Weight and household measures of cooked Nigerian staple foods according to calories

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Abstract

Diet therapy remains a cornerstone in the management of diabetes. Efforts must be made to lessen the difficulty experienced by diabetic patients in adhering to dietary restrictions. This study therefore determines the weight and household measures of cooked Nigerian staple foods per meal, according to different calorie needs. The daily calories required from carbohydrate food was based on 50% of the daily calories required. Thus 50% of each selected calorie level was estimated and distributed between the three main meals. The equivalent weight and household measures of each cooked staple food for each meal were estimated according to the different calories. It is expected that the cooked food weight and household measures of Nigerian staple food (as presented in this paper) will lessen the burden experienced in quantifying the cooked staple foods required by diabetic patients and other individuals requiring specific calories per day in Africa.

Introduction

Nutrition intervention is an integral part of diabetic management and self-care, aiming at achieving an optimal metabolic control.[1,2] Dietary counselling for diabetic patients is aimed at improving glycaemic control and quality of life through addressing individual nutritional needs.[3] Dietary management entails a series of behavioural changes regarding meal planning, food selection, food preparation and portion control, as well as appropriate responses to eating challenges.[2] The main goal of the meal plan is to control blood glucose, with an even distribution of the carbohydrate of each meal and snacks. The patient should also be aware of the quantity of each food to eat at each meal. Diabetic nutrition is often based on the calories required to establish control, translated into food portions, especially in the overweight or obese.[4]

The burden and the difficulty felt in adhering to diet restrictions, as well as having to carry out self-management behaviour, have been reported to have a great influence on the patient's quality of life.[5]

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Advising diabetic patients about cooked food portion-sizes, according to different recommended calories by weight and household measures serves as an easy and quick tool for estimation of energy intake.

This study determines the weight and the household measures of some cooked Nigerian staple foods as a reference guide, in order to make the measurements of foods and monitoring of meals easier for patients with diabetes, and other individuals requiring specific calories per day.

Methods

Each raw staple food sample was prepared based on the method used by Fadupin,[1] to obtain the cooked weight of each food. The weight of cooked foods per calories was determined based on the American Recommendation for Daily Energy Distribution between energy-yielding nutrients (carbohydrate 50%, fat 30%, and protein 20% of the total daily energy requirement).[6] Thus the total daily energy required from carbohydrate foods was based on 50% of the daily calories required. The daily energy required from carbohydrate in each food was distributed evenly between the three main meals to obtain the equivalent weight and household measures of the different cooked foods for each meal. The value of each meal could be adjusted to provide snacks for individuals as required.

Results

Tables 1 and 2 present the quantities of the cooked foods per meal in weights and household measures according to the different recommended daily energy allowance. Amongst the cereals and grains, less quantities of bread and steamed white maize 'egbo' are required than plain boiled rice, rice flour mould 'tuwo rice', or fermented maize meal 'ogi', for the same amount of calories per meal.

Amongst the roots and tubers, less cassava 'eba' is required and higher quantities of yam flour mould 'amala', soft pounded yam, unripe plantain and Irish potato are required for the same amount of calories per day.

Similarly, less brown cowpea and cowpea are required compared with bean cake 'akara' and cowpea pudding 'moinmoin' to achieve the same calories per meal.

Discussion

The focus of the obese or overweight diabetic patient's diet therapy is on the restriction of energy intake. Counselling patients properly on the food quantities, is also one

of the primary goals of effective dietary management of patients with diabetes and others requiring special diets.

