
Food Intake of Yemenite and Kurdish Jews in Israel

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V. Food intake of Yemenite and Kurdish Jews in Israel

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The food intake of Yemenite and Kurdish Jews living in five agricultural villages was assessed by means of a household inventory technique. Seventy women and 42 men were studied in the summer, but only 35 of these volunteers could be restudied in the winter.

The Yemenite Jews had lower intakes (2270 kcal (9500 kJ) per day for the women and 3210 kcal (13450 kJ) per day for the men) than the Kurdish Jews (2720 kcal (11400 kJ) per day for the women and 3570 kcal (14950 kJ) per day for the men).

There was no significant difference between food intake in the summer and the winter.

The intake of all nutrients equalled or exceeded recommended allowances except for the intake of iron and riboflavin.

The percentage of the total energy intake derived from fat was 31% in the Yemenite Jews and 33% in the Kurdish Jews.

A dietary survey was carried out at the same time as the other field studies were in progress during June and July 1968, and was repeated on a limited scale in January and February 1969. Previous dietary surveys (Bavly 1952, 1960, 1961, 1966*a, b*) of Yemenite Jewish and Kurdish Jewish settlers had revealed that there could be large differences in food habits and nutritional levels between these two communities. In this paper, the terms 'Yemenite' and 'Kurd' will be used to describe the Jewish Yemenites and Jewish Kurds who were studied.

METHODS

Subjects

It was not possible to study all the subjects included in the field survey, and inevitably more information was obtained about the women than the men. Altogether, details of food intake were ascertained from a total of 112 subjects of whom 70 were women and 42 men.

Questionnaire

A detailed form was prepared for answers to questions about family menus for 1 week, food purchases for the family, and actual daily food consumed by each adult. In addition, questions were asked about effects of nutritional guidance and changes in food habits. The information given on consumption was checked by comparison with the menu to verify whether any items were overlooked in the list given under daily consumption. There was a further check made by determining whether consumption was reasonable in the light of the figures given of weekly purchases.

Home visits

A trained dietician visited each family three times a week and completed the questionnaire after closely questioning the housewife about the menu of the previous day and the day of the

visit, quantities of food bought for the whole family and the individual consumption of each adult in the family. Sizes of portions consumed by each were shown by the housewife and weighed by the dietician on a portable scale. A form was left with the housewife on which she could note the details of food consumed in the intervals between the dietician's visits. The food stores in the house were inspected and the quantities recorded, providing another check on the statements by the housewife. When there was an obvious discrepancy between the figures given for quantity consumed and average daily purchase, the dietician made further inquiries to determine if there had been a mistake in recording purchase or consumption, or whether there were any special circumstances such as family celebrations, extra heavy work, illness, guests, etc. Since the nutritionist formed part of the field team, she was able to compare her information with the rest of the team. This was of mutual interest and improved final accuracy. In addition, information was obtained at the village shop, where the bulk of purchases were made, of the quantities sold each week.

Computations

The 44 items of food listed in the questionnaire were cut down to 26 by combining those foods with similar nutrient content in order to carry out the so-called 'short method' of computation (Leichsenring & Wilson 1951). Many different fruits and vegetables were consumed, but these were reduced to nine groups by distinguishing on the basis of the presence or absence of vitamins A and C. The food composition tables prepared by Guggenheim (1964) were used for the calculation of food intake, supplemented when necessary by consulting Watt & Merrill's tables (1964).

Reliable information about the consumption of alcohol was difficult to obtain, and so energy intake derived from this source were not taken into account. The sugar content (about 10 %) of all cold drinks was calculated and added to the total amount of sugar consumed by the individual. Allowance was made for inedible portions of food, such as bones in meat and fish, by using the nutritive content of foods as purchased.

Comparison with recommended allowances

The nutritional intakes as computed were compared with the recommended allowances of the U.S. National Research Council (1968), as these have been adopted by the Israeli Nutrition Committee of the Ministry of Health. The intake as found was expressed as a percentage of the recommended allowance of the 'reference' man and woman. However, in the case of the recommended allowances for energy intake, riboflavin and niacin, these were increased by 15 % as the subjects were engaged in active agricultural or house work (or both in the case of many women). A similar adjustment had been made in two earlier rural food surveys (Bavly 1966*a*). The assumption was also made that at least one-third of the recommended protein allowance should be of animal origin. A further assumption was that 10 mg niacin was derived indirectly from the protein content of the diet, and this was subtracted from the recommended allowance before a comparison was made between the recommended allowance and the niacin content of food consumed.

Seasonal changes

The survey was repeated in January and February 1969, but on a more limited scale, when 35 of the 112 subjects studied in the summer were re-examined.

