Research Article

Assessment of Nutrition Status of School-Going Children of Age 8 - 16 Years: District Lahore - Pakistan

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Abstract

Nutrition status is the general conditioning of the body while nutrition assessment is a systematic process of verifying and interpreting data to make decisions about the nature and cause of nutrition-related problems. The present study was conducted to assess the nutrition status of school-going children age 8 - 16 years in Lahore city, Pakistan. The study aim was to identify the children who were at risk of malnutrition. Nutritional assessment was carried out among both genders male and female. It was a cross-sectional survey and the sample size was two hundred (200). Randomly, male and female students were selected. A questionnaire was designed to collect data. An interview technique was used to fill the questionnaire. Questions were related to demographic data, anthropometric data, frequency of meals consumption and food frequency data. Data were analyzed by using SPSS version 22. Data were presented in tables (percentages) and pie charts. The present study result showed that most children have normal body mass index percentile. Children were consuming eggs, wheat flat bread without oil (Chapatti) and milk on a daily basis. Mostly children were taking breakfast, lunch and dinner on a daily basis. Most of them were not taking bedtime snacks. Few children were consuming miscellaneous and fast foods. So, based on the results it was concluded that the majority of school-going children have healthy eating habits and good nutritional status.

Keywords: Nutrition Assessment; Weight; BMI Percentile; Dietary Habits; Food Frequency Questionnaire

Introduction

Nutrition starts at conception and pre-conception stages then it continues to birth, adolescence and adulthood. It spans generations to generations. Malnourished girls are more prone to remain undernourished and when they get pregnant, they deliver babies that have low birth weight [1]. Quality of life can be measured by assessing the nutrition status of children. If the nutrition status of children is good then ultimately they will have a better life and healthy future generations. School-age is an important period for the physical, mental and social growth of children [2].

Childhood is a very precious time period in which body stores bundle of nutrients which required at adolescence age. If that time body does not store enough nutrients then it leads toward adverse health effects like reduced work capacity, unable to concentrate and growth retardation [3]. Malnutrition exists in many forms like children who are thin and lean have insufficient intake of food and nutrients while on the other hand children who carry too much weight have an excessive intake of fat, salt and sugars which leads to increase risk of chronic diseases. In both cases, children are deficient in vitamins and minerals. Diet and malnutrition are the big-

gest risk factors of the global burden of disease and every country is facing a serious challenge [4].

Poor dietary habits are the main contributor to the development of non-communicable diseases [5]. Nutrition knowledge is important to promote healthy eating habits [6]. Positive attitude with nutrition knowledge towards healthy eating is required to change dietary habits [7]. Studies showed that children in developing countries have unhealthy food choices due to wrong perception and lack of knowledge towards healthy food [8]. The reason is that the media has changed the food concept from growth and nourishment to a source of pleasure and enjoyment [9].

According to the National Nutrition Survey of Pakistan, 15% children have waisitng, nearly 44% stunted and 33% are underweight. In the last two decades, there has been little reduction in the prevalence of malnutrition in Pakistan compared to other developing countries [10]. Growth failure in early childhood can be overcome in adolescence time period but it depends on significant catch-up growth. Optimal nutrition immediately after 18-24 months of preceding menarche results in significant catch-up growth [11].

There are several ways to assess the nutrition status in which anthropometry and dietary habits are an important one. Anthropometry measurements include various parameters but most important are height and weight. These parameters are used to assess the nutrition status of children: stunting, wasting and underweight [12]. Mostly literature exists in the under-5 population only a few studies were conducted on school-going children to assess the extent of the problem. So, the present study was designed to assess the nutrition status of school-going children among age 8 - 16 years. It helps to analyze the rate of malnutrition among school-going children. Hence, nutritional awareness can be imparted to the parents for the prevention and management of malnutrition.

Materials and Methods

Study design

The research study was a cross-sectional survey. Cross-sectional survey is a type of survey in which you collect data from specific population at the specific point in time.

Setting

The present study was conducted at the Govt. Junior Central Model School, Lower Mall, Lahore, Pakistan.

Ethics

Data was collected after submitting the consent form and taking the permission of concerned students' parents and Principal.

Study participants

The sample size for the study was two hundred (200) only and collected through convenience sampling. The population of the study was a school-going children both boys and girls having age 8 - 16 years.

Data collection tool

Semi-structured questionnaire was developed consisting of both open and close-ended questions. Questions were related to demographic data, anthropometric data, frequency of meals consumption and food frequency data [13].

