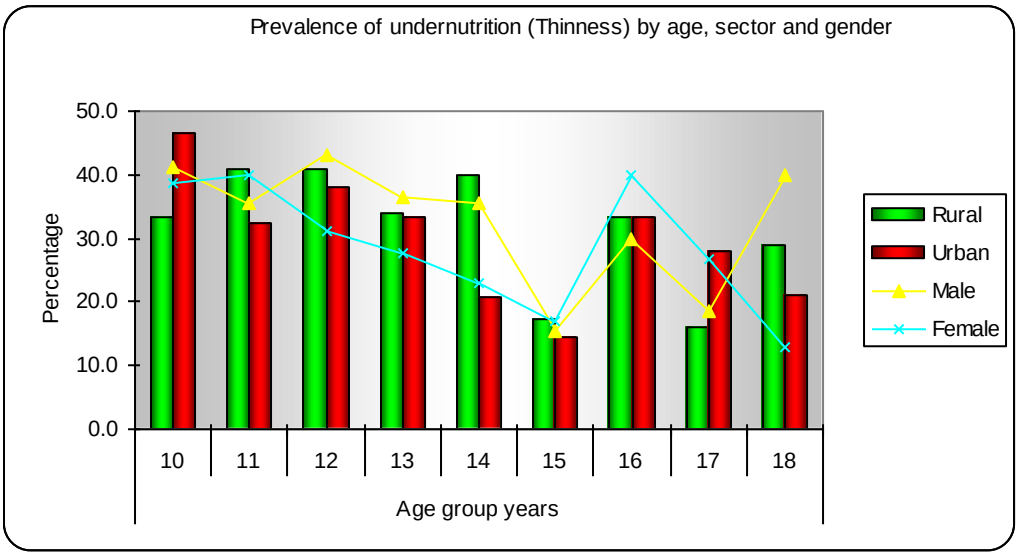
Mean BMI was highest in 18yrs among urban school adolescents while rural adolescents showed highest BMI at the age of 16yrs.



Considering all age groups (N=710) in both rural and urban there is a total of 2.5% adolescents who are overweight and obese while only 66.6 % were within normal BMI range. Prevalence of thinness among these children was 30.8%. (Obesity is defined by an indirect measure of body fat, the body Mass Index (weight in kg/Height in metre^2).)

Again 3.2% of Males and 1.5% Females were overweight and obese giving an impression that more females are within normal BMI range than males. This has been favored by the less thinness of females compared to males according to BMI.

Figure:



In this survey more overweight/obesity is seen in rural sector than urban (2.8% in rural to 2.3% respectively)

This resemblance has not changed even with considering the thinness. (32.1% to 29.5% respectively)

Prevalence of thinness, overweight in relation to age, gender and sector

Prevalence of thinness, overweight and obesity by age, gender and sector

		Body Mass Index group				
		Thinness	Normal	Overweig	Obese	
		%	%	%	%	N
Age group	10 yrs	40.2%	57.5%		2.3%	87
	11 yrs	37.1%	57.3%	4.5%	1.1%	89
	12 yrs	39.4%	58.5%	1.1%	1.1%	94
	13 yrs	33.7%	65.3%	1.1%		95
	14 yrs	30.6%	67.3%	2.0%		98
	15 yrs	16.0%	82.1%	.9%	.9%	106
	16 yrs	33.3%	60.0%		6.7%	15
	17 yrs	22.8%	71.9%	3.5%	1.8%	57
	18 yrs	24.6%	75.4%			69
Total		30.8%	66.6%	1.5%	1.0%	710
Gender	Male	33.6%	63.2%	1.6%	1.6%	437
	Female	26.4%	72.2%	1.5%		273
School sector	Urban school	29.5%	68.2%	1.7%	.6%	352
	Rural school	32.1%	65.1%	1.4%	1.4%	358

