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Food consumption patterns in a Palestinian West Bank population

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Objective: To describe the food consumption patterns in relation to wealth status and age groups in a Palestinian West Bank village population.
Design: Community-based cross-sectional survey of both households and individuals. A list recall method was used at the household level. At the individual level, a short food-frequency questionnaire was used in addition to a 24-h recall without estimates of portion sizes.
Setting: A Palestinian semi-rural village in the central West Bank.
Subjects: All households and all men and women aged 30–65 y in the study village were invited. All 368 households and 85% ($n = 500$) of eligible individuals participated.
Results: The mean energy consumption from 25 selected food items on household level was about 13.8 MJ (3300 kcal)/consumption unit/d (a consumption unit corresponds to the expected energy requirement for an adult male). The proportion of dietary energy from fat and the consumption of most animal products was highest among the wealthiest households, and the opposite trend was seen for the consumption of wheat flour and lentils. There seems to be an ongoing trend of increasing consumption of processed products rich in sugar among the younger age groups.
Conclusion: Shortage of dietary energy on the household level did not seem to be a problem in this population, even among the poorest. Differences in food consumption patterns between the poor and the wealthy, including a higher percentage of energy from fat among the wealthy, may be to the disadvantage of the wealthy with respect to some diet-related chronic diseases.
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Descriptors: dietary survey; developing country; cross-sectional study; rural population; socio-economic factors

Introduction

Many countries in the Middle East have experienced an increase in nutrition-related chronic diseases in recent years (Musaiger & Miladi, 1996). With changes in social and material conditions, many less-developed countries worldwide have experienced large shifts in dietary patterns that are thought to be partly responsible for the increase in non-communicable chronic diseases such as diabetes and cardiovascular diseases (Popkin, 1994; WHO, 1990). The transition in dietary patterns often occurs with increased urban influences, and it is typically characterized by increased consumption of foods of animal origin, such as meat, poultry, fish, eggs and dairy products and increases in processed and refined foods (Popkin & Bisgrove, 1988). Decreases in physical activity and increases in the prevalence of obesity usually accompany the nutritional transition.

It is likely that the Palestinian West Bank population is undergoing a transition in health, life-style and food consumption patterns. To our knowledge, no study of food consumption has previously been carried out in the Palestinian West Bank population. Therefore, changes in dietary patterns are difficult to document. In 1981 one of the authors conducted a study of living conditions and health in three West Bank villages (Giacaman, 1988). Several subsequent observations clearly indicate that this population has experienced a radical change in living conditions in recent years. For example, most households have electricity and piped water from municipal sources now, whereas this was very uncommon in 1981. Today, nearly all households have electrical devices such as washing machines and televisions (Giacaman, 1988). In addition, the village population has become more dependent on wage work, something which has coincided with a countrywide decrease of employment in the agricultural sector (Human Development Project, 1997).

Information on food consumption patterns is needed for planning health and nutrition policies (James, 1988; WHO, 1990). The infrastructure and resources necessary to carry out food consumption surveys representative for the whole Palestinian population do not exist at present. As part of a larger survey of non-communicable chronic diseases, food consumption patterns were studied in a semi-rural village in the Ramallah district on the West Bank during 1996. The

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objective of this paper is to provide a description of food consumption patterns in a West Bank village population and to assess how these patterns may be related to household wealth status. We also use the results to discuss possible changes in the food consumption patterns among Palestinian West Bankers.

Methods

One West Bank village was selected for the study to serve as a prototypic village of the Ramallah district of the West Bank. The study village is a Muslim, semi-rural village located about 15 km from the nearest city, Ramallah, in the central region of the West Bank. Most of the wage workers from the study village are employed in Ramallah. About 15% of women aged 30–65 y are economically active. Men are mostly employed in low-paid unskilled work or semi-skilled to skilled manual work such as building or painting. Less than 10% of men aged 30–65 y are employed in agriculture as their main occupation. The study was carried out in two phases: a household survey during March 1996, and a study of individuals aged between 30 and 65 y, which was carried out from December 1996 to January 1997. Field workers were hired from the village and trained at Birzeit University. Information meetings were held in the village before the initiation of the study, and the purpose of the study was explained. Information on tests and procedures involved were explained, and informed consent was obtained from each participant.

