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FOOD ENVIRONMENTS: WHAT IS THE ROLE OF DEMOGRAPHICS IN
FIJIANS' DECISION MAKING RELATED TO FOOD CHOICE AND OVERALL
NUTRITION BEHAVIOR?

by

Sandra Bradshaw

A thesis submitted in partial fulfillment
of the requirements for the degree

of

MASTER OF SCIENCE

in

Agricultural Systems Technology
(Family and Consumer Sciences Education and Extension)

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ABSTRACT

Food Environments: What is the Role of Demographics in Fijians' Decision Making
Related to Food Choice and Overall Nutrition Behavior?

by

Sandra Bradshaw, Master of Science

Utah State University, 2013

Major Professor: Dr. Lindsey Shirley

Department: Agricultural Systems Technology and Education

Due to the recent increased quantity of nutrition-related diseases worldwide, current research recommends exploring environmental factors that influence this trend. The Islands of Fiji are of particular concern because of the growing number of non-communicable diseases. On the same small island, nutrition problems vary according to demographic. Thus, the different environments of each demographic constitute diverse food environments, which are manifested in varied nutrition concerns. This study explored environmental motivators of food choice for the Fijian population. Gathering the perspectives of Fijian Islanders using a narrative inquiry research format proved to be insightful in measuring the environmental influences of decisions pertaining to food.

(86 pages)

PUBLIC ABSTRACT

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The people of the Islands of Fiji suffer from a growing prevalence of non-communicable (NCD) diseases that are often nutrition related. Much of the blame for the growing rate of these diseases is due to lifestyle choice, specifically food-related decisions. Fiji's nutrition concerns and NCD prevalence are greater in urban centers, compared to a lower frequency in rural villages. Contrasting demographics are composed of dissimilar food environments that influence inhabitants' food decisions, in turn increasing the prevalence of nutrition-related concerns.

The purpose of this study was to extend existing knowledge and document the perspectives of Fijian Islanders through identifying the strongest environmental factors that influence their food choice. Once motivations of food decisions are identified, this knowledge can aid in designing effective nutrition-related programs and policy reformation.

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CHAPTER 1

INTRODUCTION

The perennial question of why people eat as they do continues to be of great interest for nutrition research and policy makers. The answer to this question has direct implication for Fiji; a South Pacific Island that has a number of nutrition-related concerns. Gathering the perspectives of Fijian Islanders using a narrative inquiry research format can be insightful to measure the environmental influences of decisions pertaining to food. If environmental influences of the Fijian people's food choices and nutrition behavior can be identified, a greater understanding of what impacts this phenomenon worldwide can be learned. On the same small island, nutrition problems vary according to demographic (Taylor, 1992). Thus, the different environments of each demographic constitute diverse food environments, which are manifested in varied nutrition concerns. The nutrition problems of Fiji are complex and result from a long history that has lead to the current situation.

Psychological, social, cultural, economic, environmental, and biological forces all influence food choice (Bisogni, Connors, Devine, & Sobal, 2002). Throughout a lifetime, these forces are key contributors to shaping ones preferences, habits, and attitudes; which in turn, shape nutrition-related behavior. The Ecological Systems Theory developed by Bronfenbrenner (1994) can be used to identify key influences of Fijian Islander's different ecological environments related to food choice. These biological, social, and environmental factors all lead to the Fijians' decision on what to eat.

Need for Study

An understanding of the impact a food environment has on an individual's eating patterns is crucial for addressing food-related issues in a country. While a broad range of studies have concentrated on food choice pertaining to individuals (Fitzgerald, Heary, Nixon, & Kelly, 2010), few studies have set out to qualitatively examine the people of Fiji on their own environmental influences of food choice (Hone, 2004). Research pertaining to food behavior is emerging but transitional economies, like Fiji, are still underrepresented in the international scientific literature (Milosevic, Zezelj & Gorton, 2011). There is limited information on what, how much, and why Fijians make the food decisions they do (Hone, 2004). With Fiji's rare set of circumstances and great need for nutrition policy reform, the information gained in this study can be used to aid in program design, nutrition education and policy reform.

The Pacific Islands pose a unique set of nutrition concerns. Under-nutrition, traditionally the main problem in these underdeveloped countries, is now replaced with a growing condition of over-nutrition (Hone, 2004). For Fiji, diseases related to over-nutrition are increasing in significance, with economic and health implications to consider (Hone, 2004). Over-nutrition leads to obesity, which in turn causes many non-communicable diseases like cardiovascular disease, diabetes, hypertension, and some cancers.

Nutrition-related non-communicable diseases have the potential to impose substantial drains on economic and social development (Coutts & Waqanivalu, 2012). Individuals suffer costs from health factors due to obesity, but the public sector meets

additional costs associated with public funding, like medical care and hospital treatment (Coutts & Waqanivalu, 2012; Hone, 2004). As of 2000, non-communicable diseases accounted for 39% of the Fijian health care budget with anticipated growth, diverting public funding from other possible avenues like health programs, education, development, and law (Hone, 2004). Moreover, the growth of obesity affects the economy by reducing the capable Fijian labor force available to support economic growth. Research has found that obese workers tend to be less productive on average compared to workers without weight problems, using fewer sick leaves and living longer working lives (Hone, 2004). These costs and sacrifices are anticipated to grow over time, as obesity becomes more of a problem for the country of Fiji.

