

Frequency distributions of mean daily intakes of food energy and selected nutrients obtained during nutrition surveys of different groups of people in Great Britain between 1968 and 1971

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1. Nutrition surveys were made in Great Britain between 1968 and 1971 of 1321 pre-schoolchildren aged 6 months to 4.5 years, 321 primary schoolchildren (10–11 years), 178 secondary schoolchildren (14–15 years), 792 secondary schoolchildren (14–15 years), 435 women in the second trimester of pregnancy, 443 elderly people (65–74 years), 384 elderly people (75 years and over).

2. The studies included a 7 d weighed dietary record and all subjects except some of the pre-schoolchildren were medically assessed for evidence of malnutrition. Among the children there were no clinical signs of undernutrition, 4% of the boys and 7% of the girls were described as obese. In the survey of elderly people 3% were malnourished but in each case malnutrition was associated with clinical disease.

3. Percentage frequency distribution curves of mean daily intakes (averaged for 7 d) were obtained for total food energy, total protein, animal protein, fat, carbohydrate, calcium, iron, retinol, thiamin, riboflavin, nicotinic acid, pyridoxine, vitamin C and vitamin D.

4. Comparison of the distribution of food energy intakes with 1969 recommendations (Department of Health and Social Security, 1969) showed that the mean of the distribution was less than the 1969 recommendation for energy. From the age of 12 months, results indicated that males had larger intakes of food energy than females.

5. Comparison of the distributions for protein, Ca, Fe, retinol, thiamin, riboflavin and vitamin C with the recommendations for these nutrients revealed that appreciable numbers of people had intakes less than the recommendations without signs of malnutrition.

There have been few published results from recent nutrition studies of population groups of any size in the United Kingdom apart from a study of pre-schoolchildren in Newcastle-upon-Tyne (Black *et al.* 1976), a survey of Kent schoolchildren aged 8–15 years (Topp *et al.* 1972), studies of schoolchildren in Glasgow aged 14 years (Durnin *et al.* 1964; Durnin *et al.* 1974) and of smaller groups of elderly people (Stanton & Exton-Smith, 1970; Exton-Smith *et al.* 1972).

In 1963 a study of 450 pre-schoolchildren aged 6 months–5 years (Ministry of Health, 1968) was made to test the method for a series of nutrition surveys of population groups in the United Kingdom. The main surveys (six in all) were made between 1968 and 1971 and were of people who could have been at risk of malnutrition. Some, but not all, have been reported (Department of Health and Social Security, 1972, 1975). In this paper, we present the centile distributions of mean daily intakes of food energy and of selected nutrients. These results may be of some use for purposes of comparison with similar measurements made at other times.

EXPERIMENTAL

Subjects

Pre-schoolchildren. In 1967–68, a sample of pre-schoolchildren aged 6 months–4.5 years was randomly selected from thirty-nine areas in Great Britain (Department of Health and Social Security, 1975). The areas were regarded as corporately representative of the country as a whole and dietary information was obtained from 1321 children.

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Primary schoolchildren. Between 1 January and 31 March 1971, a sample of boys and girls aged 10–11 years from primary schools in Bristol, Croydon and Sheffield was studied. In each of the three areas, three schools were chosen by the Principal School Medical Officer on the basis of his local knowledge as being likely to have the largest proportion of children whose parents' income was such that they would just not qualify for the benefit of free school meals. The samples were randomly selected from all children in the schools who were of the required age; 163 boys and 158 girls took part.

Secondary schoolchildren Newcastle-upon-Tyne. A sample of schoolchildren aged 14–15 years who were from one-parent families in Newcastle-upon-Tyne was studied between February and July 1970 together with a control sample, matched for sex and month of birth, of children living with both parents. Information was obtained from ninety-three boys and eighty-five girls.

Secondary schoolchildren Birmingham. From 1 September 1970 to 31 August 1971, a study was made of schoolchildren aged 14–15 years who were randomly selected from all schools situated in the south-east area of Birmingham. This city was chosen as an example of a large industrial conurbation and the south-east postal district was selected because the area extended from the crowded city centre to the outer suburbs. Dietary information was obtained from 390 boys and 402 girls.

Pregnant women. In 1967–68 a sample of 435 women who were 6–7 months pregnant was selected from thirty-nine areas in Great Britain. The sample was not nationally representative.

Elderly. A study of elderly people in 1967/68 included 396 men and 431 women who were living in their own homes or with relatives from four different areas in England and two in Scotland (Department of Health and Social Security, 1972). The subjects were all 65 years of age or over and in one area (the London borough of Camden) they were all 70 years or over.

