

A Comparative Analysis of the Mexican vs. Mexican-American Diet and Rates of Obesity through Two Case Studies

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Chapter 1: Introduction

Preface:

As a physiology major, a future healthcare professional, a workout guru, and the son of a dietician, I have an inherent interest in health and fitness. When presented with the opportunity to travel to a rural village in Yucatan, Mexico to conduct research on the topic of my choice, I could not have been more excited to study the Yucatecan diet and the prevalence of obesity among the residents of Santa Elena, Yucatan. During my time in Santa Elena, I conducted interviews with various local residents including chefs, restaurant owners, the local doctor, and the local midwife. I gathered data on the composition of the Yucatecan diet, the reason behind the increased prevalence of obesity in the Yucatan, and the health risks/benefits associated with the consumption of Yucatecan cuisine. Upon returning to the United States, I decided to compare my findings to the Mexican-American diet in Laramie, WY. I conducted interviews with Mexican-Americans living in Laramie, WY in order to answer the same type of questions: What is the composition of the Mexican-American diet? Why is the prevalence of obesity increasing among Mexican-Americans? What are the health risks/benefits associated with the consumption of Mexican-American cuisine?

Prior to presenting my data I would like to thank Dr. Mary Katherine Scott for all of her help and kindness. Without her, this research would have been impossible. She personally introduced me to the numerous residents of Santa Elena whom I worked with, as well as provided crucial research advice and edits. I would also like to thank the University of Wyoming Honors program for allowing me to present my research and for uploading my research to the Honors Program Database.

Abstract:

In this research paper I analyze and compare the diet of the inhabitants of a rural village in Yucatan, Mexico with the diet of Mexican-Americans living in Laramie, WY in order to discern the reasons behind the increasing trends in obesity among these particular populations. This project is based on data collected through interviews with volunteer participants from among the target audiences in both locations. Data on nutrition and obesity among Yucatecan populations was previously collected during the summer study abroad course, “Maya Art & Culture”, taught by Dr. Mary Katherine Scott (2014). This data is compared with new data collected in Laramie, WY in the spring of 2016. In both cases, IRB approval was given. I compared these two populations because both populations are rural communities. Santa Elena, Yucatan is a rural village that is approximately 20-30 minutes from the nearest city, Ticul, Yucatan. Likewise, Laramie, WY is a rural community situated approximately 45 minutes from the larger city of Cheyenne, WY.

Research Themes:

Obesity is on the rise for both Mexican-Americans in Laramie, WY, USA and Yucatecans in Santa Elena, Yucatan, Mexico. There is no single causative agent of obesity among these populations, but common factors include: overconsumption of calorically dense foods, increased frequency of consumption, lack of education concerning diet and obesity, and poor dietary choices. Although the underlying factors that cause obesity are the same for both populations, there is some variation as to which factors play the largest role in causing obesity among these populations.

Both populations have added soft drinks, packaged foods, and highly processed foods to their diets. However, in Santa Elena, Yucatan, these foods are eaten in conjunction with the traditional Yucatecan diet. In other words, these foods are not replacing traditional meals; they are eaten between meals and sometimes with meals, with no apparent reduction in meal size. In Laramie, WY, these foods are replacing traditional Mexican dishes. Unlike the Yucatecan diet, the Mexican-American diet has suffered from the disappearance of healthy foods such as fresh fruits. The Yucatecan diet suffers mostly from the addition of unhealthy snack foods, whereas the Mexican-American diet suffers mostly from the replacement of healthy, traditional meals with unhealthy restaurant food and fast food.

Another factor that has a significant adverse effect on the Mexican-American diet (but not the Yucatecan diet) is acculturation to the US diet. Increased acculturation leads to poorer dietary choices. Lastly, the sheer amount of food consumed by Yucatecans is a large culprit of obesity in Santa Elena, Yucatan, whereas the high frequency at which food is consumed in Laramie, WY is a large culprit for obesity for Mexican-Americans in Laramie, WY.

Methods:

Research was conducted in two separate locations and at two different time periods: Laramie, WY, USA in the spring of 2016 and Santa Elena, Yucatan, Mexico in the summer of 2014. In the Yucatan, I collected the majority of my evidence by conducting interviews with approximately 10 residents of Santa Elena, Yucatan, Mexico. All interviews were conducted in Spanish and were translated to English by the author for the purpose of this paper. I conducted interviews with the local doctor (Luis A. Sansozes Mian), the local midwife (Eulalia Ortegon), a resident who went on a diet (Berto), my mentor (Francisca Ek May), and various members of my

mentor's family (Estela Ub Ek and Rosy). All of my interviews were based on obesity and the composition of the Yucatecan diet, but there was some variation in my interview questions depending on the expertise of the person with whom I was conversing. For instance, my interview with the local doctor was focused on the prevalence of obesity and other health related diseases in the Yucatan whereas my interviews with my mentor were focused on modern and traditional cooking techniques in the Yucatan.

In addition to conducting interviews in the Yucatan, I collected data by observation. For instance, I would observe my mentor and other locals as they prepared dishes to see how they prepared their food and what foods they consumed. I recorded my observations in my field notebook and asked questions to clarify any ambiguities. I also collected nutrition labels, menus, health and fitness brochures, and any other material relevant to my research. I used this information to analyze the nutritional value of certain foods, to analyze the dietary options available at certain restaurants, and to analyze the health claims and recommendations made by fitness centers and nutrition labels.

Last but not least, I collected data by immersing myself in Yucatec-Maya culture. I completely committed myself to the Yucatecan diet for six weeks. I tried every food that I was offered and almost always cleaned my plate. Surprisingly, I lost about 10 pounds during my time in the Yucatan. Then again, I ran frequently, avoided sweets and overeating, and was unable to lift weights for the duration of my time abroad. This goes to show that the Yucatecan diet is not fattening when consumed in moderation and paired with physical activity.

