Original Article

A Survey to Assess the Food Habits of School Going Children from High Socioeconomic Background

Food Habits of Children

1. Riaz Ahmed Bhutto 2. Muhammad Safdar Baig 3. Khawar Saeed Gillani

1. Assist. Prof. of Community Medicine, Altibri Medical College, Isra University, Karachi 2 Asstt. Prof. & HoD Dept of Oral & Dental Surgery Quaid-e-Azam Medical College and Bahawal Victoria Hospital, Bahawalpur
3. Senior Registrar Pediatrics Unit II, Bahawal Victoria Hospital and Quaid-e-Azam Medical College, Bahawalpur

ABSTRACT

Objectives: To assess food habits of school going children from a high socio-economic background, Establish food frequency of commercially available foods and to determine the risk factors and to suggest the way to control these risk factors.

Study Design: Cross sectional study

Place and Duration of Study: This study was conducted at the Department of Community Medicine, Al-tibri Medical College, Isra University, Karachi from 31st May to 30th July, 2015.

Materials and Methods: This survey was carried out on 200 students age of 6-12 years enrolled in KAS school belong to high socioeconomic group, randomly selected for interviews through an administrated structured food frequency questionnaire. This survey was conducted in three days during 8am to 3pm. All students who visited the health office for any reason were asked to participate in the study.

Results: The mean age of respondents was 12.7±3.7 years. Thirty-nine reported missing at least one meal a day. Averagely the students consumed 4.2meals per day. Most frequently missed meal was evening tea/snack (n=17), followed by midday snack (n=12). Few students reported missing lunch (n=3) or dinner (n=2) during the week.

Conclusion: Students need to be encouraged to take healthy foods, by creating opportunities for better choices. Health education strategies can be effective implemented in a school setting through innovate means can ensure better outcomes.

Key Words: Food habits, School-age Children, Commercially available foods, Risk factors

Citation of article: Bhutto RA, Baig MS, Gillani KS. A Survey to Assess the Food Habits of School Going Children from High Socioeconomic Background. Med Forum 2015;26(12):32-36.

INTRODUCTION

Internationally there has been little impetus for nations to develop food and nutrition policies since the calling for a marriage between agriculture and health by the being of nations in the 1940s. The relative complacency of the 1950s and 1960s toward nutrition was rocked by the global food crisis in 1973.[1,2] In late 1974 the Food and Agriculture Organization convened a World Food Conference and called on nations to develop food and nutrition policies. Norway was the only country to respond, adopting a National Nutrition Policy in 1976.[3] Toronto City Council is working with Boards of Education to establish nutrition programs in all Toronto schools[4] (Toronto Food Policy Council). In Pakistan, Agha Khan Project (Taranna Project) also has started working on school nutritional programs.

Improvements in the community's food intake and nutritional status only will occur it efforts are concentrated on making "healthy choices - easy choices".[5] Changes in the food supply may be required. However, any decisions made regarding interventions at particular points in the food and nutrition system must be based on knowledge of the whole system - objectives, inputs, outputs and linkages.[6] Knowledge of the food system is obtained by the collection of data, which then can be used as a guide for monitoring the system. In particular, it enables decisions to be made which enhance the food system effectiveness and ultimately improve the population's nutritional status.

Nutrition is the study of nutrients in food and how the body handles them including eating, digestion, absorption, storage and excretion. Nutrition is essential for a healthy physical and mental development. Meeting the nutritional requirements of Children 6-12 years of age takes larger amount of the same foods needed by preschool aged children. Children in this age group are the period where growth is slow but steady, in contrast intellectual and social growth is rapid. School children have long day and mentally demanding day followed by some very active periods. Leaning about food, growth and health is an important part of this age group. Good nutrition is based on variety, moderation, balance and regularity. Healthy life involves more than just eating. Children should be

Correspondence: Dr. Riaz Ahmed Bhutto
Asstt. Prof Community Medicine Altibri Medical College, Isra University, Karachi
Contact No.: 03452751689
E-mail: drrkb@hotmail.com

encouraged to get involved in physical activities regularly in order to have a good maintenance. The health and wellbeing of children is closely linked with that of the mother. The giving or life and support for survival of that life. Hence it is essential to develop effective strategies for improving the nutrition habits of school children so that they can go on to develop as healthy adults. Malnutrition can cause stunting, physical and mental retardation.

