Introduction

The Galapagos Islands are located 600 miles off the west coast of Ecuador in the Pacific Ocean. There are approximately 28,000 people living on five inhabited islands in the Galapagos (Galapagos Conservancy, 2008). San Cristobal Island is one of the five inhabited islands in the archipelago, and all of the islands are part of Ecuador.

Residents of the Galapagos Islands are primarily people who have emigrated from mainland Ecuador. The primary industry in the Galapagos is tourism, which brings approximately 150,000 people to the islands every year (Watkins, 2007). Because of the tourism industry, the socioeconomic status of Galapagos residents is higher than most other provinces of Ecuador, drawing people to the islands to live and work. However, the cost of living on the islands is high (Page, 2013).

In 1959, in response to human settlement on the Galapagos and concerns about environmental and wildlife conservation, the Ecuadorian government created the Galapagos National Park, which turned 97% of the land on the Galapagos into a protected conservation area, and restricted 3% of the land for human settlement. Since then, there has been more pressure to restrict human migration, land use, and agricultural production on the islands in order to protect the natural environment (Watkins, 2007).

Agricultural production has historically happened on the Galapagos Islands, even with the limited space allowed for human domestication. In recent years, international conservation pressures have resulted in government regulations that have made farming on the islands difficult (Novy, 1999). These regulations are meant to protect the environment, and include limitations on which species can be grown on the island. These limitations have decreased farmers’ abilities to diversify crops, increasing competition amongst farmers and making farms less resilient to pests.
and disease. Additionally, farming is done in the highlands, and transportation into town to sell produce is burdensome for farmers. Because of the transportation costs and restrictions, food grown on the island is usually more expensive than food shipped in from mainland Ecuador. All of these factors have made the fishing and tourism industries more profitable than farming, and farming on the islands has steadily decreased (Watkins, 2007). Overall in Ecuador, agriculture makes up only 8% of the economy, with the largest economic sector being the service sector (68%) and industry making up the remaining 24% (Waters, 2006).

The Galapagos Islands are a somewhat vulnerable place to live, as nearly everything needed for human habitation on the island is shipped from mainland Ecuador. Food that is shipped from the mainland is subsidized, which is another reason why it is generally cheaper than food that is grown on the island (Watkins, 2007; Novy, 1999). However, the produce sometimes arrives over ripe or rotten, as it is generally uncovered on the boats and has to travel 600 miles to the islands. Additionally, ships may not make it to the island at all, if a ship has to skip one of the islands for some reason (Page, 2013). This may lead to island-wide food insecurity because residents are unable to get the types of foods that they desire due to unavailability.

Most research to date in the Galapagos Islands has focused on the natural environment, resulting in permanent residents often feeling ignored. There has been one study prior to this one that has focused on the quality of life for human inhabitants of the Galapagos Islands (Page, 2013). This study of mother-child dyads took place on Isla Isabela. Evidence of the nutrition transition was found, as well as a high prevalence of other health-related issues, such as poor water quality, lack of access to medical care, and depression. The nutrition transition is characterized by a shift from traditional diets high in fiber and complex carbohydrates to diets
high in fats, sweeteners and processed foods (Popkin, 2002). With this shift in dietary patterns comes a shift in disease burden, with increasing rates of overweight and obesity leading to noncommunicable diseases.

In this study, we aimed to characterize the current food environment on the island and determine how the nutritional health of mothers and children are affected. Problems associated with food access will hopefully shed light on barriers to food security on the island, and typical intakes of mothers and children as well as general weight patterns will be described. We will frame our findings in the context of the global nutrition transition.

Methods

To better understand the food environment on San Cristobal Island, we analyzed food access and typical dietary practices of mothers with children between one and six years of age. Two of our primary tools were the Spanish language United States Department of Agriculture (USDA) Household Food Security Questionnaire, and non-quantified 24-hour dietary recalls. We also collected anthropometric data to assess mother and child weight status.

Study Population

In-depth interviews were conducted with twenty mothers living on San Cristobal with children between one and six years old (Table 1). Sampling was performed by convenience and word of mouth.
Table 1. Population demographics.