In Laramie, WY, I collected data by conducting interviews with Mexican-American students attending the University of Wyoming. These students were members of a campus organization known as MEChA (Movimiento Estudiantil Chicano de Aztlán), which strives to

liberate chicano/a students from prejudice and oppression via higher education and political involvement. All Mexican-American interviewees from Laramie, WY will be referred to anonymously. Peer-reviewed journal articles from sources such as the Journal of Nutrition, the American Journal of Health Promotion, the Journal of Primary Prevention, Ecology of Food and Nutrition, and Social Science and Medicine were also used to facilitate my research. Lastly, data was collected from the World Health Organization and the Centers for Disease Control and Prevention websites.

Chapter 2: The recent surge in obesity among residents of Santa Elena and Mexican-Americans living in Laramie, WY.

Obesity Trends/Statistics and Obesity Related Disease:

Obesity in Mexico has been on the rise since the 1980s. According to the World Obesity Federation (2012), 37.5% of Mexican women are obese and 26.8% of Mexican men are obese. The World Health Organization (2009) claims that, “among males, the mean body mass index has jumped from 24.5 in 1980 to 27.5 in 2009. Among females, the mean body mass index has jumped from 24.5 in 1980 to 28.9 in 2009”. For reference, a 5’6” female who weighs 151 pounds would have a BMI of approximately 24.5. The same 5’6” female would have to weigh 179 pounds to have a BMI of 28.9. Unfortunately, obesity is even more prevalent in the Yucatan than in other parts of Mexico. 45% of urban Yucatan males and 73% of urban Yucatan females have a BMI of 27.8+ whereas only 29% of urban Mexican males and 43% of urban Mexican females have a BMI of 27.8+ (Arroyo, 1999). Shockingly, Mexican-Americans are even more obese than Mexicans (and are comparable in obesity to Yucatecans). 40.2% of Mexican-American men and 45.2% of Mexican-American women who are 20 years and over are obese (Center for Disease Control and Prevention, 2014) and 77% of Mexican-American adults are overweight (McFarlin, 2013). Obesity has put this population at greater risk for diseases including cardiovascular disease, type 2 diabetes, cancer, hypertension and hyperlipidemia (McFarlin, 2013 & Nguyen, 2011). In fact, 19.1% of Mexican-American men and 22% of Mexican-American women who are 20 years and over have hypertension (meaning they have measured high blood pressure and/or are taking hypertensive medication) (CDC, 2014). Hypertension is one of the key risk factors leading to heart disease. Not only is heart disease the

leading cause of death for Hispanics, but also Hispanics are more likely to die from heart disease than other ethnic groups (McFarlin, 2013). In 2000, 27.3% of deaths among Hispanic men and 33.1% of deaths among Hispanic women were attributed to cardiovascular diseases (Nies, 2004).

Impact on Healthcare

Mexican-Americans account for approximately 11% of the total U.S. population, which is about 35 million people, or 1 in 6 Americans (US Census Bureau, 2014). By 2050, the ratio is expected to reach 1 in 4 Americans (Batis, 2011). Therefore, obesity and obesity related diseases among this population will have an immense impact on American healthcare. This is particularly concerning considering that 27.2% of Mexican-Americans under age 65 are without health insurance (CDC, 2014)¹. Not only is the majority of this population without healthcare, but most Mexican-Americans are not receiving advice from healthcare professionals concerning obesity, obesity related diseases, diet, and exercise. Studies show that only 27% to 42% of obese patients are advised by their health care providers to manage their weight. These studies also show that obese patients who are male, of advanced age, of low economic standing, who have no health insurance, and have few or no morbid health conditions are even less likely to receive advice on weight management (Nguyen, 2011). This is of particular concern because data shows that physician advice has an immense impact on changes in patient behavior. Furthermore, obesity causes an estimated 20% to 40% higher risk of death, a 3-year reduction of life expectancy, and worsened psychological well-being (Nguyen, 2011). To compound the situation, Mexican-Americans who speak Spanish at home are even less likely to receive advice

¹This percentage may be decreasing due to the implementation of the Affordable Care Act, which requires health insurance coverage to all documented immigrants and their children. However, documented immigrants who have less than 5 years of residence in the US are excluded from healthcare coverage through Medicaid and undocumented immigrants are excluded from all ACA provisions (Block, 2014:179-188).

from a healthcare professional. This is likely due to the fact that obesity is a difficult subject for patients to discuss with their doctors if they are not completely fluent in English. Considering that less than 3% of US physicians are Hispanic (Nguyen, 2011), it is difficult for Mexican-Americans to find healthcare professionals who are proficient in Spanish. Furthermore, there may be a cultural and/or social barrier that discourages Mexican-Americans from discussing their diet and obesity with their healthcare professionals. However, my interviewees never showed any sign of discomfort or refused to answer potentially sensitive questions regarding obesity.

