Assessment Of Dietary Pattern And Physical Fitness Level Of Adolescent Girls

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ABSTRACT

The present study was carried out to assess the dietary pattern and physical fitness among late adolescent girls (18-20 years). 100 respondents were taken into the study by using purposive random sampling method. The current study was completed at Smt. V.H.D Central Institute of Home Science College, Seshadri Road, Bangalore-01. The main purpose of the study was to assess the anthropometric measurement of the subjects, to evaluate the dietary pattern of the subjects, and physical fitness among the subjects, to compare the physical fitness of the subjects with dietary pattern. A set of questions was used to collect the data on demographic profile, diet survey, anthropometric measurement, and physical fitness. The study inferred that the respondents were aged between 18-20 years. Majority of the respondents (70%) were non-vegetarian and 64 percent of the respondents have the habit of skipping meals and 38 percent of the respondents steered clear of breakfast. 24 hours dietary recall (3 consecutive days) were done on 25 percent of the subjects. Suitable statistical tests were applied. The results shows that energy, protein intake of the respondents was lower and fat intake is higher compared to the recommended dietary allowance [RDA]. The statistical tests show a significant difference between the intake and RDA for energy, protein, fat. It is found that majority (83%) of the subjects had very poor performance on push ups test and also it is found that majority (97%) had very poor performance for the sit ups test. Response on sitting flex test among respondents had average response on sitting flex test followed by 35 percent, 19 percent had fair and good response. Also the response for floor touch test among the respondents, it is found that 72 percent were disqualified followed by 28 percent were qualified. In 3 minutes step test 33 percent of the respondents had good response followed by 23 percent had above average response and 13 percent had average and below average response. It is also found that in 12 minutes running test, 31 percent of the respondents are categorized as above average followed by 30 percent are categorized as below average and 16 percent of the respondents are categorized as average and poor and 7 percent are categorized as excellent score. Creation of awareness on the importance of physical activities among adolescents would lead to healthier food choices and proper weight for age.

Keywords: Adolescent girls, dietary pattern, physical fitness

INTRODUCTION:

The most significant part of a Human life is growing up in adolescence .This phase of one's life comes with multiple physical and mental changes where every child blossoms into a mature adult. Conflicting emotions and new experiences create chaotic behavior but teaches one independence , helps to navigate relationships while also motivating us towards creation of a self-identity to feel significant in the society.(Ruiz et al. 2010). Remaining active during this phase of growth spurt can help avoid lifestyle disorders like diabetes and obesity (McKenzie & Kahan, 2008).Adolescents and adults having a disciplined active life improves positive body composition which is the helps have a fit late adult life. (Ruiz et al., 2010). Physical activities have been proven to improve academic prowess in both childhood and adolescence , thus building a mentally fit adults . (Luppino et al., 2010; Ortega et al., 2008; Strong et al., 2005).

The current research focuses on evaluating dietary habits and physical fitness among adolescent girls of the age group 18 - 20 years.

Objectives:

- To assess the dietary pattern of the subjects.
- To assess the anthropometric measurement of the subjects.
- To assess the physical fitness level among the subjects.

Materials and methods

Location:

The present research was conducted at Smt. V.H.D Central Institute of Home Science College, Seshadri Road, Bangalore- 01

Sampling: A study was conducted on a section of students of 18 to 20 years age group. A total of 100 late adolescent girls were selected. The samples were collected by purposive sampling technique.

Data collection:

A detailed schedule was formulated to elicit the information on physical fitness among adolescent girl.

Demographic profile:

The general information regarding stage of life , sex , education, genealogy , annual revenue were collected.

Dietary pattern:

Under this, data regarding the food habits of the respondents were collected which included information on types of diet, number of meals consumed, skipping of meals and daily water intake. Data was also collected on the current nutritive practices of the subjects.