If obesity continues to increase on the island of Fiji, there will be severe health and economic implications. As there is rise in cost of public funds to support obesity, potential funds will be diverted from critical development areas. Obesity is a complex problem and no one policy instrument can hope to address all underlying factors. Obesity is essentially a behavioral issue, as it is based around decisions one makes around food choice and lifestyle (Hone, 2004).

Statement of the Problem

According to Bronfenbrenner (1994), one must examine the entire ecological system in which a human is a part in order to fully understand any human behavior. By identifying the larger environmental influences of the Fijian people's food choices and nutrition behavior, we can better understand what encompasses these decisions. On the same small island, nutrition problems vary according to demographic. The different

demographics in Fiji have created diverse food environments, which are manifested in varied nutrition concerns.

Significance and Purpose of the Study

This study is significant in its ability to gain the perspectives of Fijian Islanders through identifying potential individual, social, and environmental factors that influence food choice. There is professional significance as this study extends existing knowledge, tests prevailing beliefs, and provides greater depth to the nutrition body of knowledge.

According to initial investigation, a need exists for nutrition-related interventions in Fiji (Hone, 2004). The prevalence of obesity has grown along with diabetes and other non-communicable diseases since the introduction of modernization (Hone, 2004). Once a more traditional balanced diet, food consumption patterns in Fiji have shifted to high amounts of fat, sugars, and sodium with less complex carbohydrates, fruits and vegetables (Hone, 2004). As modernization and urbanization increases, the population also becomes more sedentary. Different demographics of Fiji have varied nutrition concerns. Environmental factors of each demographic create different food environments, which in turn shape food-related decisions for individuals, families, and Fijian communities.

Theories based on human behavior can aid to fully understand food choice. Brofenbrenner's (1994) ecological systems theory provides a more holistic view of environmental influences and can assist in the process of answering multiple questions related to human behavior. The current study used Brofenbrenner's (1994) socially

organized subsystems from the perspective of the Fijian Islanders to explore how the subsystems influence food choice.

Limited research has been conducted focusing on what, how much, and why Fijians eat the foods they do (Hone, 2004). Once motivations are determined, this knowledge can aid in designing effective nutrition-related programs. Qualitative research should be done to enhance the understanding of relationships and improve measurement of predictive and outcome variables. Through qualitative research, a more complete understanding of the phenomenon can occur, especially where the question is pertained to human behavior (Harris et al., 2009).

Research Questions

1. What environmental demographic factors are the strongest motivators for Fijians in their food choices and nutrition behavior? Are there dramatic differences in answers across demographics?
2. Even though micro- and meso-environments more directly influence individual behavior, does the larger macro- and exo-environment have a substantial impact in decision making as well?

Researcher Perspective

The perspective or position of the researcher shapes all research. Malterud (2001) writes: “Preconceptions are not the same as bias, unless the researcher fails to mention them.” As a junior high nutrition teacher, I have a strong interest in nutrition, specifically the psychological aspect of food choice. Although I teach about nutrition and healthy

eating, I myself make food decisions that I sometimes reflect later on and wonder why I made the decision I did, despite my knowledge and training. The choices an individual makes are influenced by a number of factors, and I am curious how much nutrition education can shape these choices. It is this interest that leads me to connect humanitarian work with my research. When I became aware of Fiji's nutrition concerns, I thought an appropriate way to help them would be to discover more about the phenomenon itself, food choice. Understanding the nature and phenomenon of food-related decisions aids in nutrition program design and policy reform.

Variables

The variables for this study included the rural and urban demographics in Fiji. Fiji is comprised of diverse environments. Urbanized cities have many supermarkets, while there are remote villages that rely on growing their own food, farther away from city centers. The more urbanized cities in Fiji suffer from obesity-related problems the most. Rural communities on the same island often suffer from increased poverty rates and malnutrition. The social, economic, informational, and physical food environments were observed and analyzed from perspectives of the contrasting demographics in this study.

Assumptions

The environment in which one lives impacts the decisions he or she will make each day. Demographics, or the physical location an individual lives in, although an indirect environmental influence, it impacts the overall food environment. The principle

of food environments could explain disparities in behavior and disease across multiple demographics of Fiji. Both rural and urban areas have different concerns related to nutrition. Both sets of nutrition problems are rooted in environmental factors that are manifested in different nutrition-related concerns.

Limitations of the Study

1. The length of time allotted for the study, six weeks, did not allow for enough time to gather quantitative data using Steptoe and Pollard's food choice questionnaire (1995) and the quantitative data using narrative inquiry.
2. The communication between researcher and participants was challenged due to cultural and language barriers.

