Diet consumption pattern of early adolescence in the eravurpattu divisional secretariat area of Batticaloa district, Sri Lanka

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Abstract

This study was conducted in the schools at Eravurpattu Divisional Secretariat area of Batticaloa District, SriLanka during April 2016 to July 2016 with the aim of generating information on the food consumption pattern and food choices among adolescents. A total of 300 students at 14years old were used for the study. They were selected by random sampling from four schools. A face-to-face interview with each participating student was conducted in the local language (Tamil) with the duration of 20 minutes. Pre tested questionnaire was used to collect data on the dietary pattern of the students. Data on frequency of consumption of food items were estimated, using food frequency questionnaire. Body weight of each subject was measured using a physician scale (Detecto, USA) and Height of the barefooted subjects was measured in centimeters by using a wall mounted stadiometer (Doherty, UK). Body mass index (BMI) of the participant was calculated as weight/height^2 (kg/m^2). Processed data was analyzed using Statistical Package for Social Sciences (SPSS) version 19. Descriptive statistics were used to get the percentages and frequencies of variables used in this study. Results indicated that, majority (58%) of the participants got their energy source from rice on a daily basis. For protein intake, 45% consumed fish curry daily while 50% consumed chicken curry once in a week. Banana (20%) accounted for the mostly consumed fruit on daily basis and cabbage (60%), okra (59%) and brinjal (57%) accounted as the mostly consumed vegetable once in a week. Low BMI (82%) in adolescents was also recorded in the study area that may leads to susceptible to infection of many disease and they will suffer by non-communicable disease in their later life. Therefore, it is important to conduct awareness campaign to sensitize the adolescents on the importance of good nutrition in their life.

Keywords: Adolescents, Body mass index, Consumption pattern, Food frequency questionnaire, Food intake.

Introduction

Adolescence is a period of rapid physical, psychological and social growth when young people often gain 50% of their adult weight more than 20% of their adult height and 50% of their adult skeletal mass[1]. World Health Organization identifies adolescence as the period in human growth and development that occurs after childhood and before adult hood from ages 10-19 years[2].

Adolescents are facing most of the nutritional problems due to the selection of inappropriate foods and increased the consumption of fast and junk foods and of course girls are very concern about their figure thus they avoid to eat nutritional foods. The period of adolescence has recently gained recognition as a critical phase of life. This will not only benefit adolescence but also have a wider impact on adult health and economic development.

Adolescents comprise one fifth of Sri Lankan population. The area of adolescent wellbeing is always difficult to manage, during the time of self-confidence, teenagers often consider themselves invincible. The non communicable diseases are on the rise with the demographic and epidemiological transition in Sri Lanka to reduce the burden of non communicable diseases

and to achieve MDGs greater attention should also be given to adolescents in Sri Lanka. Accelerated physical growth increases the nutritional requirements of adolescents while unhealthy dietary pattern, appreciation of slim feminine figure by the society and media affect food habits resulting many nutritional problems. Moreover, higher academic expectations have created a complex environment which often pushes the adolescents towards junk foods and unhealthy snacks.

Micronutrient deficiencies (including folic acid, iron, iodine and vitamin A) also contribute to worsen the nutritional status of school children and adolescents in Sri Lanka. Establishing healthy eating habits, regular exercise and avoiding risk behavior among adolescents have been identified as key effective interventions highlighting the importance of adolescence as a critical point of entry in life course approach of NCD prevention[3]. Based on the MRI survey in 2002, it was estimated that prevalence of thinness 47.2%, stunting 28.5% and overweight 2.2% among adolescents in Sri Lanka.

Lack of diet diversity has been identified by some studies to be a serious problem among adolescents population in the developing world, whose diets are predominantly starchy staples and the consumption of junk food. The consumption of animal

products, seasonal fruits and vegetables are generally absent or minimal.

Due to the internal conflict over the last 3 decades in Sri Lanka especially in the Batticaloa district there is an absence of reliable data on nutritional status of adolescents. Hence there is a need for an up dated data on this important health problem in this area in order to overcome the problem of malnutrition among adolescents. Therefore, this study deals with the aim of studying the diet diversity andfood preferences among adolescents and to determine the nutritional status of adolescents residing inthe Eravurpattu Divisional Secretariat area by using their Body Mass Index (BMI).

Methodology

Study was carried out on a population based cross sectional study during the period from April 2016 to July 2016. The study population consists of students (age 14 years) studying in grade 9 from four schools in Eravurpattu divisional secretariat area namely Chenkalady Central College, Vantharumoolai Vishnu Mahavidyalayam, Vantharumoolai Madya Mahavidyalayam, Siththandy and Karadiyanaaru Maha vidyalayam were selected for this study. The study covered a representative sample size of 300 at 95% confidence level. The selected students were informed about the details of the study.

The food frequency questionnaire was prepared and pretested with 10 subjects among the selected students to gather dietary information of the subjects. The questionnaire was modified according to their responses. The selected students were interviewed by using food frequency questionnaire. A face to face interview with each participant was conducted for a duration of 20 minutes which included a series of questions to gather information on the type of foods intake and its frequency.

