A comparison of dietary data obtained in Jamaica by twenty-four-hour recall and by weighing

HELEN C. FOX[1], VERSADA S. CAMPBELL[1] AND H. G. LOVELL[2]

SUMMARY

The sampling and field work for a dietary survey in which data were collected both by twenty-four-hour recall and by weighing the food eaten by six hundred and sixty-five Jamaican children between the ages of weaning and six years are described. Results obtained by the two methods have been compared and show that there is a tendency to report less food items and smaller intakes when the recall method is used. Mean figures are given for the daily consumption of thirty-nine groups of items by the children and for the daily intake of food constituents of prime interest as estimated from both methods of data collection.

Little factual information on the dietary pattern of young Jamaican children has been reported, although sufficient observations have been made on low income families to indicate that preschool children are relatively more poorly fed than are older children and adults (1, 2). The major deficiencies appear to be in calories, protein and riboflavin intake.

Previous surveys undertaken by various local agencies had adopted either the recall (3) or the weighing technique (4) and each had been warmly defended by its users. Since no overwhelming justification could be found for preferring either method and such reports as existed were concerned

1 Human Nutrition Research Unit, Scientific Research Council, Jamaica, W. I.
2 Medical Research Council, Epidemiological Research Unit, U. W. I.
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with developed countries (5, 6, 7), it was decided to use both. The less expensive twenty-four-hour recall method was used to collect the six-day diet consumption of all the children and, in order to check its validity when used in a developing country, the recall history of one day's diet for each child was matched with a complete weight record of food intake for that day. This paper describes the survey and compares the results of weighing and recall histories of the same days.

MATERIAL AND METHODS

For financial reasons the survey was carried out in conjunction with a household expenditure survey of the Government of Jamaica. The statistical plan of this survey, the area selection and mapping have therefore been reported (8). Area maps and lists of all the households in fifty-nine areas selected by means of a stratified random sample, were provided for the purposes of this survey and a random sample of twenty to twenty-five households was selected from each list.

The subjects whose diets were investigated were infants receiving not more than 2 breast feeds in twenty-four hours and children under seven years old. The households were visited in the order of their random selection and all children of appropriate age were listed until a total of at least twelve children had been obtained. All children in the chosen households and in the age group of interest were studied so that the number of children surveyed in an area varied between twelve and sixteen. The number of households varied between four and eight.

The composition of the sample is shown in Table 1 together with estimates of the number of Jamaican children in the relevant age group. Twenty-two areas selected for this survey were urban and thirty-seven were rural. A total of three hundred and sixty-nine households were asked to participate; two refused and were replaced. In six households either the children being observed were removed from the house during the course of the survey or information was withheld and these children, nine in all, were not replaced. Three hundred and sixty-three households were, therefore, included in the study. The data on two children under one year old were later dis-

TABLE 1

THE NUMBER OF HOUSEHOLDS AND CHILDREN SURVEYED IN URBAN AND RURAL AREAS

	Urban	Rural	Total
No. of Areas	22	37	59
No. of Households scouted	124	245	369
No. of Households surveyed	122	241	363
No. of children			
Weaning - 1 yr.	26	17	43
1 - 3 "	81	185	266
3 - 6 "	112	244	356
Total	219	446	665
Approx. Population in relevant age range (1960 census)	45,000	227,000	272,000
% Population studied	0.49	0.20	0.25

carded because their main dietary intake was breast milk although they also received supplementary feeding in the form of sweetened "bush" tea five or six times daily. The diets of six hundred and sixty-five children are therefore reported. Although sixty-seven percent of these children were from rural areas the urban population is over-represented in the sample because statistical selection was based on areas and households and not on children in the relevant ages.

The field officers were trained in survey methods and the importance of keeping accurate records was particularly stressed. They were instructed not to discuss the diets of the children among themselves, but were encouraged to inform each other of daily customs and happenings in the households as an aid to pinpointing particular days for recall purposes. The supervising officer made spot checks twice a week.