Prevalence of thinness, overweight and obesity by age and sector

School sector Urban school

		Body Mass Index group				
		Thinness	Normal	Overweig	Obese	
		%	%	%	%	N
Age group	10 yrs	46.7%	51.1%		2.2%	45
	11 yrs	32.5%	57.5%	7.5%	2.5%	40
	12 yrs	38.0%	60.0%	2.0%		50
	13 yrs	33.3%	66.7%			42
	14 yrs	20.8%	75.0%	4.2%		48
	15 yrs	14.6%	85.4%			48
	16 yrs	33.3%	66.7%			9
	17 yrs	28.1%	71.9%			32
	18 yrs	21.1%	78.9%			38
Total		29.5%	68.2%	1.7%	.6%	352

Prevalence of thinness, overweight and obesity by age and sector

School sector Rural school

		Body Mass Index group				
		Thinness	Normal	Overweig	Obese	
		%	%	%	%	N
Age group	10 yrs	33.3%	64.3%		2.4%	42
	11 yrs	40.8%	57.1%	2.0%		49
	12 yrs	40.9%	56.8%		2.3%	44
	13 yrs	34.0%	64.2%	1.9%		53
	14 yrs	40.0%	60.0%			50
	15 yrs	17.2%	79.3%	1.7%	1.7%	58
	16 yrs	33.3%	50.0%		16.7%	6
	17 yrs	16.0%	72.0%	8.0%	4.0%	25
	18 yrs	29.0%	71.0%			31
Total		32.1%	65.1%	1.4%	1.4%	358

Prevalence of thinness, overweight and obesity by age and gender

Gender Male

		Body Mass Index group				
		Thinness	Normal	Overweight	Obese	
		%	%	%	%	N
Age group	10 yrs	41.1%	55.4%		3.6%	56
	11 yrs	35.6%	57.6%	5.1%	1.7%	59
	12 yrs	43.1%	53.8%	1.5%	1.5%	65
	13 yrs	36.4%	62.1%	1.5%		66
	14 yrs	35.6%	64.4%			59
	15 yrs	15.4%	81.5%	1.5%	1.5%	65
	16 yrs	30.0%	60.0%		10.0%	10
	17 yrs	18.5%	74.1%	3.7%	3.7%	27
	18 yrs	40.0%	60.0%			30
Total		33.6%	63.2%	1.6%	1.6%	437

Prevalence of thinness, overweight and obesity by age and gender

Gender Female

		Body Mass Index group				
		Thinness	Normal	Overweig	Obese	
		%	%	%	%	N
Age group	10 yrs	38.7%	61.3%			31
	11 yrs	40.0%	56.7%	3.3%		30
	12 yrs	31.0%	69.0%			29
	13 yrs	27.6%	72.4%			29
	14 yrs	23.1%	71.8%	5.1%		39
	15 yrs	17.1%	82.9%			41
	16 yrs	40.0%	60.0%			5
	17 yrs	26.7%	70.0%	3.3%		30
	18 yrs	12.8%	87.2%			39
Total		26.4%	72.2%	1.5%		273

4.2 How has the Nutritional status of the adolescent been affected by ,

Nutritional status by food habits

		Body Mass Index group				
		Thinness	Normal	Overweight	Obese	
		%	%	%	%	N
Hunger due to not enough food at home	Never	29.7%	67.7%	1.4%	1.1%	629
	Rarely (1-5 days)	43.1%	55.2%	1.7%		58
	Some times (6-12 days)	25.0%	75.0%			12
	Most of the time (13-29 days)	25.0%	75.0%			4
	Always (30 days)	42.9%	42.9%	14.3%		7
Number of Breakfasts taken	Never	33.3%	66.7%			51
	Rarely (1-5 days)	22.5%	77.5%			40
	Some time (5-8 days)	30.4%	68.4%	1.3%		79
	Most of the time (9-19 days)	36.6%	61.2%	1.5%	.7%	134
	Always (>20)	29.6%	67.0%	2.0%	1.5%	406
Breakfast at school	Never	28.1%	69.5%	1.6%	.8%	367
	Rarely (1-4 days)	29.1%	70.9%			79
	Some times (5-8 days)	37.9%	62.1%			58
	Most of the times (9-19 days)	28.7%	67.8%	2.3%	1.1%	87
	Always (>20 days)	38.7%	56.3%	2.5%	2.5%	119

There were 7 children who responded as there was no food to eat at home and adolescents were in hunger. But 629 children were had no problems in finding food to combat their hunger.