To assess the dietary pattern of adolescents, data on frequency of consumption of food items were estimated for which a set of dietary questions were asked including list of food items and the frequency intake of fruits and vegetables, cereals, milk and milk products, meat, food drinks and snacks via pretested food frequency questionnaire. Body weight of each subject was measured using a physician scale (Detecto, USA) and Height of the barefooted subjects was measured in centimeters by using a wall mounted stadiometer (Doherty, UK). Body mass index were calculated as weight/ height^2 and the BMI was then catergorizedas, Underweight - < 18.5, Healthy weight - 18.5 – 22.99, Over weight - 23- 26.99, Obese - > 27, (Lancet, 2004)[4]

Data obtained from the food frequency questionnaire were analyzed with regards to the consumption pattern of food groups by using SPSS (version 19) statistical package.

Results and discussion

Body mass index: The BMI is used to assess weight status in children and adolescents as well as adults. BMI is the single best predictor of the mal nutrition status among children.

Table-1: BMI of adolescents in the study area

Category	Percentage (%)
Thinness	82
Normal	14
Over weight	02
Obese	02

As shown in the Table-1, 82% of the students were under weight and only 14% were normal in this study area. Nutrition has become a major problem for decades among adolescents in Sri Lanka. Generally physical growth increases during the adolescent period thus increase the nutritional requirements of adolescents, however, they practices with unhealthy food pattern to maintain their slim and figure this resulting underweight and causing many nutritional problems such as susceptible to infectious disease and suffer from non-communicable disease during their latter part life.

Dietary practices of adolescents in the study area: Dietary pattern of cereals, pulses and their products of the adolescents are presented in Table-2.

In general, more than half of the participants (58%) consumed white rice daily as it is the major stable food in Sri Lanka. Noodles (43%), pittu (30%), string hopper (36%), hopper (38%), rotty (28%) and green gram (31%) were consumed by the students once in a week. Of those equal percentages (38%) of the participants were not consumed brown rice and corn flakes. They reported that the undesirable taste being the reason for the low consumption of brown rice and the low consumption of corn flakes and some of them are mentioned about their high price limited their consumption. Around 40% of the participants were consumed bread daily as the high accessibility of bread because the bakery owners are selling their bread with low price by the way of catering services to the villages in the study area.

The Table-3 shows, 45% and 28% of the participants were consumed fish curry and fried fish respectively in daily basis. Most of the students prefer to eat inland water fish than marine fish. Because inland water fish which are readily available throughout the year as Batticaloa district is flourished with Batticaloa lagoon as a major resource for fishing activities. Shellfish (38%) and canned fish (17%) were also consumed by the participants at 5-6 times per week. Half of the students were consumed chicken only once in a weekly. Beef was consumed occasionally by 34% and 47% were not consumed beef. Religious thought and beliefs are the reasons for not consuming beef at their home. And the students were getting their beef products as samosa and Buriyani from hotels and restaurants found in the city areas. Majority of the participants (54%) has not consumed sausages due its higher price and also more than 80% of the participants were not consumed pork in the study area.

Table-4 gives the consumption pattern of the snacks and beverages in the study area. About 40% of the participants used to consumed Choco-biscuits once a week while 28% and 27% of the participants consumed plain biscuits and tea bun 2-4 times per week respectively. Pastries (44%), ice cream (51%) and chocolate (37%) were consumed occasionally by the participants due to its high prices and unwillingness. However, Tea (71%) and Horlicks (40%) were consumed daily by the participants. About 34% of the participants consumed coffee 5-6 times per week while 46% and 36% of the participants never consumed viva and fresh juice respectively. The reason for the low consumption of viva is due to its high price and fresh juice due to the unavailability of such Juice shops in the study area. Most of the participants in this survey live in the rural area and need to go for a long distance to find the market. The study further revealed that the food diversity was very poor in the study area.

Table-2: Consumption pattern of cereals, pulses and their products among adolescents

Food items	Never	Occasional	Weekly	2-4 times/week	5-6 times/week	Daily
White rice	8	14	7	2	11	58
Brown rice	38	13	10	4	8	27
Bread	1	5	3	22	2	39
Corn flakes	38	17	17	17	8	3
Noodles	7	19	43	14	6	11
Pittu	6	18	30	14	7	25
String hopper	7	13	36	11	7	26
Hopper	4	9	38	19	13	17
Rotty	8	10	28	21	23	10
Green gram	21	16	31	14	13	2
Chick pea	15	26	21	19	5	14
Cream craker	12	7	11	17	15	38

Table-3: Dietary pattern of meat, fish and their products

Food items	Never	Occasional	Weekly	2-4 times/week	5-6 times/week	Daily
Beef	47	34	17	1	1	0
Pork	81	11	7	1	0	0
Chicken	2	17	50	29	0	2
Sausages	54	8	21	11	6	0
Fried fish	3	10	32	5	22	28
Fish curry	5	5	20	19	6	45
Canned fish	2	19	37	25	17	0
Shell fish	11	16	14	5	38	16

Table-4: Dietary pattern of snacks and beverages.

