Assessment of Dietary Habits and Physical Activity Level among Adolescent Girls (13-18 years)

Dr. Asha G[1], Chiranthana Prasad M R[2], Nikhath Asma. A[3]

[1]Associate Professor, Department of Food and Nutrition and Research Centre. Smt. V.H.D Central Institute of Home Science (Autonomous), Seshadri Road, Bengaluru 560 001)
[2]Masters in Food and Nutrition, Department of Food and Nutrition and Research Centre. Smt. V.H.D Central Institute of Home Science (Autonomous), Seshadri Road, Bengaluru 560 001)
[3]Masters in Food and Nutrition, Department of Food and Nutrition and Research Centre. Smt. V.H.D Central Institute of Home Science (Autonomous), Seshadri Road, Bengaluru 560 001)

ABSTRACT

Obesity has remained the global pandemic for a long time and overweight is also categorized as a global concern in developing urban and rural centers. Risk of being overweight has affected the girls more than the boys. Adolescence and adults being overweight has rapidly increased in the past 20 years. The study was conducted at some of the schools and colleges of the Bangalore city. The subjects were screened by taking height and weight (anthropometric measurements) and calculating BMI by random sampling technique. Totally 457 subjects were screened for the study belonging to age ranging from 13 years- 18 years. Out of 457subjects 100 overweight and obese samples were identified and taken for the study. The results showed that the factors that could affect the prevalence of overweight and obesity among adolescent girls are due to faulty dietary pattern; lack of knowledge regarding healthy nutrient intake and RDA, practicing sedentary life style. It was also found that pervasiveness of overweight was more than obesity among pre-teen and teenage girls. It can be concluded that the rampant presence of overweight and obesity is increasing in developing countries, among juvenescence girls. Some of the factors that are related to overweight and obesity are diet and physical activity. Early puberty phase of adolescence (13-15 years) has slightly higher proportion of overweight and obese individuals compared to the late adolescent phase (16-17 years). Having improper food habits can lead to risk of being overweight, eating maladies. It also remains a major cause for other lifestyle disorders and thus maximizing the risk of being overweight in adulthood as well. Lack of proper nutritional awareness needed during this growth spurt phase remains a major concern.

Keywords: Dietary habits, adolescents, overweight, obesity

INTRODUCTION

Increased growing curve in early puberty is often different in individuals due unique genes, nutritional and hormonal attributes. Children and adolescents facing obesity is of prominence not only because of its dire health risks in childhood and adolescence but also i t s association with greater consequence in adulthood. (Maiti, De *et al)*

Faulty eating habits is a strong conduit for mismanaged weight and lifestyle disorders. It also remains a major cause for other lifestyle disorders and thus maximizing the risk of being overweight in adulthood as well. Heart diseases can be a major tipping point in adolescence due to majority consuming fatty foods. Mineral availability in foods (like Ca and Iron) remains reduced due to improper nutrition thus increasing deficient disorders later in life. Accompanied with increased growth curve during puberty lack of nutritional guidance for creating a healthier environment amongst them is very discerning (Dianne Neumark-Sztainer, Mary Story *etal)*

Regularization of a regimented exercise routine helps avoid chronic diseases in later stages of life. However, it can be noticed that there is a reduction in frequency of physical activity during adolescence, particularly among tennage girls. (Dianne Neumark-Sztainer, Mary Story *etal).*

Hence, taking the above points in to consideration the following objectives were formulated.

- To screen the subjects for weight and obesity.
- To determine the dietary habits of the respondents.
- To evaluate the level physical activity of the subjects.

MATERIALS AND METHODS

Location: The current study was done in - Spurthy Niketan highschool, Pillanna garden, Bangalore-5600045, Baldwin'swomen's Methodist college, Richmond road, Bangalore. Maharani Ammani college, opp. Freedom park,Bangalore-560001and Smt.V.H.DCentralInstituteofHomeScience,Sheshadriroad,Bangalore-560001

Screening: The subjects were screened by taking height and weight (anthropometric measurements) and calculating BMI by random sampling technique(www.who.int/tools/growth-reference-data-for-5to19-years/indicators/bmi-for-age).

The respondent's anthropometric measurements were taken with a measuring rod and weighing apparatus to the closest values of 0.1cm and 0.5 kg respectively. The respondents were categorized as overweight and obese based on the BMI cut-off values (85th and 95th percentile) specified on CDC growth charts. (*United States: CDC Growth Charts; 2000.)*

Totally 457 subjects were screened for the study belonging to age ranging from 13 years- 18 years. Out of 457 subjects 100 overweight and obese samples were identified and taken for the study.

