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Nutrient intake and consumption of indigenous foods among college students in Limpopo Province

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Objective. To determine the habitual diet and the consumption of indigenous foods among college students in Limpopo province.

Design. The sample consisted of 37 healthy student volunteers (18 males and 19 females) aged 23.3 ± 2.38 years, with a body mass index of 22.7 ± 2.32 kg/m^2. A validated quantitative food frequency questionnaire was used to collect information on the habitual diet of the participants. Nutrient analysis was done using FoodFinder.

Results. Mean dietary intakes were 10 042 kJ, 16.3% protein energy, 28.9% fat energy and 54.8% carbohydrate energy for females, and 12 050 kJ, 16.7% protein energy, 26.4% fat energy and 56.9% carbohydrate energy for males. The contribution of fat, carbohydrate and protein to total energy intake was similar for males and females. Frequency of food item consumption varied among students with indigenous foods consumed less often. Consumption of indigenous foods was similar in male and female subjects.

Conclusion. The habitual diet of the college students was estimated, and compared favourably with other reported data. However, patterns of indigenous food consumption were difficult to estimate. Although the number of indigenous foods used was high at 28 of 60 food items, consumption in terms of both quantity and the total number of students consuming these foods was low. Further studies are needed to determine the patterns of indigenous food intake and the contribution of these foods to total nutrient intake.

The traditional African diet has been linked with low incidence of chronic degenerative diseases.[1-3] Differences between the diets of urban and rural Africans have been reported.[1,3-5] Many researchers have explained the differences to be the result of westernisation.[1,3,5] Van Eeden and Gericke[5] found that when social status and income were similar, the dietary patterns of students from rural and urban areas were not much different, and meal composition was basically the same. However, the main differences that have been reported are more food variety,[1] more fat and less fibre in the urban diet[6] and more indigenous foods in the rural diet.[5,7-10] More recently, MacIntyre *et al.*[11] reported similar nutrient distribution in middle-class urban and rural subjects, with the urban subjects having more food variety. These authors reported a higher fat intake and lower carbohydrate intake in the upper-class urban subjects, suggesting that economic status may influence food choices.

Maintaining the meal composition of the traditional diet and inclusion of indigenous foods would be beneficial in preventing diseases. There are few data on nutrient composition and the contribution of all indigenous foods available in South Africa to the current diet of black South Africans. Several authors[6,12] have published dietary intake data obtained from studies conducted between 1975 and 1996. The traditional African diet was based mainly on harvested products[8] and natural indigenous foods collected from the fields and bush. Nowadays foods are purchased from vendors, spaza shops, general dealer shops, butcher shops and supermarkets. The diets of people in rural and urban areas seem to be influenced by the availability of food and the socio-economic status of the family.[5]

Assessment of changes from the traditional diet should be determined taking into account all factors that

influence eating habits. These factors include urbanisation, food availability, income level, social status, educational level, agricultural practices, and development with regard to housing, water and electricity.[13] A study of household diet and family income in the Eastern Cape[13] revealed deficiency in family energy intake and low income, such that at least 40% of rural families were living in a state of poverty.

Promoting traditional food requires knowledge of issues such as biological diversity and conservation in ecological settings. Despite lack of scientific knowledge, black people understand the benefits of indigenous food in maintaining their culture and in health promotion. Indigenous foods are being studied for scientific identification, nutrient composition, and cultural food use; however, there is still much to be learned. This article describes the consumption of indigenous foods in the diets of young adults. The main objective was to determine the habitual diet and consumption of indigenous foods by college students. Indigenous foods were considered to be those items or dishes forming part of the traditional diet of black Africans in pre-colonial times. Body mass index (BMI) was also determined from weight and height in order to describe the nutritional status of the subjects.

Methods

The population included Lemana College students (Vhembe district, Limpopo province) during the period 1995 - 1997. Subjects were recruited from among those living in the college residences. The criteria for inclusion were age between 18 and 30 years, BMI less than 27 kg/m^2, no known overt metabolic or cardiovascular disease, not on a medically prescribed or slimming diet, consumption of less than 30 alcoholic beverages per week, no more than 10 cigarettes per day, and a fasting capillary fingerprick blood glucose level of less than 6.7 mmol/l. Once recruited, the subjects were requested to sign a consent form after the study procedures had been explained to them fully. Ethical clearance for the study was obtained from North West University (Potchefstroom campus), while permission was obtained from the College Principal and Elim Hospital Superintendent. The setting was a primary health care clinic at Elim Hospital. The data collection took place over a 6-month period, with subjects visiting the clinic.