Demographic data: Demographic data include age, gender (male/female), father profession, mother profession, class, school grades (A/B), school fee and socioeconomic group (lower/middle/upper).

Anthropometry data: Anthropometric data includes weight and height. Weight was assessed on weighing scale while height was measured using stadiometer.

Frequency of meals consumption: Frequency of meals consumption were given in eleven different categories i.e. never, one time per week, two times per week, three times per week, four times per week, five times per week, six times per week, daily, one time per month, two times per month and three times per month. The basic purpose was to assess the frequency of consumption of meals.

Food frequency questionnaire: A food frequency questionnaire was developed. Foods were divided into seven groups: cereals, meat, milk, fruits, vegetables, sweets and fast foods. Food frequency consumption was recorded in eleven different categories i.e. never, one time per week, two times per week, three times per week, four times per week, five times per week, six times per week, daily, one time per month, two times per month and three times per month. Total of thirty-eight food items was listed in the food frequency questionnaire.

Data collection procedure

The questionnaire was filled through interview technique [3].

Data analysis

Data was compiled using SPSS Version 22. Frequency and percentages were used to analyze data. Data were presented in tables and pie charts. Descriptive interpretations were made. Findings were discussed and conclusions were made in light of existing literature [3].

Results and Discussion

Figure 1: Body Mass Index Percentile.

Body mass index percentiles of children are given in figure 1. The present study results shows that 44% children are underweight, 48.5% normal, 6% overweight and 1.5% obese. Nutrition starts at conception and pre-conception stages then it continues to birth, adolescence and adulthood [1]. There are several ways to assess the nutrition status in which anthropometry and dietary habits are important one. Anthropometry measurements include various parameters but most important are height and weight [12]. Figure 1 shows that mostly children have normal BMI percentiles. BMI percentile is a parameter which assesses weight and height according to age. A study was conducted among Jenukuruba tribal children and it was seen that 45.2% children are moderate underweight and 14.8% are severe underweight [14]. Another study was conducted in the villages of Dharwad and Haliyal taluks which showed that 44.4% children were underweight; this study is similar to the present study [15]. Children are highly underweight in developing countries. So, there are many possible reasons that lead toward underweight like low socioeconomic status, poor dietary habits, lifestyle and low access to food.

A type of breakfast consumption is given in figure 2. The present study results shows that 10.5% children are consuming wheat flat bread with oil (paratha) and egg, 18.5% wheat white bread (nan) with chickpea, 13% bread with egg and 21% others food. Rest of the student is consuming wheat flat bread with oil (paratha) with tea, cereals, vegetables and meat. Diet is an important part of our life. Adoption of healthy lifestyle is a key to prevent chronic diseases [16]. Breakfast is considered as first meal of the day which taken before the start of daily activities. It is regarded as important meal of the day [17]. Figure 2 shows that mostly children are consuming wheat flat bread with oil (Paratha) with egg, bread egg and wheat white bread (Nan) with chickpea in their breakfasts. Some children are skipping their breakfasts too. Most common reasons to skip breakfast are not feeling hungry and getting late from school. Children who eat breakfast regularly have better IQ level and school grades compared to who do not take breakfast [18]. Breakfast skipping is more common in males than females [19].

Figure 2: Type of Breakfast Consumption.

Figure 3: Type of Lunch Consumption.

A type of lunch consumption is given in figure 3. The present study results shows that children are consuming wheat flat bread without oil (chapatti) with vegetables (15%), meat (15%), cereals (17%) and others food (21%). Rests of the students are consuming vegetable rice and meat rice. Data shows that 11% children are skipping their lunch. Lunch is an important meal of the day. It has positive impact on child diet and weight status. Type of lunch also matters a lot. Let's suppose child is eating fruits and vegetables in

lunch; then he's getting bundles of nutrients that are required for body growth and good health [20]. Figure 3 show that mostly children are consuming wheat flat bread without oil (Chapatti) with cereals, meat, vegetables and meat rice in their lunch. Some children are skipping their lunch. Most common reasons to skip lunch are consumption of snacks and soft drinks from schools canteen. Eating snacks fulfill your stomach but it does not provide nutrients that are require for growth promotion. Over consumption of snacks lead towards overweight and obesity [19].