<table>
<thead>
<tr>
<th>Demographic Variable</th>
<th>Sample, n = 20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child sex</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>10 (50%)</td>
</tr>
<tr>
<td>Female</td>
<td>10 (50%)</td>
</tr>
<tr>
<td>Child Age, mean</td>
<td>3.6 years</td>
</tr>
<tr>
<td>Child Age Range</td>
<td>20 months – 6 years</td>
</tr>
<tr>
<td>Child BMI, mean</td>
<td>16.0 kg/m²</td>
</tr>
<tr>
<td>Child BMI Standard Deviation</td>
<td>1.1 kg/m²</td>
</tr>
<tr>
<td>Child BMI Z-score, mean</td>
<td>0.12</td>
</tr>
<tr>
<td>Child BMI Z-score Standard Deviation</td>
<td>0.93</td>
</tr>
<tr>
<td>Mother Age, mean</td>
<td>29.9 years</td>
</tr>
<tr>
<td>Mother Age Range</td>
<td>20 – 44 years</td>
</tr>
<tr>
<td>Mother BMI, mean</td>
<td>26.9 kg/m²</td>
</tr>
<tr>
<td>Mother BMI Standard Deviation</td>
<td>3.5 kg/m²</td>
</tr>
</tbody>
</table>

In-depth Interviews

A graduate student in Nutrition from the University of North Carolina at Chapel Hill, Beth Hopping, conducted the interviews in Spanish, and respondents dictated whether the interview took place in their homes or place of business. Interviews took approximately 45 minutes to complete and respondents were compensated US$10 for their time. Informed consent was obtained from each respondent prior to beginning participation. The interviews were audio recorded and were transcribed and translated into English by a third party. The Institutional Review Board of the University of North Carolina at Chapel Hill approved the study protocol.

These interviews were semi-structured. Mothers were asked about problems associated with living on the island, their perceptions of their own health and their children’s health, transportation and shopping habits, education level, employment, and father involvement.
Anthropometric Data

Height and weight were collected for each mother and child dyad. We used body mass index (BMI) to assess the prevalence of underweight, healthy weight, overweight and obesity in the population. For mothers, a BMI of less than 18.5 kg/m$^2$ is considered underweight, 18.5-25.00 kg/m$^2$ is normal, 25.00-30.00 kg/m$^2$ is overweight, and a BMI of greater than 30.00 kg/m$^2$ is considered obese (WHO). For children, we used BMI z-scores and growth charts from the US Centers for Disease Control and Prevention (CDC) to assess underweight, normal weight, overweight and obese status. A child whose BMI Z-score falls below the 5$^{th}$ percentile is considered underweight, a BMI Z-score between the 5$^{th}$ percentile and the 85$^{th}$ percentile is considered to be a healthy weight, 85$^{th}$-95$^{th}$ percentile is classified at overweight, and above the 95$^{th}$ percentile is considered obese. Stunting, defined as a height-for-age that is at least two standard deviations below the mean on standard growth charts (UNICEF), was also used as a means to assess child nutrition status.

Food Security Questionnaire

Food security is the condition in which all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life (Coleman-Jensen, 2013). The Spanish version of the USDA Household Food Security questionnaire was administered to each mother and scored according to USDA guidelines (Bickel, 2000). Using the USDA methodology, food security can be broken down into four levels: high food security, marginal food security, low food security, and very low food security. High food security indicates no trouble accessing or purchasing food throughout the past twelve months. Marginally food secure households indicate some trouble with food access, usually related to anxiety about the ability to purchase food, but
report no decreased food intake or compromised diet quality. Low and very low food security are defined as food insecure, and in both categories households experience reduced quality, variety, or desirability of diet. Very low food secure households report disrupted eating patterns and reduced food intake (Coleman-Jensen. 2013). Households are considered to be food secure if they fall into the high or marginal food security categories, and households are considered food insecure if they fall into the low or very low food security categories.

24-Hour Dietary Recalls

Non-quantified 24-hour dietary recalls were collected for each mother and child dyad. These were used to assess individual dietary diversity for mothers and children using the Food and Agriculture Organization of the United Nations (FAO) dietary diversity scoring guidelines (FAO, 2008). This methodology includes thirteen food group categories: cereals; vitamin A-rich vegetables and tubers; white tubers; dark leafy green vegetables; other vegetables; vitamins A-rich fruits; other fruits; organ meat; flesh meat; eggs; fish; legumes, nuts, and seeds; and milk and milk products. Dietary diversity scores are calculated as the sum of the number of food groups represented in an individual’s diet in the 24-hour period captured in the dietary recall. The FAO defines low dietary diversity as fewer than three of the thirteen food groups consumed in one day, medium dietary diversity as four or five food groups, and high dietary diversity as more than six food groups consumed. Using these categories, dietary diversity has been demonstrated to be an effective tool for approximating dietary quality and child nutritional status (Kant, 1998; Airmond, 2004; Daniels, 2006).
Results

Anthropometric Analysis

Most of the mothers interviewed were classified as overweight or obese. None of the mothers interviewed were classified as underweight, while 25% fell into the normal BMI category, 55% were overweight, and the remaining 20% of mothers were obese. Maternal BMI followed an upward trend with food security status (Table 2), with mothers from the least food secure households having the lowest mean BMI and mothers from the most food secure households having the highest mean BMI.