Methods

All the studies were cross-sectional in design and the survey method has been described (Ministry of Health, 1968; Department of Health and Social Security, 1972, 1975). Trained dietary investigators visited each respondent in their own home in order to explain the purpose of the survey and to make periodic checks on the keeping of the dietary records. Full participation in a study yielded socio-economic information, and a weighed record of all food (solid and liquid) ingested for a period of seven consecutive days. A specially designed food composition table (available on request from Mrs M. M. Disselduff at the Department of Health and Social Security) was used in the surveys. The table identified over 600 food codes each of which had an attributed figure for energy value and certain nutrients. The mean daily intakes of food energy and nutrients were calculated for each individual from the weighed amounts of all food and drink consumed in the survey week.

Except for some pre-schoolchildren, all subjects were assessed medically for clinical signs of malnutrition and height, weight and skinfold measurements were made. In surveys of elderly people a blood sample was taken for biochemical and haematological analysis, and radiology of the metacarpal was done. The results of these findings are reported elsewhere.

RESULTS

Medical assessment

None of the children were described as of poor nutritional status, a few were described as fair but the large majority were assessed as of good nutritional status. Approximately 4 %

Table 1. The mean daily intake, standard deviation and 5th to 95th centiles for total food energy and selected nutrients obtained from a 7 d weighed dietary study of 149 boys and 154 girls aged 12-23 months in 1967-68

	Boys										Girls									
	Mean	SD	5th	10th	25th	50th	75th	90th	95th		Mean	SD	5th	10th	25th	50th	75th	90th	95th	
Energy: MJ	5.05	1.22	3.24	3.54	4.24	4.90	5.75	6.49	7.31		4.74	1.16	3.11	3.42	3.91	4.58	5.32	6.09	6.89	
kcal	1207	291	773	847	1014	1172	1374	1551	1746		1133	277	742	817	935	1094	1271	1454	1647	
Total protein (g)	37.8	10.4	22.8	25.6	30.2	36.5	42.7	52.2	57.9		35.3	9.4	23.0	25.0	29.3	33.8	40.5	44.9	50.1	
Animal protein (g)	27.4	8.6	14.0	16.2	20.9	26.7	32.8	39.4	43.2		26.0	8.7	14.6	16.3	20.4	25.1	30.1	35.1	39.4	
Fat (g)	51.2	15.2	28.0	33.8	40.5	49.2	58.0	70.6	76.6		48.7	13.6	29.6	32.5	40.4	46.8	53.9	65.2	71.6	
Carbohydrate (g)	157	42	92	104	126	154	181	214	223		146	42	87	101	117	141	166	197	218	
Calcium (mg)	744	233	379	459	553	725	888	1041	1174		704	272	389	445	537	656	819	958	1066	
Iron (mg)	7.0	3.4	3.3	3.6	4.7	6.3	8.2	10.8	13.4		6.5	3.1	3.5	3.6	4.6	5.7	7.7	9.9	11.9	
Retinol (µg)	821	370	292	334	443	616	898	1641	1888		798	623	249	287	414	566	865	1698	1940	
Thiamin (mg)	0.63	0.32	0.34	0.40	0.48	0.55	0.72	0.89	0.99		0.57	0.20	0.35	0.36	0.44	0.52	0.64	0.78	0.88	
Riboflavin (mg)	1.21	0.66	0.60	0.71	0.88	1.11	1.34	1.77	1.90		1.10	0.46	0.59	0.67	0.81	1.01	1.27	1.54	1.73	
Nicotinic acid (mg)	6.56	5.54	3.05	3.45	4.21	5.53	7.57	10.09	11.45		5.78	3.01	2.86	3.20	3.89	4.99	6.98	8.17	9.52	
Pyridoxine (mg)	0.65	0.34	0.36	0.41	0.49	0.60	0.74	0.87	1.00		0.60	0.21	0.34	0.39	0.49	0.57	0.68	0.86	0.88	
Ascorbic acid (mg)	42.6	34.9	10.8	13.3	18.8	28.4	55.5	90.6	116.1		41.0	31.3	11.5	14.3	19.3	32.2	48.7	87.8	105.7	
Cholecalciferol (µg)	3.14	3.85	0.33	0.46	0.74	1.44	4.14	8.14	12.09		3.84	4.96	0.30	0.42	0.77	1.64	4.54	10.47	12.17	

Table 2. The mean daily intake, standard deviation and 5th to 95th centiles for total food energy and selected nutrients obtained from a 7 d weighed dietary study of 206 boys and 201 girls aged 24-35 months in 1967-68

