A comparison of the dietary pattern of adolescent schoolgirls in two defined urban and rural settings.

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Abstract

Objectives: To compare the dietary pattern and some related factors among adolescent schoolgirls in two defined urban and rural settings.

Methodology: A cross-sectional comparative study was carried out among adolescent schoolgirls in year eleven classes, attending selected Grade 1AB schools in two defined urban and rural settings. A self-administered questionnaire which included a food frequency questionnaire was used to assess the food habits and some relevant factors such as independence of dietary habits, awareness on body size (body image), dieting and exercise, food preferences, cultural beliefs and attitudes (food taboos).

Results: Consumption of meat products, eggs, fish, vegetables, soft drinks, milk products and sweets was higher among urban adolescent girls. Dried fish and dark green leaves was consumed more by rural adolescent girls and the consumption of fruits showed a mixed pattern. The study showed that the food habits of the subjects are less independent even in the urban setting. Although the concept of body image was a concern to some extent, especially among urban adolescent girls, it was not so prevalent as in industrialized countries.

Introduction

WHO has defined an adolescent as a person between 10 and 19 years of age. During this period eating habits of the child change into those typical of an adult. Very little is known about young peoples' food intake (1). Eating habits of adolescents are characterized by high energy intake, missed meals, unconventional meals, fast foods and frequent snacking, especially in urban societies. Adolescents like meats, sweets, cakes and carbonated sugar drinks and are reluctant to eat green leafy vegetables and organ meat (2). Most adolescents are more concerned about their looks than about any other aspects of themselves. Many are fearful of becoming obese (3). Food choices of many girls are influenced by their preoccupation with dieting and body weight (2, 4).

With urbanization, the food industry flourished, exacted substantial influence by promoting consumption of soft drinks, meat products, confectioneries, snack foods etc. especially with female employment, use of processed food has increased However, these are expensive and refined, rich in fat, salt and sugar, with artificial colors and additives, calorie dense but deficient in dietary fibers and micronutrients, which are called junk foods (5) Many studies have shown that there is almost a universal increase in fat, animal products and free sugar consumption in urban areas compared to rural communities, which usually depend on their staple crops of cereals, tubers, vegetables and fruits (6,7). Increases of urban population shown in national census from 10.6% in 1891 to 21.5% in 1981might have shifted the food consumption pattern in Sri Lanka as well (8).

Data are limited on adolescent food habits in Sri Lanka. Hence the study was under taken with the objective of comparing the dietary pattern among adolescent school girls in defined rural and urban settings

Methodology

A cross-sectional comparative study was carried out to assess dietary pattern in two defined groups of adolescent schoolgirls.. The rural sub-population consisted of all girls in year eleven classes, attending the two Grade 1AB schools in Mirigama Pradeshiya Sabha Division and who were residents of the same area. The urban sub-population consisted of all girls in year eleven classes, attending three randomly selected Grade 1AB schools in the Colombo Municipality and who were residents of the same area. 233 rural girls and 246 urban girls participated in the study. The study was conducted within a period of 6 weeks starting from early July 2001.

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A self-administered questionnaire (SAQ) which included a food frequency questionnaire) assessing the frequency of food intake during the previous one month. The frequency categories were continuous. But only the consumers of a given food item, who had a frequency "2 to 3 times a week" or more were included in the final comparison as it was thought that the consumption of food items only at these frequencies would have any effect on an individual's nutritional status (9). The SAQ also obtained information on some factors relevant to food habits such as independence of dietary habits, knowledge on nutrition, awareness on body size (body image), dieting and exercise, food preferences, cultural beliefs and attitudes (food taboos).

Anthropometric measurements included weight and height. The Body Mass Index (BMI) was calculated and the prevalence thinness (percentage below the 5th percentile) and over weight (percentage over the 85th percentile) was calculated from NCHS reference data for BMI for age (10).

Results

The majority of girls in the rural sample belonged to families with a monthly income of Rs. 4001-10 000 while the majority in the urban sample were from families with monthly a income of over Rs. 10 000. The majority of ($p<0.0001$) mothers in the urban sample had 'Advanced Level education and above' while the majority of rural mothers belonged to the 'Grade 6 to Ordinary Level' category. Significantly larger percentage ($p<0.01$) of girls (38.9%) in the urban sample had mothers who were employed.