Total no. of students screened	No. of overweight and obese subjects
457	100

Total no of overweight And obese subjects	No. of overweight subjects	No. of obese subjects
100	76	24

Data collection: The detailed questionnaire was formulated to elicit the information on factors causing over weight and obesity in adolescent girls. The questionnaire was pre tested and modifies wherever necessary and has four sections as given below.

Demographic profile: Basic information of the subjects were collected

Dietary pattern: Dietary pattern of the subjects were recorded, which includes type of diet, consumption of various foodstuffs such as non-vegetarian, salty snacks, baked foods, fried foods, fatty foods and sweets. The 24 hours dietary recall method was used to obtain estimates of food intake. A set of pre-standardized cups and vessels were used to obtain estimates of the amount of raw and cooked food consumed. Similarly different size of cardboard discs was used to determine the size of idli/dosa etc. Information on the type of preparation, actual ingredients used and the amount consumed by each subject was recorded in the schedule designed for this purpose. Subsequently the daily intake of energy (kcal), protein (g), fat (g) was computed by using the food composition tables (Gopalan *etal.*2010).

The adequacy of nutrient intake was calculated by dividing nutrient intake by recommended dietary allowance (RDA) appropriate for that person's age and sex andmultipliedby100 (Thimmayamma,1987).

Physical activity: The time spent by the subjects on indoor, outdoor and recreational activity was collected.

Statistical analysis: The data collected was classified, tabulated and expressed as percentage, mean, SD and chi square test and the results were analyzed statistically using Standard T test for comparing the population mean.

The analysis and interpretation of data included coding and decoding of the questions and the same was subjected to statistical analysis. The statistical tests performed include percentage, mean, standard deviation, chi-square test, student t test and standard t test.

RESULTS AND DISCUSSION

Table1: Age-wise distribution of the subjects:

Age (in Yrs.)	Number	Percentage
13–14	49	49
15–16	18	18
17–18	33	33
Total	100	100
Mean±SD	15.41± 1.98	

Table1indicates the age distribution of the subjects showing that 49 percent of overweight/ obese adolescent girls belong to of 13- 14 years and 33 per cent belong to 17- 18 years whereas only 18 per cent were15-16years.

It can be noted that obesity/overweight can be seen more significantly in school going teenage girls. As per statistics, this percentage progresses in successive levels of study. The presence of majority teenage girls in early puberty as obese and overweight individuals is due to improper eating habits, lack of exercise regime, imbalanced caloric intake, absence of nutritional awareness as compared to late puberty phase (16-17 years) Kapil *et al*. (2002).Thus one needs to promote an active lifestyle among the adolescents.

Table2: Education level of the subjects:

Educational Level	Number	Percentage
7	13	13
8	8	8
9	44	44
10	2	2
Graduate	33	33
Total	100	100

Table 2 shows the education level of overweight/ obese adolescent girls revealing that 44per cent of the girls belong to 9th standard, whereas 33 per cent, 13 per cent, 8 per cent, 2per centbelongedtograduate,7[th]standard,8[th]standard,and10[th]standard respectively.

Overweight continues to progress in late adolescence and adulthood. Post pubertal phase has lesser individuals in the overweight phase as compared to early phase. This is could be due to the growth spurt in early puberty associated with increased production of fat cells which in later puberty can increase in size due to accretion.

Table3: Type of Diet followed by the subjects:

Type of Diet	Number	Percentage
Vegetarian	21	21
Non-Vegetarian	78	78
Ova-Vegetarian	1	1
Total	100	100

Table 3 shows that majority (78 %) of overweight/ obese girls are non-vegetarian, and few(21%)follow vegetarian diet where as only one subject followed ova- vegetarian diet.

Presence of unhealthy fats in non-vegetarian foods promotes obesity .There is direct link between increased consumption of non - vegetarian food(like meat) and risk for obesity and the results found were on par with results found by Y Wang and M A Beydoun (2009).