	Boys					Girls												
	Mean	SD	5th	10th	25th	50th	75th	90th	95th	Mean	SD	5th	10th	25th	50th	75th	90th	95th
Energy: MJ	5.73	1.49	3.86	4.08	4.68	5.49	6.35	7.50	8.70	5.37	1.30	3.68	4.11	4.59	5.09	5.99	6.85	7.67
kcal	1370	357	922	975	1117	1312	1518	1793	2079	1284	310	878	983	1096	1217	1432	1636	1833
Total protein (g)	29.7	10.9	25.1	26.8	31.9	38.6	44.5	52.0	58.8	38.5	10.5	23.0	27.6	32.2	37.1	43.2	50.4	55.9
Animal protein (g)	27.4	9.0	15.0	17.8	21.2	26.3	31.7	37.8	42.7	27.1	8.7	15.4	18.2	20.9	25.8	31.3	37.7	41.6
Fat (g)	57.9	17.8	34.2	37.3	45.2	56.0	67.0	78.4	87.4	55.5	16.0	34.4	40.0	44.9	53.5	61.3	73.7	82.9
Carbohydrate (g)	182	51	114	127	146	174	210	240	266	167	42	104	121	140	160	192	211	250
Calcium (mg)	67.8	21.6	35.8	42.5	52.3	66.9	77.9	89.0	103.9	66.0	21.0	39.8	43.9	53.6	62.0	75.7	87.7	103.2
Iron (mg)	6.8	2.4	3.9	4.5	5.2	6.2	7.7	9.2	11.3	6.4	2.5	3.4	4.0	4.9	5.8	7.3	9.3	10.1
Retinol (µg)	65.6	43.0	24.0	30.0	38.9	49.6	76.6	115.5	157.7	70.4	63.5	23.4	27.4	36.9	49.6	72.8	128.5	198.4
Thiamin (mg)	0.65	0.25	0.37	0.42	0.49	0.60	0.74	0.90	1.18	0.68	0.51	0.35	0.39	0.49	0.61	0.73	0.91	1.27
Riboflavin (mg)	1.06	0.33	0.61	0.68	0.83	0.99	1.21	1.45	1.74	1.04	0.39	0.59	0.65	0.78	0.94	1.18	1.66	1.82
Nicotinic acid (mg)	7.08	3.15	3.69	4.17	5.01	6.38	8.16	10.94	13.60	6.80	3.16	3.36	3.97	4.78	6.17	7.61	10.27	12.66
Pyridoxine (mg)	0.70	0.20	0.40	0.44	0.56	0.67	0.80	0.97	1.08	0.66	0.20	0.39	0.43	0.53	0.63	0.76	0.88	1.00
Ascorbic acid (mg)	36.3	31.0	12.7	14.3	19.2	25.3	41.7	63.7	86.9	38.8	37.9	12.0	13.1	18.2	26.2	43.4	80.4	99.3
Cholecalciferol (µg)	2.29	3.02	0.30	0.45	0.74	1.24	2.13	5.55	9.78	2.63	4.57	0.34	0.44	0.72	1.21	2.34	6.38	10.20

Table 3. The mean daily intake, standard deviation and 5th to 95th centiles for total food energy and selected nutrients obtained from a 7 d weighed dietary study of 276 boys and 262 girls aged 36-47 months