All the measurements were done by one researcher (XG). Weight and height were measured. Subjects were weighed to the nearest 0.1 kg, wearing light clothing and no shoes, using a digital scale, UC - 300 (A & D Precision Health, Japan). Measurements were taken twice. Height was measured to the nearest 0.1 cm using a stadiometer (Invicta metrimeasure, IP 1465). Repeat measures were also done. The BMI was calculated as weight (kg) divided by height in m^2. The classifications used were: < 18.5 kg/m^2 underweight; 18.5 - 24.9 kg/m^2 normal weight; 25 - 29.9 kg/m^2 overweight; and > 30 kg/m^2 obese.[11]

A validated quantitative food frequency questionnaire[11] was used to collect information on the habitual diet of the participants. Validation of the questionnaire has been described elsewhere.[11] Subjects filled in the questionnaire with the help of the researcher using a food-portion picture book designed for the purpose.[11] Subjects were assisted when they were unsure and the researcher ensured that all questions were responded to. Accuracy was ensured by repeated measurements for both weight and height. The estimation of food amounts was done using a food portion atlas and the researcher assisted the subjects when they were unsure of food items or if the food item was not listed. All data were collected by one researcher. The procedure for filling the questionnaire was explained in the local language, Xitsonga.

Nutrient analysis was done using FoodFinder.[14] Frequencies in percentages were used for the analysis of food consumption. *t*-tests were done for testing differences and a *p*-value of less than 0.05 was considered significant.

Results

Anthropometric measurements

The final sample consisted of 37 healthy student volunteers (19 females, 18 males) aged 23.3 ± 2.38 years, with a systolic blood pressure of 113 ± 9.96 mmHg, diastolic blood pressure of 73 ± 7.15 mmHg, and fasting blood glucose of 3.9 ± 0.77 mmol/l. The subjects were of normal weight and their BMIs were within the normal range. The mean height was 1.69 ± 0.08 m, mean weight 64.3 ± 8.99 kg and mean BMI 22.7 ± 2.32 kg/m^2.

Dietary habits and patterns

Meal patterns

The subjects reported meal patterns as follows: 5% ate 2 meals per day, 65% 3 meals per day, and 30% 4 meals per day. The main meals were provided in the hostel dining hall, but 53% reported that they sometimes prepared their own food in their rooms. Snacks were purchased from the tuckshop or local shopping centre. Subjects visited their homes 6 - 10 times per year for a stay of between 3 days and 4 weeks. Some of the food items were consumed when they visited their homes. The main meals were composed of starch, protein and 1 or more vegetable/s. The average food variety in the diet, calculated as the number of different food items used by the individual, was 59.5 ± 12.7. The males had less food variety than the females (54.7 ± 19.0 v. 64.0 ± 12.7). Indigenous foods contributed about 32% to total food variety, with 28 indigenous foods consumed and a

consumption rate of between 3% and 100% among individuals.

Starch sources

Starch foods consumed are listed in Table I in order of popularity. The top 10 most consumed starches in this group were stiff maize-meal porridge (100%), white rice (92%), brown bread (89%), soft maize-meal porridge (81%), white bread (70%), maltabella soft porridge (65%), whole maize on the cob (65%), samp and bean dish (62%), macaroni/spaghetti (51%) and vetkoek (49%).

Breakfast consisted of soft maize-meal or maltabella porridge and/or bread. Other breakfast cereals reported in order of popularity were oats (38%), cornflakes (35%), weetbix (5%) and rice crispies (3%). All subjects reported adding sugar and/or fresh whole milk to soft porridge and cereals. Bread was often taken with tea. Stiff maize-meal was eaten at either lunch or supper each day and alternated with rice. Macaroni/spaghetti were consumed as accompaniments to rice or maize-meal porridge and not as a main starch. Samp was used in a mixed dish with beans. Other starches reported are given in Table I.

Protein sources

The most popular protein source was chicken (Table I), followed by fish, beef, mutton, mopani worms, and pork. The following methods of chicken preparation were preferred, in order of popularity: stewed chicken feet, fried/boiled chicken, stewed chicken giblets, and roasted chicken. Chicken was eaten with stiff maize-meal porridge or rice. Types of fish and preferred preparation methods may be ranked as follows: fried fish in crumbs, pilchards in tomato sauce, tuna in oil, fish cakes, fried fish in batter, and curried fish. Fish was eaten with stiff maize-meal porridge, rice or bread. Five subjects reported that they were allergic to red meat and excluded it from their diets. Mopani worms were eaten by 60% of the subjects.