Every effort was made to ensure that there was a clear understanding between the householder and the field officer that the history should be taken from the person who had prepared the child's meals, that it should relate to the day immediately preceding the field officer's visit, and that quan-

tities were to be given as accurately as possible. A few simple precautions were found helpful in promoting these aims; for instance, each area was visited in the week preceding the survey and local customs noted. All utensils used in preparing and serving meals were measured for capacity in liquid measures and quantities of food were arrived at by requesting the respondent to give a visual indication of the amount prepared or served in the relevant utensil. Visual indicators had been found to be the most accurate method among this low socio-economic group of the population where the housewife was for the most part illiterate. No assistance in weighing, measuring or recording food intake was therefore accepted; quantities being handed to the field officer in the household container.

Twenty-four-hour recalls of the children's food consumption were taken by field officers from each household for six days, Sunday through Friday, in one week. On one of the survey days, other than Sunday, all food items were weighed; records were made of the raw weights of individual items on the household menu, the weight of the item or composite recipe when cooked, and the waste. The child's portion of the total minus his plate waste gave an estimate of his consumption of each ingredient. In addition, the quantity of each item or composite recipe was recorded in descriptive terms given by the housewife, this information being used for transposing the recall data to quantitative amounts. Data for the twenty-four-hour recalls were collected by an officer other than the one who did the weighing for that household so that the householder would remain unaided in his or her recall.

The work was carried out in three phases. Inter-phase conferences helped to co-ordinate the approach of all survey staff. Two observers collected recall histories from rural areas and each weighed one day's food intake of almost every child being observed by the other. A third observer collected recall histories for five days and weighed one day's food for urban children during the last two phases of the survey and the fourt member of the team collected their matched recall histories.

The data were stored on paper tape and analysed on an IBM 1620 electronic computer.

TABLE 2

THE NUMBERS OF CHILDREN WHO CONSUMED EACH OF 39 FOOD GROUPS, AS DETERMINED BY TWO METHODS OF OBSERVATION

Group No.	Food	1. Similarity	2. Difference	
		Both methods	Weighing only	Recall only
1	Flour - whole wheat	16	5	6
2	Flour - ordinary	537	41	20
3	Oats - Pablum, popcorn, Farex	69	11	3
4	Cornmeal - Cornflakes	255	26	13
5	Rice, Barley, Cornstarch	220	17	4
6	Green banana & Plantain	278	43	21
7	Yam	183	25	16
8	Breadfruit	122	15	14
9	Cocoyam *	31	8	10
10	Potatoes - Irish	72	14	13
11	Potatoes - Sweet	63	13	8
12	Beans & Peas - dry	97	11	14
13	Beans & Peas - green	9	3	2
14	Sugar - Granulated	346	34	19
15	Sugar - Brown	547	31	20
16	Milk - Cow's fresh	398	22	15
17	Milk - dried skimmed	187	13	7
18	Milk - dried half cream	18	3	0
19	Beef	42	9	13
20	Mutton	7	1	2
21	Pork (fat)	67	29	7
22	Chicken	29	5	2
23	Liver	3	1	1
24	Eggs	92	30	3
25	Cheese	19	4	2
26	Fish - Fresh	58	6	6
27	Fish Salted (low fat)	244	41	24
28	Fish Salted (high fat)	79	15	4
29	Butter & Margarine	244	87	47
30	Coconut oil & lard	362	72	46
31	Fruits - citrus	46	63	18
32	Fruits - red & yellow	53	39	25
33	Fruits - other	9	10	6
34	Vegetables - red & yellow	80	46	19
35	Vegetables - green leafy	84	21	11
36	Vegetables - other	42	25	13
37	Cocoa & cocoa products	274	18	24
38	Coconut milk	98	27	14
39	Peanuts	0	0	1

* Starchy aroids of the species colocasia and alocasia.

TABLE 3

ESTIMATES OF THE MEAN DAILY INTAKE (WET WEIGHT IN GRAMS) OF EACH OF 39 FOODS GROUPS OBTAINED BY TWO METHODS OF INQUIRY INTO THE DIETS OF 665 CHILDREN, AND COMPARISONS OF MATCHING PAIRS OF ESTIMATES. ALL OBSERVATIONS.