Table 2. Mean maternal BMI by food security level.

<table>
<thead>
<tr>
<th>Food Security Level</th>
<th>Mean Maternal BMI, kg/m²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Low Food Security, n = 4</td>
<td>25.94</td>
</tr>
<tr>
<td>Low Food Security, n = 7</td>
<td>27.11</td>
</tr>
<tr>
<td>Marginal Food Security, n = 7</td>
<td>26.11</td>
</tr>
<tr>
<td>High Food Security, n = 2</td>
<td>30.97</td>
</tr>
</tbody>
</table>

Of the twenty mothers interviewed, 75% reported trying to lose weight. Respondents who wanted to lose weight often referred to themselves as “plump” or “fat.” When asked if they would like to gain, lose or maintain their current weight, these mothers typically responded:

“I would like to lose some weight because I feel fat this way.”

(31 years old, very low food security)

“I am always trying to lose weight. I have always been that way.”

(39 years old, low food security)

“[I am] trying to lose weight, but it’s hard to keep with it but the temptation is still there; people around me eat yummy things, but yes, I would like to lose weight.”

(32 years old, high food security)
Five of the mothers who were trying to lose weight reported thinking that their bodies were “fine” or “normal” sized. Only two mothers wanted to maintain their weight, and three mothers said they were trying to gain weight. One of these mothers was pregnant and was trying to gain weight for pregnancy. Only one mother reported that she felt too skinny, and she was from a food insecure household.

In this population, 85% of the children were a healthy weight. Only three children (15%) were classified as overweight, and there were no underweight or obese children. All three of the overweight children were from households that were food insecure, and two of them were from households with very low food security. Only one child was stunted, and the remaining 95% of the children in this population were at a normal height-for-age. Mothers often stated that their children were in good health, and related their good health to food:

“[His health is] good, I think…. It’s because of his nutrition and everything I give him. Lots of veggies and fruit smoothies.” (35 years old, marginal food security)

Food Security

Study participants reported high levels of food insecurity. Over half of the population studied was food insecure (55%), with 20% of the population experiencing very low food security. Only two households (10%) reported a high level of food security.
Figure 1. Household food security level distribution.

Limited availability of acceptable produce was cited as a problem on the island by 60% of mothers. In response to a question about the variety and types of food available on the island, one mother said:

“Well, it’s not because we don’t have enough for us specifically, it’s just that sometimes there is not enough on Galapagos. So sometimes yes, there was a time when all the food on the boats went bad, so there were no fruits and there were no veggies, so we could only get onion, tomato, and there was no variety. When there are boats there is enough of everything, but when there’s not, it’s bad.” (38 years old, marginal food security)
Dietary Diversity

There was a wide range of dietary diversity on the island. For children, dietary diversity scores ranged from 2-9, with a mean of 5.85. Three children (15%) had low dietary diversity scores (<3 food groups), while more than half of children experienced high dietary diversity (≥6 food groups) (Figure 2). There were no trends observed between child age and dietary diversity.

Maternal diets tended to be less diverse than their children’s; the mean dietary diversity score for mothers was 4.7, and only three mothers reported having more highly diverse diets than their children. One third of mothers reported highly diverse diets, as compared to over half of the children having highly diverse diets, and 30% of mothers reported low dietary diversity (Figure 3). Within the same household, it was not uncommon for mothers to report consuming three fewer food groups per day than their children.

**Figure 2.** Child dietary diversity score distribution (n = 20).
**Figure 3.** Maternal dietary diversity score distribution (n = 20).