	Boys					Girls												
	Mean	SD	5th	10th	25th	50th	75th	90th	95th	Mean	SD	5th	10th	25th	50th	75th	90th	95th
Energy: MJ	6.40	1.58	4.27	4.68	5.42	6.20	7.06	8.44	9.10	5.80	1.49	4.10	4.40	4.87	5.51	6.45	7.44	8.35
kcal	1529	378	1020	1119	1295	1481	1688	2016	2174	1387	355	980	1051	1164	1317	1540	1777	1995
Total protein (g)	43.9	12.1	28.0	29.9	35.4	42.3	49.2	59.1	64.4	39.2	10.5	25.5	28.3	32.0	37.6	43.9	51.8	58.4
Animal protein (g)	29.4	9.6	16.6	18.9	22.8	28.6	34.4	41.0	46.8	26.6	11.3	15.5	17.2	20.6	25.3	30.3	36.2	40.2
Fat (g)	64.0	20.2	38.7	43.6	52.8	61.3	73.4	86.7	98.3	58.6	18.6	37.6	40.6	47.0	54.1	63.7	82.2	91.2
Carbohydrate (g)	204	49	138	149	171	198	229	259	294	186	48	125	138	155	186	207	239	280
Calcium (mg)	70.4	23.5	40.4	44.8	55.4	66.5	81.1	96.4	108.8	61.8	20.2	33.0	39.7	49.6	59.4	69.9	85.6	94.9
Iron (mg)	7.4	2.6	4.2	4.8	5.8	7.1	8.4	10.1	11.3	6.7	2.1	4.0	4.3	5.3	6.3	7.5	9.1	10.5
Retinol (µg)	76.4	63.0	28.7	31.8	39.9	57.6	93.3	142.5	167.2	61.6	45.8	23.0	29.7	37.6	49.1	69.6	118.5	158.8
Thiamin (mg)	0.75	0.27	0.42	0.47	0.57	0.69	0.84	1.08	1.25	0.64	0.24	0.40	0.43	0.50	0.60	0.72	0.87	0.99
Riboflavin (mg)	1.16	0.39	0.63	0.71	0.88	1.11	1.37	1.62	1.84	1.00	0.36	0.53	0.61	0.77	0.95	1.14	1.37	1.54
Nicotinic acid (mg)	8.26	3.35	4.00	4.88	5.97	7.46	9.50	12.23	14.28	7.29	3.04	3.94	4.47	5.36	6.90	8.15	10.30	12.93
Pyridoxine (mg)	0.77	0.23	0.47	0.51	0.62	0.73	0.88	1.03	1.14	0.69	0.20	0.43	0.48	0.57	0.66	0.78	0.92	1.01
Ascorbic acid (mg)	40.0	34.4	12.9	16.0	19.9	27.2	43.1	84.6	111.7	35.8	30.9	11.9	14.0	18.3	25.3	38.3	77.1	92.9
Cholecalciferol (µg)	1.94	2.62	0.36	0.46	0.73	1.16	1.92	3.80	6.21	1.94	2.59	0.35	0.49	0.69	1.04	1.64	4.34	8.42

Table 4. The mean daily intake, standard deviation and 5th to 95th centiles for total food energy and selected nutrients obtained from a 7 d weighed dietary study of 435 pregnant women in the 6th-7th month of pregnancy in 1967-68

	Mean	SD	Centile						
			5th	10th	25th	50th	75th	90th	95th
Energy: MJ	9.01	2.10	5.55	6.35	7.63	9.04	10.28	11.60	12.56
kcal	2152	503	1325	1517	1822	2159	2456	2771	3000
Total protein (g)	70.5	16.7	43.8	49.6	59.0	70.3	80.7	92.3	98.0
Animal protein (g)	47.8	14.3	26.1	31.0	37.5	46.8	56.5	65.6	71.7
Fat (g)	97.9	26.4	55.7	65.1	80.0	96.6	113.2	130.6	141.2
Carbohydrate (g)	260	69	143	172	211	264	304	344	370
Calcium (mg)	959	320	470	547	740	946	1168	1363	1522
Iron (mg)	11.7	3.1	6.8	8.2	9.7	11.5	13.5	15.4	17.1
Retinol (μ g)	1269	975	424	516	679	961	1493	2485	2924
Thiamin (mg)	1.04	0.28	0.62	0.70	0.85	1.03	1.20	1.38	1.47
Riboflavin (mg)	1.60	0.67	0.78	0.92	1.14	1.51	1.90	2.30	2.54
Nicotinic acid (mg)	14.30	5.30	7.90	8.88	10.89	13.41	16.41	20.34	23.27
Pyridoxine (mg)	1.27	0.32	0.74	0.88	1.08	1.24	1.45	1.66	1.80
Ascorbic acid (mg)	54.9	24.7	22.7	28.0	37.7	49.7	68.2	89.0	102.3
Cholecalciferol (μ g)	2.28	2.01	0.64	0.76	1.12	1.66	2.54	4.40	6.06

of the boys and 7% of the girls were assessed as obese. No clinical signs of specific nutrient deficiencies were seen. The nutritional status of most of the elderly subjects was also satisfactory; a few (3%) were malnourished but in each case this was due to co-existent clinical disease.

Energy and nutrient intakes

Tables 1-9 show the fifth to the ninety-fifth centiles for the mean daily intakes of food energy by males and females separately in the different population groups. As early as 12-23 months of age there was a statistically significant difference ($P < 0.05$) in the mean energy intake between the sexes; the mean energy intake of the boys being, as for older males, greater than that of the girls of the same age. The differences were more pronounced in the older age-groups.