Household survey

All the households in the study village were visited by field workers. A household was defined as a group of people eating main meals together. A structured questionnaire was administered to the female head of household (the one recognized by the household members as responsible for the cooking, most often the wife of the acknowledged head of household). She provided information on age, sex, marital status, main occupation and educational attainment of each household member. The consumption of 25 selected food items was estimated at household level with the list-recall method (Nelson & Bingham, 1997). The specific items were selected to cover the most important contributors to the energy consumption. Quantities were reported in units individually preferred by the respondent according to ease of conceptualization. The estimated yearly household food consumption was expressed per consumption unit (CU). The energy requirement of a male aged 18–30 y according to FAO/WHO/UNU (1985) was set to 1 CU. The number of consumption units in a household was calculated from the expected energy requirement where individuals in other age and sex groups contributed fractions of a CU according to FAO/UNU/WHO (1985) . For calculation of energy and macronutrient content, nutrient values were taken from food composition tables for use in the Near East (FAO & USDA, 1982; Pellet & Sossy, 1970). The female head of household was also asked about perceived changes (increased, decreased or unchanged) in household consumption of some selected food items over the past 10 y.

Household wealth status was assessed by the key informant method (Adams *et al,* 1997). Six informants from the study village were asked to categorize each household in the village as relatively poor, middle or relatively wealthy, according to agreed upon criteria ('general social status', furniture and clothing of the household members, ability to give to charity, ownership of arable land, wage workers in the household, and remittances from family members working abroad). The rankings by all informants were compared, and any disagreement between informants was discussed until consensus was reached. The final categorization of households that all six informants agreed to was used in the analysis.

Survey of adult individuals

In the second phase of the study, all individuals between 30 and 65 y of age in the village were invited to participate in a more detailed health study, including drawing of blood samples, anthropometric measurements and a structured questionnaire administered by field workers. Respondents were given individual appointments to come for testing in the village hall after an overnight fast. Respondents were asked to provide information on socio-demographic variables and life-style factors, including an 11-item qualitative food frequency questionnaire. The interview was concluded with a 24-h dietary recall without estimation of portion sizes.

Data analysis

Relationships between household food consumption and wealth status were assessed by tests for linear trend. 'Wealth status' was entered as an independent variable with three values (coded 1, 2 and 3) in a linear regression model with household food consumption as the dependent variable. Variables were log-transformed to improve model fit and to assure that crucial assumptions for the test were met. The untransformed data was used if log-transformation did not make any substantial difference to the result. If the assumptions for the linear regression model were violated, a non-parametric Kruskal–Wallis test was used. Individuals were assigned the wealth status of their household. Relationships between food items consumed by individuals and wealth or age were tested analogously by fitting a logistic regression model with wealth or age in three categories (age 30–39, 40–49 and 50–65 y, respectively). The magnitude of these associations was estimated by the differences in proportions between the wealthiest and the poorest, and between the oldest (50–65 y) and youngest (30–39 y) age groups, respectively. A P-value of < 0.05 was regarded as significant.

Results

In the household survey all of the 368 households in the study village participated. The total population in the study village was 2360, with 44% below the age of 15 y. Eighty-five percent of eligible individuals aged 30–65 participated in the survey (95% of women and 75% of men). The typical meal pattern in the Palestinian West Bank village population includes a light breakfast and a large lunch, and often a light evening meal. Bread is usually consumed with every meal. Lunch is the most important meal of the day and often includes chicken or red meat, rice or potatoes, and vegetables. Tea with sugar, fruits or other snacks is often consumed between main meals.