24 hours dietary recall:

The short term dietary survey was used to obtain estimates of food intake. Information on the food and amount consumed by each subjects was recorded. Subsequently the daily intake of macronutrients was computed by using the food composition tables (Gopalan et al. 1999)

By diving as per the recommended RDA specific to the respondent age and sex (multiplied by 100) helped obtain the appropriate nutrient intake. (Thimmayamma, 1987)

Anthropometric measurement:

Noninvasive quantitative measurements were conducted as per WHO standards.(WHO 2010)

Physical fitness tests are as follows:-

Push ups test(Source: adapted from Golding, et al. 1986). The Y's way to physical fitness (3rd ed.), Sit ups test (Kendall et al., 1993), Flexibility (Sit and reach test Source: adapted from Golding, et al. 1986). The Y's way to physical fitness (3rd ed.), Sitting flex (source: Wells, K.F. & Dillon, E.K. 1952). The sit and reach. A test of back and leg flexibility(Research Quarterly, 23. 115-118) , 12 minutes running test (Source:- COOPER, K.H. 1968) ,The 3-minute step test (Source: Canadian Public Health Association Project 2002)

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.

TABLE – 1 Grading of Respondents by Age group and Education

N=100

Attributes	Tier	Respondents	
		Number	Percent
Age group (years)	18 years	53	53.0
	19 years	36	36.0
	20 years	11	11.0
Education	1st degree	64	64.0
	2nd degree	36	36.0
Total		100	100.0

Table 1 shows the classification of respondents by age and education of the subjects. The results indicates that more than half of the respondents (53%) were found to be in the age group of 18 years, followed by (36%) in the age group of 19 years followed by (11%) in the peer group of 20 years. About 64 percent of adolescent girls were in 1st year degree and 36 percent of adolescent girls were in 2nd year degree.

TABLE – 2 Grading of Respondents by Dietary pattern and Water intake
N=100

Attributes	Tier	Respondents	
		Number	Percent
Type of diet	Vegetarian	30	30.0
	Non-vegetarian	70	70.0
Meals consumed per day	Two	8	8.0
	Three	71	71.0
	Four	21	21.0
Water intake/day	1-2 lts	65	65.0
	2-3 lts	35	35.0
	3-4 lts	0	0.0
Total		100	100.0

The table reveals the type of diet and amount of meals consumed per day and water intake of the subjects. More than half of the respondents (70%) were non-vegetarian, followed by 30 percent who were vegetarian. 71 percent of subjects consume meals thrice a day followed by 21 percent and 8 percent of subjects consume four times & twice a day respectively.

The above table also depicts the daily water intake of the respondents. It shows that 65 percent of the respondents consumed 1-2 liters of water per day followed by 35 percent who consumes 2-3 liters of water daily.

Consumption of non vegetarian food is high in hydrogenated fats will increase probability of encountering heart diseases and obesity. While, mostly three meals are consumed in a day, it is advised to have small and frequent meals throughout the day. As this may reduce the intake of food thereby, reducing the risk of obesity.

For normal functioning of the body it requires at least two to three liters of water. Dehydration can lead to fatigue, dizziness and less productivity at work, it can also cause constipation problems, flatulence and indigestion. According to the table, most subjects are found to have less water intake per day.

TABLE – 3 Grading of Respondents by Habit and frequency of skipping meals

N=100

Attribute	Tier	Respondents	
		Number	Percent
Habit of skipping meals	Yes	64	64.0
	No	36	36.0
Frequency of skipping	Daily	13	13.0
	Weekly once	4	4.0
	Weekly twice	2	2.0
	Weekly thrice	23	23.0
	Fortnightly	7	7.0
	Monthly	5	5.0
Skipping meal	Breakfast	38	38.0
	Lunch	9	9.0
	Snacks	9	9.0
	Dinner	8	8.0

Table 3 depicts the habit of skipping meals and frequency of skipping meal by the respondents. About 64 percent of the subjects have the habit of skipping meals. Majority of the subjects (23%) used to skip meals thrice in a week, followed by 13 percent who skip their meals everyday and 7 percent fortnightly, among which 38 percent of the subjects have the habit of skipping breakfast followed by 9 percent who skip lunch & snacks and 8 percent skip dinner.

Breakfast is one of the most important meals of the day as it increases the activity level and concentration thereby, increasing the productivity level at work. Breakfast helps in reducing gastrointestinal problems such as gastritis, ulcer and improves bowel movement and reduce fatigue. Studies have shown that intake of breakfast also reduces obesity in the long run because people tend to eat or consume more when they skip breakfast on a regular basis.