Chapter 3: Recent dietary changes for residents of Santa Elena, Yucatecan and Mexican-Americans in Laramie, WY

Traditional Diets in Laramie, WY and Santa Elena, Yucatan:

The traditional Yucatecan diet in Santa Elena is actually quite healthy. All of my interviewees agreed that the Yucatecan diet primarily consists of beans, squash, corn (tortillas), onion, tomato, peppers, chicken, and pork. They also agreed that the bulk of the foods eaten at meals come from the *milpa*², the *parcela*³, or are homegrown. When I asked my mentor what foods she grows in her home-garden she replied without hesitation, “What we eat” (Ek May, 10 June 2014). Later in our conversation she reinforced this point by stating, “There are not foods that we need from the grocery store because we grow what we eat” (Ek May, 10 June 2014). Needless to say, most meals prepared with fresh, homegrown ingredients are healthy. Beans, one of the most commonly consumed items in the Yucatan, are particularly healthy. Beans contain complex carbohydrates and are rich in magnesium, copper and a-linoleic acid, all of which may improve insulin sensitivity and lipid profiles (Reyes-Ortiz, 2009). Furthermore, corn is a good source of protein, dietary fiber, and antioxidants (Reyes-Ortiz, 2009). The hand-pressed tortillas consumed in Santa Elena are prepared by a process known as *nixtamalization*, in which maize (corn) is soaked in an alkaline solution (limewater), thereby making it more easily ground and more flavorful. Coincidentally, this treatment also significantly increases its calcium and protein content as well as its overall nutritional value (and corn is one of the only sources of calcium in some Latin American diets) (Rosado, 2005). There are some unhealthful aspects of

² A *milpa* is a cropping field in which maize, beans, and squash are grown in rotation. It is often a small clearing in a naturally forested area.

³ A *parcela* is federally owned land that has been divided into plots for agricultural purposes.

the traditional Yucatecan diet, however. For instance, a high percentage of foods are fried in lard or oil. Upon completing a two month study of the cooking techniques used in two rural communities in the Yucatan, Arroyo (2010) found that 41% of the main dishes were fried, 27% of which were lard-fried.

Like the traditional diet in Santa Elena, the traditional foods eaten by Mexican-Americans in Laramie, WY are predominately healthy. However, all of my interviewees mentioned that they do not eat traditional foods as frequently as they did when they lived in Mexico. As Respondent D stated, “Things that I used to eat - some of the staple foods - include: rice, beans, tortillas, tamales, and soups of hominy” (1 April 2016). Other foods that were frequently mentioned as staple dishes include: meat-based enchiladas, meat-based tacos, goat meat, and *tortas*⁴. However, Respondent D later stated:

“My diet has changed quite a bit since I moved to the US, but there are still some similarities. I still eat a lot of rice and a lot of beans because they happen to be very cheap and very easy to make. And, of course, tortillas. Those are things that I have retained. I don’t think I would consider them my primary diet right now” (1 April 2016).

All of my interviewees also mentioned that their meals in Mexico were simple and consistent. Meals would usually consist of a meat dish, such as chicken in mole sauce, along with beans, rice, and tortillas on the side. Once again, these dishes are quite healthy. In fact, higher consumption of beans and legumes may have a protective affect against cancer and myocardial infarction (Reyes-Ortiz, 2009).

Packaged/Processed Foods:

Unfortunately, neither the Yucatecan diet nor the Mexican-American diet consists solely of traditional dishes. Soft drinks, packaged goods, and highly processed foods have been added

⁴ A *Torta* is meat-based sandwich served on a bread roll.

to both of these diets. These foods are high in sodium, fat, carbohydrates, sugar, and preservatives. In Santa Elena, Yucatan, these foods are eaten in conjunction with the traditional Yucatecan diet. In other words, these foods are not replacing traditional meals; they are eaten between meals and sometimes with meals, with no apparent reduction in meal size. In Laramie, WY, these foods are replacing traditional Mexican dishes.

The majority of the American foods that have been incorporated into the Mexican-American diet in Laramie, WY are carbohydrate heavy and lacking in micronutrients⁵. They are usually highly processed foods with added preservatives such as cookies, chips, crackers, pastries, French fries, and sugary cereals. Notice that all of these foods are simple carbohydrates that are flour or potato-based, as opposed to complex carbohydrates that are corn or vegetable-based (as most carbohydrates are in Mexico). In conjunction with the snack foods listed above, frozen meals and premade meals are also overtaking the Mexican-American diet. As Respondent B states, “Now that I live alone I prefer to buy things that are premade already rather than buying all the vegetables and cooking them. I find the easiest stuff to cook and I get it ready as fast as possible” (28 March 2016). Respondent A said, “In Mexico I consumed more fruit. Here I get more bagged chips and manufactured foods” (30 March 2016). These dietary changes are likely due to cultural assimilation, as will be discussed later in this essay.

One of the most common foods that has been incorporated into Mexican-American diet in Laramie, WY is pasta. When I asked Respondent D what foods he has added to his diet since immigrating to the U.S. he said, “Definitely pasta. Pasta is not really a Mexican food. That flour diet that you see in America never really happened in Mexico. It was always corn. I have definitely added a lot of pasta to my diet because, like rice and beans, it’s cheap and it’s easy to

⁵ Micronutrients are dietary components, often referred to as vitamins and minerals, which although only required by the body in small amounts, are vital to development, disease prevention, and wellbeing (CDC).

make” (1 April 2016). Respondent B said, “Making more pasta, like mac and cheese, is the biggest change” (28 March 2016). These highly-processed, simple carbohydrates are not only appearing on Mexican-Americans’ plates at lunch and dinner time, but also at breakfast. When I asked Respondent B what she has added to her diet since immigrating to the United States she said, “Pancakes; if I had a pancake in Mexico it was like every 2 years” (28 March 2016). Respondent B also claimed that, “(In Mexico) Breakfast was only a shake. When I moved here sometimes in the morning we had pancakes or French toast” (28 March 2016). Respondent D said, “Since I work at the coffee shop here on campus I eat a lot of things that are available there. Things like sandwiches or breakfast pastries like muffins or croissants” (1 April 2016).