Food items	Never	Occasional	Weekly	2-4 times/week	5-6 times/week	Daily
Choco biscuit	7	13	40	18	7	15
Plain biscuit	2	17	25	28	13	15
Tea bun	11	16	16	27	11	19
Pastries	22	44	14	8	4	8
Ice cream	12	51	21	9	6	1
Chocolate	10	37	28	16	2	10
Sweets	7	13	31	23	14	12
Sugar added cereals	7	19	18	31	8	17
Tea	10	10	1	1	7	71
Coffee	13	5	4	19	34	25
Horlicks	20	10	9	2	19	40
Viva	46	11	9	1	2	31
Fresh juice	36	35	13	4	3	9

Table-5: Dietary pattern of fruits in the study area

Fruits	Never	Occasional	Weekly	2-4 times/week	5-6 times/week	Daily
Apple	45	35	11	3	6	0
Orange	33	37	15	8	0	7
Banana	3	3	35	30	9	20
Grapes	36	29	12	5	4	14
Guava	18	30	28	11	2	11
Mango	7	27	29	15	5	17
Pine apple	1	43	34	3	6	13

Table-5 shows the consumption pattern of fruits in the study area. Mostly all the participants consumed banana (97%) because of its availability almost all year round and affordability. Of them 35%, 30% and 20% consumed banana once a week, 2-4 times per week and daily basis respectively. The high consumption rate of banana may be due to cheaper price and availability in the market throughout the year. Even though 99% of the participants consumed pine apple, the frequency of consumption is very low because pine apple is a seasonal fruit and the season plays a major role in their consumption. About 35%, 37%, 29% and 30% of the participants in the study area consumed apple, orange, grapes and guava respectively.

Table-6: Dietary pattern of vegetables in the study area

Vegetables	Never	Occasional	Weekly	2-4 times/week	5-6 times/week	Daily
Carrots	7	7	20	51	5	10
Spinach	5	11	49	20	8	7
Amaranthus	3	10	57	15	6	9
Cabbage	4	6	18	60	3	9
Beans	11	4	30	44	2	9
Leeks	9	9	16	38	12	16
Onion	2	3	5	23	11	56
Garlic	7	5	11	52	14	16
Green salad	6	13	33	26	9	13
Tomato	8	4	17	27	26	18
Potato	7	10	7	51	13	12
Brinjal	8	3	8	57	19	5
Okra	2	5	8	59	16	10
Pumpkin	4	2	11	56	19	18
Bitter gourd	4	14	45	24	7	6
Snake gourd	5	18	46	18	7	6
Bottle gourd	6	15	54	12	7	6
Luffa	5	21	38	27	3	6
Beetroot	4	12	33	36	13	2
drumstick	3	27	49	12	7	2

Table-6 shows the vegetable consumption by the participants in this study. Majority of the participants reported about consumption of carrots (51%), cabbage (60%), beans (44%), leeks (38%), potato (51%), brinjal (57%), okra (59%), pumpkin (56%), and beetroot (36%) 2-4 times per week. Of the participants 57%, 33%, 45%, 46%, 54%, 38% and 49% consumed spinach, amaranthus, green salad, bitter gourd, snake gourd, bottle gourd, lufa and drumstick once in a week respectively. On a daily basis onion (56%) were largely consumed by the participants more than other vegetables.

The consumption of vegetables in the areas studied is largely influenced by season and nutrition knowledge of the parents. Price influenced the vegetable consumption as a result of limited availability of the commodity and occasionally by transportation constrains. Vegetables are the most affordable and sustainable dietary source of vitamins, trace elements and other bioactive compounds. Michaela *et al*.[5] and Liu[6] reported that fruits and vegetables are key sources of several important nutrients including K, Mg, vitamin A & C and dietary fibre.

Therefore, regular intake of fruits and vegetables in their diet will improve the nutritional status of adolescents in the study area.

Conclusion

Generally, it was found that adolescents consumed a diet with a high dietary diversity, however, consumption of most significant food groups such as meats, other animal based proteins like eggs and fish and fruits that are good sources of micronutrients were significantly low in the study area. Fruits and vegetables are rich sources of many vitamins and minerals as well as dietary fiber. Most of the adolescents consumed less amount of fruits and vegetables probably due to the lack of basic information on the nutritional benefits of such foods. It may lead to poor nutrients intake. Therefore, adolescents should be encouraged to increase the consumption of fruits and vegetables. As far as the BMI of the adolescents is concerned, more than 80% were under weight; this underweight status represents depleted body fat stores in the study area. Therefore, proper awareness in school level has to be created among students as well as among parents regarding the importance of having nutritious food items and food diversity in their meals.

This will support to solve the problem of malnutrition among adolescents in every villages in the study area.

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