Processed meats and meat products were eaten with bread or as an accompaniment to maize-meal porridge (Table I). Other meat sources reported were locusts, a variety of domesticated birds and wild animals (Table I). The consumption of locusts was reported by 22% of the subjects. Legumes were eaten by some subjects as a protein source (Table I). Peanuts (59%) and dried beans (54%) were reported to be used in the preparation of mixed dishes. Other subjects ate peanuts as a snack (54%). All subjects (Table I) reported consuming fresh milk daily in soft porridge, in tea/coffee or as a drink. Only 19% reported consuming sour milk to accompany stiff mealie-meal porridge or as a drink. Total milk consumption was on average 125 ml per day. Yoghurt was reportedly consumed as a snack by 59% of the subjects.

Fruit and vegetables

Fruits were eaten daily at mealtimes or in between meals by almost all subjects. The popularity of fruits were as follows (Table I): apples (92%), oranges (84%), bananas (81%), mangoes (51%), guavas (43%), canned apricots/peaches (41%), grapes (38%), and fresh peaches (24%). For all subjects intake was reported to be between 2 and 4 fruits per day. Intake of a variety of wild fruit was reported by 22% of the subjects.

All subjects consumed tomato and onion on a daily basis. These vegetables were used in stews, to make gravy or in salads. Other vegetables used are given in Table I. Spinach and other indigenous vegetables (type unspecified) were grouped together in the questionnaire, therefore the reported frequency of spinach consumption (89%) also refers to consumption of other green leafy vegetables. The least popular vegetable was chickpeas. Potato and sweet potato were considered vegetables by the subjects and always accompanied the starch and meat. Indigenous vegetables consumed were pumpkin leaves and tendrils (3%) and dried green cowpea leaves (3%)

Other food items

All subjects reported adding salt to dishes when cooking, and to cooked food when eating. Other popular condiments were tomato sauce (96%) and mango atchaar (73%). Mango atchaar was consumed with bread by some subjects. Tea was used by 76% of the subjects while 51% reported using coffee. All subjects added sugar to tea, coffee and soft porridge. The most popular take-away foods were meat pies (54%) followed by hamburgers (43%) and sausage rolls (19%). For snacking, 54% reported eating potato chips or salted peanuts, while 24% used peanuts and raisins. Other snacking foods are listed in Table I.

All subjects used oil for cooking, while margarine was used by 84% to spread on bread or in cooking. Mayonnaise was used by 70% of subjects, mainly in salads but sometimes to add to food when eating. For dessert, subjects reported eating baked pudding (43%), jelly (41%), and canned apricots/peaches (41%) with custard (76%) or icecream (76%) as a sauce.

Carbonated colddrinks were consumed by 59% of the subjects. *Maheu* (a drink made from fermented cooked maize-meal porridge and other ingredients) was the most popular alcoholic drink (59%) and wine the least popular (3%). Other alcoholic drinks consumed were commercial beer (19%), and homemade beer, whisky or other spirits (3%). The use of alcoholic drinks in this group was low, with only 1 female and 7 male students using alcohol. Table I sets out details of other food items consumed by the subjects.