Reasons for missing breakfast

		School sector		
		Urban school	Rural school	Total
Main reasons for missing breakfast	Dont have time for breakfast	17.3%	19.6%	18.5%
	Cant eat early in the morning	15.3%	17.9%	16.6%
	There is not always food in my home	2.6%	2.0%	2.3%
	Some other reason	4.0%	3.1%	3.5%
	No answer	60.8%	57.5%	59.2%

Although 59.2% of Adolescents had no answer to reason out for missing their break fast but only 2.3% were frank to say that there was no food to eat in the morning at home. 18.5% were had no time to eat breakfast and 16.6 % said that they can't eat early in the morning. This has been flagged more in rural setting.

?(Urban >Rural - said no food at home -> 2.6%)

Perception about the body weight

		School sector		
		Urban school	Rural school	Total
Perception about body weight	Very underweight	.9%	1.1%	1.0%
	Slightly underweight	20.2%	22.3%	21.3%
	About the right weight	50.6%	49.4%	50.0%
	Slightly overweight	9.1%	13.1%	11.1%
	Very overweight	.9%	.3%	.6%
	No idea	18.5%	13.7%	16.1%
Total	Col %	100.0%	100.0%	100.0%

A total of 16.1% had no idea about there weight whether it is adequate or not, rest of the others were conscious about their weight and 50% of the sample knew they are within their expected weight limits.

Action taken for weight control

	School sector		
	Urban school	Rural school	Total
Lose weight	7.1%	7.8%	7.5%
Gain weight	9.7%	12.8%	11.3%
Maintain the same weight	10.5%	10.3%	10.4%
Not trying to do anything	72.2%	68.7%	70.4%
No answer	.6%	.3%	.4%
	100.0%	100.0%	100.0%

To control their weight 70.4% had not tried any thing, but 29.2% were taking some plan to control their weight. This has been seen more or less in both urban and rural settings with only a slight difference.

Action taken for weight control

		History of taking drugs to control weight		
		Yes	No	No answer
Age group	10 yrs		98.9%	1.1%
	11 yrs	2.2%	97.8%	
	12 yrs	1.1%	98.9%	
	13 yrs	1.1%	98.9%	
	14 yrs	2.0%	98.0%	
	15 yrs	.9%	99.1%	
	16 yrs		100.0%	
	17 yrs	3.5%	96.5%	
	18 yrs		100.0%	
Total		1.3%	98.6%	.1%
School sector	Urban school	1.4%	98.3%	.3%
	Rural school	1.1%	98.9%	
Gender	Male	1.4%	98.4%	.2%
	Female	1.1%	98.9%	

Practice starvation for weight control

		Starvation as a weight control method		
		Yes	No	No answer
Age group	10 yrs		98.9%	1.1%
	11 yrs	1.1%	98.9%	
	12 yrs	1.1%	98.9%	
	13 yrs	2.1%	97.9%	
	14 yrs	1.0%	99.0%	
	15 yrs		100.0%	
	16 yrs		100.0%	
	17 yrs	1.8%	96.5%	1.8%
	18 yrs		100.0%	
Total		.8%	98.9%	.3%
School sector	Urban school	.6%	98.9%	.6%
	Rural school	1.1%	98.9%	
Gender	Male	.5%	99.1%	.5%
	Female	1.5%	98.5%	

Some were using drugs to control their weight without any sort of medical advice. This can be seen mostly at the age group of 17 yrs, urban schools, and among male adolescents.

Starvation is also a method used by adolescents to control their weight seen at the age group of 17yrs (1.8%), although same percentage (1.8%) had no answer regarding starvation as a weight control measure. This is observed more in rural schools and among females.