A type of dinner consumption is given in figure 4. The present study results shows that Children are consuming wheat flat bread without oil (chapatti) with vegetables (16.5%), cereals (11%), meat (11%) and others food (30%). While, 17% children are skipping their dinner. Dinner is one of the major meals of day. The previous study showed that children who eat dinner with family have healthy eating habits compared to children who don't eat. It was also seen that eating dinner with family also enhance family conversations regarding healthful eating [21]. Figure 4 show that mostly children are consuming wheat flat bread without oil (Chapatti) with vegetables, cereals, meat and wheat white bread (Nan) with meat in their dinner. Some children are skipping their din-

ner. Most common reasons to skip dinner are lack of cooking skills, taste, lack of hunger and excessive use of internet [22]. Excessive use of snacking whole day can also be a reason to skip meal [23]. Snacking is closely associated with less consumption of meal. It causes detrimental effects to health. Study showed that females are skipping dinner more commonly then males [19].
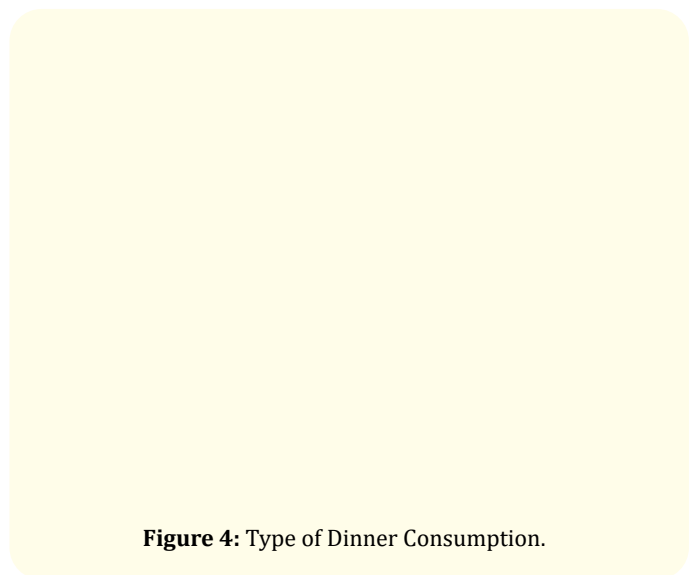

Figure 4: Type of Dinner Consumption.

	Never	1T/W	2T/W	3T/W	4T/W	5T/W	6T/W	Daily	1T/M	2T/M	3T/M
Bread and Cereal Products											
Bread	7	15	16	12	7	3.5	0.5	38	1	-	-
Wheat flat bread without oil (Chapatti)	2	4	7.5	2.5	2	0.5	3	78.5	-	-	-
Wheat white bread (Nan)	9.5	32	23.5	8	4	1.5	3	16.5	2	-	-
Wheat flat bread with oil (Paratha)	9.5	20.5	17	13.5	4.5	3.5	4	27	0.5	-	-
Biscuits	15.5	15	15.5	10	5.5	3.5	2.5	31.5	1	-	-
Rusks	32.5	23	19.5	9.5	3	1	2.5	7.5	1.5	-	-
Rice	22	18	25	13	9	3.5	0.5	8	1	-	-
Porridge	47	16.5	6	6	3.5	3	0.5	7.5	9.5	0.5	-
Pasta/Noodles/Spaghetti	28	19.5	17.5	11	8	1.5	0.5	9.5	4.5	-	-
Legumes/Pulses/Lentils	22.5	26	16	14	7	3	2	8	1.5	-	-

Table 1: Food frequency consumption of bread and cereals products.

Data are presented in percentages. Frequencies of consumption are given in columns while food items are given in rows.

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Food frequency consumption of bread and cereals products is given in table 1. Out of two hundred students, 15% children one-time per week, 16% two times per week, 12% three times per week and 38% daily are consuming bread. 78.5% children are consuming wheat flat bread without oil (chapatti) on daily basis. 23.5% children two times per week and 16.5% daily are consuming wheat white bread (nan). Data analysis shows that 20.5% children one-time per week, 17% two times per week, 13.5% three times per week and 27% daily are consuming wheat flat bread with oil (paratha). The present study results shows that 15.5% children never, 15% one-time per week, 15.5% two times per week and 31.5% daily are consuming biscuits. Data analysis shows that 32.5% children never, 23% one-time per week, 19.5% two times per week and 9.5% three times per week are consuming rusk. The present study results shows that 22% children never, 25% two times per week, and 8% daily are consuming rice. Data analysis shows that 47% children never, 16.5% one-time per week, 7.5% daily and 9.5% one-time per month are consuming porridge.