Household food consumption

Flour was clearly the most important contributor to energy consumed in the households, with 40% of the total energy from the 25 selected food items. Olive oil and sugar were

also important single contributors of energy, each providing 13–14% of the total energy. The yearly household consumptions of the 25 foods, stratified by household wealth status, are shown in Table 1. There was a highly significant trend where the consumption of most animal products was highest in the wealthiest households. The consumption of flour was lowest in the wealthiest households, and the test for linear trend over wealth groups was highly significant. Lentils were negatively associated with wealth, but there was no significant trend over wealth groups for all legumes together. Sugar and salt consumption showed no substantial differences with household wealth.

The mean energy and macronutrients from the 25 selected food items are presented in Table 2. Household energy consumption seemed to vary little with wealth. On the other hand, there were significant differences in the composition of macronutrients. Mean fat consumption increased with increasing wealth, whereas mean carbohydrate consumption decreased with increasing wealth (all tests for trend highly significant). Although two-thirds of the fat consumed was of plant origin, it was the differences in animal fat that were most pronounced. Protein consumption seemed to differ little with wealth. The components animal protein and plant protein, however, seemed to differ quite substantially between wealth groups, with opposite trends.

Perceived change in household consumption

The respondents' perceptions of changes (increased, decreased or unchanged) in household consumption of selected foods during the past 10 y are summarized in Figure 1. The results indicated that the consumption of typical modern, sugar-rich foods, such as juices, soft drinks, biscuits and candies, has increased in most households during the past 10 y. On the other hand, the consumption of legumes and whole wheat flour was reported to have decreased the most.

24-h dietary recall

The foods and beverages that were reported as consumed by 15% or more of the individuals aged 30–65y in the 24-h dietary recall are shown in Table 3. Differences are shown for age groups and wealth groups. Tea, *taboun* bread and olive oil were the most commonly consumed items. There were significant increasing trends with wealth for the proportion of respondents consuming yoghurt, bananas and cucumber. A significant negative trend with wealth was noted for tomatoes. There was a significant decreasing trend with age for the proportion of respondents who reported consuming Arabic coffee, white bread, soft drinks, tea and potatoes. On the other hand, the proportion that had eaten *taboun* bread was lowest in the youngest age group.

Table 1 Mean (s.d.) household consumption of 25 selected foods, by wealth status[a]

