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Socio Economic Differences in Frequency of Food Consumption and Dietary Trends in Urban Areas of Karachi, Pakistan

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Abstract: The present study was conducted to explore socioeconomic differences in the quality of diets and dietary trends in families living in Karachi. A total of 120 housewives (forty each from low, middle and high-income groups) were interviewed for this purpose. Quality of the diets was assessed by the representation of various food groups in the family's diet. In low income group only 3% of families whereas 68 and 58% families from the high income group had all the crucial food groups (meat/pulses, milk and vegetable/fruit) represented in the family's diet. Foods from fruit, meat and milk were most often missing from the daily diet groups. According to the mean number of food items for which change in consumption was reported the change did not appear to be extensive but socioeconomic difference in this regard was noticeable. Socioeconomic differences were noted also in the reasons for the dietary change. The most often mentioned factor considered to be responsible for the dietary change was 'cost' by low income families and health by middle and high-income families.

Key words: Nutrition, Urban, income, socioeconomic status, food consumption, dietary trends developing country, children and adults

INTRODUCTION

Socio-economic disparities in health and nutrition are found in almost all parts of the world but the extent and kinds may differ^[1-5]. Differences in dietary patterns are found to be associated with health status^[6-11]. Diet and sanitation are two important modifiable factors important for assurance of good health through maintenance of good nutritional status and primary prevention of diseases. By studying dietary habits at different income levels we can identify pitfalls in food consumption patterns at each income level. This information could help in setting up realistic dietary guidelines suitable for various income levels. As the relevant information is not available for local population therefore this study was planned to compare socioeconomic differences in food consumption pattern and dietary trends in Karachi Pakistan.

MATERIALS AND METHODS

Sampling: As this study aimed at exploring association between Socio Economic Status (SES) and nutritional

status, of urbanized population, sampling was purposive. A total of 120 families (40 each for low, middle and high-income groups) were recruited only from urban authorized residential areas of four districts (East, West, South and Central) of Karachi division.

Thus plot size was used as the primary variable for selection of families for each of the three groups. However information about family's monthly income and possession of household assets was also obtained to check the validity of using plot size as criteria for determining the SES of families. Information about housing and household possessions was used to develop a SES scale and each family was assigned a SES score accordingly. Significant differences in reported income and SES score of the three groups were expected.

In order to control the effect of variability in family composition, stage of family life cycle was controlled. Childless families, families with married children and extended or joint families were not included in the study. Families with pregnant or lactating mothers and children less than 1 year of age were also excluded.

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Recruitment procedure: From each district approximately 10% of the urban-legal localities were selected randomly. As valid information regarding exact proportion could not be obtained the proportion of families of varying SES recruited 3 from various localities was not statistically controlled. However an attempt was made to have a balanced representation by recruiting at least 2 families of each income level from each selected locality. Within the selected localities the blocks of houses having specific size were identified. Data collectors visited these blocks, interviewed families and families that fulfilled the selection criterion and were also willing to participate were recruited. The families were identified through snow balling rather than statistical randomization.

Data collection: Households were visited by trained data collectors and the housewives were interviewed about family's socio-demographic characteristics and their food habits.

Demographic information (age, education, place of birth, income and occupation of family members, cause of death of grandparents and details of housing and household possessions) was taken from the housewives with the help of a questionnaire.

Regarding food consumption the question asked was that how often any family member ate any specific food item. A list of forty foods was read and the responses were to be given in terms of daily, weekly, monthly, yearly and less than yearly or never. From this information approximate frequency of monthly consumption of each food was calculated. Further the food were grouped into basic food groups and frequency of consumption of foods from particular food groups was calculated to study relative adequacy of diets. If any food item was eaten by at least one family member daily it was considered to be represented in family's diet.

Regarding dietary trends the housewives were requested to identify food items from a list of thirty two and state whether the consumption was increased, decreased or the same in comparison with 20 years ago; and if it was changed what was the reason.

Statistical analysis: SPSS for windows, version 7.5 was used for data entry and analysis.