The present study results shows that 28% children never, 19.5% one-time per week and 7.5% daily are taking pasta, noodles and spaghetti. Data analysis shows that 22.5% children never, 26% one-time per week and 16% two times per week are consuming legumes, pulses and lentils. Breads and cereals group are one of the most important food group. These are rich source of various essential vitamins, minerals and phytochemicals. It comprises of both soluble and insoluble fiber, carbohydrates, protein and antioxidants content. It typically contains low saturated fats and high polyunsaturated fats like omega-3 linolenic acid. Due to its properties and characteristics it helps to reduce weight and cholesterol levels in body [24]. Table 1 show that majority children are taking wheat flat bread without oil (Chapatti), rusk and biscuits on daily basis, while wheat white bread (Nan), wheat flat bread with oil (Paratha) one time per week and rice two times per week. One study showed that consumption of cereals and bread in school going children were in fair range, mostly children were not consuming whole cereals in daily routine [13].

	Never	1T/W	2T/W	3T/W	4T/W	5T/W	6T/W	Daily	1T/M	2T/M	3T/M
Milk and Dairy Products											
Milk	13.5	15.5	10.5	7	7	2.5	4	38.5	1	0.5	-
Milkshakes	11.5	17.5	22	13.5	8.5	3.5	3.5	19.5	0.5	-	-
Yogurt (any form)	15	11.5	14.5	12	7	6	3	30	0.5	0.5	-
Cheese (any form)	35.5	23	9.5	10	4	-	0.5	12	5	-	0.5
Ice cream	11	21.5	23.5	15.5	7	5.5	-	15	1	-	-

Table 2: Food frequency consumption of milk and milk products.

Data are presented in percentages. Frequencies of consumption are given in columns while food items are given in rows.

Food frequency consumption of milk and milk products are given in table 2. Out of 200 children, 13.5% children never, 15.5% one-time per week, 10.5% two times per week and 38.5% daily are consuming milk. The present study results shows that 17.5% one-time per week, 22% two times per week and 19.5% daily are consuming milkshakes. Data analysis shows that 15% children never, 14.5% two times per week and 30% daily are consuming yogurt. Data analysis shows that 35.5% children never, 23% one-time per week, 10% three times per week and 12% daily are consuming cheese. The present study results shows that 11% children never, 21.5% one-time per week, 23.5% two times per week, 15.5% three times per week and 15% daily are consuming ice cream. Milk and

milk products are major contributors in our diet. They are good sources of vitamin A, D, B_2, B_{12}, calcium, phosphorus, zinc, potassium and magnesium. Milk products include yogurt, cheese and frozen dairy desserts. These all are main sources of calcium [25]. Table 2 shows that majority children are taking milk and yogurt on daily basis and ice cream on weekly basis. Majority students are not taking cheese. One study showed that mostly children were consuming milk, cheese and yogurt on daily routine and in a standard time of the day. They preferred to consume all these things in their breakfasts [13]. Another study showed that consumption of yogurt was high in female children of age 6-10 years while in males consumption of milk was common in age of 3-5 years [26].

	Never	1T/ W	2T/ W	3T/ W	4T/ W	5T/ W	6T/ W	Daily	1T/M	2 T/M	3 T/M
Meat and Meat Products											
Egg (any form)	18	18	16.5	11	5	4.5	4	21	2	-	-
Chicken(any form)	17.5	28	16	16.5	4.5	4	1.5	11	1	-	-
Beef/Mutton (any form)	30.5	26.5	14.5	8	3.5	2.5	1	9.5	3.5	0.5	-
Fish (any form)	39	18.5	12.5	3.5	2.5	1.5	0.5	15.5	6.5	-	-

Table 3: Food frequency consumption of meat and meat products.

Data are presented in percentages. Frequencies of consumption are given in columns while food items are given in rows.

Food frequency consumption of meat and meat products are given in table 3. Out of 200 children, 18% children never, 18% one-time per week, 16.5% two times per week and 21% daily are consuming egg. The present study results shows that 17.5% children never, 28% one-time per week, 16% two times per week, 16.5% three times per week and 11% daily are consuming chicken. The present study results shows that 30.5% children never, 26.5% one-time per week, 14.5% two times per week, 9.5% daily are consuming beef and mutton. Data analysis shows that 39% children never, 18.5% one-time per week, 12.5% two times per week and 15.5% daily are consuming fish. Meat and meat products are important sources of various nutrients. It contains high biological value protein which is required for body growth. Fat content of meat varies like beef and lamb have high fat content compared to chicken and fish [27]. Red meat such as beef and dark meat of chicken are rich source of iron than white meat. Meat and meat constituents contain fat, protein and iron that are required to our body to perform daily activities [28]. Table 3 shows that majority children are consuming eggs on daily basis and chicken on weekly basis. Majority students are not taking fish, beef and mutton. One study showed that students were consuming meat (chicken, fish, mutton and beef) in fair range. Most common reason of decrease consumption of meat are low socioeconomic status and lack of affordability [13]. Another study showed that in female adolescents consumption of canned fish is more common in younger age group (11 - 14 years) than older age group (15 - 18 years) [26].