Constant patterns of snacking junk food, irregular eating , avoiding breakfast and consistent outdoor eating can be noticed in adolescence(Petrillo JA 2002).

TABLE – 4 Stratification of Respondents by Anthropometric measurements
N=100

Attribute	Tier	Respondents	
		Number	Percent
Body mass index (BMI)	Under weight	40	40.0
	Normal	41	41.0
	Over weight	19	19.0
Waist hip ratio (W/H)	Normal	80	80.0
	Obese	20	20.0
Total		100	100.0

Table 4 shows the classification of respondents by anthropometric measurements. It is found that 40 percent of respondents are underweight, 41 percent of respondents fall under normal category followed by 19 percent who are obese. The above table also shows the 80 percent of the respondent's waist hip ratio is normal and 20 percent are obese.

Majority of the subjects were found to be underweight. This could be due to their skipping meals. They won't be able to take the required RDA which in term reduced their body weight and other side of skipping meals, they skip the meals but they eat all empty calories such as snacks, chips, coca cola due to this they won't get other nutrients and other side 19 percent of the respondents found to be obese this could be due to skip the meals and they go for eating lots of junk foods which leads to increasing body weight.

Obesity and counter balance in energy obtained through consumption of processed foods not only reduces bioavailability of dietary fiber , and burdens the body with saturated fats , simple carbohydrates and promoting more metabolism of sugars. (Schlosser E.2001).

TABLE – 5 Systematization of Respondents by Physical activities
N=100

No.	Type of Exercise	Respondents (%)			
		Participation		Duration	
		No	Yes	< 30 mins	30-60 mins
1	Walking	27	73	60	13
2	Jogging	83	17	15	2
3	Running	80	20	17	3
4	Swimming	96	4	2	2
5	Cycling	78	22	19	3
6	Exercise	84	16	13	3
7	Yoga	85	15	15	0
8	Meditation	85	15	13	2

@ Multiple Response

Table 5 depicts the classification of respondents by physical activities. The results indicates that majority of the respondents (73%) indulge themselves in walking with duration < 30 minutes followed by 13% who walk for 30-60 minutes.

Around 22 percent and 20 percent of the respondents involve themselves in cycling and running respectively.

The above table shows that the majority of the subjects were involved in some kind of physical activities, even if they do physical activity but duration is less. If they do less than 30 minutes which is of no use. They should do minimum 30 minutes - 45 minutes of physical activity and more than 30 minutes - 60 minutes of physical activity is beneficial, at least 5 days a week.

TABLE – 6 Grading of respondents by attitude towards importance of exercise
N=100

Aspects	Category	Respondents	
		Number	Percent
How important is exercise	Very important	58	58.0
	Moderately important	42	42.0
Total		100	100.0

Table 6 indicates that the majority of the respondent's (58%) feel that exercises very important followed by 42 percent feel that exercises moderately important.

To have better standard of living , incorporating a fitness regime through physical exercises will help adolescence and adults avoid non communicable diseases .

TABLE –7 Association between age group with physical activity and current level of Fitness
N=100

Aspects	Category	Sample (n)	Age group						χ^2 Test
			18 yrs		19 yrs		20 yrs		
			N	%	N	%	N	%	
Physical activity	No	23	11	20.7	9	25.0	3	27.3	0.35 NS
	Yes	77	42	79.3	27	75.0	8	72.7	
Current level of Fitness	Good	54	31	58.5	18	50.0	5	45.5	2.93 NS
	Average	37	17	32.1	14	38.9	6	54.5	
	Poor	9	2	9.4	4	11.1	0	0.0	
		100	53	53.0	36	36.0	11	11.0	

NS : Non- Significant

Table 7 depicts the age group with physical activity and current level of fitness in physical activities. The results indicates that 20.7 percent, 25 percent and 27.3 percent were found to be in the age group of 18 years, 19 years and 20 years were not doing physical activity.

Also the table shows that 58.5 percent, 50 percent, 45.5 percent were found to be in the age group of 18 years, 19 years and 20 years were good level of fitness followed by 32.1 percent (18 years), 38.9 percent (19 years), 54.4 percent (20 years) were categorized as average level of fitness and 9.4 percent (18 years), 11.1 percent (19 years) were categorized as poor level of fitness. There is non-significant different and majority of them are physical level are at the age group of 18 years.