Another commonly added food was highly processed and heavily salted meats, such as hot dogs, lunch meat, and beef jerky. When I asked Respondent A what foods she had added to her diet since immigrating to the US she said, “Maybe jerky. I have learned to love jerky but I would never eat it in Mexico. I don’t think we have that kind of stuff” (30 March 2016). As Respondent D put it, “Both countries are very carnivorous but processed meats are more of a trend here; they are more the norm” (1 April 2016).

The unhealthy, processed foods that have been added to the Mexican-American diet are not the only reason for the increased prevalence of obesity among Mexican-Americans. When my interviewees were asked what foods have been removed from their diets since immigrating to the United States, the most common answer was fresh fruits. Respondent D said, “In Mexico everything is very fresh, all the time, because everything grows there. Here a lot of things I’ve had to sacrifice have been on the scale of freshness. Here it’s harder to find more diverse foods, especially fruits, like mango or papaya” (1 April 2016). Respondent D later speculated as to why he no longer consumes as much fresh produce. He said, “The layout of grocery stores here is a

little bit different. You still find the same things but in Mexico fresher things are all over the place. You find them more easily. In this country you have a very definite and clean cut outlined produce area” (1 April 2016).

Coca-Colonization:

Both the Mexican-American diet in Laramie, WY and the Yucatecan diet in Santa Elena have been tainted with soft drinks and other sugary, calorie-dense drinks. According to Leatherman (2005:833):

“Coca-Cola, an international icon of US culture, along with other local and internationally owned calorie-dense but nutrient-poor snack foods, is now a common element of Mayan diets, leading to what we call ‘coca-colonization’. The consequences of this diet, likely exacerbated by the increased consumption of snack foods, include an apparent increase in overweight and obese adults as well as signs of growth stunting in children”.

I definitely witnessed the “coca-colonization” that Leatherman speaks of during my time in the Yucatan. Every lunch at my mentor’s house was accompanied with Pepsi or Coke. All of the convenience stores in Santa Elena are painted so heavily with the Pepsi or Coke logo that it’s difficult to find the shop’s name. When I asked a resident of Santa Elena, Berto, what drinks are consumed most frequently in the Yucatan he said, “The first thing that you will see on the table is Coke. Always Coke or another pop. Way after this you will find fruit drinks” (26 June 2014).

According to Leatherman (2005:839):

“By the 1990s, Mexico had already become one of the world’s largest consumers of soft drinks, with an annual per capita consumption of 560 8-oz. servings accounting for over 20% of Pepsi’s and 15% of Coke’s international sales. In 1999, their annual per capita consumption of 431 servings of Coca-Cola products alone was the highest of any country in the world, and marked a 23% increase over the previous 5 years”.

Although Coke may not be as prominent in the United States as Mexico, there is still a preference for sugary drinks instead of water. When comparing her diet in Mexico to her diet in the United States, Respondent A said, “Here (in the US), I would get more flavored drinks instead of water or natural water with watermelon (like in Mexico)” (30 March 2016).

Food Prices:

Monetary restrictions play a significant role in the addition of unhealthy drinks and snacks to the Yucatecan diet. Likewise, food prices are a major determinant in what Mexican-Americans consume in Laramie, WY. In both Mexico and the United States, all of my interviewees agreed that unhealthy foods are generally less expensive and more available than healthy foods. When I was in the Yucatan, even when I asked questions unrelated to the price of food I would receive answers that implied that monetary restrictions have a massive impact on food selection. For instance, I asked my mentor how the consumption of Coca-Cola affects the Yucatecan diet and she said, “Well, if you don’t have any money...” (Ek May, 10 June 2014). What she is implying is that people have no choice but to buy unhealthy foods. After all, Pepsi and Coke products are dirt cheap in the Yucatan. A 12 oz. bottle of Pepsi is only about 5 pesos. Unfortunately, the same does not hold true for healthy foods. According to Leatherman (2005:841), “Compared to 10 years ago, a greater variety of foods is available in rural communities, but at a higher cost to households. As one resident of Coba noted ‘there are more foods available now, but no money to buy them’”. Leatherman (2005:841) also notes that, “Households with steady employment can purchase a variety of foods year round, while other households are more dependent on the local harvest and temporary wage jobs”.

As for Mexican-Americans, healthy foods are often readily available, but they are frequently out of their price range. As Respondent D puts it:

“Because of the socioeconomic status of minorities it is more common for them to be purchasing processed foods. Poverty populations are purchasing foods that are not healthy for anyone. That’s the most important thing that will possibly drive obesity a little bit higher within minorities” (1 April 2016).

For Mexican-Americans like Respondent D, the grocery store is not a place to be choosy about the kinds of food you purchase, but the price of the foods you purchase. As he said, “For me it definitely has to do with my budget” (1 April 2016). The same holds true of Mexican-Americans eating out. Respondent C said, “I remember asking my dad: ‘Why did you take us to McDonald’s so much when we were little? And he said: ‘Because we don’t have money’” (31 March 2016). According to Reyes-Ortiz (2009:2293-2301):

“Higher concentrations of Mexican-Americans in a neighborhood are correlated with poverty and disadvantage; therefore, the pattern of low consumption of some fruits (e.g. cherries, berries) and some vegetables (e.g. broccoli) in our study may reflect unaffordable costs for foods or lower availability in a neighborhood food environment”.

One of the only reasons that there is some retention of traditional Mexican food in the Mexican-American diet is that it is inexpensive. As Respondent D said, “I still eat a lot of rice and a lot of beans because they happen to be very cheap and very easy to make” (1 April 2016).

