

BACKGROUND

- The world's indigenous population experience worse health outcomes than their non-indigenous counterparts
- The Kuna Indians are an indigenous community primarily residing in indigenous zones on the mainland and on the San Blas islands off Panamá
- Globally, the increasing Westernization of diet and changes in lifestyle habits have been major contributors to increases in chronic disease
- The dietary cacao habits of the Kunas were initially studied in the early 1990s in an attempt to explain low levels of age-related hypertension compared to Panamá City residents
- No additional studies focusing on diet have been completed in the remote Kuna Indians living in the San Blas islands



OBJECTIVE

- To identify dietary patterns within the Kuna Indian community on the San Blas Islands and investigate sociodemographic correlates with dietary food items

METHODS

- Approvals:** The current research was developed by the 501(c)(3) non-profit organization Indigenous Health International (IHI), in collaboration with the Panamá Ministry of Health, the Kuna Congress, and the Gorgas Institute in Panamá
- Population:** Adult indigenous community members from an indigenous Kuna community in the San Blas Islands
- Demographic Factors:** Age, Sex, Education, Monthly Income, Martial Status, Literacy, Family Dependents
- Dietary Patterns:** Participants responded to questions about their diet by indicating the frequency they ate a number of specific food items.

- Categories of Food:** Food categories included
 - Fruits:** apple or pear; banana; grapes, watermelon, melon; papaya, pineapple; orange, lime or mango; other fruits that weren't listed, raisins, dried fruit
 - Vegetables:** squash, beans, spinach, broccoli, greens; lettuce, cucumber, cabbage; tomato, carrot
 - Cacao:** cacao or dark chocolate
 - Fish:** fish that has not been fried, canned tuna
 - Sodas:** soda, canned or boxed juice, artificially flavored drinks (ie. Kool Aid)
 - Fried foods:** tortilla, empanadas; French fries, fried plantain, fried yuca; fried sausage; fried nuggets; fried meats
 - Fast food:** McDonalds, Pío Pío, Burger King
 - Junk food:** chips, Doritos, caramels, chocolate bars
- Fruits, vegetables, fish, sodas, fried foods, cacao, and junk food were categorized for each individual as daily vs. not daily; Fast foods were categorized as weekly consumption vs. less than weekly
- Statistical Analysis:**
 - Univariate analyses were used to describe demographic variables
 - Unadjusted and adjusted models run to understand individual correlates of food types

RESULTS

Table 1: Sample Demographics

	Percentage
Age	
18-39	40.1%
40-59	32.4%
60-90	27.5%
Sex	
Male	27.0%
Female	73%
Education	
None	17.6%
Primary	28.6%
Secondary	53.8%
Monthly Income	
Don't Know	51.9%
<\$250	37.0%
>=\$250	11.1%
Married	
No	29.6%
Yes	70.4%
Literate	
No	20.7%
Yes	79.3%
Family Dependents	
1 to 5	25.0%
6 to 8	29.3%
9 to 11	24.0%
12 to 22	21.6%

RESULTS cont.

Table 2: Dietary Habits

Food Category	Percentage (95% Confidence Interval)
Fruits	64.9% (58.1-71.4)
Vegetables	9.0% (5.5-13.7)
Cacao	42.9% (36.1-49.8)
Fish	42.5% (35.7-49.6)
Sodas	42.7% (35.9-49.6)
Fried Food	46.9% (40.0-53.9)
Fast Food	84.4% (78.7-89.0)
Junk Food	10.9% (7.0-15.9)

Table 3: Dietary Habits by Sociodemographic Factors

	Fruits	Vegetables	Cacao	Fish	Sodas	Fried Food	Fast Food	Junk Food
Age	p=0.23	p=0.03	p=0.99	p=0.12	p=0.05	p=0.16	p=0.001	p=0.50
18-39	57.8%	7.2%	42.7%	40.2%	38.6%	48.2%	73.5%	13.3%
40-59	70.2%	16.4%	43.3%	35.4%	35.8%	53.7%	86.6%	11.9%
60-90	68.4%	3.5%	43.9%	53.6%	56.1%	36.8%	96.5%	7.0%
Sex	p=0.52	p=0.94	p=0.09	p=0.70	p=0.60	p=0.82	p=0.001	p=0.70
Male	68.4%	8.8%	33.3%	40.4%	45.6%	45.6%	70.2%	12.3%
Female	63.6%	9.1%	46.4%	43.3%	41.6%	47.4%	89.6%	10.4%
Education	p=0.20	p=0.86	p=0.71	p=0.17	p=0.72	p=0.99	p<0.001	p=0.47
None	80.0%	11.4%	48.6%	45.5%	45.7%	45.7%	100.0%	5.7%
Primary	66.7%	8.8%	40.4%	48.2%	42.1%	47.4%	96.5%	14.0%
Secondary	63.6%	8.4%	41.5%	34.0%	38.3%	46.7%	71.0%	11.2%
Monthly Income	p=0.05	p=0.22	p=0.02	p=0.001	p=0.02	p=0.52	p<0.001	p=0.04
Don't Know	72.2%	6.5%	51.4%	54.8%	50.9%	50.0%	95.4%	15.7%
<\$250	57.1%	7.8%	37.7%	28.6%	29.9%	41.6%	70.1%	5.2%
>=\$250	52.2%	17.4%	21.7%	30.4%	47.8%	47.8%	78.3%	4.4%

CONCLUSIONS

- Women and the 60-90 year old age group reported eating more fast food than men and the 18-39 age group
- Those with a secondary/university level of education ate significantly less fast food than those with only a primary level of education and those with no education
- The group with a monthly income below \$250 ate a significantly less fast food than those with an unknown level of income
- 43% reported eating fish daily with the group reporting a monthly income below \$250 eating significantly less than those with an unknown level of income

IMPLICATIONS

- The most vulnerable groups (women, elderly, low income, low education) reported higher intake of fast food.
- The most vulnerable group based on income had the highest intake of fish, which may indicate traditional reliance of this staple diet item is still important for this subset of the population.
- Results suggest that the community could benefit from efforts to increase cultivation in order to reduce the percentage of energy consumption contributed by fast food, fried food, and junk food, and support the reliance on fish as a protein option.
- Further research is needed to develop culturally relevant nutrition programs, particularly with the lowest income subset of the island Kuna population.

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