Rural-Urban differences in Food and Nutrient intake of Pakistani Children

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Abstract

Background: Global increase in urbanisation accompanied by increase in complexftv of nutritional problems is a cause of concern for most nations.
Objective: The aim of this study was to assess the differences in frequency of food consumption and nutrient intake of urban and rural Pakistani children.
Setting: Forty rural, 59 middle income urban and 81 affluent urban children belonging to the province of Punjab. Children were recruited through schools in Lahore and Rayonpura, Kala-Shah-Kaku (Sheikhupura district).
Method: Three-day estimated diet records were kept by a total of 180, 10-12 year old school-children. The nutrient intake was calculated by the nutritional analysis package COMP-EAT and analysed on SPSS. The results of the three groups were compared.
Results: Consumption of chapati, eggs, yoghurt and some of the traditional vegetarian snacks was very, similar in all the three groups. Consumption of lentils, cooked vegetables, paratha (fried Asian bread) and tea decreased and that of milk, meat curry, chicken curry, chocolates, cakes, ice-cream, fruit and raw vegetables increased with urbanisation. As compared with the rural children, the urban children had a higher mean daily intake of calories, sugar, protein, total fats, cholesterol, calcium, sodium, potassium, niacin, vitamin B12, folic acid, antioxidant vitamins A,C and E and lower intake of total carbohydrates, fibre and starch.
Conclusion: It is concluded that although the macro-nutrient consumption pattern of rural children appears to he heart healthy lower consumption of protective micro-nutrients by them may pitt them at risk. In view of rapid urbanisation and its multidimensional impacts on the health of the populations living in the u rban areas of the developing world, these dietary trends provide baseline information for health professionals (JPMA A 49:288,1999).

Introduction

Historical evidence from different parts of the world indicates association of demographic transitions with variations in dietary habits and health[1-9].

In high income countries demographic transition has been gradual[8], whereas in many less developed countries transition has occurred over a relatively short period of time. In many of these developing countries problems of under- and over-nutrition appear to coexist. Increasingly it appears that earlier equal distribution of nutritional problems is being replaced by problems of excess and deficit among the rich and poor respectively[5]. These differences are also showing their effect in terms of malnutrition among the underprivileged and chronic diseases among the rich[10].

Urbanisation is increasing in Pakistan[11] (Figure 1).