	Mean (s.d.) (kg/consumption unit/y)				
Food item	*Poor (n = 95)*	*Middle (n = 224)*	*Wealthy (n = 48)*	*Test for trend*[b]	*Overall (n = 367)*
Olive oil	17.4 (10.0)	18.6 (10.3)	19.3 (9.8)	$P = 0.2$	18.4 (10.1)
Vegetable oil	3.2 (5.7)	3.1 (4.9)	3.8 (6.6)	$P = 0.9$[c]	3.2 (5.3)
Margarine	5.0 (3.2)	5.3 (4.0)	5.1 (5.1)	$P = 0.7$[c]	5.2 (4.0)
Sum fats/oils	25.7 (11.2)	27.1 (11.3)	28.1 (13.4)	$P = 0.2$	26.9 (11.6)
Red meat	9.1 (8.6)	10.3 (8.6)	16.0 (13.6)	$P < 0.001$	10.8 (9.6)
Cold cuts	3.1 (4.0)	4.8 (4.6)	5.5 (5.6)	$P = 0.002$[c]	4.4 (4.7)
Chicken	48.9 (33.2)	55.1 (29.5)	61.1 (27.1)	$P = 0.02$	54.3 (30.3)
Fish	5.8 (4.9)	6.8 (5.7)	7.3 (6.6)	$P = 0.009$	6.6 (5.6)
Eggs	15.2 (12.2)	15.1 (8.2)	17.0 (9.7)	$P = 0.4$	15.3 (9.5)
Sum	82.1 (44.5)	92.1 (37.1)	107.0 (37.6)	$P < 0.001$	91.5 (39.8)
Milk, fresh	6.4 (11.0)	8.6 (17.2)	7.7 (16.0)	$P = 0.9$[c]	7.9 (15.6)
Dried milk	0.7 (2.0)	1.5 (3.5)	3.9 (10.5)	$P = 0.06$[c]	1.6 (4.8)
Labaneh[d]	6.0 (7.1)	6.8 (7.0)	10.1 (8.3)	$P < 0.001$[c]	7.1 (7.3)
Yoghurt	9.8 (11.8)	12.3 (10.9)	10.6 (10.2)	$P = 0.4$	11.4 (11.1)
White cheese	2.0 (2.9)	2.8 (4.1)	4.8 (9.0)	$P < 0.001$[c]	2.8 (4.9)
Yellow cheese	0.9 (1.7)	1.3 (2.3)	2.5 (3.2)	$P = 0.1$	1.3 (2.3)
Sum dairy produce	25.8 (21.8)	33.4 (25.2)	39.6 (31.5)	$P < 0.001$	32.3 (25.6)
Lentils	4.2 (4.5)	2.9 (5.8)	2.0 (1.9)	$P < 0.001$[c]	3.1 (5.1)
Chick peas	1.7 (2.4)	1.2 (2.0)	1.8 (2.7)	$P = 0.2$[c]	1.4 (2.2)
Fava beans	1.8 (2.0)	2.2 (2.9)	2.4 (2.3)	$P = 0.2$[c]	2.1 (2.6)
Peas	3.0 (3.6)	3.7 (4.4)	3.8 (4.8)	$P = 0.5$[c]	3.5 (4.3)
Sum legumes	10.8 (8.4)	10.0 (8.7)	10.0 (7.2)	$P = 0.5$[c]	10.2 (8.4)
White flour	67.9 (68.4)	69.9 (64.0)	54.3 (53.8)	$P = 0.4$[c]	67.3 (64.0)
Brown flour	25.6 (31.6)	25.9 (28.9)	21.6 (24.9)	$P = 0.7$[c]	25.2 (29.1)
Mixed flour	54.9 (74.9)	34.8 (61.4)	29.3 (52.8)	$P = 0.05$[c]	39.3 (64.7)
Sum flours	148.4 (69.7)	130.6 (75.7)	105.2 (62.0)	$P = 0.001$	131.9 (73.5)
Rice	27.0 (13.6)	28.9 (15.7)	33.8 (19.3)	$P = 0.02$	29.1 (15.8)
Olives	2.6 (2.8)	2.7 (2.3)	3.3 (3.0)	$P = 0.2$	2.8 (2.5)
Sugar	37.3 (21.2)	38.1 (25.0)	37.4 (20.4)	$P = 0.9$	37.8 (23.5)
Salt	9.5 (6.5)	8.8 (4.8)	10.0 (10.2)	$P = 0.9$	9.1 (6.2)

[a] Figures represent consumption (kg) per year per household member, with number of household members standardized as reference consumption units (expected energy expenditure for men aged 18–30 y).
[b]For variables where model assumption were violated, a Kruskal–Wallis non-parametric test was performed.
[c]*P*-value for Kruskal–Wallis test.
[d]Partially dehydrated yoghurt.

Table 2 Mean (s.d.) household consumption per day of energy and macronutrients contributed from 25 foods, by wealth status[a]

	Mean (s.d.) household consumption				
	Poor (n = 95)	*Middle (n = 224)*	*Wealthy (n = 48)*	*Test for trend*	*Overall (n = 367)*
Energy (MJ/d)	14.0 (4.1)	13.8 (4.4)	13.6 (3.9)	$P = 0.6$	13.8 (4.2)
Fat (g/d)	105 (38)	113 (34)	125 (52)	$P = 0.002$[b]	112 (38)
animal origin	28 (15)	33 (14)	42 (23)	$P < 0.001$	33 (16)
plant origin	77 (32)	80 (32)	82 (37)	$P = 0.4$[b]	79 (33)
Protein (g/d)	91 (29)	92 (27)	97 (28)	$P = 0.2$[b]	92 (28)
animal origin	37 (19)	44 (18)	55 (27)	$P < 0.001$	43 (20)
plant origin	53 (21)	47 (22)	41 (19)	$P = 0.002$	48 (22)
Carbohydrates	501 (174)	470 (193)	429 (165)	$P = 0.03$	473 (185)
E%[c] from fat	29.0 (7.8)	32.4 (8.8)	35.1 (10.6)	$P < 0.001$	31.9 (9.0)
E% from protein	11.2 (2.1)	11.6 (2.6)	12.3 (2.4)	$P = 0.009$[b]	11.6 (2.5)
E% from carbohydrate	59.8 (8.8)	55.9 (10.2)	52.6 (12.0)	$P < 0.001$	56.5 (10.3)