MATERIALS AND METHODS

This study consisted of 200 students age of 6-12 years enrolled in KAS school belong to high socioeconomic group. This cross sectional study was conducted at the Department of Community Medicine, Al-tibri Medical College, Isra University, Karachi from 31st May to 30th July, 2015. 200 students were randomly selected for interviews. They were an administrated structured food frequency questionnaire. All students who visited the health office for any reason were asked to participate in the study. The collection of dietary intake data from a community can he used to determine the proportion of the community that is receiving an excessive or inadequate intake of various nutrients. These data also can reveal relationships between dietary intake and nutritional status. Since dietary intake data are an indirect measure of nutritional status, they need to be considered along with the biomedical data when assessing the nutritional status of a community. This allows identification of the proportion or a community who may he malnourished with respect to one or more nutrients. The methods that have been developed to more dietary intake differ according to the type of information that is sought, the way in which the information is collected and the time frame of the study. There are advantages, disadvantages and limitations to each method, with no single method of dietary assessment being accepted as entirely satisfactory or universally the best.

Dietary Intake Methodologies: 24-hour recall: The respondent is interviewed and asked to recall all food and beverages consumed during the preceding 24 hours. After obtaining a description of the food and beverages consumed and the method of preparation, the interviewer records this intake. Accurate reporting of the portion size by the participant can be improved by showing household measures and food models and getting the respondent to compare their portion sizes to these.[8]

Food record: This method involves the respondent measuring and recording all food and beverages as they are consumed. The food items consumed may be measured using household measures (e.g. 3 tablespoons of rice) or by weighing the food when it is ready to eat[8]. Leftover food also must be measured and recorded. Food records are usually kept for three days (not necessarily consecutive), but may be kept for longer periods of a week, a month or even one year.[9]

Food frequency questionnaire: The questionnaire may be self-administered or completed by the interviewer. Respondents are required indicate how frequently they consume each food item listed[10] (as number of times consumed per day, week, month or year). Portion sizes are included for each food item. Although a food frequency questionnaire may specifically on food or beverages containing a particular nutrient, the food items listed should reflect the food preferences of the community being studied.

Diet history: This method of obtaining dietary intake data is usually only used in one on one clinical setting, due to the length of the interview (1-2 hours) and therefore the high cost involved.[11] The respondent is interviewed to determine their habitual food intake over a preceding, specified time period (e.g. three months or one year). The semi-structured interview incorporates several styles of dietary data collection, such as a food frequency and 24-hour recall. The respondents' psychosocial history with respect to food intake often is included.

Store turnover: Turnover of foodstuffs from a store is determined using store invoices for all food items delivered to the store during a preceding, specified time period. Total quantities of each food supplied are tabulated and the average daily supply is calculated. Apparent per capita consumption of food and nutrients per day is then calculated by dividing mean daily store turnover by the number of people in the community.[9] This method is most appropriate for a geographically isolated community, of small size, serviced by a single food store.

Assessing Nutritional Status: From a nutritional perspective, the role of the food and nutrition system is to provide the population with a safe, affordable, accessible and nutritious food supply. However, inequalities in the distribution and availability of foods, and hence nutrients, exist. These inequalities may be identified by assessing the nutritional status of those living in a particular community. The term 'assessment' is derived from the Latin ward assess are which means 'to sit by' or 'watch over'. In health care, the term nutritional status assessment describes "the process of collecting all pertinent information about the [nutritional] status of a person or group of persons"[12]. Since nutrition is one of the most important determinants of health, it follows that the assessment or "nutritional status should be one of the most important activities in monitoring the health of our nation"[13].

Biomedical Indicators: There is no single, reliable biomedical test that provides a direct measure of nutritional status. Instead, the assessment procedure involves collecting and interpreting data using a variety of methods. The biomedical data collected can be used to identify the presence of diseases with nutritional

components, such as hypertension and some cancers. The risk factors for such diseases also can be identified.[14]

Anthropometric Assessment: Anthropometry is "the process of measuring various dimensions of the body". The measures provide estimates of size, weight and proportions, particularly muscle and fat components of the body and are inexpensive and simple to obtain.[15] Accuracy depends on correct technique and reading of instruments, as well as accurate recording of the data. Owen and Frankle maniacs a number of anthropometric measurements used to assess the nutritional status of individuals. I will discuss briefly those measurements that are more commonly used.