Food habits and consumption pattern

Intake of carbonated soft drinks

		Intake of carbonated soft drinks					
		Didnt drink carbonated soft drinks during the past 30 d	Less than 1 time per day	1 times per day	2 times per day	3 times per day	5- or more times per day
Age group	10 yrs	28.7%	69.0%	1.1%		1.1%	
	11 yrs	27.0%	68.5%	3.4%	1.1%		
	12 yrs	30.9%	64.9%	4.3%			
	13 yrs	28.4%	67.4%	2.1%		2.1%	
	14 yrs	26.5%	65.3%	7.1%			1.0%
	15 yrs	32.1%	58.5%	7.5%	1.9%		
	16 yrs	20.0%	80.0%				
	17 yrs	8.8%	87.7%		3.5%		
	18 yrs	15.9%	73.9%	5.8%	1.4%	2.9%	
Total		25.9%	68.3%	4.1%	.8%	.7%	.1%
School sector	Urban school	24.7%	70.2%	3.7%	.9%	.6%	
	Rural school	27.1%	66.5%	4.5%	.8%	.8%	.3%
Gender	Male	24.9%	68.9%	4.1%	.7%	1.1%	.2%
	Female	27.5%	67.4%	4.0%	1.1%		

		Intake of carbonated soft drinks						
		Didnt drink	Less than 1 time per	1 times per day	2 times per day	3 times per day	5- or more	
		%	%	%	%	%	%	N
Sector	Urban	21.9%	73.6%	3.1%	.9%	.3%	.3%	352
	Rural	29.9%	63.1%	5.0%	.8%	1.1%		358
Total		25.9%	68.3%	4.1%	.8%	.7%	.1%	710

		Intake of carbonated soft drinks						
		Didnt drink	Less than 1 time per	1 times per day	2 times per day	3 times per day	5- or more	
		%	%	%	%	%	%	N
School sector	Urban school	24.7%	70.2%	3.7%	.9%	.6%		352
	Rural school	27.1%	66.5%	4.5%	.8%	.8%	.3%	358
Total		**25.9%**	**68.3%**	**4.1%**	**.8%**	**.7%**	**.1%**	**710**
Gender	Male	24.9%	68.9%	4.1%	.7%	1.1%	.2%	437
	Female	27.5%	67.4%	4.0%	1.1%			273

		Fruit consumption pattern						
		Did not eat	1 time per day	2 times per day	3times per day	4times per day	5 or more times per	
		%	%	%	%	%	%	N
School sector	Urban school	4.3%	71.3%	18.2%	4.8%	1.1%	.3%	352
	Rural school	4.5%	74.0%	16.2%	4.7%	.6%		358
Total		4.4%	72.7%	17.2%	4.8%	.8%	.1%	710
Gender	Male	4.6%	76.2%	14.6%	3.9%	.5%	.2%	437
	Female	4.0%	67.0%	21.2%	6.2%	1.5%		273

		Daily intake of fruits -quantity					
		Didnt eat	One	Two	Three	Four	
		%	%	%	%	%	N
School sector	Urban school	2.6%	51.7%	33.8%	8.2%	3.7%	352
	Rural school	2.0%	49.4%	39.9%	5.0%	3.6%	358
Total		2.3%	50.6%	36.9%	6.6%	3.7%	710
Gender	Male	2.7%	50.6%	36.4%	6.9%	3.4%	437
	Female	1.5%	50.5%	37.7%	6.2%	4.0%	273

		Vegetable consumption pattern / day						
		Didnt eat	< onece	1 time	2 times	3 times	4 times	
		%	%	%	%	%	%	N
School sector	Urban school	2.0%	6.5%	20.2%	52.3%	17.3%	1.7%	352
	Rural school	3.6%	9.8%	15.4%	54.7%	16.2%	.3%	358
Total		2.8%	8.2%	17.7%	53.5%	16.8%	1.0%	710
Gender	Male	2.1%	9.6%	20.1%	52.6%	14.2%	1.4%	437
	Female	4.0%	5.9%	13.9%	54.9%	20.9%	.4%	273