[a] Figures represent energy (MJ = 239 kcal) or macronutrients (g) contributed per day household member, with number of household members standardized as consumption units (expected energy expenditure for men aged 18–30 y).
[b]Statistical analysis based on log-transformation of the dependent variable. [c]E%: Percentage of energy.

Table 3 Proportion of respondents who reported consuming some commonly eaten food items in a 24-h diet recall, and differences between the age groups 30–39 and 50–65[a]

Food item	*Proportion of all (n = 490)*	*Difference in proportion between the wealthiest and the poorest*[b]	*Test for trend with wealth*[c]	*Difference in proportion between old (50–65) and young (30–39)*	*Test for trend with age groups*[d]
Tea	0.86	0.00	$P = 0.9$	− 0.12	$P = 0.004$
Taboun bread	0.79	− 0.08	$P = 0.1$	0.08	$P = 0.05$
Olive oil	0.46	− 0.06	$P = 0.4$	0.07	$P = 0.2$
Tomato	0.38	− 0.22	$P = 0.005$	− 0.03	$P = 0.9$
Eggs	0.35	0.06	$P = 0.3$	− 0.14	$P = 0.4$
Chicken	0.34	0.06	$P = 0.4$	− 0.04	$P = 0.6$
Zatar (a herb)	0.31	− 0.10	$P = 0.2$	− 0.03	$P = 0.06$
Arabic coffee	0.29	− 0.02	$P = 0.6$	− 0.14	$P = 0.003$
Potatoes	0.25	0.06	$P = 0.4$	− 0.20	$P < 0.001$
Red meat	0.24	0.02	$P = 0.96$	0.05	$P = 0.2$
Yoghurt	0.22	0.19	$P = 0.002$	− 0.01	$P = 0.9$
Olives	0.22	0.02	$P = 0.5$	− 0.01	$P = 0.8$
Clementines	0.19	0.02	$P = 0.5$	0.04	$P = 0.5$
Banana	0.19	0.13	$P = 0.004$	− 0.01	$P = 0.8$
Rice	0.19	0.07	$P = 0.1$	− 0.06	$P = 0.2$
White bread	0.19	0.03	$P = 0.6$	− 0.12	$P = 0.004$
Soft drink	0.19	0.05	$P = 0.4$	− 0.12	$P = 0.006$
Cucumber	0.15	0.09	$P = 0.03$	− 0.05	$P = 0.2$

[a] Commonly eaten foods here are those reported by 15% or more of repondents in the 24-h dietary recall.
[b] Individuals were assigned the wealth status of their households.
[c] Based on trend over three wealth groups: relatively poor ($n = 122$), middle ($n = 292$) and relatively wealthy ($n = 69$).
[d] Based on linear trend over three age groups: 30–39 y ($n = 220$), 40–49 ($n = 127$) and 50–65 y ($n = 143$).