The statistical test found to be non significant in physical activity ($\chi 2 = 0.35$ NS) and current level of fitness. ($\chi 2 = 2.93$ NS)

Majority of the subjects belongs to 18 years were doing physical activity and majority of the subjects current fitness level is good. But as the age increases physical activity goes down, interest on physical activity decreases due to laziness, lack of interest and time constrain. If they are not physically active their health condition also declines so one should be physically fit irrespective of the age group.

TABLE – 8 Association of age group and body mass index

N=100

Characteristics	Category	Sample (n)	Respondents						$\chi 2$ Test
			Underweight		Normal		Overweight		
			N	%	N	%	N	%	
Age group	18 yrs	53	18	34.0	24	45.3	11	20.7	1.73 NS
	19 yrs	36	17	47.2	13	36.1	6	16.7	
	20 yrs	11	5	45.4	4	36.4	2	18.2	
Total		100	40	40.0	41	41.0	19	19.0	

NS : Non-significant

Table 8 reveals the classification of respondents on body mass index. It is found that 34% (18 years) of respondents are underweight followed by 47.2% (19 years) & 45.4 (20 years) of respondents are underweight. 20.7% (18 years) of respondents and 16.7% (19 years), 18.2% (20 years) of respondents are overweight.

The statistical tests indicate that the difference in the BMI level of the subjects found to be non significant. [χ^2= 1.73 NS].

As age increases normal BMI decreases either they will be underweight or overweight this could be due to wrong food habits, consumption of junk foods, wrong sleeping pattern, not doing any physical activity, more of sedentary lifestyle which leads to obesity and other way because of this stressful condition, they don't eat food properly, irregular meal pattern, quantity wise they don't take food properly whatever is required to their body which leads to underweight.

The sedentary lifestyle of watching TV, having a desk job and in general sitting continuously for more than 2 hours a day significantly contributes to obesity . Along with this if there is zero physical exercise and increased consumption of processed foods, obesity in an adult or adolescent is attained rapidly as per Kumar S et al, (2007)

The lack of proper nutrition or choice of foods which have all 5 food groups in the diet can help contribute muscle building and bone mass during the adolescent growth spurt. This contributes to undernutrition mainly being the result of deficit calories and protein. This will progressively lead to one having nutritional disorders like anemia (iron deficient form) and other micronutrient deficiencies. Poor eating viciously contributes to lack of strength and poor physical achievements. (Kankana D 2017).

TABLE – 9 Consumption of Nutrients, Adequacy and Comparison with RDA

(3 consecutive days recall)

N=25

No.	Nutrients	RDA	Response			't' Test
			Mean	SD	Adequacys(%)	
1	Energy (KCal)	1900	1468.8	332.8	77.3	6.48
2	Protein (g)	55	33.8	10.5	61.5	10.09
3	Fat (g)	20	26.4	9.0	132.0	3.56

Above table shows the intake of various nutrients i.e. energy, protein, fat with their RDA among subjects. The intake of energy [1468.8] and protein [33.8] is lower compared to their RDA [1900] [55].

The intake of fat [26.4] is higher when compared to their RDA [20]. The % adequacy of nutrients is found to be 77.3%, 61.5%, 132% for energy, protein, fat respectively.

Energy and protein intake among adolescent girls is lower when compared to recommended dietary intake (1900kcal and protein 55gm) due to skipping meal, they skip the meals but they eat all empty calories such as snacks, chips, coca cola due to this they won't get other nutrients, less quantity of food intake, lack of time, irregular food habits, more of sedentary life style, irregular meal pattern, quantity wise they don't take food properly whatever is required.

Fat intake was found to be more than the required amount indicating their lack of knowledge regarding healthy food choices, consumption of junk foods, consumption of processed foods fast food may increase energy intake, consumed more total and saturated fat.

TABLE – 10 Performance on Push ups test and Sit ups test among Respondents N=100

No.	Category	Respondents			
		Push ups test		Sit ups test	
		N	%	N	%
1	Excellent	0	0.0	0	0.0
2	Good	0	0.0	0	0.0
3	Above average	0	0.0	0	0.0
4	Average	7	7.0	0	0.0
5	Below average	1	1.0	0	0.0
6	Poor	9	9.0	3	3.0
7	Very poor	83	83.0	97	97.0
	Total	100	100.0	100	100.0

The above table shows the performance on push ups test and sit ups test among Respondents. It is found that majority (83%) of the subjects had very poor performance on push ups test. Also it is found that majority (97%) had very poor performance for the sit ups test.

