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Reproducibility of a Culture-specific Dietary Assessment Questionnaire in the Adult Population of Trinidad and Tobago

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INTRODUCTION

- Global rates of chronic non-communicable diseases (NCDs) continue to increase at an alarming rate.
- Trinidad and Tobago has the highest prevalence of morbidity and mortality from chronic NCDs in the Caribbean accounting for 80% of total deaths.
- Trinidad and Tobago has several ethnic and cultural influences giving it a unique dietary intake pattern.
- Therefore a culture-specific dietary assessment questionnaire (DAQ) which includes local composite foods, mixed foods and street foods would identify the dietary patterns specific to population of Trinidad and Tobago.
- This DAQ can then be utilized to investigate the role of dietary intake in the high prevalence of NCDs in the country.

OBJECTIVE

To evaluate the reliability of the food group and nutrient intake estimates of a culture-specific semi-quantitative DAQ in the adult population of Trinidad and Tobago.

METHODS

- A 154-item electronic semi-quantitative DAQ for the Trinidad and Tobago population was created using Google forms.
- The questionnaire was administered twice, 3 months apart, to 91 participants ≥ 18 years.
- Food items were grouped according to the Caribbean 6 food groups; additional groups created were street foods, sweetened beverages, alcoholic beverages, sweets, and water.
- Intake estimates of 22 nutrients were determined using Nutrition Data System for Research version 2018.
- Reproducibility was determined with paired t-tests, bivariate correlations and cross-classifications using SPSS Version 26.

Trinidad & Tobago Dietary Assessment Study (TTADA)
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RESULTS

Table 1. Demographic characteristics of participants

	Male	Female	All
N (%)	19 (21)	72 (79)	91
Age (years), mean ± SD	36.9±9.5	38.7±9.6	38.4±9.6
Height (cm), mean ± SD	177.5±7.8	165.3±7.1	167.9±8.8
Weight (kg), mean ± SD	91.8±18.6	84.8±24.5	86.3±24.5
Waist circ. (cm), mean ± SD	93.8±10.6	93.2±16.2	93.3±15.2
BMI (kg/m^2), mean ± SD	29.5±6.1	30.5±7.9	30.5±7.9
BMI Categories, %			
Normal	26.3	25.0	25.3
Overweight	36.8	33.3	34.1
Obese	36.9	41.7	40.7
Education level, %			
Some University or above	84.3	90.3	89
Secondary School	15.7	9.7	11
Employment, %			
Employed	89.5	84.7	85.7
Unemployed	10.5	15.3	14.3
Exercise frequency, %			
≤1 per week	21.1	33.3	30.8
1-2 times per week	31.6	29.3	29.7
≥3 times per week	47.4	37.6	39.6
Chronic Disease Status (%)			
One or more NCDs	21.1	26.4	25.3
None	78.9	73.6	74.7

Table 2. Food group intake estimates of DAQ1 and DAQ2

Food Groups (N=91)	Mean±SD[a]			Corr[b]	Agreement[d]
	DAQ1[c]	DAQ2[c]	*p*-value	*r*	%
Staples	4.1±3.1	3.6±2.4	0.018	0.77*	81
Legumes	1.5±1.6	1.1±0.9	0.008	0.55*	81
Vegetables	3.4±3.0	2.8±2.5	0.019	0.66*	85
Fruits	3.7±5.9	3.2±4.3	0.222	0.75*	87
Food from Animals	3.7±3.4	3.2±2.5	0.037	0.74*	84
Fats and Oils	1.8±2.1	1.55±1.5	0.150	0.51*	77
Street Foods	0.7±0.7	0.7±0.8	0.659	0.50*	70
Sweets	0.8±1.3	0.7±1.1	0.333	0.66*	79
Water	6.5±2.9	5.1±3.3	<0.0001	0.58*	90
Sweetened Beverages	0.6±0.7	0.5±0.7	0.091	0.44*	79
Alcoholic Beverages	0.1±0.5	0.1±0.4	0.100	0.91*	92

[a] Determined with paired t-tests
[b] Determined with Pearson's correlations
[c] DAQ1 is the first administration, DAQ2 is the second administration of the electronic dietary assessment tool
[d] % agreement within 1 quintile of the exact match of the cross-classified ranked estimates between the two DAQs
*p<0.01 level (2-tailed).

Caribbean Six Food Groups

Table 3 Nutrient intake estimates of DAQ1 and DAQ2

Nutrients (N=91)	Mean±SD[a]			Corr[b]	Agreement[c]
	DAQ1	DAQ2	*p*-value	r [b]	(%)[d]
Energy (kcal)	**1951.1±1211.4**	**1643.3±812.8**	**<0.0001**	**0.8***	**85**
Carbohydrates (g)	257.1±186.2	212.0±119.1	<0.0001	0.8*	87
Protein (g)	77.2±47.5	65.7±32.8	0.001	0.7*	82
Fats (g)	72.8±43.2	62.5±32.1	0.002	0.7*	87
Saturated Fatty Acids (g)	20.9±12.9	18.2±10.3	0.008	0.7*	86
Omega3 (g)	2.6±1.53	2.3±1.1	0.010	0.6*	73
Trans fat (g)	1.0±0.76	0.9±0.6	0.068	0.7*	82
Cholesterol (mg)	233.1±257.6	195.8±216.8	0.021	0.8*	82
Fiber (g)	32.4±23.0	27.1±15.5	0.001	0.8*	89
Vitamin A (IU)	15571.6±11931.8	13166.3±9665.5	0.011	0.7*	89
Vitamin C (mg)	194.9±175.7	155.4±122.6	0.010	0.6*	85
Vitamin D (µg)	5.9±4.4	5.1±4.2	0.032	0.7*	77
Vitamin E (mg)	13.3±8.4	10.6±6.6	<0.0001	0.6*	84
Vitamin B12 (mg)	4.1±2.67	3.6±2.6	0.038	0.6*	67
Folate (µg)	561.2±373.9	461.3±241.8	<0.0001	0.7*	85
Choline (mg)	359.0±265.8	300.3±215.4	<0.0001	0.8*	78
Iron (mg)	16.2±10.0	13.6±7.3	0.001	0.7*	84
Calcium (mg)	756.4±541.8	679.3±396.5	0.057	0.7*	84
Phosphorus (mg)	1195.9±722.7	1023.1±517.7	0.001	0.8*	85
Sodium (mg)	3070.9±1588.6	2689.9±1347.7	0.003	0.7*	80
Potassium (mg)	3437.1±2553.3	2787.1±1548.2	<0.0001	0.8*	88
Zinc (mg)	10.4±6.5	8.8±4.6	0.001	0.7*	80

[a] Determined with paired t-tests
[b] Determined with Pearson's correlations
[c] DAQ1 is the first administration, DAQ2 is the second administration of the dietary assessment questionnaire.
[d] % agreement within 1 quintile of the exact match of the cross-classified ranked estimates between the two DAQs
*p<0.01 level (2-tailed).

CONCLUSION

The culture-specific DAQ has a good level of reproducibility for use in future studies to assess the eating habits and nutrient intake of adults living in Trinidad and Tobago.