Although the efficacy of diet therapy is widely recognised, it is not easy for patients to learn and sustain dietary management behaviour.[7] Daily calculation for specific foods of the menu may be extremely time consuming, and the detailed calculation for the actual quantity may not be possible for many patients. The weight and the

Table 1 The weight of cooked foods per meal according to different recommended daily allowances for energy

	1000kcal	1500 kcal	1800 kcal	2000 kcal	2500 kcal	3000 kcal
Cereals and grains (g)						
Plain boiled rice	137	205	246	273	341	410
Rice flour 'tuwo rice'	143	214	257	286	357	429
Steamed white maize (egbo)	135	202	242	269	337	404
Fermented maize meal (ogi)	744	1115	1338	1487	1859	2231
Bread	64	96	115	128	160	192
Roots and tubers (g)						
Cassava (eba)	135	202	243	270	337	405
Cassava flour (amala)	146	219	262	292	364	437
Yam flour (amala)	170	255	305	339	424	509
Soft Pounded yam	170	255	305	339	424	509
Yam (boiled)	143	214	257	286	357	429
Sweet potato (boiled)	191	287	344	382	478	574
Sweet potato (fried)	–	–	–	–	–	–
Unripe plantain (boiled)	255	383	460	511	639	766
Irish potatoes	165	248	297	330	413	495
Legumes (g)						
Cowpea (white variety)	126	189	227	252	315	378
Cowpea (brown variety)	115	173	207	230	288	346
Bean cake (akara)	184	277	332	369	461	553
Cowpea pudding (moinmoin)	241	362	434	483	603	724

Table 2 The number of household measures of cooked foods per meal according to different daily allowances of calories

	1000 kcal		1500 kcal		1800 kcal		2000 kcal		2500 kcal		3000 kcal	
	dsp	mt	dsp	mt	dsp	mt	dsp	mt	dsp	mt	dsp	mt
Cereals and grains												
Plain boiled rice	8.0	12.5	12.0	2.0	14.4	2.5	16.0	2.8	20.0	3.5	24.0	4.0
Tuwo rice (under milled)	7.8	1.3	11.7	1.9	14.0	2.3	15.7	2.5	19.6	3.2	23.5	3.8
Steamed white maize (egbo)	6.6	1.0	9.9	1.6	11.9	2.0	13.2	2.2	16.5	2.7	19.8	3.3
Roots and tubers												
Cassava (eba)	6.7	0.8	10.0	1.3	12.0	1.5	13.4	1.7	16.8	2.1	20.1	2.5
Cassava flour (amala)	8.0	0.9	11.8	1.5	14.4	1.8	15.8	2.0	19.8	2.5	23.7	3.0
Yam flour (amala)	9.0	1.2	13.8	2.0	16.6	2.2	18.4	2.4	23.8	3.0	27.6	3.6
Pounded yam	8.4	2.5	12.6	3.7	15.0	4.4	16.8	4.9	21.0	6.0	25.0	7.4
Legumes												
Cowpea (white variety)	7.0	1.0	10.5	1.7	12.6	2.0	14.0	2.2	7.5	2.8	2.2	33.0
Cowpea (brown variety)	5.0	1.0	7.7	1.5	12.5	1.8	10.0	2.0	12.5	2.5	15.0	3.0
Bean cake (akara)	7.0	–	10.5	–	12.6	–	14.0	–	17.5	–	21.0	–
Cowpea pudding (moinmoin)	–	1.7	–	2.6	–	3.0	–	3.5	–	4.3	–	5.2

Note: dsp = desertspoon; mt = small evaporated milk tin

household portion sizes of cooked foods per meal, according to different calorie allowances given in this paper, are derived from the food exchange lists of local foods in Nigeria.[1] It is designed primarily to serve as a quick and more manageable framework for diabetic patients in Nigeria and other parts of Africa. It is expected to enhance the accuracy and convenience of meal estimation. The diabetic individual ideally needs to follow the meal plan set with a trained dietician and also ensure that the varieties of food and only the amount of food in the meal plan are eaten each day. If snacks are taken, the calorie value (about 40 kcal) must be deducted from the calories of the previous or the next meal. Meals and snacks must be eaten at regular times daily. Food rich in fibre such as green leafy vegetables, whole cereals and legumes (which supply up to 35 grams fibre per day) should be included in the meal plan.

Knowledge of the cooked food weight and household sizes of cooked Nigeria staple foods according to the selected daily calorie allowance in this paper is expected to lessen some of the burden and the difficulties experienced by diabetic patients in estimating staple food quantities. It will also help individuals to account for and to accurately incorporate the quantities of energy foods eaten per meal.

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