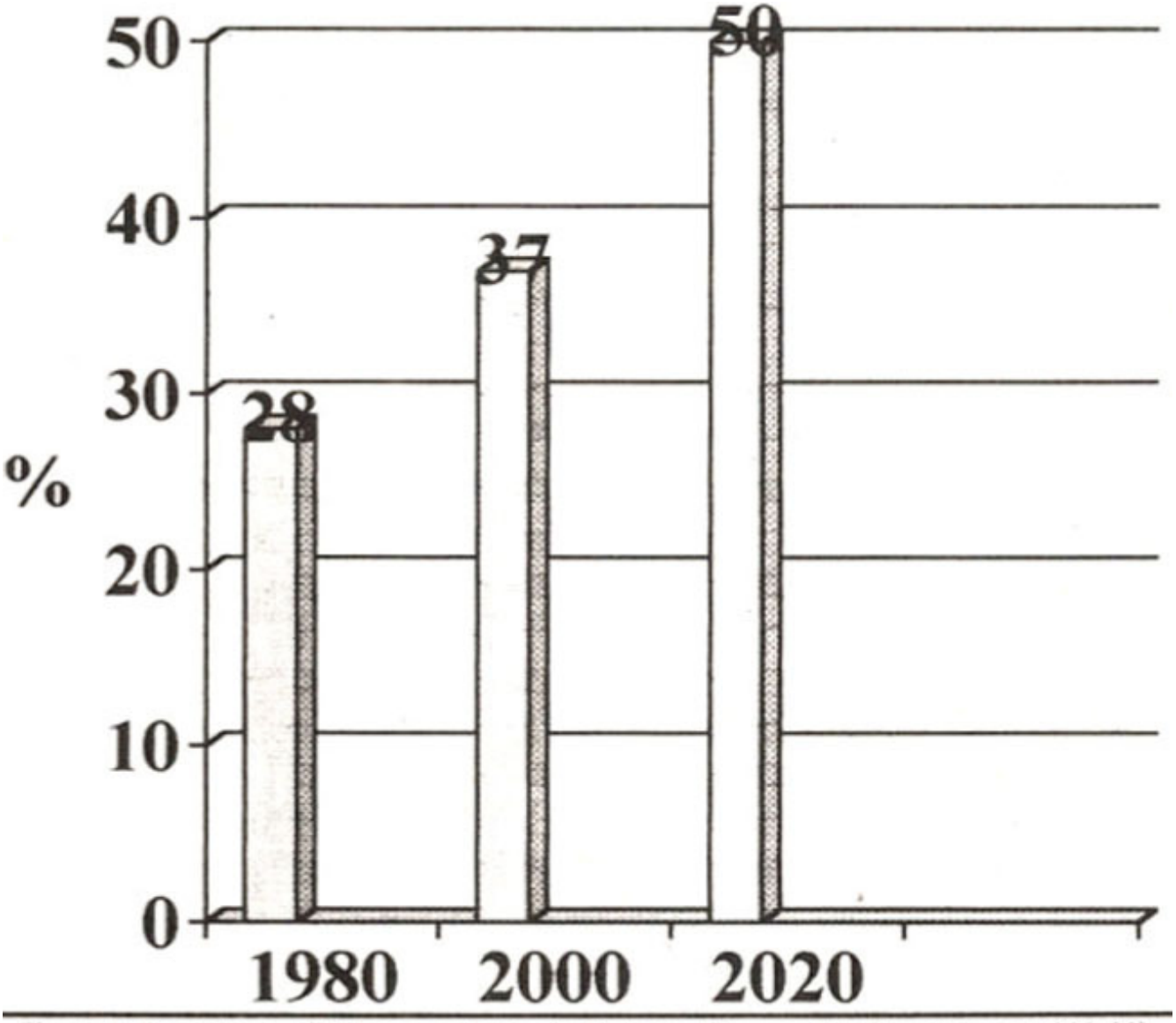

Figure 1. Percentage of Urban population in Pakistan (Source: World resources 1998-99).