Tables 1-9 also show, for males and females separately in the different population groups, the fifth to the ninety-fifth centiles for the mean daily intakes of total protein, animal protein, fat, carbohydrate, calcium, iron, retinol, thiamin, riboflavin, nicotinic acid, pyridoxine, ascorbic acid and ergocalciferol.

DISCUSSION

The most important finding of the surveys was that none of the children studied showed clinical signs of undernutrition. Undernutrition, diagnosed in 3% of the elderly subjects, was associated with debilitating disease.

Food energy intakes

In general, except for pre-school boys and elderly men, the means of the distribution for each sample were lower than those recommended (Department of Health and Social Security, 1969) so that more than half the group had daily intakes which were less than the recommended amount. These findings confirm those for children under 4 years of age (Black *et al.* 1976); for schoolchildren aged 7-17 years in Kent (Cook *et al.* 1973); for schoolchildren aged 14 years in Glasgow (Durnin *et al.* 1974), and for the elderly (Exton-

Table 5. *The mean daily intake, standard deviation and 5th to 95th centiles for total food energy and selected nutrients obtained from a 7 d weighed dietary study of 163 boys and 158 girls aged 10-11 years in 1971*

Energy: MJ kcal	Boys										Girls									
	Mean	SD	5th	10th	25th	50th	75th	90th	95th	Mean	SD	5th	10th	25th	50th	75th	90th	95th		
2169	9.08	1.63	6.34	6.99	7.95	9.13	10.23	11.03	11.72	19.16	1.56	5.25	6.02	7.02	7.86	9.02	10.20	10.77		
62.4	12.5	42.2	45.5	45.5	53.5	62.0	71.3	78.8	84.0	55.4	9.3	38.3	42.3	47.4	54.5	62.7	70.5	75.4		
39.1	9.9	24.2	25.8	31.7	39.0	45.4	51.4	55.1	55.1	35.6	9.2	22.2	24.2	28.6	35.0	40.7	49.2	52.0		
90.7	19.6	59.9	67.7	75.8	90.4	104.5	115.3	122.5	122.5	82.8	19.9	52.1	61.1	68.1	80.0	95.2	106.8	117.9		
292	58	193	224	253	292	327	366	402	402	252	52	162	183	211	253	283	318	345		
899	231	514	588	762	904	1042	1172	1274	1274	787	224	446	495	637	778	896	1080	1204		
10.8	2.6	6.8	7.9	9.0	10.7	12.1	14.3	15.5	15.5	9.7	2.3	6.5	7.0	8.2	9.5	10.7	12.3	13.6		
893	548	384	409	527	724	1071	1497	1821	1821	812	453	337	379	509	707	991	1363	1580		
1.03	0.28	0.61	0.72	0.85	1.00	1.15	1.40	1.50	1.50	0.88	0.21	0.53	0.60	0.74	0.84	0.99	1.14	1.24		
1.43	0.40	0.81	0.91	1.11	1.42	1.70	1.95	2.06	2.06	1.24	0.36	0.72	0.83	0.97	1.17	1.46	1.76	1.91		
11.19	3.13	7.13	7.85	9.19	10.45	12.82	15.94	16.50	16.50	9.57	2.46	5.77	6.62	7.81	9.28	11.00	12.40	13.72		
1.16	0.24	0.76	0.85	1.00	1.16	1.30	1.47	1.55	1.55	1.05	0.23	0.72	0.78	0.90	1.02	1.18	1.35	1.41		
48.5	24.4	23.4	26.5	33.1	42.7	55.8	72.0	84.1	84.1	46.2	23.4	20.9	25.6	32.0	41.1	56.0	68.7	79.5		
1.66	1.02	0.67	0.82	1.08	1.44	1.92	2.52	3.22	3.22	1.44	0.74	0.58	0.72	0.94	1.30	1.80	2.22	3.06		

Table 6. *The mean daily intake, standard deviation and 5th to 95th centiles for total food energy and selected nutrients obtained from a 7 d weighed dietary study of 92 boys and 85 girls aged 14.5 years in Newcastle-upon-Tyne in 1970*