Table4: Frequency of eating snacks by the subjects:

Snacks	Daily	Twice a Week	Once a Week	Once in Fortnight	Once a Month	Never
Salty snacks	34	24	30	7	5	-
Baked foods	25	29	28	7	9	2
Milkshakes	13	13	19	5	33	17
Energy Drinks	6	3	12	9	25	45
Sweets	31	18	26	8	15	2
Ice-cream	16	27	34	9	10	-
Sweetened Coffee drinks	27	13	17	6	21	16
Fast foods	-	11	9	9	55	16
Significance ofχ^2value	85.3214**					

**Significantat1%level

Table 4 depicts that the snack consumed in higher frequency and daily was found to be salty snacks (34 per cent), followed by sweets (31 per cent), sweetened coffee drinks (27percent), baked foods (25 per cent), ice cream (16 per cent), and energy drinks (6 percent), whereas fast food was consumed in a higher frequency (55 per cent) once in a month. On the contrary the least consumed snack was found to be energy drinks (45 percent), followed by milkshakes, sweetened coffee drinks (16 per cent), fast foods (16 percent).

Significance of 1% level was found among subjects. Consumption of junk food and high calorie and fatty food is common among overweight and obese adolescent girls which could be one of the major causes for them being overweight or obese. Increased calorie tends to increase weight when sodas are used instead of milk. Milk has nutrients like protein and fat whereas soda has simple sugar which is digested faster than milk. This contributes to increased weight due to increased presence of blood sugar , hunger pangs and excess fat conversion. (Janet James *et al* 2004).

Table 5: Overeating in Hunger by the subjects:

Over Eating when Hungry	Number	Percentage
Yes, Most of the Times	15	15
Yes, Sometimes	64	64
No, Never	21	21
Total	100	100
Significanceofχ^2 Value	43.3030**	

**Significantat1%level

Above table (table 5) indicates that majority (64 %) of subjects over eat when hungry, 21per cent of the subjects never over eat when hungry, while only 15 percent of them overeat when feeling hungry with significance at1per cent level. It is important to have meals on time without skipping which otherwise would result in building up of hunger which might lead to unnecessary overeating especially snacks and junk food rather than healthy food which would result in one being overweight and obese.

Table 6: Walking habit among overweight and obese adolescent girls:

Walk daily	Number	Percentage
Yes	71	71
No	29	29
Total	100	100

According to above table (table 6) 71 per cent of the subjects involved themselves in walking daily while 29percent did not. Though majority of the subjects were involved in activity of walking daily still had no effect on their weight which could have been due to low intensity. Increased frequency of walking will help retract weight and thus remains inversely proportional to distance covered through walking as well. The results were on par with James A Levine *et al* (2007).

Table7: Participation of the subjects in exercise

Exercise	Number	Percentage
Yes	47	47
No	53	53
Total	100	100

Table 7 inferred that 53 per cent of the subjects did not involve in any kind of exercise at all, while 47 percent participated in exercise.

Lack of exercise and those who followed sedentary lifestyle tend to put on weight while others who were indulged in exercise but still were found to be overweight and obese must have been due to practicing low intensity exercise for a very short duration.

Regulated daily exercise of moderate intensity (60 minutes) will help reduce excess weight and thus negating positive energy balance .The results were found on par of Claude Bouchard *et al* (2012).

Table8: Type of Exercise done by the subjects:

Type of Exercise	Duration			
	(%) 30Min.	(%) 1Hr.	(%) >1Hr.	Never
Jogging	1	6	1	92
Running	5	6	-	89
Skipping	28	5	1	66
Swimming	-	-	3	97
Yoga	7	1	-	92
Gym Exercise	2	-	1	97
Significance of χ^2 value	46.7829**			

**Significantat1%level

Most of the subjects (28 %) involved themselves in skipping for about 30 minutes per week, 6 per cent in jogging and running for one hour, and only 7 per cent were involved in yoga for just 30 minutes, whereas only 1 and 2 per cent of the subjects were involved in jogging and gym exercise respectively, and 3per cent were involved in swimming for more than an hour per week as seen from the above table (table 8).

Significance level of 1%was found among the subjects. It's the duration, continuity and frequency that matters the most while doing exercise. Indulging in exercise once in awhile, practicing low intensity exercise does not help in bringing about effective weight reduction. Daily regimented exercise modules like walking can help maintain a healthy weight . The results found were on par with results found by Claude Bouchard *et al* (2012).

Table9: Participation in outdoor games by the subjects:

Outdoor games	Number	Percentage
Yes	42	42
No	58	58
Total	100	100

Only 42 per cent of the subjects were involved in outdoor games, while 58 per cent were not involved in outdoor games (table 9).