Definitions of Terms

Markets, specifically town markets, are enclosed selling grounds usually found in the center of the city. Here, local farmers come and sell their fresh produce for a competitive price. Fresh produce fill markets, as farmers bargain with potential customers as they pass by. Markets run solely on cash flow. Bus stations are adjacent to markets.

Supermarkets are filled with imported and packaged goods, toiletries, and very limited fresh produce. They are a small store-type system with employees and managers that buy food and other products from distributors. Credit cards and cash are both accepted.

The Hot Bread Store is a specific well-known business chain that is unique to Fiji. They sell bread and a few dessert pastries. *The Hot Bread Store* is very successful and is arguably the number one source of bread on the island. Supermarkets have contracts with this chain and sell *The Hot Bread Store* products in their stores.

Cassava and taro root are common root crops unique to the Pacific Islands, both major sources of carbohydrates in Fiji.

Canteens are similar to America's school lunch/cafeteria system. Often they are funded and run locally. Volunteers or part-time employees come at lunch to assist. Most canteens are filled with packaged treats sold to students who have money at lunch.

Non-communicable diseases, or NCD's, are the common term that categorizes many nutrition-related health conditions common in Fiji including heart disease, diabetes, high blood pressure, and obesity.

Food dependency is a condition where a country's food source dynamics become dependent on imports or exports.

Food environment is the accumulation of physical, social, economic, and informational environmental factors that are interrelated with each other to create an overall food environment that impacts food choice at an individual level (Glanz, Sallis, Saelens, & Frank, 2005).

Summary

Investigations of the motivation behind food choice are needed in order to design more effective nutrition education programs and inform policy reform. Fiji is an ideal location to study food choice, as nutrition concerns are growing and policy reform is

needed. Rural and urban demographic locations in Fiji have varied nutrition concerns, with urban locations suffering more from obesity and nutrition-related non-communicable diseases. Gaining the perspective of Fijian Islanders residing in contrasting demographics can be useful for answering the research question guiding the current study, what are the greatest environmental influences determined by demographic that influence food choice? Using Brofenbrenner's (1994) ecological systems theory as a theoretical framework data analysis integrated the levels of environmental influence, specifically at the exosystem level.

CHAPTER 2

REVIEW OF LITERATURE

Food Choice Research

The study of human behavior connected to choice has been analyzed by disciplines in many sciences, especially nutrition-related fields (Story, Neumark-Sztainer, & French, 2003). A physical necessity, the simple act of eating can be reviewed further to determine all the underlying motivations. Any eating episode involves many decisions including what, where, when, with whom, how long, how, and how much to eat. Research estimates that most people make over 220 food decisions per day (Sobal & Bisogni, 2009). This frequent and expected decision every person makes warrants further analysis to explore the topic further. Theories and research focused in human development and behavior can aid in answering these questions.

In 1979, the ecological systems theory (EST) was introduced to examine the different environments that influence human development (Bronfenbrenner, 1994). Although used to give perspective to the multiple contexts of human development, the theory has the ability to analyze the varying levels of influencing environments on an individual's behavior, specifically food choice. EST investigates the continuous interaction and influences between an individual and their environment. Through the use of this theory we examined the steps of environmental influences on food choice for varied demographics in Fiji.

Food Choice Related to Nutrition Problems

The environment in which one lives creates a food environment that shapes much of what an individual and population eats. Because of the power environments have on food choice, numerous agencies across the world including the World Health Organization, the Institute of Medicine, the International Obesity Task Force, and the Centers for Disease Control have identified environmental interventions as the best strategy for worldwide improvements in eating, physical activity and weight status (Glanz et al., 2005). The increase in diet-related diseases like obesity, heart disease, and diabetes worldwide reflect complex interactions of personal behavior pertaining to the environment (Contento, 2008).

While many studies have concentrated on motives for human food choice, there is lack of information on environmental influences for Fijians pertaining to food choice (Hone, 2004). Food behavior in developing countries like Fiji is neglected in international research (Milosevic et al., 2011). It is superlative to qualitatively examine different countries with varied food environments in order to really grasp these concepts.

Nutrition-related Problems in Fiji

Fiji, located at the hub of the Pacific, has a unique history that contributes to the nutrition concerns of today. Once a secluded and undisrupted island completely engrossed in a traditional way of life, Fiji is now considered one of the most developed of the Pacific Islands (Jansen, Parkinson, & Robertson, 1990). Much of Fiji's westernization started in the late 19th century after the British came and brought slaves

from India to harvest the island's lucrative sugar (Jansen et al., 1990). With this westernization came a transition from traditional ways to the introduction of modern living. Food dependency was one of the results of the European influences, as Fiji suddenly became a part of the world import/export system. With the new import/export driven economy and these modern influences, Fijian diets changed dramatically by switching from traditional well-balanced diets to often less nutritious imported foods (Jansen et al., 1990).