RESULTS

Food consumption

The food intakes were computed for each subject and the average intakes are given in table 1. The components of the diet were arranged in ten categories. All types of food derived from milk, including yoghurt and cheese, were considered together on the basis of their protein content, and the quantities given denote the amount of milk from which these various foods were derived (milk equivalent). The quantity of carbohydrate in bread and cereals was calculated and expressed as grams of flour (flour equivalent). The quantity of sucrose in sweets, jam, honey and sugar was calculated and the results given as grams of sucrose (sugar equivalent). The Kurds had a substantially higher consumption than the Yemenites of milk equivalent, eggs, meat and chicken, legumes and nuts, potatoes and vegetables. The men in both communities ate more than the women.

TABLE 1. AVERAGE CONSUMPTION (g/day) OF MAIN FOOD GROUPS, SUMMER 1968

	Yemenite		Kurd	
	female	male	female	male
milk and cheese (milk equivalent)	177	205	253	256
eggs	43	49	53	60
meat and chicken (without bones)	85	117	129	169
fish (without bones)	19	39	22	25
bread and cereals (flour equivalent)	291	446	286	433
legumes and nuts	23	27	47	61
sugar and sweets (sugar equivalent)	66	68	80	88
oils and fats (fat equivalent)	39	56	36	60
potatoes and vegetables	287	381	410	509
fruit	318	480	402	548

Nutrient intake

The average nutrient intake is set out in table 2 and compared with the recommended allowances which were increased by 15% for energy, riboflavin and niacin to allow for the fact that the majority of subjects were engaged for all or part of the time in relatively arduous agricultural work. The diet exceeded or was equal to recommended allowances in all cases for the Kurds, men and women, and Yemenite men. The Yemenite women had intakes of iron and riboflavin below the recommended allowances. On the other hand, the overall energy intake of the Kurds, both men and women, appears to be too high. In most cases the intake of individual nutrients was considerably in excess of the recommended allowances. The percentage of energy derived from fat was 33% for the Kurds and 31% for the Yemenites.

Phosphorus and calcium ratio

The average intakes in the two communities were 1600 mg P and 1090 mg Ca for the Kurds with a ratio of 1.5:1, and 1285 mg P and 950 mg Ca for the Yemenites with a ratio of 1.4:1.

Individual intake

The range was in all cases considerable, as indicated in table 2. As far as energy intake was concerned, there were only six subjects whose consumption was at or below 80% of the recommended allowances, of whom five were women (two Kurds, three Yemenites). On the other

TABLE 2. AVERAGE NUTRIENT INTAKE PER DAY, SUMMER 1968

	Yemenite		Kurd		recommended allowance†	
	female	male	female	male	female	male
kcal	2270 (1570-3190)	3210 (2530-4380)	2720 (1700-4550)	3570 (2980-4780)	2300	3220
kJ	9500 (6570-13350)	13450 (10600-18350)	11400 (7110-19050)	14950 (12500-20000)	96300	13500
animal protein/g	29 (20-45)	40 (25-53)	41 (29-57)	51 (40-64)	18	22
total protein/g	73 (42-104)	106 (78-146)	91 (59-119)	119 (94-146)	55	65
fat/g	82 (46-132)	104 (62-150)	99 (66-147)	132 (94-198)	—	—
carbohydrate/g	324 (145-416)	466 (375-623)	345 (161-487)	484 (342-721)	—	—
calcium/mg	800 (250-1260)	1130 (684-1691)	912 (458-1377)	1270 (974-1791)	800	800
phosphorus/mg	1090 (620-1580)	1500 (1150-1750)	1390 (860-1898)	1810 (1391-2637)	800	800
iron/mg	13.3 (7-18)	18.0 (15-22)	16.9 (11-26)	22.0 (15-29)	18	10
vitamin A units	4940 (1750-8420)	6870 (3720-11740)	6810 (2340-12960)	8790 (5210-15560)	5000	5000
vitamin C/mg	100 (46-256)	123 (74-217)	119 (63-212)	152 (88-288)	55	60
thiamin/mg	1.87	2.28	2.13	2.54	1.0	1.4
riboflavin/mg	1.36	1.79	1.62	2.04	1.7	2.0
niacin/mg	14.0	20.7	16.7	22.6	15	21

† Increased 15% for calories, riboflavin and niacin.

hand, there were 48 subjects consuming more than 110% of the recommended allowances, 39 Kurds and nine Yemenites. There were no examples of an inadequate intake of protein or vitamin. The intake of calcium was low in nine women only (six Kurds, three Yemenites) and in only one woman was the intake of phosphorus below 80% of the recommended allowance. The intake of iron was low in 20 women (six Kurd and 14 Yemenite). Vitamin A intake was below 80% of the recommended intake in 12 subjects (one Yemenite man, eight Yemenite women and three Kurdish women).

