

## Introduction:

Indigenous women in Ecuador are the poorest segment of the population and suffer from malnutrition.



Source: ENSANUT 2014, INEC

- 36.5% of indigenous children are stunted and 24.6% are obese
- 13% of adult women with BMI $\geq$ 25 have stunted children (H/A $<$ -2SD)
- 8.5% of indigenous women with BMI $\geq$ 25 are also anaemic (hg $<$ 12g/dl)

## Research Question:

Are the traditional diets of indigenous women in Guasaganda nutritionally adequate?

## Objective:

Evaluate the nutritional contribution of Traditional Foods' (TFs) intake to indigenous women in Guasaganda, Central Ecuador

## Indicators:

- Nutrient Adequacy Ratios
- Mean Adequacy Ratio
- Food Variety Score
- Women Dietary Diversity Score
- Food intake in g

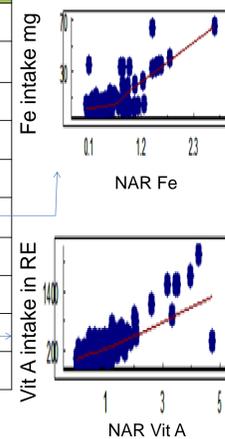
## Methodology:

- Random selection of participants (indigenous adult women)
- 18 villages in Guasaganda
- Villages identified by GPS coordinates
- N = 260  $\rightarrow$  24-h recalls Interviews were repeated to the same respondents after 14 d
- n = 127  $\rightarrow$  Food Frequency Questionnaires
- Food Composition Tables of Central America, PERU and Ecuador
- Portion size of food was measured using a standard cup, dish and spoon
- Plants were collected for identification
- TFs were used for recipe preparation
- Nutrient losses were corrected according to cooking method
- Sportfire S+ was used for summary statistics and linear regression

## Results:

### Nutrient contribution of Traditional Food intake

Nutrient	Nutrient Adequacy Ratio	Mean intake TFs foods (SD)	% contribution TFs to total intake	R <sup>2</sup>
Energy (kcal)	0.67	515.7 (225.2)	38.6	0.26
Protein (g)	1.30	30.0 (19.0)	<b>63.6</b>	0.36
Total fat (g)	0.52	15.5 (9.8)	43.9	0.35
Carbohydrates Total (g)	1.29	56.4 (34.5)	26.1	0.05
Fibre (g)	0.35	4.9 (5.0)	55.1	0.33
Calcium (mg)	0.52	235.8 (198.3)	59.4	0.56
Iron (mg)	1.49	5.5 (8.7)	54.5	<b>0.61</b>
Zinc (mg)	1.01	3.5 (2.3)	59.3	0.50
Vitamin A (RE)	0.88	213.1 (259.0)	52.2	<b>0.67</b>
Vitamin C (mg)	1.62	85.9 (133.9)	<b>70.1</b>	0.37



### Consumption of Traditional Foods

WDDS food group	Scientific name Author	Median g	Frequency
<b>Starchy staple foods</b>			
Plantain	<i>Musa x paradisiaca</i> L.	87.5	2.5 times/week
Cassava	<i>Manihot esculenta</i> Crantz	58.4	1 time/week
Maize	<i>Zea mays</i> L.	33.6	1 time/month
Taro/Papa china	<i>Colocasia esculenta</i> (L.) Schott	38.2	1time/month
<b>Dairy Milk</b>			
		183.1	3 times/week
<b>Flesh foods</b>			
Beef	<i>Bos taurus</i>	32.3	1 time/week
Chicken	<i>Gallus gallus domesticus</i>	36.9	1 time/week
Freshwater fish	Eight species merged	41.6	1 time/week
Pork	<i>Sus domesticus</i>	51.8	1 time/ week
<b>Eggs</b>			
		49.4	2 times/week
<b>Vitamin A-rich dark leafy veg.</b>			
Hierbita	<i>Coriandrum sativum</i> L.	2.4	7 times/week
Culantro	<i>Eryngium foetidum</i> L.	1.8	1 time/week
<b>Other vitamin A-rich veg. and fruits</b>			
Banana	<i>Musa acuminata</i> Colla	164.4	3 times/week
Papaya	<i>Carica papaya</i> L.	182.9	1 time/week
Baby Banana	<i>Musa acuminata</i> Colla	52	1 time/week
Pumpkin	<i>Gurania</i> sp.	77.3*	1 time/month
<b>Other fruits</b>			
Oranges	<i>Citrus maxima</i> (Burm.) Merr.	185.2	4 times/week
Tree tomato	<i>Solanum betaceum</i> Cav.	91.7	2 times/week
Mandarines	<i>Citrus reticulata</i> Blanco	120	2 times/week
<b>Beans and peas</b>			
Faba beans	<i>Vicia faba</i> L.	17.5	1.5 times/week
Red beans	<i>Phaseolus vulgaris</i> L.	60.3	1 time/month
<b>Nuts and seeds</b>			
Peanut	<i>Arachis hypogaea</i> L.	10.9	2 times/month

### Nutrient adequacy of the diet

MEAN Adequacy Ratio (MAR) = **0,79**  
( $\Sigma$ NAR/10)

### Diversity of the diet

Women Dietary Diversity Score = **7**  
(10 food groups)

Food Variety Score = **23**

140 different foods  
69 traditional food items

Plantain is the most consumed traditional starchy food with 6% of total energy intake

60% of the population consumes more than the required 36.3 g/day of protein

Green leafy vegetables provide with 4% of the total vitamin A intake

Banana is the most frequently consumed fruit

Oranges contribute to 45% of total vitamin C intake

The consumption of red beans contributes to 29% of total iron intake

## Conclusions:

- The traditional diet of indigenous women is adequate in most of its nutrients, although energy intake was low.
- Eating regularly plantain (*Musa Paradisiaca* L.) and banana (*Musa acuminata* Colla) is important for reaching nutrient recommendations.
- The mean consumption of beef is adequate for a healthy diet, but subjects eating more than 50 g/day should reduce its consumption to the latter maximum to prevent cancer and maintain low Greenhouse Gas Emissions.
- Malnutrition can be prevented if traditional eating is practiced. Future healthy-eating interventions in the area should transmit educational messages promoting the consumption of traditional foods.