		Quantity of vegetable consumption - daily				
		Dont eat	1-4	5-8	4-9 or	
		%	%	%	%	N
School sector	Urban school	1.4%	53.1%	38.9%	6.5%	352
	Rural school	.8%	54.2%	38.0%	7.0%	358
Total		1.1%	53.7%	38.5%	6.8%	710
Gender	Male	1.1%	51.9%	41.0%	5.9%	437
	Female	1.1%	56.4%	34.4%	8.1%	273

		Taught benefits of healthy eating			
		Yes	No	Dont know	
		%	%	%	N
School sector	Urban school	75.9%	22.4%	1.7%	352
	Rural school	79.6%	17.6%	2.8%	358
Total		77.7%	20.0%	2.3%	710
Gender	Male	78.9%	19.2%	1.8%	437
	Female	75.8%	21.2%	2.9%	273

		Eating from fast food restaurant						
		0 Days	1 Day	2	3	4	5	
		%	%	%	%	%	%	N
School sector	Urban school	72.4%	17.0%	5.1%	2.0%	1.4%	2.0%	352
	Rural school	84.1%	8.1%	4.5%	1.4%	.3%	1.7%	358
Total		**78.3%**	**12.5%**	**4.8%**	**1.7%**	**.8%**	**1.8%**	**710**
Gender	Male	78.0%	12.1%	5.5%	2.3%	.9%	1.1%	437
	Female	78.8%	13.2%	3.7%	.7%	.7%	2.9%	273

		Taught benefits of eating more fruits and vegetables			
		Yes	No	Dont know	
		%	%	%	N
School sector	Urban school	71.0%	25.9%	3.1%	352
	Rural school	74.9%	23.7%	1.4%	358
Total		**73.0%**	**24.8%**	**2.3%**	**710**
Gender	Male	74.8%	23.1%	2.1%	437
	Female	70.0%	27.5%	2.6%	273

		Taught benefits of drinking more milk				
		Yes	No	Dont know	No answer	
		%	%	%	%	N
School sector	Urban school	42.3%	52.6%	4.8%	.3%	352
	Rural school	47.8%	48.6%	3.6%		358
Total		**45.1%**	**50.6%**	**4.2%**	**.1%**	**710**
Gender	Male	47.1%	48.1%	4.6%	.2%	437
	Female	41.8%	54.6%	3.7%		273

		Taught how to make healthy meals			
		Yes	No	Dont know	
		%	%	%	N
School sector	Urban school	59.1%	36.9%	4.0%	352
	Rural school	59.5%	36.9%	3.6%	358
Total		**59.3%**	**36.9%**	**3.8%**	**710**
Gender	Male	60.9%	34.6%	4.6%	437
	Female	56.8%	40.7%	2.6%	273

		How many times clean or brush your teeth				
		Did not	1 time per	2 times	3 times	
		%	%	%	%	N
School sector	Urban school	1.4%	20.2%	70.7%	7.7%	352
	Rural school	.8%	18.4%	74.9%	5.9%	358
Total		**1.1%**	**19.3%**	**72.8%**	**6.8%**	**710**
Gender	Male	.9%	23.6%	69.3%	6.2%	437
	Female	1.5%	12.5%	78.4%	7.7%	273

		Washing hands before eating					
		Never	Rarely (1-4 days)	Some times	Most of the time	Always (30 days)	
		Row %	Row %	Row %	Row %	Row %	N
School sector	Urban school	7.7%	11.4%	12.5%	32.1%	36.4%	352
	Rural school	9.2%	12.3%	15.4%	33.0%	30.2%	358
Total		**8.5%**	**11.8%**	**13.9%**	**32.5%**	**33.2%**	**710**
Gender	Male	9.8%	13.0%	12.6%	31.6%	33.0%	437
	Female	6.2%	9.9%	16.1%	34.1%	33.7%	273