	Never	1T/ W	2T/ W	3T/ W	4T/ W	5T/ W	6T/ W	Daily	1T/M	2 T/M	3 T/M
Fruits and Vegetables											
Dry fruits	10.5	18	18.5	13.5	7.5	7.5	2.5	20.5	1.5	-	-
Fresh fruits	12.5	17.5	20.5	11.5	9	7.5	3.5	17	1	-	-
Fresh fruit juices	17.5	18.5	18.5	14	8.5	4	1.5	16	1.5	-	-
Green Leafy vegetables	20.5	20	17	15	9.5	4.5	1	11.5	1	-	-
Roots and tubers	20	19	26	12	7	2.5	1.5	11.5	0.5	-	-
Cooked vegetables	18.5	18.5	20.5	13	7	3	3.5	15.5	0.5	-	-
Raw vegetables (Salad)	16.5	20.5	18.5	14.5	8.5	4.5	3	13	1	-	-

Table 4: Food frequency consumption of fruits and vegetables.

Data are presented in percentages. Frequencies of consumption are given in columns while food items are given in rows.

Food frequency consumption of fruits and vegetables are given in table 4. Out of 200 children, 18% one-time per week, 18.5% two times per week, 13.5% three times per week and 20.5% daily are consuming dry fruits. The present study results shows that 17.5% one-time per week, 20.5% two times per week and 17% daily are consuming fresh fruits. The present study results shows that 18.5% one-time per week, 18.5% two times per week and 16% daily are consuming fresh fruit juices. Data analysis shows that 20.5% children never, 20% one-time per week, 17% two times per week and 11.5% daily are consuming green leafy vegetables. The present

study results shows that 20% children never, 19% one-time per week, 26% two times per week and 11.5% daily are consuming roots and tubers vegetables. Data analysis shows that 18.5% children never, 18.5% one-time per week, 20.5% two times per week and 15.5% daily are consuming cooked vegetables. The present study results shows that 16.5% children never, 20.5% one-time per week, 18.5% two times per week and 13% daily are consuming raw vegetables (salad). Fruits, vegetables and nuts play important role in human health. It especially contains minerals and vitamins C, A, B_6, B_1, B_3 and E. These are rich sources of dietary fibers [29]. Legumes, vegetables, potatoes and nuts contain high quality protein and essential amino acids. Nuts are good source of minerals, vitamin E, fiber and essential fatty acids. Fruits and vegetables also contain folate, riboflavin, calcium, potassium, zinc and phospho-rus [30]. Nuts, fruits and vegetables have a remarkable effect in reducing stroke, heart disease, some forms of cancer and chronic diseases [31]. Table 4 shows that majority students are consuming dry fruits on daily basis, fresh fruits and fresh fruit juices on weekly basis. Intake of green leafy vegetables is very low. Intake of roots, tubers and cooked vegetables are two times per week. Consumption of raw vegetables salad is also one time per week. The previous study showed that fruits and vegetables intake was found low due to seasonal unavailability, strong flavor and taste. Lack of consumption of fruits and vegetables leads toward low intake of vitamin A, vitamin C and other essentials vitamins and minerals [13]. The previous study showed that consumption of fruit juices was higher in younger age group (3-5 years) than older age group (6 - 10 years) [26].

	Never	1T/ W	2T/ W	3T/ W	4T/ W	5T/ W	6T/ W	Daily	1T/M	2 T/M	3 T/M
Sweets, Confectionary and Beverages											
Chocolate/Candies	18.5	13.5	11	8	6.5	4	4.5	32.5	1	-	0.5
Carbonated drinks	21	19	17	13	6	4.5	2.5	15.5	1.5	-	-
Tea (any)	19	18	18.5	14	7.5	5	2	13.5	2	-	0.5
Non-carbonated drinks	18.5	20.5	18.5	9	8	4.5	2	15.5	3	-	0.5

Table 5: Food frequency consumption of sweets, confectionary and beverages.