RESULTS

Demographic Characteristics of the families: The three groups were different from each other in terms of, financial status, parents' occupation, their educational status and family size also to varying degrees. As expected the income and educational level was higher and the family

Table 1: Socio-demographic characteristics of families

	SES		
	LOW	MIDDLE	HIGH
Father's occupation	N=40	N=40	N=40
Business	31%	24%	34%
Manual work	31%	26%	0%
Office work	23%	29%	17%
Professional ¹	5%	9%	40%
Retired/Jobless	10%	12%	9%
Mother's occupation	n=40	n=40	n=40
Housewife	73%	75%	67%
Working	27%	25%	33%
Education years	Mean (SD)	Mean (SD)	Mean (SD)
Father	10.19 (2)	14.50 (2)	13.78 (5)
Mother	11.30 (3)	13.25 (2)	13.85 (3)
Age in years	Mean (SD)	Mean (SD)	Mean (SD)
Father	35.33 (7)	42.84 (8)	47.72 (10)
Mother	28.32 (9)	36.42 (8)	42.24 (9)
Financial status	Mean (SD)	Mean (SD)	Mean (SD)
Monthly Income in Rs.	3725 (2403)	16325 (5804)	42600 (9621)

¹Doctors, engineers, Professors and teachers

size was relatively lower among higher income groups (Table 1). Reported income increased with SES.

The mean number of kids was slightly lower at upper income levels. Average number of children in the low-, middle- and high-income groups was 2.91, 2.80 and 2.57, respectively.

SES and Frequency of Food Consumption: Frequency of consumption of most of the foods was higher at higher income levels. The consumption of fruit juices, lamb, fresh fruit, butter, sweets, chocolates, raw vegetables/salads, was more than five times higher and that of fizzy drink, chicken, white bread, chips, leafy vegetables, sweet dishes, eggs, milk, biscuits, cakes was more than twice as high at high income level as compared to the low income level. The difference was statistically significant ($p < 0.01$ in each case) for all of these foods.

Differences in frequency of food consumption are presented in Table 2 in terms of mean number of time any food was consumed by any income group. Monthly frequency of consumption of yoghurt, vegetables oils, sugar, was also significantly higher at the high income level but the difference in frequency was less than twofold. It could be noted that most of differences were statistically significant between low and middle; and low and high income group and the middle and high income groups were relatively similar. Differences in the consumption of cooked vegetables, rice, potatoes, lentils, chapatti, "mithai" (asian sweets), beef, milk without cream, whole meal bread, fish, low-calorie drink, were not statistically significant. Ghee, was the only item which was consumed significantly more often by the low income group as compared to the high income group. It was consumed on average 17 times in a month by low income

Table 2: Socio economic differences in family's monthly frequency of food consumption (mean number of times any food was consumed by ay income group)

Food	LOW N=40	MIDDLE N=40	HIGH N=40	P Value*	LSD**	Ratio***
	Mean	Mean	Mean			
Lamb	2	15	15	0.000	l-mh	7.44
Beef	4	5	4	ns		0.98
Chicken	3	8	10	0.000	l-mh	3.87
Fish	6	4	3	ns		0.52
Eggs	8	18	17	0.000	l-mh	2.25
Ordinary Milk	11	20	21	0.000	l-mh	1.99
Milk without cream	3	0	2	ns		0.93
Yoghurt	14	22	21	0.006	l-mh	1.46
Butter	2	11	10	0.000	l-mh	5.91
Margarine	3	4	6	ns		2.19
Ghee	17	6	3	0.000	l-mh	0.19
Vegetables oils	21	29	30	0.000	l-mh	1.42
Ordinary white bread	6	24	21	0.000	l-mh	3.27
Wholemeal bread	3	3	1	ns		0.54
Chapatti	25	29	28	ns		1.09
Rice	19	21	23	ns		1.21
Sugar	22	28	29	0.000	l-mh	1.30
Sweet dishes	3	7	8	0.018	l-mh	2.33
Lentils	12	14	13	ns		1.15
Nuts	2	4	4	ns		1.98
Potatoes	11	15	13	ns		1.16
Leafy vegetables	3	8	7	0.009	l-mh	2.33
Cooked Vegetables	13	16	16	ns		1.22
Raw vegetables/ Salads	4	21	22	0.000	l-mh	5.41
Fresh fruit	4	24	26	0.000	l-mh	5.93
Fruit juices	2	10	16	0.000	all	9.44
Low-calorie drink	0	0	0	ns		0.46
Ordinary Fizzy drink	4	7	15	0.000	all	3.90
Biscuits, Cakes	8	14	16	0.004	l-mh	1.91
Chips	4	10	12	0.000	l-mh	3.22
Sweets, Chocolates	2	8	11	0.000	l-mh	5.58
Mithai	2	3	2	ns		1.01