Carbohydrate intake

The carbohydrate component of the diet was divided into starch, sucrose and monosaccharides, using the tables prepared by Hardinge, Swarner & Crooks (1965). The results are set out in table 3 which shows a reasonable relation between sugar and total carbohydrates.

TABLE 3. CARBOHYDRATE CONTENT OF DIET

	Yemenite	Kurd
total carbohydrates/g	398	418
starch/g	275	268
sucrose/g	88	108
monosaccharides/g	35	42
sucrose as % of carbohydrates	22	26

Fat intake

The composition of the fats included in the diets was determined using tables prepared by the U.S. Department of Agriculture (1959). The results, set out in table 4, indicate that the proportion of poly-unsaturated fatty acid was about equal to the ratio of 1:1 recommended by Bronte-Stewart (1965).

TABLE 4. ANALYSIS OF FAT INTAKE

	Yemenite	Kurd
total fat per adult/g	93	116
fat energy intake as % of total energy intake	31	33
(a) saturated fatty acids/g	22	33
(b) poly-unsaturated fatty acids/g	24	32
relation (b):(a)	about 1:1	about 1:1

Seasonal differences

The nutrition survey was repeated in January and February 1969 when 35 individuals were examined. The results were similar to those of the summer survey, the main differences being a reduction in the consumption of vegetables in the winter and a change in the fruits consumed; in the summer, melons and apricots predominated and in the winter, citrus fruit. As a result, the intake of vitamin A was lower in the winter and vitamin C intake was higher. The mean energy intakes of the 35 subjects in summer and winter are set out in table 5. None of the small differences is statistically significant.

TABLE 5. FOOD CONSUMPTION (g/day) OF 35 SUBJECTS IN TWO SEASONS

	Yemenite		Kurd	
	summer	winter	summer	winter
milk and cheese (milk equivalent)	148	129	244	211
eggs	54	54	40	60
meat and chicken (raw without bones)	99	99	184	158
fish (raw without bones)	29	30	8	18
bread and cereals (flour equivalent)	368	307	353	411
legumes and nuts	24	47	50	49
sugar and sweets (sugar equivalent)	70	75	97	100
oils and fats (fat equivalent)	44	34	44	47
potatoes and vegetables	321	277	475	325
fruit	386	359	354	513

DISCUSSION

The main conclusion from the nutritional survey is that the Kurdish Jews had significantly larger food intakes than the Yemenite Jews. The proportions derived from protein, fat and carbohydrate did not differ significantly in the two ethnic groups, although the Kurdish Jews had a higher fat intake (33 % of energy intake) than the Yemenite Jews (31 % of energy intake). There was a higher intake of sucrose (108 g/day) by the Kurds than by the Yemenites (88 g/day), but in other respects the diet was similar.

There have been considerable changes in dietary patterns in Israel during the last 20 years, and communities such as the Yemenite and Kurdish Jews have altered the food habits they had

in their country of origin. Cohen, Bavly & Poznanski (1961) concluded that Yemenite Jews in the Yemen had virtually no intake of sucrose and a very low intake of fat. Toor, Katchalsky, Agmon & Allalouf (1957) reported that the proportion of energy intake derived from fat in the diet of Yemenite Jews shortly after their arrival in Israel was 21 %. Traditional dishes in both the Yemenite and Kurdish Jews' dietary persist, but have become modified with time (Bavly 1964). An indication of changes during the last 10 years is provided by the results of a survey carried out in 1959 (Bavly, Mundel, Guggenheim & Halevi 1962) in which two villages, Bitha (Yemenite) and Pattish (Kurd), were studied. These two villages were included in the present study. The average daily intake of the male Yemenites in the age group 18 to 35 was 2850 kcal (11 920 kJ) in 1959 as compared with 3210 kcal (13 450 kJ) in 1968–9. The Kurds had an intake of 3420 kcal (14 300 kJ) in 1959 and 3570 kcal (14 950 kJ) in 1968–9.

Amongst the Yemenite men, fat intake yielded 26 % of energy intake in 1959 compared with 29 % in 1968–9. The Kurds' intake of fat rose from 29 % in 1959 to 33 % in 1968–9. Both the Yemenites and the Kurds had the same intake of sucrose in 1959 as in 1968–9. The differences between the diets in 1959 and 1968–9 were indicative of a rising standard of living, with an increased consumption of meat and fish and a decrease in the amount of bread eaten. At the same time, the differences between the Kurds and Yemenites were similar in the two surveys, namely, a higher consumption of sucrose and fats, and a substantially larger energy intake by the Kurds compared with the Yemenites. In both Kurds and Yemenites the intake of nutrients, minerals and vitamins was high and exceeded recommended allowances except for iron and riboflavin in the case of the Yemenite women.

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