With an increase in media to promote consumerism in Fiji, imported foods have become a staple in the modern Fijian diet. A survey conducted in 1990 found that of 678 food items that were advertised in 30 editions of newspapers, 64.3% were imported (Jansen et al., 1990). Of the remaining local products, almost all had some imported ingredient in them. Additionally, over 77% of the foods advertised were foods high in refined carbohydrates, sugar, salt, and saturated fats, and are low in fiber, vitamins, and minerals (Jansen et al., 1990). In Fiji, food dependency is unnecessary. Many imported foods already grow on the island. After WWII, popular imports sold in supermarkets included ice cream, soft drinks, candy, snack foods, breakfast cereals, tea, coffee, and alcoholic beverages (Jansen et al., 1990). Each of the identified situations has contributed to the drastic nutritional and health transformation of the Fiji.

Increases in the average body mass index (BMI) of both Fijian and Indo-Fijians have resulted in a nationwide obesity concern (Hone, 2004; World Health Organization, 2010). Fiji is ranked 12th in the leading countries throughout the world in obesity, with 23.9% of the population reported obese (Central Intelligence Agency, 2012). Obesity is the result of increased food consumption patterns and lower rates of physical exercise.

Both of these factors are of concern in Fiji as consumption of nutrient dense foods like taro, a native root crop, have decreased with a shift to imported, calorie rich foods (Hone, 2004). There is speculation that the decrease in physical activity could be due to the shift of people from labor-intensive jobs in rural settings to the sedentary jobs in urban demographics. Additionally, the Pacific Region is particularly prone to obesity due to their genetic make-up (Hone, 2004). Some researchers have argued that Pacific Islanders have what's called a "thrifty gene" that enables them to rapidly convert calories into body fat (Hone, 2004). The presence of this gene occurs in historical populations who are confronted with unstable food supplies like Fiji has in the past.

Data shows there is a significant increase in the number of Fijians with diabetes and high blood pressure from year to year (Coutts & Waqanivalu, 2012; Taylor, 1992). According to the Fiji Ministry of Health, 80 % of Fijian deaths are from non-communicable diseases, which are often nutrition related, including conditions like cardiovascular diseases, cancers, diabetes, and chronic respiratory conditions (Coutts & Waqanivalu, 2012; Taylor, 1992). Leading causes of death was coronary heart disease and stroke (Coutts & Waqanivalu, 2012). All of these conditions are related to the increase in obesity and premature morbidity on the island (World Health Organization, 2010).

For Fiji, demographics have been linked to differences in nutrition-related behavior. Taylor (1992) reported that Fijian urban subjects were more obese than rural subjects, having higher prevalence rates of diabetes, hypertension, and generally higher cholesterol levels. Rural subjects were consistently more slender and had higher energy intakes, suffering less from diabetes and hypertension than urban inhabitants (Taylor,

1992). Urban subjects ate high amounts of protein and fat, while the rural populations of Fiji ate higher proportions of complex carbohydrates (Taylor, 1992).

Why would these demographics give such contrasting results? The differing demographic leads to different food environments that affect decisions pertaining to food choice and activity level. The transition from labor-intensive jobs in rural areas to higher paid sedentary jobs in urban settings has been one factor impacting food choice in Fiji. Incomes grow slightly, yet consumption patterns trend from high nutrient density foods to higher calorie foods (Hone, 2004). This change to a less active lifestyle reduces calorie needs, but intake remains the same or even grows. Rural participants had higher levels of physical activity (Hone, 2004). Past research focused on demographics provides persuasive evidence that exercise and diet together have a significant impact on rural/urban differentials in obesity and non-communicable diseases.

Theoretical Framework

The concept of choice related to human behavior has long been a subject studied by disciplines in sociology, anthropology, psychology and nutrition science. The choice of what one eats is of particular great interest to many nutrition researchers, as there are great implications for health. The driving force for eating is, of course, the body's biological response of hunger. This simple decision is influenced by many other factors. Many theories have been developed to try and explain the simple phenomenon of why people make the choices they do. Theories based in human development can aid in answering this complex question.

For the current study, the ecological systems theory (Bronfenbrenner, 1994) was used to examine the different environments that influence Fijian Islanders. Through the use of this theory, the direct environmental influences of food choice for varied demographics in Fiji were examined.

Ecological Systems Theory Relates to Nutrition Behavior

Bronfenbrenner (1994) argued that in order to understand human development, one must examine the entire ecological system in which growth occurs. Specifically, Bronfenbrenner focused his research on child and human development, but the ecological systems theory (EST) explores a wider and more holistic view of environmental influences to answer multiple questions related to human behavior. EST has served as a framework for multiple research studies conducted across multiple disciplines to help understand the social environment's influence on human behavior (Bronfenbrenner, 1994). EST, which was first introduced in the 1970's, has direct implications for nutrition-related behavior and food choice around the world today.