ITEM	WEIGHING		RECALL			
	Mean	Standard deviation	Mean	Standard deviation	t	P
Flour - whole wheat	0.9	6.6	1.2	9.2	1.24	> .1
Flour - ordinary	54.4	51.7	49.5	47.3	3.25	<.002
Oats - Pablum, Popcorn, Farex	3.5	13.7	3.7	15.2	0.69	> .25
Cornmeal - Cornflakes	15.0	25.4	16.0	27.9	1.45	> .1
Rice, Barley, Cornstarch	23.3	42.6	18.2	35.7	4.09	<.001
Green banana & Plantain	42.9	64.5	40.2	60.4	1.59	> .1
Yam	32.6	68.6	34.2	71.2	0.81	> .25
Breadfruit	28.6	77.1	23.7	63.4	3.81	<.001
Cocoyam *	4.5	22.5	5.4	23.8	1.29	> .1
Potatoes, Irish	7.3	25.4	7.2	25.9	0.22	> .25
Potatoes, Sweet	6.6	23.1	7.2	24.7	0.87	> .25
Beans & Peas - dry	3.6	10.7	3.0	8.8	2.27	< .05
Beans & Peas - green	0.4	3.7	0.2	2.0	1.63	> .1
Sugar - Granulated	9.0	17.9	9.3	21.9	0.41	> .25
Sugar - Brown	42.2	34.6	44.0	37.8	1.35	> .1
Milk - Cow's fresh	101.5	138.3	107.1	150.6	1.52	> .1
Milk - dried skim	6.4	14.3	4.9	11.1	3.79	<.001
Milk - dried half cream	1.5	11.7	1.3	10.1	0.71	> .25
Beef	2.6	11.3	2.2	9.1	1.64	> .1

* See footnote on Table 2.

TABLE 3 (Continuation)

ESTIMATES OF THE MEAN DAILY INTAKE (WET WEIGHT IN GRAMS) OF EACH OF 39 FOOD GROUPS OBTAINED BY TWO METHODS OF INQUIRY INTO THE DIETS OF 665 CHILDREN, AND COMPARISONS OF MATCHING PAIRS OF ESTIMATES. ALL OBSERVATIONS.

ITEM	WEIGHING		RECALL			
	Mean	Standard deviation	Mean	Standard deviation	t	P
Mutton	0.6	6.1	0.3	3.6	1.41	> .1
Pork (fat)	2.6	9.1	2.3	9.0	1.18	> .1
Chicken	2.1	13.1	2.1	11.7	0.08	> .25
Liver	0.5	7.7	0.4	5.6	0.72	> .25
Eggs	6.6	16.0	6.1	17.5	1.25	> .1
Cheese	0.5	2.7	0.6	4.0	1.30	> .1
Fish - Fresh	5.5	20.7	6.7	25.8	2.07	< .05
Fish Salted (low fat)	7.3	12.0	7.1	11.9	0.40	> .25
Fish Salted (high fat)	3.3	10.7	2.9	9.6	1.33	> .1
Butter & Margarine	3.6	7.5	2.9	6.3	2.40	< .02
Coconut oil and lard	10.2	12.8	9.5	11.6	1.48	> .1
Fruits - citrus	11.8	34.0	7.1	26.1	4.05	<.001
Fruits - red & yellow	13.3	47.7	12.5	47.0	0.61	> .25
Fruits - other	2.6	22.5	2.0	17.4	0.73	> .25
Vegetables - red & yellow	6.8	22.1	5.3	20.6	2.50	< .02
Vegetables - green & leafy	5.5	17.5	5.1	18.4	0.68	> .25
Vegetables - other	4.0	19.6	3.6	18.1	0.56	> .25
Cocoa & cocoa products	5.8	13.0	5.7	11.1	0.00	> .25
Coconut milk	13.1	40.7	7.1	22.5	4.07	<.001
Peanuts	0.0	0.0	0.0	0.8	1.00	> .25

Note: There are 664 degres of freedom for each item.

TABLE 4

ESTIMATES OF THE MEAN DAILY INTAKE (WET WEIGHT IN GRAMS) OF EACH OF 39 FOOD GROUPS OBTAINED BY TWO METHODS OF INQUIRY INTO THE DIETS OF 665 CHILDREN, AND COMPARISONS OF MATCHING PAIRS OF ESTIMATES AT LEAST ONE POSITIVE OBSERVATION.