Energy: MJ kcal	Boys										Girls									
	Mean	SD	5th	10th	25th	50th	75th	90th	95th	Mean	SD	5th	10th	25th	50th	75th	90th	95th		
2674	11.19	2.30	7.68	8.44	9.35	11.18	12.60	14.33	14.65	20.63	1.83	5.55	6.67	7.34	8.62	9.80	11.27	12.28		
75.1	15.2	53.7	54.7	64.5	73.7	85.7	93.3	98.4	98.4	60.4	14.8	37.0	42.0	50.9	58.0	68.0	82.1	86.9		
45.8	12.5	27.7	30.3	37.6	44.4	52.9	61.2	65.6	65.6	37.1	12.0	18.2	23.2	29.1	35.3	42.1	51.0	62.7		
114.6	29.2	69.6	77.4	93.3	110.9	133.4	160.0	163.4	163.4	91.8	22.2	57.4	64.4	76.6	87.0	105.2	117.4	129.6		
35.6	8.2	23.1	26.3	28.8	34.3	40.7	46.5	50.1	50.1	26.4	6.1	15.9	18.6	22.5	25.8	31.2	33.7	36.0		
930	306	514	566	717	931	1154	1325	1376	1376	705	218	370	435	551	691	835	982	1096		
13.4	3.4	8.6	9.4	11.1	12.8	15.2	17.7	19.4	19.4	10.9	2.7	6.7	7.3	9.2	10.6	12.4	14.8	16.2		
832	539	280	312	502	708	959	1406	1875	1875	737	414	313	346	481	628	850	1133	1613		
1.16	0.27	0.71	0.81	0.93	1.18	1.33	1.54	1.63	1.63	0.90	0.24	0.54	0.59	0.72	0.87	1.04	1.20	1.39		
1.61	0.56	0.84	0.94	1.21	1.54	1.91	2.42	2.58	2.58	1.18	0.44	0.55	0.66	0.86	1.10	1.42	1.69	1.99		
13.64	3.08	9.44	10.08	11.23	13.29	15.22	18.05	19.60	19.60	10.61	2.86	6.13	7.25	8.58	10.47	12.41	14.30	15.66		
1.41	0.31	0.91	1.06	1.22	1.33	1.55	1.90	1.98	1.98	1.15	0.29	0.75	0.80	0.91	1.10	1.34	1.51	1.64		
58.3	37.2	26.5	30.0	39.2	49.8	62.2	88.3	128.5	128.5	47.2	26.0	19.1	21.4	33.1	42.3	56.1	69.6	87.6		
2.10	1.66	0.33	0.64	1.02	1.73	2.59	4.30	4.52	4.52	2.18	1.70	0.58	0.73	1.17	1.86	2.58	3.45	4.37		

Table 7. The mean daily intake, standard deviation and 5th to 95th centiles for total food energy and selected nutrients obtained from a 7 d weighed dietary study of 390 boys and 401 girls aged 14-15 years in Birmingham in 1970-71

	Girls																	
	Boys					Girls												
	Centile					Centile												
	Mean	SD	5th	10th	25th	50th	75th	90th	95th	Mean	SD	5th	10th	25th	50th	75th	90th	95th
Energy: MJ	10.25	2.47	6.38	7.28	8.55	10.16	11.74	13.44	14.58	8.00	1.902	5.01	5.61	6.65	7.98	9.18	10.19	10.89
kcal	2451	589	1524	1739	2043	2427	2805	3210	3482	1911	454	1197	1340	1588	1907	2192	2435	2601
Total protein (g)	71.2	17.4	43.8	48.8	58.0	71.0	83.2	94.2	100.1	57.2	13.9	37.5	40.9	48.5	56.1	64.9	73.6	77.7
Animal protein (g)	42.0	13.3	21.4	25.2	32.2	41.5	51.5	58.9	64.0	35.1	11.6	18.9	22.0	27.2	33.1	41.7	49.1	54.4
Fat (g)	101.8	28.2	59.8	66.6	83.2	98.7	118.3	137.7	154.4	84.7	23.0	48.9	57.4	69.1	83.4	98.2	111.3	123.4
Carbohydrate (g)	330	87	193	224	265	329	377	445	477	243	64	138	160	198	242	278	320	347
Calcium (mg)	870	299	418	503	663	841	1062	1261	1380	667	238	324	393	502	623	798	1007	1105
Iron (mg)	12.4	3.5	7.1	8.3	10.1	12.0	14.6	17.1	19.0	10.1	2.7	6.4	7.0	8.4	9.8	11.7	13.0	14.0
Retinol (µg)	860	610	303	382	526	711	1012	1358	1933	780	574	273	329	460	628	848	1423	2044
Thiamin (mg)	1.17	0.35	0.66	0.77	0.94	1.14	1.37	1.59	1.66	0.92	0.50	0.56	0.63	0.73	0.87	1.04	1.19	1.27
Riboflavin (mg)	1.48	0.57	0.66	0.83	1.10	1.40	1.80	2.20	2.46	1.13	0.71	0.56	0.66	0.79	1.07	1.32	1.63	1.91
Nicotinic acid (mg)	13.31	4.22	7.62	8.66	10.27	12.87	15.58	18.04	20.52	10.53	5.06	6.59	7.17	8.51	10.05	11.75	13.55	15.03
Pyridoxine (mg)	1.40	0.35	0.87	0.97	1.14	1.38	1.61	1.82	1.94	1.17	0.53	0.72	0.80	0.95	1.12	1.31	1.49	1.64
Ascorbic acid (mg)	53.3	29.2	21.4	27.5	37.6	49.4	63.4	76.6	93.9	48.8	27.9	20.8	26.0	32.6	42.4	57.7	77.6	86.5
Cholecalciferol (µg)	2.11	1.67	0.46	0.70	1.12	1.68	2.65	3.78	4.46	1.81	1.38	0.46	0.61	0.92	1.43	2.27	3.33	4.38