* ANOVA, Overall Difference

**ANOVA, Least Significant Difference at least at P<0.05 level

l-mh = low significantly different from middle and high income group

all = all three groups significantly different from each other

***Ratio of difference between low and high income group

Table 3: Quality of Diet according to Number of crucial food groups (Milk, Meat or lentils, Vegetables & Fruits) represented in daily diet

No. of food groups	Diet Quality	Diet Quality according to No of crucial food groups represented		
		LOW %	MIDDLE %	HIGH %
0	lacking in all four important food groups containing fats, sugars and cereals only	8	0	0
1	definitely lacking in three food groups	13	2	0
2	definitely lacking in two food groups	51	5	8
3	definitely lacking in one food group	26	24	35
4	likely to be adequate	3	68	58

families and only 3 and 6 times by high and middle income families.

In general the food consumption pattern of middle income group was similar to the high income group and both of them differed significantly from the low income group in the frequency of consumption of various foods. The only foods where middle income group had significantly lower consumption than the higher income group were fruit juices and fizzy drinks.

SES and Relative Adequacy of Diets: Figure 1 shows differences in the representation of various food groups in the family's diet. The daily consumption of fats and cereals was universal at each income level. Socio-

economic disparity in frequency of food consumption was most obvious for fruits and meat. All the middle and high income families and 87% of low income families consumed at least one sweet food or drink each day.

Relative adequacy of the diets was assessed by comparing the number of food groups represented in the diets of families. Proportion of families who consumed at least one food from important groups during the day is given in Table 3. As the consumption of cereals, fats and sugars was almost universal the comparison was done in terms of consumption of protein foods (meat and lentils) milk, vegetables and fruits. If the family consumed at least one food from each group daily the diets had any possibility of being adequate otherwise the diets were

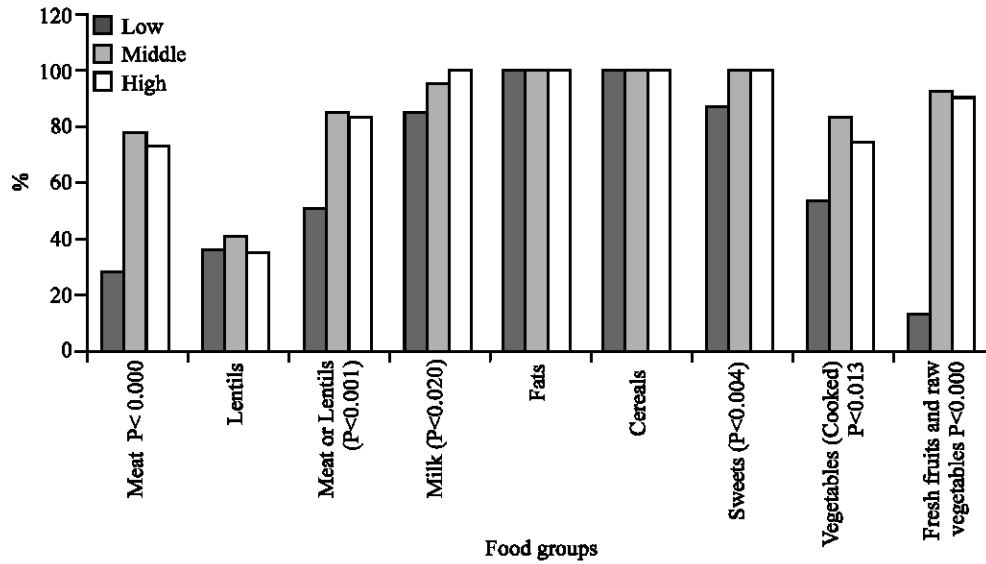


Fig. 1: Percentage of families that consumed at least on food from any particular food.