Triceps skin fold (TSF) measurement: Skin fold measurements measure subcutaneous fast (underneath the skin) at various sites of the body. Since approximately half of the fat in the body is present as subcutaneous fat, the thickness of skin fold over the triceps muscle provides a good indication of fat, and energy stores.[16] The TSF measurement is taken at the midpoint of the non-dominant arm, using calipers. It may be interpreted by comparing the measurement with reference or percentile values, the latter providing adjustments for age.[17] Common errors made when obtaining a TSF measurement include measuring the wrong arm, incorrectly positioning the calipers, or taking the reading at the wrong time. The individual's state of hydration as well as the presence of oedema also may affect the accuracy of the reading.

Midarm muscle circumference (MAMC): This measurement indicates muscle or somatic protein stores. It is calculated using TSF and mid arm circumference (MAC) measurements. When obtaining the MAC measurement, care must be taken to ensure the tape is correctly positioned around the non-dominant arm, which should be loosely hanging by the side.

Waist to hip ratio (WHR): The WHR is used to measure abdominal obesity. It is calculated by dividing the abdominal circumference (halfway between the lowest lateral portion of the rib cage and iliac crest) by the hip circumference (at the level of the maximal protrusion of the gluteal muscles). Although cut off points for defining those persons at risk have yet to be identified, a WHR greater than 0.85 may be representative of excessive abdominal adiposity. Abdominal obesity (or android type) is seen more frequently in men while gluteofemoral (or gynoid type) is more common in women. After menopause, women tend to take on the male fat distribution pattern of abdominal obesity.[18]

Body mass index (BMI): This ratio provides a good indication of body fat in adults. It is calculated by dividing an individual weight (in kilograms) by their height squared (in meters). An index of between 25-30 is classifieds overweight, while obesity is identified if the BMI is greater than 30. As BMI increases beyond those values considered to be acceptable, health risks also increase. BMI fails to distinguish soft tissues and muscle bulk from fat.[14] Consequently, athletes frequently fall into the 'overweight' range but the excess weight is usually muscle. BMI also cannot distinguish between gluteo-femoral and abdominal obesity. As with other anthropometric measurements, the height and weight measurements used to calculate BMI are subject to errors. These errors may be due to the incorrect use of instruments, or the way the measurements are read and recorded. Day to day, or within day variations can influence monuments such as height by up to 2 centimeters.

Growth charts: Data from the National Centre for Health Statistics (NCHS) were accepted by the World Health Organization in 1978, and now ere the foundation for recognized growth chart development. Charts based on those data are used internationally, since there is little difference between the growth of children in developed societies and growth in those from privileged groups in developing countries.[18] Single points on a growth chart can rarely be interpreted accurately. Comments on the adequacy of a child's growth pattern can only be made from the plotting of multiple measurements taken over time. This establishes a percentile ranking, on the growth grid. Growth velocity, as well as acceleration or deceleration, can then be monitored which will reflect excessive or inadequate energy and/or nutrient intakes.

Biochemical Assessment: A number of biochemical tests are available for assessing nutritional status. These measure the concentration of nutrients circulating in biological fluids such its blood and urine, while haematological tests are concerned with the morphology and physiology of blood cells. Owen and Frankle lists a number of biochemical tests used in nutrition surveys. As discovered previously, improvements in the community's food intake and nutritional status only will occur if efforts are concentrated on making 'healthy choices - easy choices'. Knowledge of the food system is obtained by the collection of data, which then can be used as a guide for monitoring the system. In particular, it enables decisions to be made which enhance the food system's effectiveness and ultimately improve the population's nutritional status.

RESULTS

The mean age of respondents was 12.7±3.7 years. To the question as to how many days a week they have a certain meal or snack. One fifty-six reported missing at least one meal a day. Averagely the students consumed 4.2 meals per day. Most frequently missed meal was evening tea/snack (n=68), followed by midday snack (n=48). Few students reported missing lunch (n=12) or dinner (n=8) during the week (Table 1).