Food habits

Consumption of all milk products was greater among urban girls but a significant difference was observed only for butter, cheese ($p<0.0001$) and yogurt ($p<0.05$). Among fruits, consumption of plantains, apples, oranges and grapes was significantly higher ($p<0.01$) in urban girls while the consumption of guava ($p<0.00001$) and avocado ($p<0.05$) was significantly high in rural girls. Consumption of all short-eats with the exception of Chinese rolls was greater among urban girls with significant differences for patties and pastries. Consumption of sweets was higher among urban girls but only chocolate and ice cream showed a significant different ($p<0.0001$). Soft drinks and fresh fruit juices were consumed by a significantly larger percentage of urban girls ($p <0.00001$) Consumption of meat was compared using selected food items (chicken, sausages and meatballs) that were consumed by both groups at relatively high rates. Urban girls were found to be eating meat at a significantly higher rate ($p<0.01$) than rural girls. Consumption of dark green leaves was higher among rural girls but the difference was not significant. Consumption of rice and bread was compared at a frequency of 'once daily or more'. Rice consumption was 94.8% among rural and 96.8% among urban girls at this frequency. Consumption of bread had a significance difference ($p<0.00001$) at the same frequency - 66.9% rural girls compared to 82.2% urban girls. Potatoes was the only tuber consumed at a high rate in both settings, consumption among rural girls (74.2%) was found to be significantly higher ($p<0.01$) than among urban girls (62.2%). Consumption of other tubers was very low. Dhal was the only largely consumed pulse (rural 82.4%, urban 88.6%) while consumption of other pulses was low (15-25% in both settings)

Independence of diet

For a great majority of rural girls meals were prepared almost daily by their mother (92.7%), which was significantly high ($p<0.01$) compared to urban girls; nevertheless the percentage for the urban girls was also high (84.1%). The majority in both settings (82.8% in rural and 85.0% in urban) consumed dinner with their family almost daily. A great majority in both settings (98.2% rural and 97.1% of urban) rarely or occasionally eat at restaurants accompanied by family, friends or alone.

A significantly lager ($p<0.01$) percentage of urban girls (45.5%) consumed a school meal which was brought from home. In both settings the majority bought food from the school canteen in addition to the meal brought from home, with a significantly high percentage in the rural setting ($p<0.01$). When foods brought from home were analyzed it was seen that rural girls brought mostly rice (93.1%) while only 46.3% of urban girls brought rice ($p<0.000001$). Bread was brought from home by a significantly larger percentage of urban girls (66.3%) compared to rural girls (8.6%).

Table1.Distribution of the contents of the school meal bought at the school canteen by rural and urban adolescent girl

	Rural		Urban	
	No	%	No	%
Rice/bread/string hoppers	8	5.2	7	5.3
Short eats	147	94.8	72	54.1*
Sweets	0	0.0	34	25.6
Milk products	0	0.0	3	2.3
Soft drinks	0	0.0	33	24.8

Multiple response question Difference between two proportions *P<0.00001

When food bought from the canteen was analyzed a significantly larger number (p< 0.00001) of rural girls bought short-eats compared to urban girls. Sweets, milk products and soft drinks were bought exclusively by urban girls (Table 1).

Table 2. Assessment of the awareness of body image / body size among rural and urban girls.

	Rural		Urban	
	No	%	No	%
Underweight	69	29.6	60	24.4
Appropriate	123	52.8	124	50.4
Overweight/obese	41	17.6	62	25.2*
Total	233	100.0	246	100.0

Difference between two proportions*P<0.05

The majority of girls in both settings thought that their weight was appropriate. Although there was no significant difference between those who thought themselves to be under-weight, significantly higher percentage of urban girls thought themselves to be obese (Table 2). The majority in both settings were concerned about their parents' comments on their body image. Fewer girls were concerned about their friends and relatives commented.

Difference between two proportions *p<0.0001

Table 3. Distribution of the nature of the attempts at controlling weight among rural and urban adolescent girls.

	Rural		Urban	
	No	%	No	%
Attempted to maintain weight	61	26.2	58	23.6
Attempted to reduce weight	40	17.2	84	34.1*
Attempted to increase weight	23	9.9	28	11.4
All not relevant	109	46.8	76	30.9*
Total	233	100.0	246	100.0

The majority of rural girls had never attempted to control weight while one third of urban girls had attempted to control weight sometime in the past (Table 3).

Table 4. Distribution of being on a diet at the time of the study and the reason among rural and urban adolescent girls.

	Rural		Urban	
	No	%	No	%
Yes, to reduce	22	9.4	46	18.7*
Yes, to increase	13	5.6	18	7.3
Yes, to maintain	38	16.3	46	18.7
Not on a diet	160	68.7	136	55.3*
total	233	100.0	246	100.0

Difference between two proportion *p<0.01

The majority of girls in both settings were not controlling their diet at the time of the study.

Table 5. Distribution of BMI among girls who thought they were over- weight or obese.