Table 4: Mean number of food items for which change in consumption was reported at three income levels

	Socioeconomic status		
	Low	Middle	High
Dietary Trend	Mean	Mean	Mean
Unchanged	26.56	22.73**	24.13
Decreased	3.90	3.27	3.50
Increased	1.54	5.95***	4.38

**p = 0.002 ANOVA Mean values were significantly different from low to middle (P=.000) and low to high(P=.023) income level

***p<0.0001 ANOVA Mean values were significantly different from low to middle (P=.000), low to high (P=.000) and middle to high (P=.044), income level

definitely lacking in at least one important food group and were not likely to be adequate. Only 3% of the families from low income group consumed at least one food from all the food groups and thus had any likelihood of adequacy of their diets. At middle and high income level this figure was 68 and 58%, respectively. The higher proportion of middle income families were having potentially adequate diet was due to higher consumption of vegetables as compared to the high income level.

SES and Dietary Trends: According to the mean number of food items for which change in consumption was reported the change did not appear to be extensive but socioeconomic difference in this regard was noticeable (Table 4). Mean number of foods for which consumption was reportedly increased was higher at middle and high income level as compared to low income level. Mean number of foods for which consumption was reportedly decreased was lower at middle and high income level as compared to low income level. Thus according to the

responses of housewives the diets of higher income group had become more varied with time

Qualitative differences were also noted in the three groups in terms of change in food consumption. For example in general the consumption of ghee (hydrogenated vegetable oil), beef, sweets, chocolates and butter was decreased and that of low-energy drinks, ordinary fizzy drinks, milk without cream and fruit juices was increased in high-income families. On the other hand in low-income families the consumption of fresh fruits, ordinary white bread and fruit juices was more often decreased and that of ordinary fizzy drinks, chicken, chips, sweet dishes and lentils was more often increased. In most cases the middle-income families were similar to the high-income families in terms of dietary trends.

Socioeconomic differences were noted also in the reasons for the dietary change. The first five most often mentioned factors considered to be responsible for the dietary change by low-income families were: cost, likes, time available for food preparation, dislikes and season; health, likes, availability, cost and time by the middle-income families; and health, likes, availability, time and dislikes were mentioned by the high-income families.

DISCUSSION

The results of this study evidence that there are great disparities in food consumption pattern of low and high income group. As shown in Table 2, 3 and Fig. 1 the quality of diet was markedly poorer at low income level. There was not much difference in the consumption of fats

and cereals but consumption of food having high quality proteins like meat and those rich in vitamins and minerals like milk and fruits was much lower at low income level. It indicates that most of the calories in the diets of poor people would be coming from cereals, sugars and fats. As the consumption of meat, milk, vegetables and fruits is low the nutrient density of diet is likely to be extremely low. Thus this section of population which is most often exposed to pathogens has the lowest consumption of protective elements in diets. Low consumption of fruit and vegetables is also linked to higher incidence of diabetes, obesity, cancer and heart disease. Thus the diets at low income level are exposing them to both infectious and chronic diseases. In terms of primary prevention of both types of disorders improvements of diet can make a significant difference. Consideration regarding minimum pay and welfare schemes for poor people are essential along with development of dietary guidelines and nutrition education.

Positive association between income and diet quality is reported in several other studies also^[6-12]. But the fact to be emphasized is that in the sample studies while the diets were relatively better at higher income levels the diets of a large proportion of families were not likely to be adequate. It indicates the need for nutrition education at higher levels also.

At present the reported dietary trends show a few positive changes in food consumption pattern only among the high and middle income groups. At low income level it appears that in spite of limited resources indulgences in expensive fast foods like fizzy drink is increasing. Perhaps if people are better aware of the importance of adequate diet they could be encouraged to spend the money they are currently spending on fizzy drinks and 'mithai', on fruit milk and meat. Somewhat similar dietary trends has been reported by Florentino *et al.*^[13].

The results of this study indicated an urgent need for nutrition education at all income levels and identifies specific areas of focus for upper and lower income groups living in Karachi.

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