Table No.1: How many a day a week do you take the following meals?

Meal/day	0	1	2	3	4	5	6	7	Total
Breakfast	20	12	20	20	24	20	24	60	200
Midday	48	12	16	32	28	24	20	20	200
Lunch	12	12	20	24	36	28	44	24	200
Evening tea or snack	68	8	8	24	20	16	20	36	200
Dinner	8	0	4	0	28	60	52	48	200
Total	156	44	68	100	136	148	160	188	1000

Table No.2: Location where meal is consumed. (n=200)

Meal consumed	Home	School	Other (specify)
Breakfast	168	-	12
Midday	0	152	-
Lunch	52	80	56
Evening tea or snack	76	8	48
Dinner	116	-	76

Most students took meals at home except for midday snack, which was usually taken at school. The average number of times per week a student ate a meal outside the school or home was 2.6±1.2. There were six students who were on special diets. Four were on a low calorie diet and two were strict vegetarian. Four were self-prescribed, one was prescribed by a physician and one was prescribed by a yoga instructor (Table 2). Most children reported consuming most of the listed foods regularly. Two children were strict vegetarians. Chicken was the most frequently consumed meat followed by mutton and beef. Seventeen children reported non-consumption of fish. Milk was not taken out by two children, whereas majorly consumed milk on a daily basis. Fruits vegetables and pulses were no consumed too often (Table 3).

Table No.3: Type of foods consumed per week

Food/day	0		1		2		3		4		5		6		7	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Chicken	28	14.0	-	-	-	-	-	-	-	-	32	16.0	44	22.0	96	48.0
Beef	64	32.0	24	12.0	28	14.0	16	8.0	-	-	-	-	-	-	8	4.0
Mutton	28	14.0	-	-	4	2.0	12	6.0	16	16	28	14.0	36	18.0	64	32.0
Fish	68	34.0	68	34.0	32	16.0	8	4.0	12	12	4	2.0	8	4.0	-	-
Milk	8	4.0	-	-	-	-	-	-	8	8	24	12.0	56	28.0	104	52.0
Cheese	8	4.0	24	12.0	8	4.0	36	18.0	44	44	4	2.0	4	2.0	72	36.0
Eggs	32	16.0	-	-	-	-	4	2.0	8	8	4	2.0	48	24.0	104	52.0
Apples	8	4.0	4	2.0	8	4.0	20	10.0	24	24	12	6.0	52	26.0	92	46.0
Bananas	24	12.0	-	-	-	-	-	-	8	8	4	2.0	76	38.0	88	44.0
Watermelon	-	-	-	-	-	-	-	-	24	24	56	28.0	44	22.0	76	38.0
Potatoes	24	12.0	8	4.0	52	26.0	60	30.0	8	8	24	12.0	8	4.0	8	4.0
Cabbage	12	6.0	56	28.0	20	10.0	12	6.0	24	24	44	22.0	32	16.0	-	-
Cucumber	-	-	48	24.0	60	30.0	8	4.0	24	24	16	8.0	12	6.0	32	16.0
Salad leaf	-	-	48	24.0	60	30.0	8	4.0	24	24	8	4.0	8	4.0	44	22.0
Daal	-	-	44	22.0	32	16.0	48	24.0	24	24	28	14.0	12	6.0	12	6.0
Beans	-	-	60	30.0	76	38.0	48	24.0	4	4	4	2.0	8	4.0	-	-

DISCUSSION

Good nutrition is critical for development of healthy body and mind. Our study shows that even when food is adequately available it is the poor choice of food that can cause concern.[19] Children of high socio-economic class with access to all types of foods still do not consume adequate fruits and vegetables. They are likely to indulge in unhealthy junk food.[20]