Nutrient intakes of subjects

The mean daily energy intake for both females and

Table I.	Frequency of food consumption (%)				
Starches					
Maize-meal porridge, stiff	100	Whole maize (on the cob)	65	Crackers	16
Rice, white	92	Samp and beans	62	Bread, wholewheat	8
Bread, brown	89	Macaroni/spaghetti	51	Rusks	8
Maize-meal porridge, soft	81	Vetkoek	49	Weetbix	5
Bread, white	70	Oats	38	Maize-meal porridge, crumbly	3
Maltabella porridge, soft	65	Cornflakes	35	Rice crispies	3
Meat and meat products					
Chicken, boiled/fried/roasted	95	Chicken giblets	41	Bacon	11
Polony	92	Vienna sausage	32	Springbok	8
Fish, fried	81	Liver, ox, fried	32	Dove	8
Beef, fried/braised/grilled	78	Boerewors/sausage	31	Heart, ox	8
Egg, boiled	70	Canned beef	27	Pigeon	5
Chicken feet, stew	65	Locusts	24	Other wild animals	5
Mutton, stew/roasted/grilled	65	Tuna, in oil	19	Hare	5
Mopani worms	60	Kidney, ox	16	Fish, curried	5
Tripe, ox	54	Rabbits	11	Beef, minced	5
Fish, canned pilchards	51	Egg, fried	11	Sparrow	3
Pork, roasted/grilled/spareribs	47	Fish cakes	11		
Hamburger	43	Ham	11		
Milk and milk products					
Whole milk	100	Cream, fresh	22	Condensed milk	11
Yoghurt, fruit	59	Sour milk	19	Skim milk powder	8
Cheddar, cheese	57	Whole milk powder	14		
Legumes					
Peanuts (samp bean dish)	59	Dried beans (varieties)	54	Baked beans, canned	3
Peanuts, roasted, salted	54	Peanuts & raisins	24		
Fruits					
Apple	92	Apricot, canned	41	Fruit cocktail, canned	8
Orange	84	Peach, canned	41	Fruit punch	8
Banana	81	Grapes	38	Pear, canned	3
Orange juice	76	Peach, fresh	24	Morula fruit	3
Mango, fresh	51	Wild fruit	22		
Guava	43	Apricot, canned	19		
Vegetables					
Tomato in gravy	100	Sweet potato, baked	62	Carrot, cooked	12
Onion	100	Carrot, raw	57	Sweet potato, cooked with sugar	5
Cabbage, cooked	89	Sweet potato, cooked	35		
Potato, boiled	89	Tomato, raw	34	Chickpeas	3
Spinach, cooked with oil	89	Potato, mashed	30	Pumpkin leaves and tendrils	3
Beetroot	84	Potato, chips	30	Dried green cowpea leaves	3
Pumpkin	84	Potato, roasted	16		
Lettuce salad	62	Potato salad	16		
Miscellaneous					
Oil, sunflower	100	Maheu (fermented maize-meal)	59	Butter	19
Salt	100			Sausage roll	19
Sugar	100	Potato chips, snack	54	Beer, commercial	19
Tomato sauce	96	Cornish pie	54	Bovril	14
Margarine	84	Chocolate	51	Meat spread, ham or bacon	11
Tea	76	Coffee	51	Coffee creamer	5
Custard	76	Jam	43	Beer, homemade	3
Icecream	76	Pudding	43	Chutney	3
Atchaar, mango	73	Sweets	41	Tomato paste	3
Mayonnaise	70	Jelly	41	Toppers	3
Peanut butter	70	Scones, homemade	38	Wine	3
Cookies, biscuits	65	Soup, packet	24	Whisky, spirits	3
Colddrink, carbonated	59	Cake, commercial	22		

Table II. Statistical significance levels for nutrient intakes v. RDA or EAR

Nutrient	Females (*N* = 19)	RDA (females)	*t*-test and *p*-value	DRI (EAR) (females)	*t*-test and *p*-value	Males (*N* = 18)	RDA (males)	*t*-test and *p*-value	DRI (EAR) (males)	*t*-test and *p*-value
Energy (kJ)	10 042	9 240	1.748	10 093	-0.111	12 050	12 180	-0.276	12 881	-1.763
Calcium (mg)	630.7	1 200	-6.204*	1 000	-4.024*	788.9	1 200	-4.360*	1 000	-2.239‡
Iron (mg)	16	15	0.969	8.1	7.652†	20.5	10	9.899†	6	13.671‡
Sodium (mg)	2 115.9	-	-	-	-	2196.6	-	-	-	-
Zinc (mg)	14	12	5.812†	6.8	20.923†	17	15	5.657†	9.4	21.496 †
Vitamin A (RE)	1 764	800	21.010†	700	23.189†	1 853	1 000	18.095†	900	20.216†
Thiamin (mg)	1.84	1.1	2.150§	0.9	2.732§	2.44	1.5	2.659§	1.1	3.790†
Riboflavin (mg)	1.85	1.3	1.598	0.9	2.761§	2.45	1.7	2.121§	1.3	3.253†
Niacin (mg)	21.2	15	5.405†	11	8.892†	27.8	19	7.467†	12	13.407†
Vitamin B_6 (mg)	1.33	1.6	-0.785	1.1	0.668	1.43	2.0	-1.612	1.1	0.933
Folic acid (µg)	232.7	150	5.768†	320	-6.089*	264.4	200	4.372†	320	-3.774*
Vitamin B_{12} (µg)	10.1	2.0	11.769†	2.0	11.769†	11.1	2.0	12.869†	2.0	12.869†
Ascorbic acid (mg)	126.1	60	14.406†	60	14.406†	128.4	60	14.510†	75	11.328†
Vitamin D (µg)	1.0	10	-26.153*	5	-11.624*	1.1	10	-25.173*	5	-11.031*
Vitamin E (mg)	13.33	8	9.293†	12	2.319§	13.23	10	5.481†	12	2.087