Food Availability and Fast Food:

The accessibility of junk food and the general lack of healthy options have also facilitated the addition of unhealthy drinks and snacks to the Yucatecan diet. When I asked Rosy if one can buy healthy foods at the local grocery store she said, “Almost never” (10 June 2014). Then I proceeded to ask Berto if one can buy unhealthy foods at the local grocery store and he said,

“This is all you will find” (26 June 2014). I noticed from my own observations that there is an excessive amount of junk food packed on the shelves of Yucatecan grocery stores and convenience stores. In fact, it is a struggle to find any healthy food in many of these markets, particularly food that is not packaged. Breakfast foods and granola bars are especially hard to find in the Yucatan. The other students and I often visited local grocery stores for weekend breakfasts and we were usually limited to eating cookies, chips, donuts, crackers, nuts, and other sugary or salty snacks. According to Leatherman (2005:833), “Yucatec Mayan diets have become increasingly dependent on purchased foods, and reflect a greater consumption of commercialized processed foods”.

Grocery stores in the Yucatan may be packed with processed and packaged foods simply because most locals have their own home-gardens, raise and butcher their own animals, and/or acquire food from the local *milpa*. Thus, the grocery store is not necessarily meant to be a place where meals are purchased (as in the United States). However, now that meals and side dishes are being bought at grocery stores with greater frequency, there is a desperate need for healthy options to appear in Yucatecan grocery stores. After all, studies have shown that greater fresh vegetable availability within 100 meters of residences was a positive predictor of vegetable intake (Reyes-Ortiz, 2009).

In the United States, snack foods and junk food is available in grocery stores, but the real culprit for Mexican-American obesity is fast food and restaurant food. Most of the immigrants that I interviewed agreed that in Mexico, eating at restaurants was a rarity that was done only on special occasions; it was not an alternative to cooking dinner regularly (as it is in the United States). When I asked Respondent A how her diet changed upon immigrating to the U.S. she said, “I think it began to change because we would eat more fast foods and we would end up

going to more restaurants compared to Mexico. In our town we didn't really have restaurants. You would have to go to the city; drive like 30 minutes for restaurant food" (30 March 2016). Respondent B said of her mother, "In Mexico she wouldn't take us out very often. Like twice a year. Because of the culture and because of the price. Every other month she would buy tacos that they sell in the street. She wouldn't do it a lot. It was more like a treat" (28 March 2016). However, once she moved to the US Respondent B's mother began to change. Respondent B said, "Sometimes she would take us to McDonald's or Wendy's because she didn't want to cook" (28 March 2016). Respondent B's first choice would not have been McDonald's or Wendy's. She felt forced to go to these fast food restaurants because of a lack of Mexican cuisine in her town in the United States. She said:

"I wasn't into McDonald's. I never went into McDonald's until I moved to Jackson, WY when I was 13; and I got here at 10. I started going to American restaurants when I came to Jackson. There's not a lot of Mexican restaurants in Jackson so we didn't have an option" (28 March 2016).

Now that she is away from her mother and has had plenty of time to acculturate to the United States, Respondent B eats at restaurants frequently. She said, "There's this Mexican place - Andale Rapido - that's the restaurant that I go to the most. One week I went three times. And that's not good. And then I feel crappy from going there" (28 March 2016). Respondent B's mother did not only increase the frequency in which she took her kids out to dinner, she also decreased the frequency in which she cooked fresh meals. Respondent B said:

"She (her mom) will make food and then refrigerate it for two days instead of cooking it each day. She would cook each day in Mexico. Here she only cooks every other day and then she takes us out at least once a week or twice depending on how much she wants to cook" (28 March 2016).

Once again, this is likely due to cultural assimilation, as will be discussed next.

Acculturation and (In)Ability to speak English in America:

Another factor that has a significant adverse effect on the Mexican-American diet (but not the Yucatecan diet) is acculturation to US culture. Acculturation among Mexican-Americans is associated with increased dietary fat and sugar intake due to increased consumption of desserts, salty snacks, pizza and French fries. In other words, as the level of exposure to the US environment increased, the Mexican-American diet shifts toward an unhealthier one (Batis, 2011). Increased acculturation is also linked to increased waist circumference and abdominal obesity (Reyes-Ortiz, 2009). Not only are unhealthy foods added to the Mexican-American diet with increased acculturation, but traditional, healthy foods are removed. As Batis notes (2011:1898-1906),

“The largest difference was the much lower consumption of corn tortillas among Mexican-Americans compared to Mexicans. Corn tortillas are a low-fat, low-sodium, and high-fiber food that could be considered as healthy and, therefore, the lower intake of this food among Mexican-Americans may be classified as a negative effect of food acculturation”.

Acculturation is an incredibly fast process for most Mexican-Americans. According to Batis (2011:1898-1906):

“Mexican-Americans born in Mexico who had adopted many aspects of the US diet but still preserved many from their original Mexican culture appeared to have healthier diets than Mexican-Americans born in the US. Our findings indicate that within one generation in the US, the influence of the Mexican diet is almost lost.”

Furthermore, acculturation is more rapid and more detrimental to the diet of Mexican-Americans born in the United States than Mexican-Americans born in Mexico (Batis, 2011). In fact, there is little variation between the diet of Mexican-Americans born in the US and native white populations (Batis, 2011).

Acculturation goes hand in hand with language acquisition. According to Chu (2011:770), “Higher language acculturation was associated with poorer diet and greater body weight. That is, those who reported some use of English or only used English had approximately 4 times higher odds of being obese than those who reported minimal use of English”. None of the Mexican-Americans that I interviewed blamed the language barrier for the worsening of their diets, but when referring to his mother Respondent D said, “The language barrier has not debilitated her in the sense that she cannot get the things that she is looking for (at restaurants or the grocery store), but it has impaired her in a way that is an annoyance and an inconvenience. For example, if she wants to customize some kind of dish at a restaurant, where it’s more of a Mexican take on something, where it’s fresher and maybe has less preservatives, the waiter doesn’t get it” (1 April 2016).