*Low dietary diversity: light spots
Medium dietary diversity: medium spots
High dietary diversity: dark spots

Child dietary diversity was related to household food security status. Children in households with high food security consumed on average 3.5 more food groups than children in households with very low food security. Children in households that had low or marginal food security both consumed approximately six food groups per day, which is slightly higher than the overall dietary diversity average for this population. Maternal dietary diversity, however, did not appear to be impacted by food security status. Mean maternal dietary diversity did not fluctuate with food security level. Mothers experiencing the highest levels of food security reported less than one food group more on average than mothers experiencing the lowest food security (Figure 4).
Figure 4. Mean dietary diversity by food security level.

Typical Dietary Intake

Among children, the most commonly consumed foods included cereals (consumed by 100% of children), milk and milk products (90%), and soup (90%). The soup was generally homemade, and the ingredients of the soup were counted in the dietary diversity analysis (i.e., chicken noodle soup was counted as both a meat and a grain, and vegetable soup was counted as a vegetable).

The majority (65%) of children consumed a snack, and 40% of children reported consuming fried foods. Soda and sweets were relatively uncommon; only 10% reported consuming soda, and 25% consumed a dessert. These trends are represented visually in Figure 5.
Figure 5. Combined mother and child 24-hour dietary recall “wordle”; the larger the word, the more often it was reported by both mothers and children.

Cereals and “other” vegetables were consumed by more than half of children in all three dietary diversity levels. The majority of children with medium dietary diversity also consumed meat, dairy products, eggs, and “other” fruits. Children with high dietary diversity additionally consumed vitamin A-rich fruits and legumes, nuts and seed (Table 3). Commonly consumed foods for mothers were similar, except that the majority of mothers did not report eating eggs or fruit, and mothers reported consuming more meat and fish than their children (Table 4).
Table 3. Child commonly consumed foods.

<table>
<thead>
<tr>
<th>Low Dietary Diversity (1-3), n = 3</th>
<th>Medium Dietary Diversity (4-5), n = 6</th>
<th>High Dietary Diversity (6+), n = 11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cereals</td>
<td>Cereals</td>
<td>Cereals</td>
</tr>
<tr>
<td>Other vegetables</td>
<td>Other vegetables</td>
<td>Other vegetables</td>
</tr>
<tr>
<td>Meat</td>
<td>Meat</td>
<td>Milk and milk products</td>
</tr>
<tr>
<td>Milk and milk products</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eggs</td>
<td>Eggs</td>
<td>Other fruits</td>
</tr>
<tr>
<td>Other fruits</td>
<td></td>
<td>Vitamin A rich fruits</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Legumes, nuts and seeds</td>
</tr>
</tbody>
</table>

*Foods consumed by ≥50% of children in each category

Table 4. Maternal commonly consumed foods.

<table>
<thead>
<tr>
<th>Low Dietary Diversity (1-3), n = 6</th>
<th>Medium Dietary Diversity (4-5), n = 7</th>
<th>High Dietary Diversity (6+), n = 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cereals</td>
<td>Cereals</td>
<td>Cereals</td>
</tr>
<tr>
<td>Other vegetables</td>
<td>Other vegetables</td>
<td>Other vegetables</td>
</tr>
<tr>
<td>Meat</td>
<td>Meat</td>
<td>Meat</td>
</tr>
<tr>
<td>Fish</td>
<td>Fish</td>
<td>Milk and milk products</td>
</tr>
<tr>
<td>Milk and milk products</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vitamin A rich fruits</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Legumes, nuts and seeds</td>
</tr>
</tbody>
</table>

*Foods consumed by ≥50% of mothers in each category

A typical child breakfast consisted of bread, eggs, and a dairy product; lunch and dinner usually included soup, rice, a fruit or vegetable, and either fish, beans, or meat. Fruit, vegetables, chips, oatmeal or cereal, or sweets were typical snacks. Milk and juice would be consumed with meals. A typical maternal diet would be similar, with more fish consumed during lunch and dinner.

Compared with the two households reporting high food security, the four households with very low food security ate simpler diets with fewer snacks and processed foods. While 90% of the study population reported consuming soup in the 24-hour recall period, neither mothers nor children in the high food security households reported consuming soup. Both children in the high food security households had snacks during the day (three snacks each), but only one out of
four children from the very low food secure households reported having a snack. Additionally, mothers and children in highly food secure households reported consuming many different types of food. On average, mothers and children in the high food security households consumed 9.75 different types of food per day, as opposed to an average of 4.75 food groups per day in the very low food security households. This is not reflected in dietary diversity, as the different types of food consumed in the high food security households did not necessarily come from a variety of food groups. Low food security households consistently reported consuming rice and soup, while the high food security households reported consuming foods like hot dogs, sausages, sandwiches, and more highly processed foods. These patterns are summarized in Table 5.