*Significantly low at 1% ($p = 0.01$).
†Significantly high at 1%.
‡Significantly low at 5% ($p = 0.05$).
§Significantly high at 5% ($p = 0.05$).
RDA = recommended dietary allowances (Food and Nutrition Board, NRC, 1989); DRI = daily recommended intakes;
EAR = estimated average requirement; RE = retinol equivalents.

Table III. Mean nutrient intakes (subjects aged 17 - 25 years, mean 23.3 ± 2.38 years)

Nutrient	Females (N = 19)	RDA (females)	DRI (females)	Males (N = 18)	RDA (males)	DRI (males)
Energy (kJ)	10 042	9 240	10 093	12 050	12 180	12 881
Total protein (g)	96.3	46	0.66/kg	118.3	58	0.66/kg
Animal protein (g)	60			70.9		
Plant protein (g)	36.1			47.2		
Total fat (g)	78.5			85.9		
P/S ratio	0.8			0.8		
Cholesterol (mg)	313	< 300		346.7	< 300	
Total carbohydrate (g)	318.9	130	100	393.7	130	100
Fibre (g)	24.9	25 - 30	25*	33.1	25 - 30	38*
Added sugar (g)	35.0			45.6		
Alcohol (g)	0.1			1.5		
Energy – protein (%)	16.3	12 - 15		16.7	12 - 15	
Energy – fat (%)	28.9	< 30		26.4	< 30	
Energy – carbohydrate (%)	54.8	> 55		56.9	> 55	
Energy – alcohol (%)	0.0			0.4		
Calcium (mg)	630.7	1 200	1 000	788.9	1 200	1 000
Iron (mg)	16	15	8.1	20.5	10	6
Sodium (mg)	2 115.9			2 196.6		
Zinc (mg)	14	12	6.8	17	15	9.4
Vitamin A (RE)	1 764	800	700	1 853	1 000	900
Thiamin (mg)	1.84	1.1	0.9	2.44	1.5	1.1
Riboflavin (mg)	1.85	1.3	0.9	2.45	1.7	1.3
Niacin (mg)	21.2	15	11	27.8	19	12
Vitamin B_6 (mg)	1.33	1.6	1.1	1.43	2.0	1.1
Folic acid (µg)	232.7	150	320	264.4	200	320
Vitamin B_{12} (µg)	10.1	2.0	2.0	11.1	2.0	2.0
Ascorbic acid (mg)	126.1	60	60	128.4	60	75
Vitamin D (µg)	1.0	10	5	1.1	10	5
Vitamin E (mg)	13.33	8	12	13.23	10	12

* Adequate intake.
RDA = recommended dietary allowances (Food and Nutrition Board, NRC, 1989); DRI = daily recommended intakes;
PS ratio = polyunsaturated to saturated fatty acid ratio; RE = retinol equivalents.

males did not differ significantly from either the recommended daily allowance (RDA) or the daily recommended intake (DRI) (Table II). The percentage contribution of protein, fat and carbohydrate also compared favourably with the recommendations, with a fat contribution of less than 30% (Table III). Total protein intake was almost double that recommended, with 59% being of animal origin and 41% of plant origin. Fibre intake compared favourably, with adequate intakes for both females and males.