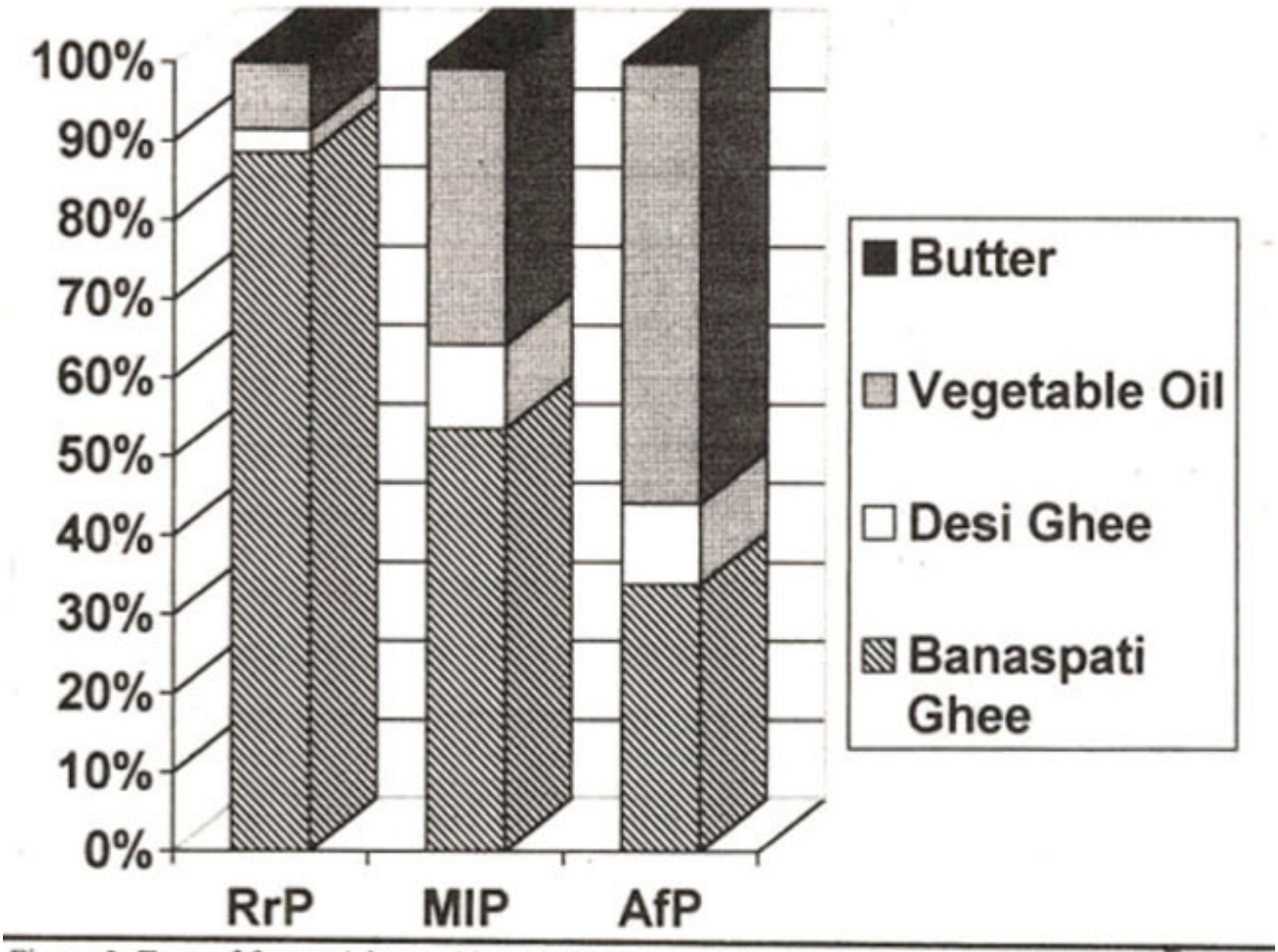

Figure 2. Type of fat used for cooking in the households of rural and urban Pakistani children.

In view of increasing urbanisation it may be anticipated that problems related to urbanisation seen in other countries, would also be increasing in urban areas of Pakistan. Observing the rural-urban differences in the diets of Pakistani people may indicate the kind of dietary changes and associated health problems to be anticipated with increase in urbanisation.

The purpose of this study was to explore the possible impact olurbanisation and affluence on the dietary habits of Pakistani children. In order to attain this aim, differences in food consumption pattern and nutrient intake of rural (RrP), middle income urban (MIP) and affluent urban (AfP) Pakistani children arc compared.

Methods

Sampling and data collection

All the children for this study were recruited from schools. With the co-operation of Association of Private Schools, (Punjab) and the District Education Authority Lahore, schools catering to relatively high or to middle income groups were identified and invited to participate in this study. One school from an adjacent rural area (KalaShah-Kaku) was identified through personal contacts.

In view of the literacy skills, children around eleven years of age (10-12 years old) were considered to be best suited to the aims of this study. All (or randomly selected sections depending on enrolment size) of the ten to twelve year old students from the participating schools were invited to take part in the study. Around 90% (74-99% from different schools) of the invited children participated in this study.

Data was collected from Pakistan in the months of April-May, 1995.

Assessment of food and nutrient intakes

The participating children were provided with special diaries printed for this purpose to record their food intake for three consecutive days, Wednesday, Thursday and Friday to represent two weekdays and one weekend day. Children were instructed to record everything they ate or drank and mention quantities in household measures during the record keeping period. In order to estimate the capacity of the utensils children normally used 30 ml disposable medicine- measuring cups were provided to children and the procedure of estimating and recording capacity of their utensils in the dairy was demonstrated and thoroughly explained. A letter, requesting the parents to monitor and assist their child in the record keeping process if required, was sent to the parents.

The food consumption information from the food records was coded and entered directly on SPSS (version 6). Proportion of children from each group who either ate or did not eat any food from the particular food group were compared and chi-square test was performed to test the statistical significance of the observed differences. Besides looking at overall significance of the results (i.e., comparison of the three groups together) chi-square test was repeated to compare groups with each other individually i.e., RrP V AfP, RrP V MIP and MIP V AfP.

The nutritional analysis package COMP-EAT, with added data on South Asian dishes from Kassam-Khamis[12] was used to calculate the nutrient intake. Mean daily intake of nutrients by each subject was entered and analysed on SPSS, (version 6) for comparison of the three groups. One way analysis of variance (with post hoc analysis of Least-Significant-Difference, to compare each group) was used for comparing means.

Children belonging to the rural, middle income urban and affluent urban group were assigned an urbanisation rank 1, 2 and 3 respectively. Total frequency of consuming items from any food category was computed for each child. Correlation between urbanisation rank and frequency of food consumption was studied to see the impact of urbanisation on food consumption. The nutrient intake of children was calculated separately for each of the three record-keeping days. In order to get a balanced representation of weekdays and week ends, mean intake of two week days was multiplied by six and added to intake on week ends; the resulting figure was divided by seven to get mean daily intake for each individual representing the whole week.