Table 4 Proportion of the respondents who reported consuming some selected foods twice or more per week and difference between the age groups 30–39 and 50–65

Food item	*Proportion of all (n = 500)*	*Difference in proportion between the wealthiest and the poorest*[a]	*Test for trend with wealth*[b]	*Difference in proportion between old (50–65) y and young (30–39) y*	*Test for trend with age groups*[c]
Vegetables	0.98	0.02	$P = 0.3$	− 0.02	$P = 0.2$
Fruits	0.85	0.15	$P = 0.01$	− 0.01	$P = 0.6$
Chicken	0.84	0.11	$P = 0.02$	− 0.09	$P = 0.01$
Eggs	0.77	0.03	$P = 0.5$	− 0.13	$P = 0.003$
Rice	0.74	0.13	$P = 0.07$	− 0.15	$P = 0.002$
Yoghurt	0.70	0.00	$P = 0.8$	0.02	$P = 0.6$
Labaneh[d]	0.68	0.17	$P = 0.04$	− 0.03	$P = 0.6$
Meat	0.54	0.10	$P = 0.4$	0.03	$P = 0.5$
Yellow cheese	0.27	0.24	$P < 0.001$	− 0.10	$P = 0.03$
Arabic sweets	0.20	0.10	$P = 0.1$	− 0.05	$P = 0.2$
White cheese	0.18	0.29	$P < 0.001$	0.01	$P = 0.9$

[a]Individuals were assigned the wealth status of their households.
[b]Based on trend over three wealth groups: relatively poor ($n = 126$), middle ($n = 298$) and relatively wealthy ($n = 69$).
[c]Based on linear trend over three age groups: 30–39 y ($n = 220$), 40-49 ($n = 129$) and 50–65 y ($n = 151$).
[d]Partially dehydrated yoghurt.

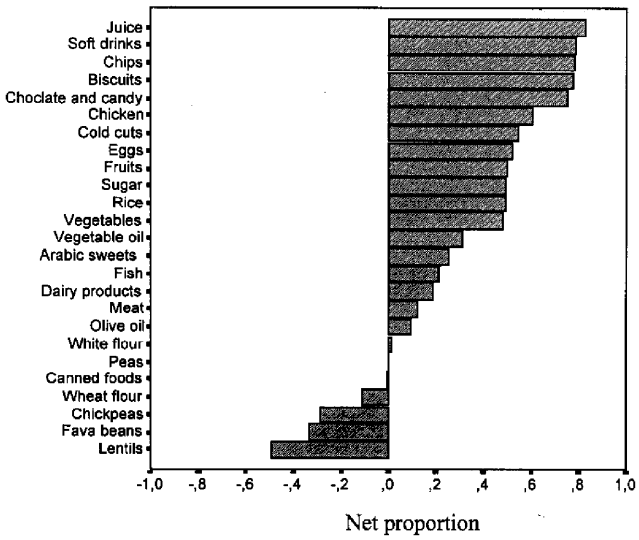

Figure 1 Proportion of households reporting increase in consumption minus proportion reporting decease for some selected food items ($n = 368$).

Frequency questionnaire
The percentage of the respondents who reported consuming some selected foods twice or more per week is shown in Table 4, stratified by wealth and by age group. Significant increasing trends with wealth were noted for fruits, chicken, *labaneh* (partially dehydrated yoghurt), yellow cheese and white cheese. Significant negative trends with age were noted for the proportion who ate chicken, eggs, rice and yellow cheese twice or more per week.

Discussion

Energy consumption
The 25 food items included in the household survey were selected for their assumed important contribution to the energy consumption. Most of the commonly reported items reported in the 24-h dietary recall (Table 3) were covered at the household level, with the exception of fruits and vegetables. Although fruits and vegetables are important sources of some nutrients, they contribute a relatively small amount of energy. For instance, in a study of Jordanian households, it was estimated that fruits and vegetables contributed 7% of total energy consumption (Tukan, 1996).

The estimated energy consumption based on these foods was slightly higher than the expected energy requirement (FAO/WHO/UNU, 1985), and very similar to the estimated total energy available to Jordanian households according to Tukan (1996). Interpretations of our result with respect to adequacy of the diet should be made with caution, since we know little about intra-household distribution and adequacy of specific nutrients. In conclusion, our data indicates that shortage of dietary energy on household level is not a problem in this population, even among the poorest households.