ITEM	WEIGHING		RECALL		Degrees of freedom	t	P
	Mean	Standard deviation	Mean	Standard deviation			
Flour - whole wheat	21.9	25.0	29.9	36.3	26	1.26	> .1
Flour - ordinary	60.5	51.0	55.1	46.7	597	3.25	<.002
Oats - Pablum, Popcorn, Farex	27.6	29.0	29.7	33.1	82	0.69	> .25
Cornmeal - Cornflakes	33.9	28.6	36.3	32.1	293	1.45	> .1
Rice, Barley, Cornstarch	64.4	48.7	50.2	43.8	240	4.18	<.001
Green banana & Plantain	83.5	68.5	78.2	64.3	341	1.59	> .1
Yam	96.9	88.1	101.5	90.8	223	0.81	> .25
Breadfruit	126.1	118.0	104.3	96.5	150	3.95	<.001
Cocoyam *	61.6	58.2	72.6	53.2	48	1.30	> .1
Potatoes - Irish	49.1	47.9	48.1	50.6	98	0.22	> .25
Potatoes - Sweet	52.3	43.2	56.8	45.3	83	0.87	> .25
Beans & Peas - dry	19.8	17.5	16.5	14.2	121	2.30	< .05
Beans & Peas - green	18.3	18.2	9.1	10.9	13	1.74	> .1
Sugar - granulated	15.0	21.1	15.5	26.5	398	0.41	> .25
Sugar - brown	46.9	33.3	49.0	36.8	597	1.35	> .1
Milk - Cow's fresh	155.2	144.7	163.8	159.3	434	1.52	> .1
Milk - dried skim	20.5	19.3	15.7	15.2	206	3.88	<.001
Milk - dried half cream	47.3	47.8	40.9	40.8	20	0.70	> .25
Beef	26.7	26.4	22.3	20.4	63	1.66	> .1

* See footnote on Table 2.

TABLE 4 (Continuation)

ESTIMATES OF THE MEAN DAILY INTAKE (WET WEIGHT IN GRAMS) OF EACH OF 39 FOODS GROUPS OBTAINED BY TWO METHODS OF INQUIRY INTO THE DIETS OF 665 CHILDREN, AND COMPARISONS OF MATCHING PAIRS OF ESTIMATES. AT LEAST ONE POSITIVE OBSERVATION.

ITEM	WEIGHING		RECALL		Degrees of freedom	t	P
	Mean	Standard deviation	Mean	Standard deviation			
Mutton	38.8	32.5	21.8	20.7	9	1.49	> .1
Pork (fat)	17.1	17.1	14.7	18.6	102	1.18	< .1
Chicken	38.5	42.8	37.9	34.9	35	0.08	> .25
Liver	62.5	71.4	47.7	49.3	4	0.68	> .25
Eggs	35.4	18.8	32.3	28.1	124	1.26	> .1
Cheese	12.2	7.5	16.0	13.3	24	1.32	> .1
Fish - fresh	52.2	40.4	63.5	52.4	69	2.12	< .05
Fish - Salted (low fat)	15.7	13.3	15.4	13.4	308	0.40	> .25
Fish - Salted (high fat)	22.3	19.0	19.5	17.6	97	1.34	> .1
Butter & Margarine	6.6	9.1	5.4	7.8	357	2.41	< .02
Coconut oil and lard	14.1	13.1	13.1	11.8	479	1.48	> .1
Fruits - citrus	61.9	54.5	37.2	49.6	126	4.27	<.001
Fruits - red & yellow	75.6	91.1	71.0	92.0	116	0.61	> .25
Fruits -other	68.0	96.6	54.1	73.5	24	0.73	> .25
Vegetables - red & yellow	31.2	38.5	24.5	38.6	144	2.53	< .02
Vegetables - green & leafy	31.7	30.6	29.5	35.1	115	0.68	> .25
Vegetables - other	33.3	47.3	29.6	44.3	79	0.56	> .25
Cocoa & cocoa products	12.0	16.7	12.0	13.5	315	0.00	> .25
Coconut milk	62.8	69.6	33.8	39.1	138	4.27	<.001
Peanuts	0.0	0.0	21.3	0.0	0	0.00	> .25

RESULTS

Food items consumed by the six hundred and sixty-five children in this survey were divided into thirty-nine groups and the number of positive observations in each group for recall and weighing together and separately are shown in Table 2. The numbers of qualitative agreements and of discrepancies between the two methods are clearly outlined in columns numbered 1 and 2.