Discussion

The general picture that emerges is that the differences in food and nutrient intake of rural and urban children were more marked as compared to the differences between middle income and more affluent urban children. The differences noted between the rural and urban groups in this study are similar to those observed by other researchers elsewhere. As found in most studies looking at dietary changes accompanying exposure to urbanised lifestyle, consumption of sweets, fizzy drinks and fast food increases from rural to urban Pakistani group[13]. Consumption of meat is usually found to increase with exposure to a more urbanised environment[14]. In this study also, meat consumption increased from rural to urban Pakistani children.

Although no research study has been done to document rural-urban difference in the diets of Pakistani people, consumption surveys reveal certain distinct characteristics of the two groups. According to the National Nutrition Survey of 1985-87, the mean intake of cereals, vegetables and milk was higher in rural areas and that of meat, egg and fish higher in urban areas of the country[15]. Annual household expenditure survey reports also indicate that the rural population of Pakistan has a higher level of consumption of wheat, rice, gram, milk, butter, ghee, brown sugar and ‘gur’ and lower per capita consumption of meat, eggs, white sugar and vegetable oil[16-19].

The differences observed between dietary habits of rural and urban children in Pakistan in this study

were in most cases typical of dietary changes accompanying urbanisation[20]. Rural Pakistani children as expected ate more vegetables, bread, biscuits, sweets and fizzy drinks than urban children. These trends coincide with the results of the National Nutrition Survey[15] and Household Surveys[16-19]. The surveys conducted by Government of Pakistan also, indicate that rural Pakistanis on average consume more milk than urban Pakistanis. But the rural-urban difference in milk consumption was reversed in this study. The reason may be that unlike National Surveys, in these results the frequency of milk intake does not include milk used in tea. As tea consumption was higher in rural areas and they have a much higher proportion of milk in their tea as compared to urban children, it is likely that both frequency of milk consumed by rural children is understimated in this study.

The mean energy intakes of the ,three groups of children were also less than the amounts recommended for Pakistani children[21] and this trend was found in the National Nutrition Survey[15] also, but again the difference was greater in our study. Estimated food records tend to underestimate food consumption as compared to weighed food records[22,23]. In the present study estimated three day records were used while seven day weighed food intake was recorded by the subjects in the National Nutrition Survey of Pakistan[15]. So this general trend of underestimation of food intake in the present study is probably because of the difference in methodology used. In the present study the emphasis was on inter group differences rather than on comparison with any standards and as the effect of methodology was consistent in all the groups this general trend of underestimation, of fod intake is unlikely to affect inter group comparisons.

These findings reveal not only the impact of urbanisation on food consumption pattern of Pakistani children but also the quality of diets of rural children. As far as the qualitative aspect is concerned the food consumption pattern of rural Pakistani children appears to be closer to a healthy diet. However lower intake of fresh fruits and vegetable by the rural group and a very frequent consumption of sugary and fatty foods by the urban group is a cause of concern. The lower intake of fresh fruits and vegetables expose the children to vitamin and mineral deficiencies and thus lowers their antioxidant potential. As there is considerable evidence of the positive impact of antioxidants on the risk for CHD[24-27], the rural children thus are at risk of early development of atherosclerotic lesions. Children entering adult life with such scars would be expected to respond more readily to atherogenic diet than those having healthier arteries. A greater variety of foods consumed by the urban children is expected to provide them a wider range of nutrients in sufficient quantities but frequency of cosuming sugary and fatty foods needs to be checked.

The present study reveals that diets of urban children have the drawbacks typical of urban food habits, some degree of modernisation of rural ‘areas has caused their diets. to be not as healthy now as it is usually anticipated. On the other hand, positive impact of a relatively higher intake of micro-nutrients, may be more than offset by the high intake of fats, cholesterol and sodium. A comprehensive nutrition education programme, both for rural and urban areas of Pakistan may help in reducing future risks for these children.