A report by the US Department of Health and Human Services, examined similar variables in a much larger sample of US school children.[21] It recommends implementing, innovative strategies to reverse the rising trend of overweight in young children by promoting consumption of five or more servings of fruits and vegetables each day, increasing physical activity, increasing breastfeeding, and decreasing television viewing. Promote adequate dietary iron intake and screening of children at risk for iron deficiency. Overweight (high weight-for-length-BMl-for-age) in children and adolescents have reached epidemic proportions in recent years.[22] The prevalence of overweight in children in PedNSS from birth to age 5 is 13.1%. Overweight in children younger than 2 does not pose the same risk as it does in children aged 2 or older because little association has been found between their weight and increased risk for adult obesity.[23] Expert committees have recommended a two-level screening

for over weighting among children aged 2 years or older. The recommendations are to use BMl-for-age at or above the 95th percentile to define overweight and between the 85th and 95th percentile to define risk of overweight.[24]

CONCLUSION

Health education strategies can be effective implemented in a school setting. Health education through innovate means can ensure better outcomes. Students need to be encouraged to take healthy foods, by creating opportunities for better choices. School Canteens should also play its important part and provide nutritious food "Healthy choice-easy choices".

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

1. Peter Timmer. Reflections on food crises. Elsevier 2009.
2. Chand R. The Global food crisis: causes, severity and outlook. review of agriculture. Economic & Political Weekly; 2008
3. Milio N. Nutrition Policy for Food-Rich Countries: a Strategic Analysis. Baltimore: The Johns Hopkins University Press; 1990.
4. Toronto Food Policy Council [online] 2015. Available from: URL: http://www.tfpc.to/
5. Hawe P, Stickney EK. Developing the effectiveness of an intersectoral food policy coalition through formative evaluation. Health Educ Res 1997; 12(2):213-25
6. Fernandez PM, Juan S. Dietary habits and nutritional status of school aged children in Spain. Nutr Hosp 2006;21(3):374-78.
7. Kemm JR, Booth D. Promotion of healthier eating how to collect and use information for planning monitoring and evaluation. London: HMSO Publishers; 1992:17-26.
8. Kang J. Nutrition and metabolism in sports, exercise and health. London & New York: Routledge Publisher; 2012.
9. Mackerras D. Comparison of an Australian food-frequency questionnaire with diet records: implications for nutrition surveillance. Public Health Nutr 2003; 6(4):415-22.
10. Barrett-Connor. Diabetes in America. NIH Publication; 1995.
11. Williams S, Worthington R. Nutrition assessment and guidance in prenatal care. Times Mirror/ Mosby, St. Louis Publishers. 1989; 4:141-71.
12. Binns CW. Assessment of growth and nutritional status. J Food Nutr 1985; 2(3): 119-26.
13. Owen. AL, Frankle RT. Nutrition in the community, the art of delivering services. Times Mirror/Mosby College Publishers 1986:(2): 183-203.
14. Williams SR, Worthington R. Nutrition throughout the life cycle. Times Mirror/ Mosby College Publishing, St. Louis; 1988.
15. Wahlqvist ML. Food and Nutrition in Australia. Australia: Nelson: 1988 (3).
16. Zeman E. Clinical Nutrition and Dietetics. New York: Macmillan Publishing Company 1986 (2).
17. Roche AF. Human growth: assessment and interpretation. New York. Cambridge University Press:2005.
18. Block G. Human dietary assessment: methods and issues. Prev Med 1989;18: 653-660.
19. Smink FR, van Hoeken D, Hoek HW. Epidemiology of eating disorders: incidence, prevalence and mortality rates. Cur Psychiatry Rep 2012;14(4):406-14
20. Sherrie S, Delinsky G, Wilson T. Weight gain, dietary restraint, and disordered eating in the freshman year of college. Elsevier 2008; 9: 82-90.
21. Miller CA, Golden MD. An introduction to eating disorders: clinical presentation, epidemiology, and prognosis. Nutr Clin Pract 2010; 25(2):110-5.
22. Hakeem R, Thomas J, Badruddin SH. Food Habits and nutrient density of diets of Pakistani children living in different urban and rural settings. J Health Population Nutr 2002; 20(3): 255-63.
23. Salameh P, Jomaa L, Issa C. Assessment of health risk behaviors among university students: a cross-sectional study in Lebanon. International J Adolesc Youth 2014; 19(2). 43-7.
24. dos Rei JA, Carlos Reeves Rodrigues Silva CRR. Factors associated with the risk of eating disorders among academics in the area of health. RGE J 2014; 35(2).75-9.