Estimates of the mean daily intake of each of the thirty-nine groups of items are listed separately in Table 3 where values of Student's *t* test are given for paired differences between recall and weighing estimates. Data on all the children are included in this table, zeros being recorded for items not reportedly consumed. Table 4 shows similar figures for each group of items but is restricted to those children who, by either technique, consumed some of the items in the group.

Table 5 summarises the mean daily intakes of the most important nutrients and the mean daily weight of food consumed by subjects in this survey, as estimated from the two methods of observation. A comparison of nutrient intake by these methods in children of three age groups is shown in Figure 1. References to the sources of conversion factors, which were used to obtain the dry weight and nutrient content of the diets, are given in the appendix.

DISCUSSION

Two independent estimates of the food intake on one day were obtained for each of the six hundred and sixty-five children. All items consumed were weighed by one observer and the following day a different observer collected a twenty-four-hour recall history. Thirty-nine groups of items were distinguished some being more frequently used than others.

It is apparent from Table 2 that items were more likely to be recorded by the weigher and omitted from the recall list than vice versa; cocoa and cocoa products being among the few exceptions. Items more prominent among the weighed data included ordinary flour, green bananas and plantain, low fat salt fish, brown and granulated sugar, butter, margarine,

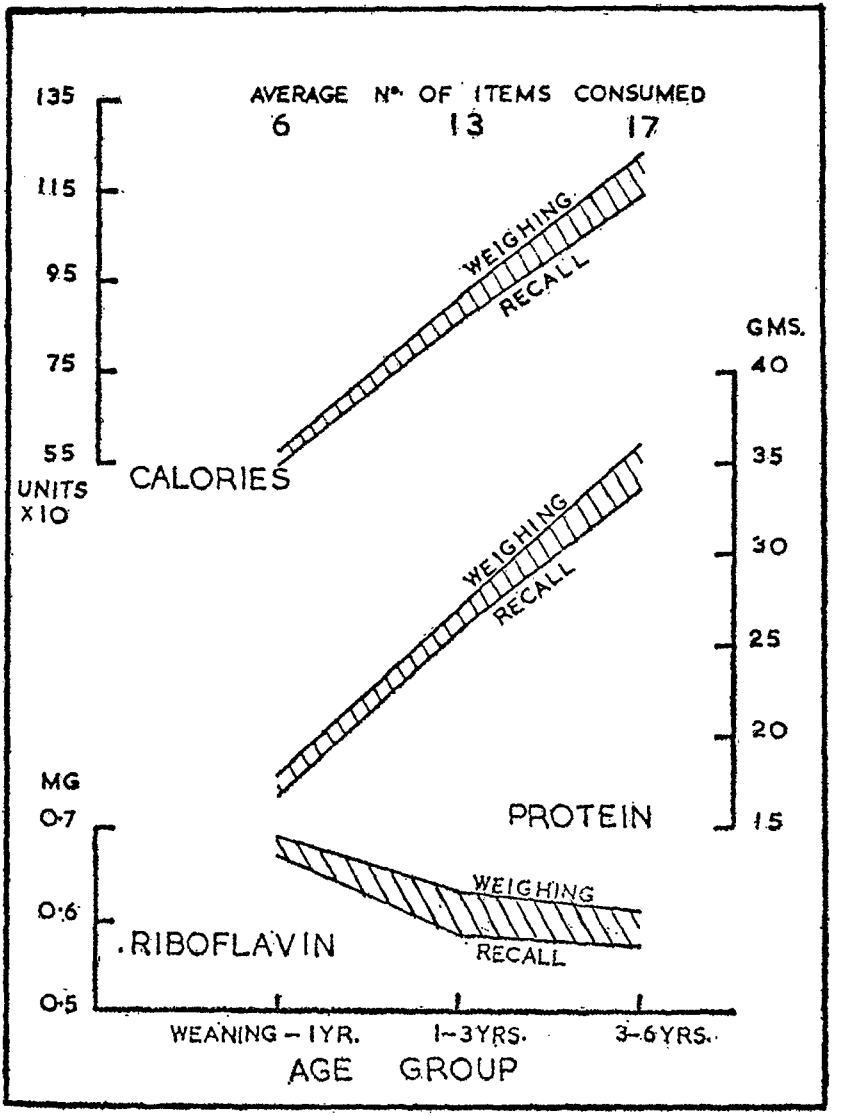

Figure 1: Comparison of nutrient intake of children in three age groups as determined by two methods of observation.