There is a clear need to discourage the unhealthful components of the American diet among Mexican-Americans. There are some possible dietary benefits of acculturation, however. Studies have shown that with increased acculturation, Mexican-American populations show a greater preference towards low fat milk as opposed to high fat milk as well as increased consumption of high fiber bread (Batis, 2011).

Chapter 4: Overeating

Reasons for eating too much:

Obesity is caused by many factors such as genetics, physical activity level, and diet. However, if there is one factor that outweighs the others for the reason behind obesity in Santa Elena, Yucatan it's overeating. When I asked the local doctor what causes obesity in Mexico he said, "Everything is about eating. Going to a baseball game or a birthday party is all about eating. There's too much eating. Men who work in the *milpa* drink too much *pazole*⁶ and eat too many tortillas. People eat 5 to 7 *panuchos*⁷ at a time, which is a ton. It's a problem of the culture" (Mian, 3 July 2014). Overeating is perhaps most evident with tortillas. In the Yucatan, tortillas are viewed as a tool for eating, as opposed to a side dish. I was often the only person (out of an average of 6 people) at the lunch table at my mentor's house who was even offered a spoon. The residents of Santa Elena use tortillas to scoop up beans or soup or to grab meat off of their plates. Therefore, every single bite is accompanied with a piece of tortilla, meaning that upwards of 5 tortillas are consumed with each meal.

When I inquired about what people should eat more of to maintain good health the doctor said, "It's not that there's a problem with the health of foods, it's the amount of food consumed" (Mian, 3 July 2014). I also noticed from my observations that women feed themselves, their friends, their family, and their guests excessively in Santa Elena. Even when I told my mentor that I was full she insisted that I eat more. The most frequent command that I heard in my mentor's kitchen was "eat it!". Furthermore, I was never allowed to choose how much food I was served. One of the women in the house would serve my lunch for me. The only instance in

⁶ Pazole means "hominy", a soup made from maize kernels

⁷ Panuchos are open-faced tacos that consist of a fried tortilla that is stuffed with beans and topped with meat and vegetables

which I was allowed to choose how much food I was going to eat I was forced to choose between 5 and 6 panuchos (which is a ton!). It is touching that the women of Santa Elena are so generous with their food but they are simultaneously contributing to the elevated obesity percentage. They are also teaching their children that it is acceptable to eat as much as you possibly can at every meal. As Arroyo (2010:69) notes, “The culinary culture of the Yucatan encourages the consumption of foods high in energy density”. This mentality may have stemmed from Yucatecans’ traditional necessity to eat high calorie meals in order to have enough energy to work hard in the *milpa* or *parcela*. These jobs are labor intensive and consist of long hours of planting and harvesting crop. However, the residents of Santa Elena seem to eat the same amount of food whether or not they have labor intensive jobs, resulting in weight gain for all but the few men who actually harvest crop.

Yucatecans and Mexican-Americans have a similar mentality when it comes to food.

Food is not something that you nourish your body with; food is family. It is a part of culture. As Respondent D said:

“Mexican-Americans plan their life and their work around their meals. That has remained a very prominent thing within our psyche. Eating is definitely about cooking with the family, eating with the family members, and sharing experiences that way. And because family is so important, that’s why eating is so important. As far as scheduling meals I would hope that the family element remains” (1 April 2016).

Unfortunately, this mentality often causes Mexican-Americans to cook and consume excessive amounts of food regardless of how many family members are present to eat. As Respondent A said, “Generally Mexican families make a lot of food for a lot of people. Even if they don’t have a lot of people over at their house they always have a lot of food. Sometimes they really enjoy that specific food type and keep eating it and eating it to the point that their

stomach hurts. Lately, my mom has said, ‘if you’re full don’t eat any more’. Back in the day she said, ‘you have to finish everything on your plate’”(30 March 2016).

Frequency of consumption:

The sheer amount of food consumed by Yucatecans is the largest culprit of obesity in Santa Elena, Yucatan, whereas the frequency at which food is consumed in the United States is the largest culprit for obesity for Mexican-Americans in Laramie, WY. The Mexican-Americans that I interviewed agreed that in Mexico they adhered to a much more defined eating schedule.

As Respondent B said:

“We had a time limit. Dinner was at 3, lunch was at 12, and breakfast was at 7am, which was only a shake. She (her mother) would say ‘we’re having dinner at 3; you have to be here at 3’. You could eat no later than 7. If you eat after 7 it’s like breaking the rules. But here (in the US) she never kept those rules” (28 March 2016).

In Mexico, Respondent B’s mother would cook each meal fresh every single day and Respondent B was never allowed to help her in the kitchen. Now, Respondent B feels free to grab whatever she wants out of the pantry when she is hungry. Further, snacks between meals in Mexico were always light. Respondent B said, “In the afternoon if we were hungry my mom would give us half a piece of bread because she thought that a full piece of bread was too much for a girl. And she would only give us less than a full glass of milk” (28 March 2016). Now that they live in the United States, Respondent B and all of my other interviewees no longer adhere to a strict eating schedule and have become more accustomed to eating due to boredom or because of the ease at which one can acquire food in the United States (e.g. fast food). When I asked Respondent B how she could improve her diet she said, “Having a schedule of eating. Because right now I don’t have a schedule and that’s messing up my body a lot” (28 March 2016).