Data are presented in percentages. Frequencies of consumption are given in columns while food items are given in rows.

Food frequency consumption of sweets, confectionary and beverages are given in table 5. Out of 200 children, 18.5% never, 13.5% one-time per week, 11% two times per week and 32.5% daily are consuming chocolates and candies. The present study results shows that 21% children never, 19% one-time per week, 17% two times per week, 13% three times per week and 15.5% daily are consuming carbonated drinks. The present study results shows that 19% children never, 18% one-time per week, 18.5% two times per week and 13.5% daily are consuming tea. Data analysis shows that 18.5% children never, 20.5% one-time per week, 18.5% two times per week and 15.5% daily are consuming non-carbonated drinks. Children and adolescents mostly give preferences to sweet foods and soft drinks. They mainly provide carbohydrates. Excessive use of sweetened foods leads to the development of caries [32]. Table 5 shows that majority children are consuming chocolates and candies on daily basis. Intake of non-carbonated drinks is one time per week. The previous study showed that consumption of crackers, sweet cookies and filled sweet cookies were higher in children. The most common reason is sweet taste. Soft drink consumption was higher in male adolescents in older age group (15-18 years) than younger age group (11-14 years) [26].

Food frequency consumption of miscellaneous and fast food is given in table 6. Out of 200 children, 23% never, 21.5% one-time per week, 18.5% two times per week, 15.5% three times per week and 9% daily are consuming fritters (pakora) and fried potato filled pastry (samosa). The present study results shows that 26.5% children never, 20.5% one-time per week, 14.5% two times per week and 8.5% daily are consuming crisp sphere eaten (gol gappay) and chickpea salad (chana chaat). The present study results shows that 22% children never, 21% one-time per week, 15.5% two times per week and 6% daily are consuming fried flour balls with yogurt (dahi bhalay). Data analysis shows that 23% children never, 19.5% one-time per week, 14.5% two times per week and 7.5% daily are consuming shawarma. The present study results shows that 23% children never, 23% one-time per week, 11% two times per week

and 8.5% daily are consuming french fries. Data analysis shows that 24% children never, 23% one-time per week, 11% two times per week and 17.5% one-time per month are consuming pizza. The present study results shows that 30% children never, 25.5% one-time per week and 14.5% one-time per month are consuming burger. Data analysis shows that 36% children never, 18.5% one-time per week and 12% two times per week are consuming other foods. Fast food consumption has become a fashion now and its trend is increasing day by day. Fast food includes chips, sandwich-es, fried chicken, french fries, nuggets, fish, pizza and ice cream. Fast foods are highly processed food that are low in fiber, vitamin A, C, folate, calcium, iron and trace minerals [33]. Table 6 shows that majority students are not consuming fritters (Pakora), fried potato filled pastry (Samosa), crisp sphere eaten (Gol Gappay), chickpea salad (Chana chaat), shawarma and burger. They are consuming French fries, chips and pizza on weekly basis. One study showed that consumption of fried potatoes was more common in female than male children [26].

	Never	1T/ W	2T/ W	3T/ W	4T/ W	5T/ W	6T/ W	Daily	1T/M	2 T/M	3 T/M
Miscellaneous and Fast Food											
Fritters (Pakora)/Fried potato filled pastry (Samosa)	23	21.5	18.5	15.5	2.5	1	1	9	5.5	0.5	2
Crisp sphere eaten (GolGappay)/Chickpea salad (Chana chaat)	26.5	20.5	14.5	7.5	6	2	1	8.5	8	1	4.5
Fried flour balls with yogurt (Dahi bhalay)	22	21	15.5	7.5	5	4.5	1	6	9	5	3.5
Shawarma	23	19.5	14.5	10	5	3	2	7.5	6	2.5	7
French fries	23	23	11	8.5	5.5	2	0.5	8.5	9.5	5	3.5
Pizza	24	23	11	5.5	2	2	2	3	17.5	5.5	4.5
Burger	30	25.5	8.5	6	1	3.5	0.5	3.5	14.5	5.5	1.5
Others	36	18.5	12	6.5	4.5	1.5	1	7.5	7.5	3.5	1.5

Table 6: Food frequency consumption of miscellaneous and fast food.

Data are presented in percentages. Frequencies of consumption are given in columns while food items are given in rows.