**Table 5.** Comparing dietary patterns of High and Very Low food security households

<table>
<thead>
<tr>
<th>Dietary Pattern</th>
<th>High Food Security, n = 2</th>
<th>Very Low Food Security, n = 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Types of food, mean</td>
<td>9.75</td>
<td>4.75</td>
</tr>
<tr>
<td>Typical foods</td>
<td>Hot dogs, sausages, cake</td>
<td>Rice, soup</td>
</tr>
<tr>
<td>Processed foods</td>
<td>75%</td>
<td>33%</td>
</tr>
<tr>
<td>Soup consumption</td>
<td>0%</td>
<td>100%</td>
</tr>
<tr>
<td>Child snacks</td>
<td>100%</td>
<td>25%</td>
</tr>
</tbody>
</table>

**Discussion**

There are high rates of food insecurity on San Cristobal Island, which is consistent with findings elsewhere in Latin America (Isanaka, 2007). Food security is a measure of food access, which reflects both the economic situation of the household and physical access to food on the island (Coleman-Jensen, 2013). As has been found elsewhere (Page, 2013), the reliance on boats
for produce on the island results in an uncertain food supply for this population. Mothers reported not always having access to the types and variety of food that they desired because the boats do not reliably ship acceptable produce to the island. Therefore, while there are high levels of food insecurity on San Cristobal, it is not necessarily because the people living there do not have enough money to buy food. Living on the island yields a baseline level of food insecurity because of the dependence on boats to bring produce.

In this population, food security was associated with dietary diversity in children; children in the most food secure households had the highest dietary diversity scores, while children in the households with very low food security reported the lowest dietary diversity. However, overall child dietary diversity on San Cristobal Island was high. Even children living in households with low food security tended to consume highly diverse diets, and children experiencing very low food security tended to consume diets classified as “medium” dietary diversity. Therefore, while food security and dietary diversity appear to be related on San Cristobal, the high rates of food insecurity do not seem to negatively impact overall dietary quality in children. Most children ate meat daily, as well as eggs and dairy products. Additionally, the vast majority of children were at a healthy weight, and there was only one case of stunting in this population. This is different from the rest of Ecuador, where the overall prevalence of stunting in children under 5 years old is 29% (WHO Global Heath Observatory). This suggests that on the whole children on San Cristobal are getting adequate nutrition, especially since overall mothers perceived their children to be healthy.

While child dietary diversity was associated with food security status, maternal dietary diversity did not fluctuate with food security status. Additionally, maternal dietary diversity was consistently lower than their children’s. In the food insecure households, it makes sense that both
mothers and children would have lower dietary diversity scores. Mothers reporting lower dietary diversity scores than their children in food insecure households might be due to mothers attempting to protect their children from the effects of food insecurity; they may be consuming lower quality diets so that their children are able to maintain high quality diets. This phenomenon as has been described in previous studies (Hanson, 2007; Olson 2005).

However, it is strange that child dietary diversity increases with food security level and maternal dietary diversity does not. In households that are food secure, mothers having lower dietary diversity than their children might be due to maternal desires for weight loss. Of the nine food secure households, seven mothers reported that they wanted to lose weight. All seven of these mothers had lower dietary diversity scores than their children, while the other two mothers in this category (who did not report a desire to lose weight), had either the same or higher dietary diversity scores than their children. This suggests that the lower dietary diversity scores observed for mothers in the food secure households might be due to mothers dieting in an attempt to lose weight. This high rate of desired weight loss was also observed on Isla Isabela in the Galapagos Islands (Page, 2013).

Our study revealed an association between maternal BMI and food security status on San Cristobal Island; mothers in the highest food security level households were heavier than mothers in the lowest food security households. This trend has been described in the United States as well (Hanson, 2007; Olson, 2005). However, for children the opposite was true. The three overweight children in this dataset were all from food insecure households, and all of the children in food secure households were normal weight. It is unclear why there seems to be opposing trends between mothers and children on San Cristobal Island when it comes to BMI and food security status. It is possible that in the food insecure households mothers decrease their
food intake in order to make sure that their children get enough to eat, resulting in lower maternal BMI’s in food insecure households than in food secure households. If these mothers experienced decreased food intake while they were pregnant, it is possible that their children have a higher propensity to gain weight early in life (Hales, 2001), resulting in children from food insecure households being more likely to be overweight than children from food secure households. Decreased maternal intake during and after pregnancy in food insecure households could be the cause behind the opposing trends observed on San Cristobal Island.