Food Education:

My time in the Yucatan led me to conclude that Yucatecans are mostly unwilling to change their diet because it is imbedded in their culture and because they are either unaware of their poor dietary choices or are disinterested in improving their diet. According to Leatherman (2005:844):

“Local residents do not express concerns over dietary change explicitly in terms of health. This is not surprising because for the Maya, and many other cultures, health is but one dimension of an overdetermined web of relationships and realities that are not easily separated out, but rather are interwoven into a broader sense of lived experiences.”

Since the residents of the Yucatan are either unconcerned about their diet or are unwilling to change it, implementing intensive health and nutrition classes in the Yucatan may not be effective. Furthermore, “The strategies of industrialized countries to modify energy consumption using new food technologies (like fat-modified food) that lower the energy density and content of foods would be difficult to implement in Yucatan. Its culinary culture, like any well-entrenched culture, would not be easy to change” (Arroyo, 2010:69).

Affirmation of Yucatecans’ lack of attention regarding their diets was present in my interview responses. The local doctor confirmed that people in Santa Elena don’t look at the nutrition labels of the foods that they buy. Berto said, “Nobody pays attention to what they eat” (26 June 2014). When I asked Berto if he thought that the obesity rate was going to increase he said, “Yes, because people aren’t preoccupied about what they eat” (26 June 2014). When asked how to reduce the obesity percentage Estela said, “Awareness. People need to be aware of it. We need to be conscious” (Ub Ek, 12 June 2014).

As in the Yucatan, there is a general lack of education and awareness concerning obesity and nutrition among Mexican-Americans in Laramie, WY. When I asked Respondent D if he felt that Mexican-Americans were receiving proper education regarding obesity and nutrition he said, “If they are receiving an education I don’t think that it is effective” (1 April 2016). He claims that most education attempts are designed “in a way that is not tailored to our community as it should be” (1 April 2016). Respondent D said that this was particularly true of Mexican-American children. He said, “I think it’s difficult for some people to connect with children on things that they might not understand at first and this definitely translates to Mexican children” (1 April 2016). He says that Mexican-Americans are “very different in terms of making food, eating food and the culture around food” (1 April 2016).

Chapter 5: Conclusion and Recommendations

Conclusion:

Obesity is on the rise for both Mexican-Americans in Laramie, WY, USA and Yucatecans in Santa Elena, Yucatan, Mexico. Given that obesity increases the risk of diseases including cardiovascular disease, type 2 diabetes, cancer, and hypertension, the obesity epidemic is going to have a major impact on healthcare in both Mexico and the United States. There is no single causative agent of obesity among these populations, but common factors include: overconsumption of calorically dense foods, increased frequency of consumption, lack of education concerning diet and obesity, and poor dietary choices. Although the underlying factors that cause obesity are the same for both populations, there is some variation as to which factors play the largest role in causing obesity among these populations.

Both populations have added soft drinks, packaged foods, and highly processed foods to their diets. However, in Santa Elena, Yucatan, these foods are eaten in conjunction with the traditional Yucatecan diet. In other words, these foods are not replacing traditional meals; they are eaten between meals and sometimes with meals, with no apparent reduction in meal size. In Laramie, WY, these foods are replacing traditional Mexican dishes. Unlike the Yucatecan diet, the Mexican-American diet has suffered from the disappearance of healthy foods such as fresh fruits. The Yucatecan diet suffers mostly from the addition of unhealthy snack foods, whereas the Mexican-American diet suffers mostly from the replacement of healthy, traditional meals with unhealthy restaurant food and fast food.

Another factor that has a significant adverse effect on the Mexican-American diet (but not the Yucatecan diet) is acculturation to the US diet. Increased acculturation leads to poorer dietary choices. Lastly, the sheer amount of food consumed by Yucatecans is a large culprit of

obesity in Santa Elena, Yucatan, whereas the high frequency at which food is consumed in Laramie, WY is a large culprit for obesity for Mexican-Americans in Laramie, WY.

Lay Health Educators in the United States:

Given the high prevalence of obesity among Mexican-Americans and the rapidly growing size of this population, there is an undeniable need to educate Mexican-Americans about nutrition and weight management. This is no easy feat, however, considering that the Mexican-American community is comprised of a diverse group of individuals from varying backgrounds. Furthermore, Mexican-Americans are much more likely to turn to their family, the Mexican-American community, or social/religious groups for healthcare advice than visit an actual healthcare provider (Nies, 2004). The approach used to combat obesity must be culturally sensitive and address the language barrier, Mexican-Americans' tendency to be of lower socioeconomic standing, and their possible lack of health insurance. If the approach does not address these issues, it will likely fail. As Respondent C said, "I know that food is a huge part of culture and I respect that. We need a more culturally sensitive way for Mexican-Americans to connect" (31 March 2016). When I asked Respondent C if she had ever participated in a health awareness event, she said:

"No because I feel that those faces are predominately white and not very welcoming of people of color or even different shapes. They are not intentional enough in communicating or even just building relationships outside of their organization. There's this attitude of live and let live. I wasn't really exposed to that many health awareness events or even conversations in general. I kind of had to do it on my own" (31 March 2016).

Thankfully, according to Nies (2004:441-455), "Training lay health educators to address some of these issues has been widely tested and found to be a promising approach to issues of cost, trust, and culturally congruent health education". These lay health educators must

encourage Mexican-Americans to retain the healthy aspects of the traditional Mexican diet (such as beans, legumes, fruits, vegetables, and lean meat), while discouraging the unhealthy aspects of the American diet (such as fast food, frozen food, preserved food, and restaurant food). Nies (2004:441-455) gives a wonderful example of how a lay health educator would accomplish this.

He says,

“La Vida Buena’s ‘Salsa Aerobics’ was a culturally tailored physical activity program for Hispanic women in California. This program was successful in training local ‘promotoras’ to recruit and enroll Hispanic women in a community-wide exercise program. In this program, lay health educators were able to provide culturally and linguistically appropriate health education to their neighbors, to bridge many of the gaps in service that occur through fear and suspicion of official health care providers, and to facilitate effective communication within the community and between community members and professional providers”.