More than half of the subjects were not indulged in any kind of outdoor games meaning they were not involved in physical activity and practiced sedentary lifestyle while those who did participate in outdoor games but still were overweight and obese may be indicating that their duration of activity, continuity and frequency must have been improper.

Table 10: Participation of the subjects in types of outdoor games:

Type of Outdoor game	Duration			
	30 Min.	1 Hr.	>1 Hr.	Never
Hopscotch	3	2	6	89
Cycling	4	14	7	75

Swimming	1	-	1	98
Running	7	4	1	88
Significanceofχ^2 Value	34.8531**			

**Significantat1%level

Table 10 indicates that 14 per cent of the subjects cycled for about an hour per week, 7 percent were involved in running for about 30 minutes, 3 and 2 per cent were involved in hop scotch for about 30 minutes and one hour respectively, only 1percenteach did swimming as an outdoor activity for about30 minutesandmorethan1hour respectively.

1% level of significance was found among subjects participating in outdoor games. The games suggested above though contribute greatly to weight loss only when performed on a regular basis. Progressive reduction in physical activity coupled with lifestyle of playing sedentary computer games or sitting for long periods will not cause any weight loss (Goyal *et al* 2011)

Table11: Participation of the subjects in the types of indoor games:

Type of Indoor game	Duration			
	30 Min.	**1 Hr.**	**>1 Hr.**	**Never**
Tennis	2	2	1	95
Badminton	10	10	13	67
Basketball	1	-	3	96
Volleyball	1	1	3	96
Throwball	6	9	7	78
Significanceofχ^2 Value	28.6754**			

**Significantat1%level

The indoor game in which the subjects participated (33%) the most is badminton, followed by throw ball (22 %), where as rarely any subject participated in basket ball (4 %), volleyball (5%) and tennis (5%) according to table 11.

Significance of 1% level was found among subjects participating in indoor games. Remaining consistent with playing the above games can help in maintain a healthy weight.

Table 12: Napping during day time in holidays by the subjects:

Sleeping day time during holidays	Number	Percentage
Yes	63	63
No	37	37
Total	100	100

It is inferred from the table 19 that 63 per cent of the subjects sleep during day time while 37 percent of the subjects do not. The above table clearly indicates that physical inactivity and more amount of sleeping are common among overweight and

obese adolescent girls hence they tend to put on more weight. Therefore weight management is required. Short naps during the day can enhance cerebral capabilities while recurring ones can downgrade any weight loss progress (Dhand *et al* 2006).

Table 13: Time at which subjects go to sleep in the night:

Time of Sleeping	Number	Percentage
10 PM	54	54
11 PM	23	23
12 PM	10	10
Irregular	13	13
Total	100	100
Significanceofχ^2value	48.5600**	

**Significantat1%level

Table 13 depicts that 54 per cent of the subjects go to sleep at 10pm, followed by 23 percent sleep at 11pm, 10 per cent sleep at 12 pm, while 13 per cent have irregular sleeping habits.

Sleeping on regular timings for a minimum of 8 hours is very important. Going to sleep on irregular timings can lead to disturbances in circadian rhythm which could be one of the causes for being overweight and obese. Quick sleeping durations are linked with greater adiposity markers in female population . This could be an added correlation with sedentary lifestyle and faulty food habits (Garaulet *et al* 2011).

Table 14: Eating food while watching TV by the subjects:

Eating food while watching TV	Number	Percentage
Yes	86	86
No	14	14
Total	100	100

It has been shown in the above table (table 23) that 86 per cent of the subjects indulge themselves in eating while watching television, while 14percentdonot.

Eating food while watching television is common among overweight and obese adolescent girls resulting in distraction from eating with more concentration on television and hence losing the count on quantity of food and calories eaten and ultimately leading to positive energy balance and munching of unhealthy snacks.

CONCLUSION

Obesity and overweight are progressing as global burden with increased presence among adolescent and adult population. Teenage girls are making up majority as their eating patterns and lifestyle being the contributing factors. Another facet of the study concluded with acknowledging the presence of overweight and obese individuals in their early teens. This could progressively increase the later adulthood having carrying forward this concern along with the additions of other lifestyle disorders. Being overweight as an adolescent is associated with being overweight as an adult. To curtail such a global pandemic on the rise, one has to promote and encourage enjoyable physical regiments that is to be a part of anybody's daily routine since their young age. Attention to consumption behaviors, sedentary entertainment and consistent sedentary household chores trigger the proverbial epidemic of unhealthy population. For a better healthy population, promoting consistent nutritional awareness along with practice is the key.

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