This table says that 83% of respondents were very poor performance due to lack of muscle strength this is because of lack of intake of foods according to their requirements and lack of daily activities which effects on very poor performance of respondents.

TABLE – 11 Response on Sitting flex test and Floor test among Respondents
N=100

No.	Category	Respondents					
		Sitting flex test		No.	Category	Floor test	
		N	%			N	%
1	Super	0	0.0	1	Disqualify	72	72.0
2	Excellent	2	2.0	2	Qualify	28	28.0
3	Good	19	19.0				
4	Average	40	40.0				
5	Fair	35	35.0				
6	Poor	4	4.0				
7	Very poor	0	0.0				
	Total	100	100.0		Total		100.0

The above table reveals the response on sitting flex test and floor test among respondents. It is found that 40 percent of the respondents had average response on sitting flex test followed by 35 percent, 19 percent had fair and good response.

Also the table depicts the response for floor touch test among the respondents, it is found that 72 percent were disqualified followed by 28 percent were qualified.

Floor touch test and sitting flex test is measures the nature of lower back flexibility of the along with hamstring muscles similar in sit and reach test. Majority of the subjects were not able to touch their feet because of poor posture and their body is not flexible, they are not exposed their body to any physical activity, never use staircase and lift and no time to do any kind of physical activity or they don't get time.

The above test sitting flex test in this ,shows the flexibility of the respondents in which 40% of respondents are have a average performance this is due to lack of flexibility and physical activity in day today life of respondents . Creation of awareness of the benefits of physical activities is the need of the hour.

TABLE – 12 Response on 3 mins step test and 12 mins running test among Respondents N=100

No.	Category	Respondents			
		3 mins step test		12 mins running test	
		N	%	N	%
1	Excellent	0	0.0	7	7.0
2	Good	33	33.0	-	-
3	Above average	23	23.0	31	31.0
4	Average	13	13.0	16	16.0
5	Below average	13	13.0	30	30.0
6	Poor	18	18.0	16	16.0
7	Very poor	0	0.0	-	-
	Total	100	100.0	100	100.0

The above table indicates the response on 3 minutes step test and 12 minutes running test among respondents. In 3 minutes step test 33 percent of the respondents had good response followed by 23 percent had above average response and 13 percent had average and below average response.

Also the above table found that in 12 minutes running test, 31 percent of the respondents are categorized as above average followed by 30 percent are categorized as below average and 16 percent of the respondents are categorized as average and poor and 7 percent are categorized as excellent score.

This table shows the results of 3 minutes step test which is cardio resistant which means the cardiac capacity to oxygen intake and output here 18% of respondents are have poor cardio resistance due to lack of physical activity and behavior changes is needed for health life style practices .

12 minutes test shows that 16 percent were found to be average and poor which could be due to improper diet intake, lack of physical activity which can be improved if the life style is improved with diet and exercise and time management.

CONCLUSION:

Based on the study done on the level of physical activity and physical fitness among adolescent girls which can be concluded that their physical activity performance is very poor and they were not physically fit. This is due to poor attitude on diet, wrong sleeping pattern, more of unhealthy lifestyle. Therefore, maximum number of subjects BMI falls under overweight and underweight. Being an overweight is also one of the causes for poor physical activities due to consumption of fast foods and junk foods (salty snacks, baked foods, sweeten coffee drinks, soft drinks). Being underweight is due to inadequate nutrient intake, irregular meal pattern, they don't eat food properly whatever is required, skipping of meals and breakfast, and stressful condition.

To come over of this problem, need to motivate reinforce them to practice consuming breakfast regularly, reducing consumption of processed foods, healthy lifestyle modification, proper sleeping pattern, nutrition education along with the practicing regular physical activity is most essential. Creation of awareness on the impertinent indulgence of physical activities among adolescent girls promotes healthy weight , overall hormonal balance and creation of healthy food choices.

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