Evidence of the nutrition transition can be found on San Cristobal Island when comparing the dietary patterns of the highest food security households with those of the lowest food security households. Mothers and children in households with high food security ate more processed foods, such as hot dogs and cake. Conversely, mothers and children experiencing very low food security consumed fewer processed foods, and overall their diets were more traditional, with soup, rice, vegetables and some protein being dietary staples. There was one mother and child dyad from a very low food secure household who both had high dietary diversity and consumed more traditional foods. This mother worked at a market and had access to lots of different foods, so even though the household was food insecure, they consumed high quality diets. In this population, the more food secure households seem to be shifting to western diets and away from traditional foods, while food insecure households appear to be maintaining more traditional diets.

There are limitations to the present study. Primarily, the non-quantified 24-hour dietary recall and dietary diversity scoring are imperfect methods for assessing diet quality. The 24-hour dietary recalls were part of a much larger interview, so it is possible that not all foods were reported for each individual due to respondent fatigue. However, these potential data collection errors do not jeopardize this study’s ability to describe overall trends in dietary patterns on San
Cristobal Island. Overall, the dietary recalls accurately reflect the types of foods consumed by mothers and children. Using dietary diversity scores to assess diet quality from a 24-hour recall has potential biases. An individual may not eat very many food groups on the day in question, but over the period of three days or a week they may consume a greater variety of foods. Therefore, it is possible that some respondents had higher-quality diets than their dietary diversity scores reflect. However, in this study dietary diversity scores were averaged and used as a basis of comparison between food security levels. For these purposes, the potential errors in dietary diversity are not of great concern. A final limitation of this study is the small sample size. While we were able to observe overall trends in food security status, dietary diversity, and BMI, our sample size does not allow for statistical analyses of significance. Therefore, it is possible that the trends we observed were due to chance. However, the interviews allowed us to go into depth with mothers on various topics, strengthening the dataset. Our sample size was sufficient for achieving our aim of qualitatively describing the food environment on San Cristobal Island.

Strengths of this study include mixed-methods analysis and in-depth interviews. Analyzing anthropometrics, food security, and dietary diversity in a quantitative manner allows us to draw conclusions about the prevalence of certain phenomena on San Cristobal Island, which is necessary in order to characterize the food environment. The in-depth interviews allows for a deeper understanding of the phenomena observed in the quantitative analysis. For example, without the interviews we would not have known that the high rates of food insecurity on San Cristobal Island are at least partially due to boats and island-wide food access. Additionally, we would not know about the high prevalence of dieting and desired weight loss among mothers without the in-depth interviews, which is a key part of understanding differences in dietary
diversity between mothers and children. Our study is unique in that it is able to describe the food environment on San Cristobal Island both qualitatively and quantitatively.

**Conclusion**

The prevalence of food insecurity on San Cristobal Island is high among households with children under six years of age. However, this did not seriously impact the quality of children’s diets, and on the whole it appears that children on San Cristobal Island are healthy. Child dietary diversity was positively associated with food security status, but even children from food insecure households consumed on average either medium or highly diverse diets. Maternal dietary diversity was not related to food security status, and this is likely due to dieting and the desire to lose weight. Children and mothers from food secure and food insecure households alike consumed diets that consisted of mostly rice, soup, vegetables, meat and milk. Food secure households generally reported more snacking and more processed foods than the most food insecure households. Finally, food insecurity appears to be an island-wide issue due to the uncertain quality of produce arriving from the mainland on boats.

Food access is only one of the problems that mothers identified in their in-depth interviews. Access to potable water and quality medical care were two other concerns that mothers frequently cited as problems associated with living on San Cristobal Island. Further research is required to elucidate the causes and consequences of these concerns that affect quality of life on San Cristobal Island.
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References


5. Galapagos Conservancy. 2008. Galapagos statistics. Available at:


19. WHO BMI Guidelines. Available at:

20. WHO Global Health Observatory Data. Child malnutrition country estimates (WHO global database): Children under 5 years stunted. Available at:
   http://apps.who.int/gho/data/node.main.1097?lang=en

21. Wordle creator. Available at: http://www.wordle.net/