Social ecology is the study of people in an environment and the influences they have on one another (Bronfenbrenner, 1994). Ecology systems theory states that behavior is a function of the person and the environment, and considers the continuous interaction between the two (Bronfenbrenner, 1994). This framework is used to examine the multiple effects and interrelatedness of social elements in an environment. EST is comprised of four socially organized subsystems that influence human behavior, attitudes, and beliefs. The four levels are the microsystem (such as family or friends), the mesosystem (two microsystems in interaction), the exosystem (external environments

which indirectly influence), and the macrosystem (the larger socio-cultural context). The current study focused on these socially organized subsystems from the perspective of Fijian Islanders and how components of each subsystem influence food choice.

Microsystem Food Environments

The innermost environment level is the microsystem, which is the most intimate of environmental surroundings. These influences are closest to the individual, for instance, one's family members, peers, friends, and teachers to name a few. In this subsystem, a person spends most of their time and interacts with people and institutions closest to them (Bronfenbrenner, 1994). Related to food choice, these influences are strong for an individual. Family and friends have the potential to create food experiences by example and repeated exposure. For instance, through repeated exposure to new foods (social conditioning), Fijian mothers are able to encourage their children to try new foods. These sensory affective influences create cultural and familial preferences to specific foods. Self-reported food preferences have been found to be one of the strongest predictors of food choice (Story et al., 2003).

Mesosystem Food Environments

The next level of the environment is the mesosystem, which is the interrelationship among two or more microsystems in which the developing person actively participates (see Figure 1). They include the various settings in which the individual is involved: home, family dynamics, school, peer groups, church, programs, etc. (Story et al., 2003). Mesosystems could also be considered any norm-forming

component of a group or organization like rules, policies, or acceptable etiquette (Bronfenbrenner, 1994).

The home environment could be considered the most complex of food environments. Food at home is affected by food availability at other outlets. The primary food shopper and preparer have particular influence on the eating patterns of others in the household, so there is a strong social influence component (Glanz et al., 2005). The availability of food and parental influences are especially strong for children as they create perceived norms (Story et al., 2003).

Any interrelationship that an individual actively participates will impact what types of foods they eat. Further, schools are identified as one of the most influential sources for children's consumption patterns (Glanz et al., 2005). Glanz et al. (2005) found that availability of fruits and vegetables in close proximal places, such as school, can dictate an individual's consumption patterns. Zipf's principle of least effort explains the relative proximity of healthy vs. unhealthy food products is reflected by population's healthy vs. unhealthy diets (Glanz et al., 2005).

Exosystem Food Environments

The third environmental level is the exosystem and has great influence on an individual through indirect contact. In an exosystem, the individual is not a direct participant, but outside events have the ability to influence (Bronfenbrenner, 1994). Specifically, this level explains the influence larger social systems (median and community) have on the individual. Within an exosystem there is a web of organizations and interpersonal relationships that create the community (Bronfenbrenner, 1994). This

community is larger than the mesosystem but smaller than the respective nation or culture it composes (macrosystem). For instance, on the island of Fiji the urban demographic location of Suva could be considered an exosystem, but the country of Fiji as a whole could be considered the macrosystem, one step up. Although physical location alone doesn't necessarily determine subsystems, demographics could be considered an exosystem through the indirect but powerful influences they possess on an individual and their behavior.

According to data collected by multiple studies, demographics in Fiji have a strong correlation to nutrition-related behaviors (Hone, 2004; Taylor, 1992). Hone (2004) suggested that obesity is not found in the rural demographics of Fiji as much as higher income groups in urban demographics. The power behind the concept of food environments could explain the disparity between the two demographics of Fiji. Each of the urban and rural demographics is composed of different environmental characteristics all contributing to different food environments. For instance, urban areas are concentrated with multiple fast food restaurants and highly imported super markets compared to rural areas where there are more farms, gardens, and natural produce is available (Hone, 2004). Overall, exosystems contain different characteristics that contribute to different possible environments. For the purpose of this study, characteristics that influence food choice have been divided into four environments (physical, social, economic, and information).

Physical environment. The physical environment in a community influences the types of foods that are accessible and available for consumption. These physical communities differ for each individual but they usually include what is most proximal.

Examples include schools, fast food outlets, restaurants, and shopping malls. For developing countries like Fiji, it refers to whether foods consumed are imported or locally grown. All of these outside environment-related factors work together to dictate what actual foods are available for consumption.

Social environment. The society and cultural practices of Fiji contributes to some of Fiji's nutrition-related concerns. Traditions and customary ways of thinking pertaining to food have impacted the decision making process for individuals and families from Fiji. For example, in some countries there is a cultural bias against being overweight. This negative bias is not as strong in Fiji as it is in other developed countries (Hone, 2004). The traditional Fijian perception of size as an indicator of wealth and status encourages over eating and obesity (Hone, 2004). This social way of thinking contributes to attitudes and norms in the social environment.

Economic environment. According to the Central Intelligence Agency's World Fact Book (2012), 25.5% of Fiji's population lives at or below poverty level, with many people living on less than one dollar per day. The lower financial level for much of Fiji's population has led to food price being a key factor considered when deciding what to eat (Hone, 2004). Glanz et al. (2005) found that price was the second highest motivating factor next to taste in determining food choice, especially for families. With more processed imports entering the marketplace and at often lower cost, this factor becomes detrimental and aids in obesity-forming weight problems for the country (Hone, 2004).