Table 8. The mean daily intake, standard deviation and 5th to 95th centiles for total food energy and selected nutrients obtained from a 7 d weighed dietary study of 213 men and 225 women aged 65-74 years living in 1967-68

	Men										Women									
	Men					Women					Men					Women				
	Centile					Centile					Centile					Centile				
	Mean	SD	5th	10th	25th	50th	75th	90th	95th	Mean	SD	5th	10th	25th	50th	75th	90th	95th		
Energy: MJ	9.82	2.44	5.62	6.70	8.33	9.81	11.18	12.58	13.69	7.48	1.91	4.22	5.11	6.36	7.47	8.76	9.79	10.77		
kcal	2347	582	1344	1600	1991	2344	2671	3006	3270	1788	456	1007	1220	1520	1784	2094	2330	2573		
Total protein (g)	74.8	17.8	48.0	53.8	63.5	72.3	83.8	96.3	107.9	59.2	14.4	38.2	42.3	49.5	58.4	67.7	77.6	82.3		
Animal protein (g)	50.9	13.9	30.8	34.7	40.7	48.9	59.2	68.1	73.2	41.1	11.6	22.8	26.3	34.4	40.5	47.4	53.3	59.3		
Fat (g)	110.0	32.8	59.1	68.5	87.3	109.2	129.6	150.3	162.8	87.4	26.3	47.5	55.0	71.4	84.6	104.5	121.4	136.9		
Carbohydrate (g)	267	75	143	175	215	266	313	355	383	200	61	106	128	161	195	235	277	300		
Calcium (mg)	911	282	474	574	722	885	1079	1249	1422	796	244	434	487	629	790	952	1063	1174		
Iron (mg)	11.2	3.3	7.3	8.2	9.7	12.1	14.0	16.4	17.4	9.4	2.6	5.6	6.4	7.5	9.1	11.0	12.9	14.5		
Retinol (µg)	1142	686	431	513	703	958	1307	2007	2763	1027	676	384	490	625	815	1166	1747	2454		
Thiamin (mg)	1.95	0.35	0.59	0.68	0.84	1.01	1.21	1.40	1.59	0.82	0.23	0.50	0.56	0.66	0.78	0.96	1.11	1.25		
Riboflavin (mg)	1.55	0.48	0.88	0.96	1.24	1.46	1.84	2.16	2.44	1.27	0.42	0.66	0.78	0.97	1.19	1.52	1.78	1.95		
Nicotinic acid (mg)	16.91	7.42	8.37	9.89	12.11	14.58	19.91	26.97	31.70	11.49	4.56	6.25	7.12	8.46	10.30	13.05	17.50	21.42		
Pyridoxine (mg)	1.37	0.41	0.80	0.90	1.08	1.31	1.58	1.90	2.12	1.01	0.28	0.59	0.70	0.80	0.96	1.20	1.38	1.51		
Ascorbic acid (mg)	42.8	26.0	13.6	17.3	25.5	38.0	54.5	72.2	83.5	40.5	27.8	12.7	15.9	21.4	32.4	49.9	74.1	94.7		
Cholecalciferol (µg)	3.34	3.26	0.71	0.93	1.41	2.09	4.18	6.64	9.10	2.32	2.18	0.45	0.66	1.05	1.60	2.61	4.38	6.99		

Table 9. The mean daily intake, standard deviation and 5th to 95th centiles for total food energy and selected nutrients obtained from a 7 d weighed dietary study of 179 men and 204 women aged 75 years and over living in 1967-68