coconut oil and lard, some varieties of fruit, red and yellow vegetables, and eggs. Among these items, ordinary flour, butter and margarine, citrus fruits and red and yellow vegetables also had notably larger mean consumptions recorded by the weighing method (Tables 3 and 4). Breadfruit and dry beans and peas were reported in larger quantities by the weigher but not more often than by the history taker. The only outstanding example of the reverse was for fresh fish, where the mean intake estimated from recall data exceeded the estimate obtained by weighing. Other items reported more frequently by the weigher and having larger estimated means obtained by that method included rice, skim milk powder and coconut milk.

The weights of some food items were more difficult to measure or assess than were those of others. The extent of discrepancies in weights recorded by observers using different methods of data collection depended therefore on the particular group under consideration (Tables 3 and 4). Differences in estimates obtained by the two methods could not have arisen from differences in age or sex of subjects or from varying daily or seasonal consumption patterns, since these were necessarily identical. As we are concerned here only with discrepancies due to methodology and not with estimates *per se*, the data presented are not separated according to these factors.

The only duplicated recording were obtained using different methods of observation and, as can be seen from Tables 3, 4 and 5, higher values for food intake were generally obtained by weighing than by taking recall histories. The mean daily wet weight derived from the weighings of one observer in the rural area was significantly (1% level) larger than that obtained from the corresponding histories, significantly more rice, skim milk powder, citrus fruits and coconut milk having been weighed than recalled. The mean daily wet weight for children whose food was weighed by this observer was also greater than that for the groups of children whose food was weighed by the two other observers, but only significantly so when related to that of children weighed by the third observer who worked in urban areas. There were no significant differences between estimates of the mean daily consumption of the thirty-nine items, total weight or main constituents ob-

TABLE 5

ESTIMATES OF MEAN DAILY INTAKE (BY 665 CHILDREN) OF MOST IMPORTANT NUTRIENTS, AS OBTAINED BY TWO METHODS OF ENQUIRY

	WEIGHING		RECALL		Recall as % of weighing
	Mean	Standard deviation	Mean	Standard deviation	
Wet weight (g)	492.5	226.0	467.6	226.1	94.9
Dry weight (g)	238.7	93.3	224.8	90.9	94.2
Calories	1.061	438	989	411	93.2
Proteins (g)	31.0	15.9	29.1	15.4	93.9
Riboflavin (mcg)	0.62	0.42	0.58	0.36	93.5
Fat (g)	28.9	23.8	25.3	19.1	87.5

tained from all recall histories reported by the two observers who participated in all phases of the survey and worked in similar areas.

The age distributions of children whose food was weighed or recalled by the various observers were similar, but as the observers covered different areas and as one observer participated in only two of the three phases of the survey, observer bias can only be accepted where it is proved to exist between officers carrying out the same technique, weighing or recall, in the same areas. Therefore, only in the rural areas could a meaningful comparison be made and there were no significant differences between these observers using either method. The significance of the difference between wighing of one observer and corresponding recall of the other observer in the rural areas can be attributed to the cumulative influence of a higher, but not significant trend in weighing between the two officers and higher results by weighing than recall in the complete data with particular significance (0.1% level) for all the ingredients mentioned (see Tables 3 and 4).

The mean daily wet weight assessed from the recall histories of urban children was lower than either of the rural figures (sig. at 5% and 2%) and due in both cases to less ordinary flour, yam, breadfruit, sweet potatoes, brown sugar and to a smaller extent, salt fish, cocoyam and "other" vegetables reported. As before, however, these differences cannot be attributed to observer bias because of differences between the type of subjects observed. The significantly lower results obtained by both methods in urban areas may be accepted with confidence since dietary pattern studies (9) have shown that mixed feeding is instituted in urban areas at an older age than in rural.