Survey data indicates that one of the most influential factors of Fijian food choice is food cost (Hone, 2004). In poor developing countries like Fiji, the public is sensitive to any increase in food price (Hone, 2004). With little knowledge and limited

understanding of the long-term and high marginal cost of obesity, many Fijians don't understand the money saving potential of healthier foods. Until the price shifts, it is anticipated that education and information initiatives will not be as successful.

Information environment. The information environment that includes consumerism, mass media, average education level, and social media can influence individuals in both rural and urban areas. Media and advertising are all part of an informational environment and impact the attitudes and appeal of certain foods (Glanz et al., 2005). Food marketing practices either facilitate or hinder an individual's ability to act on their beliefs, attitudes, and knowledge about healthy eating. In Fiji, there is an increase in advertising and the promotion of processed, high calorie foods (Hone, 2004). Glanz, et al. (2005) found that food stores have focused advertising on foods that are closely related to causing obesity and other chronic diseases. The information environment also includes general public knowledge concerning nutrition education and healthy eating practices in Fiji.

Macrosystem Food Environments

The macrosystem is a socio-cultural environment that consists of cultural-based belief systems, economic systems, laws and political systems where an individual is not an active participant (Bronfenbrenner, 1994). Macrosystems include widespread values, ideologies, and policies of the society or culture. This system has the most distant influence on individual behavior and many characteristics of this level influence smaller subsystems.

All levels of Bronfenbrenner's model are important to conceptualize the accumulation of environments and their influence on an individual's behavior. For this study, the demographic of individuals in Fiji is considered an exosystem as shown in Figure 1. Even though the inner more proximal subsystems have the most direct influence on an individual (Bronfenbrenner, 1994), they would not exist if not nestled in the greater context of outside environments. Overall, the taste, cost, convenience, and impact on health are all key influences on food choice, but the relative importance of these factors depends on the population studied and the environment that choices are made (Glanz et al., 2005). This trickledown effect starts at the larger subsystems and works its way down to shape a food environment. Macrosystems and exosystems play a major role in shaping beliefs, attitudes, knowledge, values, social norms, and many other factors of the smaller subsystems. The overall demographics of a population influence the food environment and result in varied nutrition-related concerns across different demographics in Fiji.

Blood pressure and hypertension are all more prevalent in urban demographics compared to rural. With higher prevalence of fat intake in urban compared to higher energy intake of complex carbohydrates in rural, it is no coincidence that urban populations in Fiji tend to have more nutrition-related illnesses compared to rural populations (Taylor, 1992). Reasons for the disparities could be that there are more calorie rich imported foods available for consumption in urban demographics. Also, the urban lifestyle is more modern and has been found to be more sedentary, as rural areas participate in higher rates of physical activity because of the nature of available jobs (Taylor, 1992).