		Wash hands after using toilets					
		Never	Rarely (1-4 days)	Some times	Most of the time	Always (30 days)	
		%	%	%	%	%	N
School sector	Urban school	2.8%	3.4%	3.7%	5.7%	84.4%	352
	Rural school	1.1%	1.4%	2.8%	10.6%	84.1%	358
Total		**2.0%**	**2.4%**	**3.2%**	**8.2%**	**84.2%**	**710**
Gender	Male	3.0%	3.2%	3.4%	9.2%	81.2%	437
	Female	.4%	1.1%	2.9%	6.6%	89.0%	273

		Place for hand wash at school		
		Yes	No	
		%	%	N
School sector	Urban school	88.9%	11.1%	352
	Rural school	72.6%	27.4%	358
Total		**80.7%**	**19.3%**	**710**
Gender	Male	82.2%	17.8%	437
	Female	78.4%	21.6%	273

		Use of soap to wash hands in school					
		Never	Rarely (1-4 days	Some times	Most of the time	Always (30 days)	
		%	%	%	%	%	N
School sector	Urban school	91.5%	5.1%	1.1%	2.0%	.3%	352
	Rural school	94.1%	3.9%	1.1%	.8%		358
Total		**92.8%**	**4.5%**	**1.1%**	**1.4%**	**.1%**	**710**
Gender	Male	93.6%	3.7%	1.4%	1.4%		437
	Female	91.6%	5.9%	.7%	1.5%	.4%	273

		Taught how to wash your hands			
		Yes	No	Dont know	
		%	%	%	N
School sector	Urban school	47.2%	45.2%	7.7%	352
	Rural school	47.8%	46.9%	5.3%	358
Total		**47.5%**	**46.1%**	**6.5%**	**710**
Gender	Male	50.8%	42.6%	6.6%	437
	Female	42.1%	51.6%	6.2%	273

		Number of days physically active								
		0 Days	1 Day	2 Days	3 Days	4 Days	5 Days	6 Days	7 Days	
		%	%	%	%	%	%	%	%	Count
School sector	Urban school	17.9%	6.3%	17.0%	13.9%	6.5%	11.4%	6.0%	21.0%	352
	Rural school	16.8%	7.0%	12.0%	15.1%	5.9%	13.1%	7.3%	22.9%	358
Total		**17.3%**	**6.6%**	**14.5%**	**14.5%**	**6.2%**	**12.3%**	**6.6%**	**22.0%**	**710**
Gender	Male	10.3%	5.0%	15.1%	14.2%	8.0%	11.9%	7.6%	27.9%	437
	Female	28.6%	9.2%	13.6%	15.0%	3.3%	12.8%	5.1%	12.5%	273

		Time spent on sitting activities						
		< 1 hour	1 to 2	3 to 4	5 to 6	7 to 8	> 8 hours / day	
		%	%	%	%	%	%	N
School sector	Urban school	9.7%	52.0%	27.3%	9.9%	1.1%		352
	Rural school	12.6%	40.2%	33.2%	10.6%	2.0%	1.4%	358
Total		**11.1%**	**46.1%**	**30.3%**	**10.3%**	**1.5%**	**.7%**	**710**
Gender	Male	11.7%	45.8%	31.8%	9.8%	.5%	.5%	437
	Female	10.3%	46.5%	27.8%	11.0%	3.3%	1.1%	273

		School sports facillities		
		Foot ball ground	No Foot ball	
		%	%	N
School sector	Urban school	87.8%	12.2%	352
	Rural school	31.0%	69.0%	358
Total		59.2%	40.8%	710
Gender	Male	65.2%	34.8%	437
	Female	49.5%	50.5%	273

Prevalence of anaemia and distribution of haemoglobin in adolescent children by age and gender

		Anaemic		Haemoglobin -g/dl		
		Row %	Count	Mean	Median	Std Deviation
Age groups in years	11 - 14	20.1%	1646	12.7	12.7	1.1
	15 - 18	25.0%	1435	13.1	13.1	1.4
Total		22.3%	3081	12.9	12.9	1.3
Gender	Male	18.1%	1365	13.3	13.2	1.4
	Female	25.7%	1716	12.6	12.6	1.2
Total		22.3%	3081	12.9	12.9	1.3

Department of Nutrition, Medical Research Institute