The average intake of minerals for females was above the recommended or estimated average requirement, except for calcium which was significantly lower than both the RDA and estimated average requirement (EAR) levels ($p < 0.01$, Table II). The average vitamin intake was within the RDA and EAR except for folic acid and vitamin D. Folic acid intake was significantly lower than the EAR ($p < 0.01$, Table II) while vitamin D was significantly lower than both the RDA and EAR (Table II). Low vitamin D intake was to be expected since the main source is the sun. The same pattern was observed with the males, with significantly low intakes of calcium, folic acid and vitamin D

Discussion

The majority of the subjects (65%) in this study reported consuming 3 meals daily, namely breakfast, lunch, and supper, while Van Eeden and Gericke[5] reported 3 meals and a mid-morning snack in their home economics subjects. Stiff maize-meal porridge remains the most popular source of starch among the subjects, with daily consumption by all subjects. Regular consumption of traditional foods, with stiff maize-meal the most popular, followed by soft maize-meal porridge, samp, thin sorghum porridge, mealie-rice and (least popular) crumbly maize-meal porridge has been reported previously.[5,9] A samp-and-bean dish was consumed by 62% as a mixed dish, while others have previously reported 40% consumption of samp as

a main dish and 34.5% as a mixed dish.[5] The subjects in both studies were student teachers, but there were differences in ethnic composition – in this study 97% were Vatsonga, while only 4.7% in the other study were Vatsonga.[5] This could account for the difference in the consumption of samp as a main dish. Maize remains the most popular traditional food.

Chicken was the most preferred protein source. Mopani worms and ox tripe were among the 10 most consumed meat and meat products. Mopani consumption was more popular (60%) with the subjects than has been reported in an adult population in Venda (46% consumption).[9] Locusts, a traditional protein source, were consumed by 24% of the subjects, especially when they visited their homes. The most preferred cooking method for meat was frying, followed by roasting and then stewing. Other researchers have observed that their subjects preferred stewed (65.5%) to roasted meat (58.6%).[5] Milk consumption in this study was 100%, with an average intake of 125 ml per day. Others have observed a high consumption of milk (86%),[5] a low intake in an adult population[9] and a low intake of milk in children.[16] Sour milk, a traditional milk product, was consumed with maize-meal porridge or as a drink by some subjects.

Indigenous fruits were not popular with the students; only 22% reported consuming wild fruits. This could have been influenced by factors such as availability in the local market and in the tuckshop at the College. Other fruits were consumed on a daily basis depending on seasonal availability. The intake of fruit has been reported to be irregular in urban areas.[3] Vegetables were consumed on a daily basis. Indigenous vegetables, namely spinach, was consumed by 89% of the subjects. Other green leafy vegetables identified by name were not reported frequently as they were grouped with spinach. Pumpkin leaves and tendrils (3%) and dried green cowpea leaves (3%) were also consumed. Indigenous vegetable consumption was very low. Other factors contributing to this could have been unavailability and lack of popularity among young adults. Usually such foods are perceived to be of low class and eaten by people living in rural areas. The study period included three seasons (winter to early summer) in the Vhembe district (Limpopo province) and indigenous foods should have been available throughout.

Nutrient intakes for most nutrients fell within the RDA, with the exception of calcium at 50% of the RDA for females and 63% for males. Low calcium intake has also been observed at 38%[11] in rural women aged 25 - 34 years and at 58%[6] in rural adult women. The low calcium intake in this study could be due to the low quantity of milk and milk products consumed, although 100% of the students consumed milk. The total nutrient contribution of indigenous foods could not be determined because of the non-availability of nutrient composition data for some of the foods. Maize was the main carbohydrate source.

The results of this study indicate clearly that the consumption of indigenous foods in this group was low, while the contribution to nutrient intake was variable. Food variety was high in these subjects at 60 items with 28 being indigenous foods, compared with an average of 8 in schoolchildren[15] and less than 20 in adults.[9] Enjoying a variety of foods has recently been recommended in the South African food-based dietary guidelines.[16,17] The number of indigenous foods consumed was 28 out of a total 60 food items for all subjects, but this varied from 0 to 22 items individually. The quantities consumed were also reported to be low, on average 3 g per day. The nutrient intakes and the consumption of indigenous foods observed in this study confirm those reported elsewhere in similar subjects.

In conclusion, the total number of indigenous foods included in the diets of college student teachers was 28/60 (46.7%). However, the actual consumption in quantity was low and the total number of students consuming these foods was also low. Most of the indigenous foods were consumed occasionally and therefore their contribution to nutrient intake was minimal. In order to promote consumption of indigenous foods, underlying factors influencing their availability and accessibility should be addressed. Knowledge among black people of the benefits of indigenous foods in maintaining their culture and in health promotion may have been lost with the younger generation. Scientific investigation of nutrient value and chemical composition should be done and included with the nutrient analysis of other foods. This will enhance the advocacy for inclusion of such foods in the population's habitual diet.

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