	Never	1 time/ week	2 times/ week	3 times/ week	4 times/ week	5 times/ week	6 times/ week	Daily
Breakfast	3.5	3	2.5	2.5	1	2.5	0.5	84.5
Midmorning Snack	9	3.5	6.5	6	5	3	2	65
Lunch	4.5	2.5	1.5	3.5	2	5	2	79
Midevening Snack	23.5	3	8	8	4	4	0.5	49
Dinner	2	1.5	2.5	2.5	4.5	4	2	81
Bedtime Snack	25	4	3.5	5	5	1	0.5	56

Table 7: Frequency of meals consumption.

Data are presented in percentages. Frequencies of consumption are given in columns while meal types are given in rows.

Frequency of meals consumption is given in table 7. Out of 200 children, 84.5% children breakfast, 65% midmorning snack, 79% lunch, 49% midevening snack, 81% dinner and 56% bedtime snack are taking on daily basis. Habits of eating with family are declining day by day. The previous study results showed that 20% children are taking breakfast and lunch with their family about one to four times per week while 50% children were taking dinner with their families at least one to three times per week. About five to

sixteen meals they were taking [20]. Table 7 shows that majority children are taking breakfast, lunch, dinner and snacks on daily basis. One another study showed that mostly children of preschool age were taking breakfast and lunch with their families about one to two times per week and more than half of children taking dinner family meals five or more times per week [34]. It was suggested that it is more common in preschool children to eat breakfast and lunch with their families [35]. On the other hand, older children have habit of eating dinner with their families at least five times per week [36].

Conclusion

Based on the results of the present study it can be concluded that most of the students who participated in the study were boys of 5th class having an age of ten years. Their mothers were housewives and belong to lower middle-class families. Their weights and heights were in the range of 25kg and 132cm. BMI percentiles were in the normal range. They usually dine outside the home and play indoor games. Mostly students were taking their breakfast, lunch and dinner regularly. Many students were consuming wheat flat bread without oil (chapatti), wheat flat bread with oil (paratha), egg, milk, yogurt, dry fruits and biscuits on a daily basis. Consumption of rice, wheat white bread (nan), chicken, legumes, cooked vegetables, raw vegetables were one to two times per week. Many students were avoiding rusk, porridge, pastas, noodles, spaghettis, fish, mutton, beef, cheese, miscellaneous and fast foods.

Conflict of Interest

The authors declare no conflict of interest.

Bibliography

1. Dey Ajit Kumar and Ajoy Bhusan Nath. "Nutritional Status of school going children (6-15 years) in a semi-Urban area of Cachar district, Assam". *Journal of Evolution of Medical and Dental Sciences* 6.54 (2017): 4057-4062.

2. Srivastava Anurag., *et al*. "Nutritional status of school-age children-A scenario of urban slums in India". *Archives of Public Health* 70.1 (2012): 8.

3. Shivaprakash NC and Ranjit Baby Joseph. "Nutritional status of rural school-going children (6-12 years) of Mandya District, Karnataka". *International Journal of Scientific Study* 2.2 (2014): 39-43.

4. Achadi Endang., *et al*. Global nutrition report 2016: From promise to impact: Ending malnutrition by 2030. International Food Policy Research Institute (2016).

5. Schmidt Maria Inês., *et al*. "Chronic non-communicable diseases in Brazil: burden and current challenges". *The Lancet* 377.9781 (2011): 1949-1961.

6. Triches Rozane Márcia and Elsa Regina Justo Giugliani. "Obesity, eating habits and nutritional knowledge among school children". *Revista De Saúde Pública* 39 (2005): 541-547.

7. Brown Rachael and Jane Ogden. "Children's eating attitudes and behaviour: a study of the modelling and control theories of parental influence". *Health Education Research* 19.3 (2004): 261-271.

8. Zaborskis Apolinaras., *et al*. "Trend in eating habits among Lithuanian school-aged children in context of social inequality: three cross-sectional surveys 2002, 2006 and 2010". *BMC Public Health* 12.1 (2012): 52.

9. Dehghan Mahshid., *et al*. "Childhood obesity, prevalence and prevention". *Nutrition journal* 4.1 (2005): 24.

10. Asim Muhammad and Yasir Nawaz. "Child malnutrition in Pakistan: evidence from literature". *Children* 5.5 (2018): 60.

11. Spear Bonnie A. "Adolescent growth and development". *Journal of the Academy of Nutrition and Dietetics* (2002): S23.

12. World Health Organization. Physical status: The use of and interpretation of anthropometry, Report of a WHO Expert Committee. World Health Organization (1995).