	Rural n=41		Urban n=62	
	No	%	No.	%
< 5th percentile	1	2.5	1	1.6
5th to 84th percentiles	32	78.0	44	70.9
≥ 85th percentile	8	19.5	17	27.4

Baseline knowledge on nutrition

Knowledge on nutrition was assessed using three sets of multiple-choice questions. When scores obtained were analyzed a significantly higher (p<0.01) percentage of urban girls (96.7%) had scored 'three or more' out of five compared to rural girls (89.3%). In both settings the majority got information on nutrition from elders/parents (rural 93.5% and urban 96.7%), school teachers were the second commonest source and radio was the least common. No significant difference was observed with regard to the source of information on nutrition among the adolescent girls in the two settings.

Food taboos

Although almost one third of the population in each setting (rural 36.1%, urban 30.1%) avoided certain foods at menstruation no significant difference was seen between rural and urban settings. The majority in both settings were advised by parents to avoid certain foods during menstruation (rural 89.3% and urban 77.0%) relatives being the second highest but the influence of other sources was very low.

Discussion

Significant differences existed between rural and urban settings in socio-economic status, which can have a great impact on dietary patterns and may have played a role in the differences noted in the present study.

Adolescent food habits

Comparison of the dietary habits of the two settings can be used to assess the degree of urbanization. In the present study consumption of meat products, eggs, fish, vegetables, soft drinks, milk products, cordial and sweets was higher among urban girls. Significantly high consumption in urban settings could be associated with urbanization or indirectly related to the better socio-economic status of urban dwellers, as these food items are relatively costly. Relatively low cost may contribute to the significantly higher consumption of dried fish by the rural girls. Higher consumption of certain fruits and dark green leaves by rural may be possibly determined by the availability of home gardens. A similar situation has been reported elsewhere (7, 11). Meat items, specially ready to eat meat items like sausages and meat balls are consumed at a significantly higher rate (p<0.01) by urban which could again be due to urbanization, as well as significantly larger percentage of mothers being employed in the urban setting. Percentage of mothers being employed in the urban setting.

But it is important to note that the level of consumption of vegetables was higher in the urban setting unlike in industrialized countries. Bread which is consumed by a significantly larger percentage of urban girls (p<0.00001) reflects busy life style and the higher rate of employment of urban mothers. Consumption of short eats (snacks) was relatively low in both settings (less than one third), a desirable trend when compared to other urbanized societies.

The present study used data from self-administered food frequency questionnaire (FFQ) which can be used most appropriately to compare patterns of intake between different groups and not to determine absolute intakes of individuals. Errors may arise in, individual variation in the accuracy of reporting. Errors due to variation of diet over a time was accounted for by using a relatively long recall period but errors due to FFQ itself could not be tested as it was not validated. Most findings are likely to be a reflection of differences in socio-economic status in the two settings than an effect of urbanization. The fact that the present study has excluded adolescent girls attending private schools in the urban area and thus does not represent the affluent society need to be considered in interpreting the results.

Independence of dietary habits

In the present study meals were prepared at home by the mother almost daily in a significantly high ($P<0.01$) percentage of girls in the rural setting(92.7%) but the fact that the percentage in the urban setting too being fairly high (84.1%) shows less independence of diet in both settings. The finding of over 95% of girls in both settings rarely or occasionally ate at restaurants again shows that the food habits of the subjects are less independent even in the urban setting.

Almost all carried the school meal from home in both settings but over 50% in both settings, bought food from the school canteen in addition to the food they brought from home. This could be a reflection of their desire for frequent snacking (2) or a continuation of their food habit persisted during the growth spurt. However more information on energy requirements are needed to establish this and physical activity must also be considered. Food bought from the canteen reflects more of their independent choice and of course depends on what was available in the canteen as well. A similar finding was reported by Rolls et al. that adolescents like sweets, cakes and carbonated sugar drinks.

Awareness on body image

The majority in both setting (rural 52.8% urban 50.4%) thought their weight as about right but a significantly higher percentage of ($p<0.05$) urban girls (25.2%) thought themselves as over- weight and close to 25% in both settings thought themselves as under weight as well. This is different from what has been reported by Chapman et al. that less than half of adolescent girls saw their weight as appropriate and 51% saw themselves as over weight. Study finding shows that although the concept of body image was a concern to some extent, especially among urban adolescent girls, it was not so prevalent as in the industrialized countries.

The level of knowledge with regard to nutrition in the urban settings was higher. Information had already been provided to adolescent girls on nutrition through routine school teaching activity but elders and parents who could provide correct as well as incorrect information were identified by the majority of school girls in both settings as a source of information. Although nearly one third of girls in both settings avoided certain foods during menstruation, no significance was seen in the habit or the types of foods avoided.

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