Upon completion of lay health educator programs, Nies (2004:441-455) claims that, “Community participants showed increases in health risk awareness and leisure time physical activity. Implementation of the lay health educator within this community was successful in enhancing positive health behaviors”.

Although the previous example was related to physical activity, a similar lay health educator program could be geared towards dietary improvement. One of my interviewees’ mother had success with such a program. As Respondent A said, “In Jackson, WY they provide nutrition classes to Hispanics for people to know what to consume. My mom has transitioned throughout the years. She started with white bread and now she eats whole wheat bread” (30 March 2016). Lay health educator programs would be particularly beneficial if they incorporated cooking with the entire family, as family activities such as cooking are highly valued by Mexican-Americans. Programs that incorporate the entire family will likely increase interest in the program and increase retention of information. When discussing his high school nutrition class (an elective course), respondent D said:

“The value of cooking was something that I had grown up with and the ability to combine what I had grown up with something that I was learning was very beneficial to me. Those were the classes that I retained the most information. I really gained a lot of insight as to how I could combine these two spheres of what I was into something that I could pass on to the future. As far as health class I learned the most when things were of interest or concern to me” (1 April 2016).

Lay Health Educators in the Yucatan:

Lay health educators could also help curb the obesity rate in the Yucatan. In Santa Elena, it would be best for these health educators to focus on training participants how to avoid overeating by limiting portion sizes. Following simple guidelines to prevent overeating, such as downsizing plate size, referring to serving suggestions, and estimating serving sizes using one’s hand could effectively cure and prevent obesity in the Yucatan. Downsizing one’s plate is pretty self-explanatory. Bigger plates allow more room for food, which adds unnecessary calories to a meal. If Yucatecans learned to use smaller plates, it would make their portions look larger and, in turn, make them feel like they are eating more. If Yucatecans learned to divide their food into single servings (rather than placing a heaping mound of food on the center of the table), they would likely be less tempted to overeat or to eat second helpings.

Lastly, referring to the serving suggestion printed on packaged foods is another great way to prevent overeating. If this proves to be too difficult or impractical, using one’s hand is an alternative method for estimating portion sizes. According to the Cleveland Clinic, a person’s palm is a typical serving size of protein (fish, meat, and poultry); a person’s thumb is a typical serving size of fat (oils, dressings, cheese); a person’s fist is a typical serving size of fruits and grains (pasta, rice, cereal); and a person’s hand is a typical serving size of vegetables (Schuster, 1997). Although these recommendations may not eradicate obesity entirely, following

guidelines such as these is an important first step in curbing the obesity rate in Santa, Elena,
Yucatan.

Bibliography

- Arroyo, Pedro, et al. "Obesity and cultural environment in the Yucatan region". *Nutrition reviews* 57.5 (1999): 78-83.
- Arroyo, Pedro, et al. "The Modernization of Cooking Techniques in Two Rural Mayan Communities of Yucatán: The Case of Lard Frying." *Ecology of Food and Nutrition* 49.1 (2010): 61-71.
- Batis, Carolina, et al. "Food Acculturation Drives Dietary Differences among Mexicans, Mexican-Americans, and Non-Hispanic Whites". *Journal of Nutrition* 141.10 (2011): 1898-906.
- Block, Miguel Angel González, et al. "Redressing the limitations of the Affordable Care Act for Mexican immigrants through bi-national health insurance: a willingness to pay study in Los Angeles." *Journal of Immigrant and Minority Health* 16.2 (2014): 179-188.
- Chu, Yong, et al. "Higher Generational and Acculturation Status are Associated with Poorer Diet and Greater Body Weight among Mexican American Adolescents." *FASEB Journal* (2011):
- "Global Health Observatory Data Repository." World Health Organization. Retrieved April 4, 2016.
- Leatherman, Thomas L., and Alan Goodman. "Coca-colonization of diets in the Yucatan." *Social Science & Medicine* 61.4 (2005): 833-846.
- McFarlin, Brian Keith, et al. "A one-year school-based diet/exercise Intervention Improves non-traditional Disease Biomarkers in Mexican-American Children". *Maternal & Child Nutrition* 9.4 (2013): 524-32.
- National Center for Health Statistics 2014. Centers for Disease Control and Prevention. Retrieved April 4, 2016.
- Nguyen, Ha T., et al. "Physician Advice on Exercise and Diet in a U.S. Sample of Obese Mexican-American Adults." *American Journal of Health Promotion* 25.6 (2011): 402-9.
- Nies, Mary A., et al. "Effects of Lay Health Educator Interventions on Activity, Diet, and Health Risks in an Urban Mexican-American Community." *The Journal of Primary Prevention* 25.4 (2004): 441-55.
- Reyes-Ortiz, C., et al. "Neighbourhood ethnic composition and diet among mexican-americans". *Public Health Nutrition* (2009): 2293-2301.
- Rosado, Jorge L., et al. "Calcium absorption from corn tortilla is relatively high and is dependent upon calcium content and liming in Mexican women." *The Journal of nutrition* 135.11 (2005): 2578-2581.

Schuster, Ellen, M.S., R.D. "Making Sense of Portion Sizes." Cleveland Clinic. Oregon State University Extension Service (1997).

U.S. Census Bureau 2014 American Community Survey. "1-Year Estimates Hispanic or Latino Origin Total Population". Retrieved April 4, 2016.

World Obesity Federation. "Map of Obesity Prevalence Worldwide". Retrieved May 1, 2016.