13. Gunes F Esrra., *et al*. "Development and validation of a semi-quantitative Food Frequency Questionnaire to assess dietary intake of Turkish school-aged children". *Polish Journal of Food and Nutrition Sciences* 66.2 (2016): 129-137.

14. Prabhakar SC Jai and MR Gangadhar. "Nutritional status of Jenukuruba tribal children in Mysore district, Karnataka". *The Anthropologist* 11.2 (2009): 83-88.

15. Chandra KR Pravin., *et al*. "Nutrition assessment survey of school children of Dharwad and Haliyal taluks, Karnataka State, INDIA". *Kathmandu University Journal of Science, Engineering and Technology* 2.1 (2006).

16. Huang, Ya-Li., *et al*. "What do college students eat? Food selection and meal pattern". *Nutrition Research* 14.8 (1994): 1143-1153.

17. Sajjad A., *et al*. "Missing breakfast, sleep and exercise: are you skipping out years of life". *Journal of Nutrition Health Science* 1.3 (2014): 308.

18. Hisam Aliya., *et al*. "Regular breakfast consumption associated with high intelligence quotient: Myth or Reality?". *Pakistan Journal of Medical Sciences* 31.5 (2015): 1084.

19. Savige Gayle., *et al*. "Snacking behaviours of adolescents and their association with skipping meals". *International Journal of Behavioral Nutrition and Physical Activity* 4.1 (2007): 1-9.

20. Berge Jerica M., *et al*. "Beyond the dinner table: who's having breakfast, lunch and dinner family meals and which meals are associated with better diet quality and BMI in pre-school children?". *Public Health Nutrition* 20.18 (2017): 3275-3284.

21. Gillman Matthew W., *et al*. "Family dinner and diet quality among older children and adolescents". *Archives of Family Medicine* 9.3 (2000): 235.

22. Pendergast Felicity J., *et al*. "Correlates of meal skipping in young adults: a systematic review". *International Journal of Behavioral Nutrition and Physical Activity* 13.1 (2016): 125.

23. Cusatis Deborah Cardamone and Barbara M Shannon. "Influences on adolescent eating behavior". *Journal of Adolescent Health* 18.1 (1996): 27-34.

24. Sarwar Muhammad Haroon., *et al*. "The importance of cereals (Poaceae: Gramineae) nutrition in human health: A review". *Journal of Cereals and Oilseeds* 4.3 (2013): 32-35.

25. Gerrior, Shirley., *et al*. "Milk and milk products: their importance in the American diet". *Food Review/National Food Review* 21.1482-2016-121490 (1998): 29-37.

26. Saravia Luisa., *et al*. "Development of a food frequency questionnaire for assessing dietary intake in children and adolescents in South America". *Obesity* 26 (2018): S31-S40.

27. Chan Weng. Meat poultry and game: fifth supplement to the fifth edition of McCance and Widdowson's The composition of foods. Royal Society of Chemistry (1995).

28. Key Timothy J., *et al*. "Diet, nutrition and the prevention of cancer". *Public Health Nutrition* 7.1a (2004): 187-200.

29. Wargovich Michael J. "Anticancer properties of fruits and vegetables". *HortScience* 35.4 (2000): 573-575.

30. Kader Adel. "Importance of fruits, nuts, and vegetables in human nutrition and health". *Perishables handling quarterly* 106.4 (2001): 6.

31. Prior RL and Cao G. "Antioxidant phytochemicals in fruits and vegetables: diet and health implications". *HortScience* 35.4 (2000): 588-592.

32. Punitha VC., *et al*. "Role of dietary habits and diet in caries occurrence and severity among urban adolescent school children". *Journal of Pharmacy and Bioallied Sciences* 7.1 (2015): S296.

33. Robinson Corinne Hogden and Marilyn R Lawler. Normal and therapeutic nutrition. No. Ed. 16. Collier Macmillan Publishers (1982).

34. Andaya Abegail A., *et al*. "The association between family meals, TV viewing during meals, and fruit, vegetables, soda, and chips intake among Latino children". *Journal of Nutrition Education and Behavior* 43.5 (2011): 308-315.

35. Larson Nicole., *et al*. "Eating breakfast and dinner together as a family: associations with sociodemographic characteristics and implications for diet quality and weight status". *Journal of the Academy of Nutrition and Dietetics* 113.12 (2013): 1601-1609.

36. Fulkerson Jayne A., *et al*. "Family meal frequency and weight status among adolescents: cross-sectional and 5-year longitudinal associations". *Obesity* 16.11 (2008): 2529-2534.