Means and standard deviations of the weighed and corresponding recall history material are compared in Table 3. Each child did not of course consume all thirty-nine items, thus the presence of numerous zeros in the data, together with the heterogeneity in the quantity consumed, results in the standard deviations being large relative to the means. In general a measurement of zero is simply an observation that none of that particular item was consumed and represents a more accurate type of measurement than most, although it could also

APPENDIX

REFERENCES FOR CONVERSION FACTORS USED TO OBTAIN THE CALORIES, PROTEIN, RIBOFLAVIN AND FAT CONTENT OF 39 SAMPLES OF FOOD ITEMS

FOOD	References	Nº
Flour - whole wheat	(10)	4
Flour - ordinary	(10)	5
Oats - Pablum, Popcorn, Farex	(10)	18
Cornmeal	(11)	9
Cornflakes	(12)	252
Rice, Barley	(12)	254
Cornstarch	(10)	11a
Green banana & Plantain	(11)	131
Yam	(11)	44
Breadfruit	(11)	33
Cocoyam *	(11)	42, 43
Potatoes, Irish	(11)	39
Potatoes, Sweet	(11)	40
Beans & Peas - dry	(11)	51, 58, 66
Beans & Peas - green	(13)	88, 213
Sugar - Granulated	(11)	252
Sugar - Brown	(11)	250
Milk - Cow's fresh	(10)	251
Milk - dried skimmed	(10)	267
Milk - dried half cream	(10)	267, 265
Beef	(11)	198
Mutton	(11)	201
Pork (fat)	(11)	208
Chicken	(11)	211
Liver	(11)	207
Eggs	(10)	215
Cheese	(10)	271
Fish - Fresh **	(13)	632, 652
Fish - Salted (low fat)	(13)	617
Fish Salted (high fat)	(12)	349
Butter & Margarine	(10)	281
Coconut oil & lard	(10)	277
Fruits - citrus	(11)	137
Fruits - red & yellow	(11)	144, 151
Fruits - other	(10)	162
Vegetables - red & yellow	(11)	97, 116, 119
Vegetables - green leafy	(11)	105
Vegetables - other	(10)	116
Cocoa & cocoa products	(10)	288,289
Coconut milk	(14)	90
Peanuts	(10)	53

* See footnote on Table 2.

** Where there was more than one source average values were taken.

mean that a very small quantity of the item was consumed. In order to obtain a more sensitive comparison of mean estimates, the calculations have been repeated omitting recordings which were zero for both the weighed and matching recall data but including all pairs of recordings for which only one was zero. The results of this analysis are shown in Table 4. It was found that the significance of the mean differences as assessed by Student's t - test, were very little altered by the omission of zeros.

From Table 5 it can be seen that the nutrients of primary interest were estimated to have higher mean daily consumption when the method of observation was by weighing than when it was by recall. These differences were statistically significant at the 1% level for dry weight, calories and fat and at the 5% level for wet weight and protein. The mean differences for riboflavin was not statistically significant but the difference in variances for riboflavin was significant (at the 0.1% level). There was also a significantly larger variance for fat (0.1% level) when using the weighing method. The influence of age on the results for nutrient intake obtained by each method, as depicted in Figure 1, appears to be related to the number of food items which must be recalled by the respondent. With increase in age the content of the child's diet became more varied, the average number of items increasing from six in the infant to seventeen in the child over three years and this resulted in a widening gap between weighing and recall histories in each of the three primary nutrients.

It may be concluded that although estimates of nutrient intake by recall shows a significant statistical difference from those by weighing, the order of the difference for each of the four nutrients reported in this paper is within the limit of error usually accepted in information obtained by surveys.

RESUMEN

Comparación de datos sobre consumo de alimentos obtenidos en Jamaica por encuesta de 24 horas y por peso directo

Se describen los métodos usados para escoger la muestra y obtener los datos sobre el consumo de alimentos en 665 niños de menos de 1 año hasta 6 años de edad en áreas urbanas y rurales de Jamaica. Simultáneamente se aplicó el método de interrogación con 6 visitas caseras diarias seguidas,

calculando la cantidad ingerida y la cual se determinó además directamente durante 1 día, pesando los alimentos servidos y sobrantes. Los resultados obtenidos con ambos métodos se presentan agrupados en 39 grupos de alimentos y se calcula la ingestión de algunos nutrientes. El consumo estimado por peso directo resultó generalmente algo superior al estimado por interrogación.

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