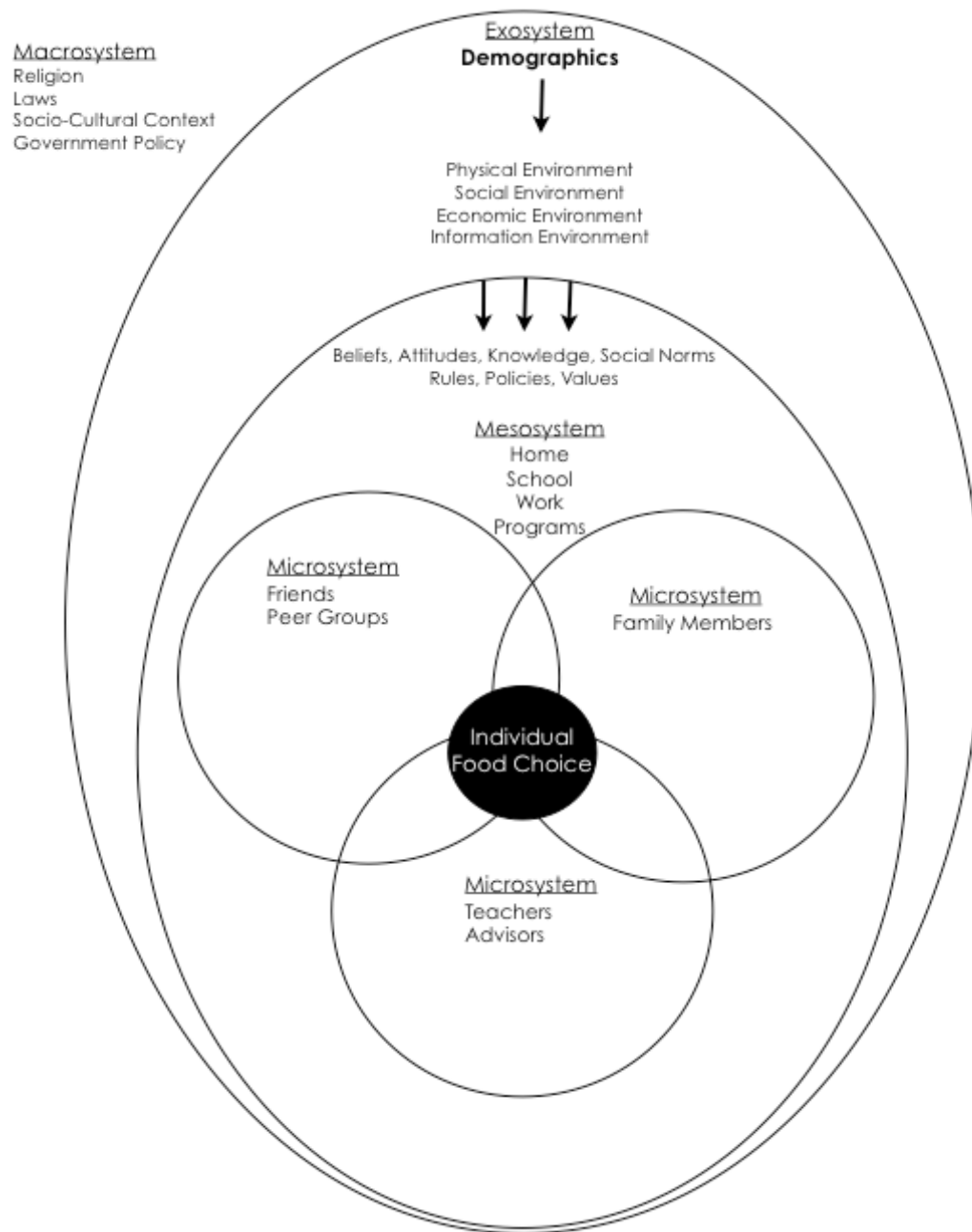


Figure 1. Environments impacting Fijian food choice.

Theory Combined with Research to Increase Nutrition Education Effectiveness

With the aid of research, it is possible to identify the influences of Fijian's food choice and potential variables that can lead to behavior change. Guided by human behavior theories like EST, an individual's choice may be improved with interventions and effective nutrition education programs in Fiji (Contento, 2008; Hone, 2004). Effective intervention strategies are needed to address current nutrition-related problems in Fiji.

Contento (2008) defines nutrition education as “any combination of educational strategies, accompanied by environmental supports, designed to facilitate voluntary adoption of food choices and other food and nutrition-related behaviors conducive to health and well-being” (p. 176). Nutrition education is most effective when delivered through multiple venues, involving activities at the individual, community, and policy levels (Contento, 2008). Nutrition education needs to include more than information dissemination to be effective, but rather address differing degrees of environmental influences as Bronfenbrenner (1994) outlined (Contento, 2008).

Knowledge of nutrition alone will not be the agent for change. An effective model used in nutrition education needs to address an individual's knowledge, attitude, and food-related behavior. This process requires a change in knowledge that leads to a change in attitude and ultimately leads to a change in behavior (Contento, 2008). After further research, this model has been proved too simple to be effective. There is a need for more complex theories for food choice and nutrition-related behaviors to fully understand motivations for behavior and potential change. An analysis of the evidence from over 300 studies shows that nutrition education is more likely to be effective when

it focuses on behavior and action rather than knowledge only and systematically links relevant theory, research, and practice (Contento, 2008).

Summary

The issue of obesity in Fiji's is in the early stages compared to neighboring pacific islands like Nauru, American Samoa, and Tonga that have higher obesity rates (Central Intelligence Agency, 2012; Hone, 2004). According to Hone (2004), the infancy of obesity in Fiji and the country's availability to a wide range of food choices suggest that there is potential for effective policy intervention. Policies focused on changing levels of physical activity and the types and portions of foods consumed will be most successful (Taylor, 1992). An environmental perspective for health promotion is needed to promote health and address the underlying determinants of these problems, as well as guide future quantitative analyses of environmental effects on food choice.

CHAPTER 3

METHODOLOGY

Introduction

The purpose of this narrative inquiry study was to develop a better understanding of the role demographics have on the food choice of Fijians. The food choice experiences of the participants in both rural and urban Fiji in this study were examined during a six-week research visit to address the research questions. Individuals in rural and urban Fiji experience food in different ways and have access to different food-related resources. Consequently, food choice has been identified as a major factor in the increased in obesity in residents in both demographics. These dynamic environments have brought on a multitude of challenges creating a need for a greater emphasis on the role of nutrition-related education and policy change.

Research Design

Qualitative methodology provided a framework for observing human behavior in a natural setting for this study. By using this framework, the researcher was able to understand participants' behavior from their own frame of reference. The initial goal for the study was to use sequential explanatory mixed method design where quantitative methods are analyzed first, with priority given to qualitative data as the primary tool for analysis (Ivankova & Stick, 2007). Both data can be collected sequentially and concurrently (Ivankova & Stick, 2007). Initially, the researcher began by collecting quantitative preliminary data as a basis for collecting and interpreting the qualitative data.