	Men										Women									
	Mean	SD	5th	10th	25th	50th	75th	90th	95th		Mean	SD	5th	10th	25th	50th	75th	90th	95th	
Energy: MJ	8.80	2.31	5.04	5.94	7.35	8.78	9.97	11.60	12.77		6.81	1.72	4.14	4.59	5.55	6.78	7.76	9.00	10.08	
kcal	2103	551	1204	1419	1755	2098	2382	2771	3051		1627	410	990	1097	1327	1619	1853	2149	2407	
Total protein (g)	67.6	18.4	37.1	43.5	53.7	67.5	78.4	87.5	94.0		53.6	13.0	31.5	34.9	44.8	54.0	61.7	69.8	73.3	
Animal protein (g)	45.9	14.1	23.1	28.2	36.6	44.7	55.1	64.1	68.5		37.4	10.4	19.7	22.9	30.3	37.6	43.2	50.1	54.3	
Fat (g)	97.9	29.2	51.6	65.0	77.9	95.8	114.2	137.4	146.3		77.6	22.0	47.7	53.8	61.9	75.0	87.9	105.0	122.7	
Carbohydrate (g)	244	73	137	154	194	240	287	327	347		187	59	91	112	148	183	224	255	287	
Calcium (mg)	883	302	421	503	668	852	1064	1253	1349		726	253	359	418	557	668	856	1008	1172	
Iron (mg)	10.9	3.2	6.1	6.5	8.7	10.6	12.9	14.9	16.1		8.5	2.5	4.5	5.4	6.5	8.4	9.9	11.7	12.7	
Retinol (µg)	1094	741	430	512	644	880	1260	1892	2406		888	588	347	404	560	729	987	1387	2115	
Thiamin (mg)	0.93	0.29	0.49	0.56	0.74	0.90	1.09	1.27	1.45		0.74	0.23	0.41	0.48	0.59	0.72	0.89	1.02	1.13	
Riboflavin (mg)	1.40	0.51	0.69	0.80	1.03	1.34	1.71	2.06	2.36		1.13	0.39	0.56	0.66	0.87	1.09	1.29	1.71	1.86	
Nicotinic acid (mg)	13.55	5.04	6.86	7.76	10.32	12.48	16.09	19.51	23.43		10.18	3.80	5.47	6.18	7.62	9.35	11.95	14.33	17.78	
Pyridoxine (mg)	1.18	0.36	0.63	0.72	0.92	1.17	1.38	1.58	1.86		0.93	0.27	0.51	0.62	0.77	0.91	1.08	1.27	1.42	
Ascorbic acid (mg)	37.7	23.1	9.8	13.8	22.7	33.7	47.0	60.8	82.1		33.7	20.0	7.8	12.3	20.8	29.2	43.1	58.7	70.0	
Cholecalciferol (µg)	2.68	2.13	0.63	0.75	1.26	1.96	3.11	5.42	7.68		2.09	1.79	0.50	0.63	1.06	1.48	2.35	4.39	6.26	

Smith *et al.* 1972; Lonergan *et al.* 1975). Many nutritionists have suggested that in an environment where the motor-car, television and domestic and industrial work-saving appliances are common, individual energy requirements are less than they were a decade or so ago. This implies that the recommended intakes for food energy were set too high in 1969. They have been reduced in a new report (Department of Health and Social Security, 1979).

Difference in energy intakes between the sexes

Sex differences in energy intake have been discussed by Durnin (1976). As expected, in these studies of schoolchildren and adults, mean energy intakes of men and boys were greater than those of women and girls of the same age. This difference between the sexes was allowed for above the age of 11 years in the Department of Health and Social Security (1969) recommendations but the results reported here showed that even in pre-schoolchildren from age 12 months onwards boys have higher energy intakes than girls of the same age. Widdowson (1947) and Black *et al.* (1976) also found that energy intakes of boys were larger than those of girls at this early age. The recommended daily amounts of energy for groups of people are now larger for males than for females from infancy onwards (Department of Health and Social Security, 1979).

Nutrient intakes

Recommendations for nutrient intakes were defined in the Department of Health and Social Security (1969) Report as amounts 'which are sufficient or more than sufficient for the nutritional needs of practically all people in a healthy population'. The distributions of the selected nutrient intakes reported here showed that many individuals in the different groups were eating less than the amount recommended without any signs of malnutrition. In addition the 1969 recommended amounts either approximated to or were less than the mean of the frequency distributions of intakes. The findings suggest that a more practical definition of the recommended amount of a nutrient would be the average amount of the nutrient which should be provided per head in a group of healthy people if the needs of practically all members of the group are to be met. This definition was agreed by the Committee on Medical Aspects of Food Policy (Department of Health and Social Security, 1979).

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