Wealth
The increases in mean household consumption of most animal products with wealth were relatively large and highly significant (Table 1). This has been shown in other populations (for example Perisse & Kamoun, 1987; Drewnowski & Popkin, 1997), and for the most part both the food frequency data and the 24-h recall data agreed well with the household level data in this regard. A strong negative trend in flour consumption with increasing household wealth was found (Table 1), and this is also in line with studies from other countries (Perisse & Kamoun, 1987; Drewnowski & Popkin, 1997). One explanation may be that bakery-made white bread is substituted for home made taboun bread as income increases. There was a relatively large decrease in lentil consumption with increasing wealth (Table 1). This was also supported by the 24-h recall data (data not shown). The lack of overall difference in the consumption of legumes between the socio-economic groups was due to opposite trends for lentils on one hand, and peas and fava beans on the other hand. The observed differences with wealth in household consumption of fat, carbohydrates and protein is a common finding in developing countries (Drewnowski & Popkin, 1997; Popkin, 1994). We conclude that the consumption of most animal products was highest among wealthiest households, while the consumption of flour and some legumes was highest among the poorest households in this population. The percentage of energy contributed from fat and animal protein was highest among the wealthiest households.

Indications of time trends in food consumption patterns
Differences between age groups may give indications as to possible future changes in food consumption patterns. The young generation is more likely to adopt new eating habits based on the market availability of foods. Likewise, the food consumption pattern among the wealthiest may also give clues as to what we can expect in the future if we assume improvements in material living conditions and increasing urban influences in rural and semi-rural areas. In addition, we have attempted to assess changes in household food consumption over the past 10 y, as perceived by the female head of household. Juice and soft drinks were the food items most often perceived to have increased (Figure 1). This was supported for soft drinks by the 24-h recall (Table 3), as soft drinks were more commonly consumed among the youngest than among the oldest. In general, soft drinks have become much more available in shops in the West Bank now than just a few years back. Biscuits, chips, chocolate and other sweets also ranked high on the list of increases in recent years (Figure 1). This was reflected only to a limited extent by the other methods employed in this study, but it is in accordance with patterns observed elsewhere (Drewnowski & Popkin, 1997). The decreasing trend in the consumption of flour (particularly whole wheat) and possibly legumes was supported by different methods of assessment, and is in accordance with a worldwide trend (Perisse & Kamoun, 1987; Drewnowski & Popkin 1997). The decreasing consumption of taboun bread and the concomitant increase in the consumption of white bread among the younger generation (Table 3) is a typical outcome of the urbanization process. Increased urban influences among the young and increased access may have resulted in a general increased taste for refined, modern foods among the young as opposed to unrefined, traditional foods. In summary, it seems that an ongoing trend is taking place in this population of increased consumption of sugar-rich, processed products, and decreased consumption of flour, particularly brown flour.

Implications
This study is part of a larger investigation of non-communicable chronic diseases in the West Bank, and further

results are forthcoming. By focusing on one village, we had the chance to promote the study properly. We managed to obtain a very high response proportion, and thus virtually eliminated sampling error for the study village. On the other hand, the descriptive results cannot readily be generalized statistically beyond the study sample. However, since the study village was carefully selected to be prototypic for the area (Giacaman, 1988), the results may be fairly representative for a larger proportion of the semi-rural population of the Ramallah district of the West Bank and possibly other parts of the West Bank. Further studies in other parts of the West Bank are necessary to support such a notion. The high consumption of fat, particularly animal fat, indicates that diet may contribute to the development of chronic non-communicable diseases such as obesity, diabetes and cardiovascular diseases (WHO, 1990), at least in the wealthier groups. Other observations indicate that this generally is the case in the Near East region (Musaiger & Miladi, 1996). It is important to document changes in food consumption patterns and lifestyle that are apparently taking place in the Palestinian population in order to provide information to health policy makers. Our findings suggest that, in the near future, health promotion in Palestine in terms of community programs and provision of health services will have to be adapted to suit the emerging products of the nutrition and health transition.

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