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References

1. Hams DR. The prehistory of human subsistence, a speculative outline. In Food. Nutrition and

evolution of food as an environmental factor in the genesis of human variability. New York, Masson, 1981, pp. 1 5-37.
2. Truswell AS. Diet and Nutrition of hunter-gatherers. Amsterdam Elsevier/Excerpta Medica. Ciba Foundation Symposium 49, Health and disease in tribal societies, 1977, PP. 1213-26.
3. Eaton SBS, Konner M. The Palaeolithic prescription a program of diet and exercise and a design for living. New York, Harper and Row, 1988.
4. Vargas LA. Old and new transitions amid Nutrition in Mexico. In: Disease in populations in transition anthropological and epidemiological perspectives., Editors: A.C. Swedlund and G.J. Armelagos. New York, Bergin and Carvey, 1990.
5. Popkin BM. The Nutrition Transition in low Income Countries: An emerging crisis. Nutr, Rev., 1994:52:285-98.
6. Omran Ar, The epidemiologic transition: A theory of the epidemiology of population change. Milbank. Q., 1971:49:509-38.
7. Milio N. Nutrition policy for food-rich countries, A strategic analysis, Baltimore, The Johns Hopkins University Press, 1990.
8. Popkin BMH. Food consumption trends of US women. Patterns and detenninants between 1977 and 1985. Am. J. Clin. Nutr., 1989:49:1307-19.
9. Popkin BM, Haines PSP. Dietary changes in older Americans, l977-B7. Am. J. Clin. Nutr., 1992:55:823-30.
10. Ge K. Dietary Pattern and physical development in China-- based on the 1992. National Nutrition Survey, Asia Pacific. Asia Pac. J. Clin. Nutr., 1995;4:1923.
11. WRI (World Resources Institute). Data Tables: Urban Data. In: World Resources, 1998-99: A joint report by WRI, UNDP, IJNEP and World Bank, Washington, USA. Oxford University Press, 1998, pp. 1-384,
l2. Kassam-Khamis TK. South Asian Food ways in Britain. Diversity and Change. London, University of London. (PhD Dissertation). 1996.
13. Almeida MD. Migration and changing food habits: A study of the Cape Verdeans in Portugal. London, University of London, (PhD Dissertation), 1989.
14. Karim N, Block DS, Falciglia 0, et al. Modifications in food consumption patterns reported by people from India, living in Cincinnati, Ohio. Encol. Food Nutr., 1986;19:11-18.
15. Government of Pakistan. National Nutrition Survey, 1985-87. Report, Islamabad GoP, Nutrition Division. National Institute of Health, 1988.
16. Government of Pakistan. Household Income and Expenditure Survey, 1983-84, Karachi, Federal Bureau of Statistics, 1986.
17. Government of Pakistan. Household Income and Expenditure Survey, 198485, Karachi, Federal Bureau of Statistics, I 987.
18. Government of Pakistan. Household Income and Expenditure Survey, 1985-
86. Karachi, Federal Bureau of Statistics, 1988.
19. Government of Pakistan. Federal Bureau of Statistics. Household Integrated Economic Survey, 1990-91, Karachi, Federal Bureau of Statistics, 1993.
20. Padmavati S. Epidemiology of cardiovascular disease in India. Ischemic heart disease. Circulation, 1 962;25:7 11-17.
21. Khan MA, Krondl M, Hrboticky N, et al. Nutrition in Growth and Health, Adapting to Cultural Changes in Food Habits, islamabad, Planning and Development Division, Government of Pakistan, 1980.
22. Hepp KD. Food consumption habits in Germany— The clinician's point of view. Metabolism, 1 995;44: 14-17.
23. Schoeller DA. Limitations in the assessment of dietaiy energy intake by self-report. Metabolism, 1 995;44: 18-22.

24. Slattery ML, Jacobs Dr, Dyer A, et al. Dietary antioxidants and plasma lipids: The CARDIA study. J. Am. Coil. Nutr., 1995;14:635-42.
25. Artaud-Wild SM, Connor SL, Sexton G, et al. Differences in coronary mortality can be explained by differences in cholesterol and saturated fat intakes in 40 countries but not in France and Finland: A paradox. Circulation, 1993;88:277 1-79.
26. Bolton-Smith C, Woodward M, Tunstall-Pedoe H. The Scottish Heart Health Study. Dietary intake by food frequency questionnaire and odds ratios for coronary heart disease risk. The antioxidant vitamins and fibre. Eur. J. Clin. Nutr., 1992;46:85-93.
27. Todd S, Woodward M, Bolton-Smith C. An investigation of the relationship between antioxidant vitamin intake and coronary heart disease in men and women using logistic regression analysis. J. Clin. Epiderniol., 1995:48:307-16.