During the implementation of the research process for this study this approach was used, however, the data collected was not valid or reliable and is not included in the findings.

Qualitative Research Perspective

Creswell (1998) suggested that qualitative research as a multi-method type of research, integrating an interpretive and naturalistic approach to a subject matter. Qualitative researchers study individuals in a natural setting, attempting to make sense of or interpret phenomena in terms of the meanings people bring to them (Creswell, 1998). Because of the nature of the research question guiding the current study, a qualitative method has been given priority. When a phenomenon is not easily measured and there is limited knowledge of the culture in which the phenomenon exists, as is the case for this study, qualitative research is beneficial (Harris et al., 2009). Through this form of inquiry, a detailed and holistic view of the food choice phenomenon in Fiji was documented.

In a qualitative phenomenological study, research explores the meaning of lived experiences for several individuals concerning a phenomenon (Creswell, 1998). Simply put, phenomenology seeks to understand people's emotions, attitudes, thoughts, meanings, and perceptions pertaining to a specific phenomenon (Harris et al., 2009). For this study, the phenomenon studied was food choice for the people of Fiji. This research approach was used in an attempt to describe the essence of the lived experience of Fijian people to explain the structure of food decision-making based on an individual's demographic. Food choice of the participants was explored to develop greater insights into the influences and impacts on the decision-making process.

Quantitative Research Perspective

Alternatively to qualitative research, a quantitative investigator relies on numerical data (Ivankova & Stick, 2007). Methods of this type are experimental in nature, emphasize measurement, and search for relationships (Ivankova & Stick, 2007). Steptoe and Pollard's (1995) food choice questionnaire (see Appendix A) was identified as a potential tool to identify food choice motives for Fijians in variable demographics. However, due to limitations of the current study, quantitative data will not be analyzed.

Limitations

When the researcher arrived in country ready to collect data related to the research question, there were many unanticipated cultural barriers. Even though a variety of barriers existed, observation of the participants' food choice behaviors allowed the researcher to respect subjects' culture and way of life. Transversely, for quantitative data collection methods, the environment needs to be controlled, free from bias in order to obtain statistically relevant and significant results. This was not possible for the situation surrounding this study. For this study, many rural subjects were not proficient in English, and had never responded to any type of questionnaire before. In addition, quantitative sample sizes were small and biased in participant referral, as most were involved in nutrition classes delivered by HELP International. As on site data collection began, it became more and more evident that qualitative means were the only reliable strategy for gaining real insight into the phenomenon of food choice behavior in Fiji.

Other limitations included short time frame to collect data, as researcher was only in Fiji six weeks. This limited time prohibited in-country preparation and flexibility. A

longitudinal study would provide a more comprehensive answer to the research question guiding this study. Furthermore, opportunity did not exist to establish relationships with the people of Fiji that were asked to participate in the study.

Researcher as Instrument

Reflexivity entails engaging in critical appraisal of own practice by reflecting on the way research is carried out and understanding how the process of doing research shapes its outcomes (Watt, 2007). For qualitative research used in this study, reflexivity is considered essential and contributes to the understanding of the phenomenon studied and the research process itself (Watt, 2007). The researcher's background and position will affect what they choose to investigate, the angle of investigation, the methods judged most adequate for this purpose, the findings considered most appropriate, and the framing and communication of conclusions (Malterud, 2001). While some see this as an issue of reliability, many feel this perspective provides a richer, more developed understanding of a complex phenomenon (Malterud, 2001).

Sample Population

A benefit of using qualitative research is the priority of conducting research in the natural setting where the researcher is only an instrument of data collection (Creswell, 1998). This study took place in Fiji during the summer of 2012. The research activities covered a six-week period, from June 14th, 2012 to July 24th, 2012. It is reported that demographics in Fiji are a strong indicator of specific nutrition concerns (Hone, 2004). According to research, urban and rural demographics deliver the most varied of nutrition

concerns (Hone, 2004). To measure the variables in this study, research was conducted in two locations, urban locations of Lautoka and Suva and remote villages on the island of Vita Levu.

Procedures

Prior to conducting research in Fiji the following procedures had to be completed (a) approval by Utah State University Institutional Review Board for working with human subjects (see Appendix B), (b) a completed letter of informed consent to provide each participant (see Appendix C), and (c) approval for conducting research in Fiji from the Fiji Immigration Department (see Appendix D and E). In order to stay consistent with the original plan of the sequential explanatory mixed method design, data collection was broken up into two phases. In the first phase quantitative data was collected using the food choice questionnaire (Steptoe & Pollard, 1995). The goal of the quantitative phase was to identify underlying motivators of food choice and allow for purposive selection of the second phase. In the second phase, the researcher conducted interviews, focus groups, and observations to qualitatively document the phenomenon. It is ideal to do an approach like the sequential explanatory mixed method design, as quantitative data becomes a means to provide a general picture of the research problem, while qualitative data analysis will refine and explain statistical results by exploring participants' views in more depth (Ivankova & Stick, 2007).

Data Collection

In order to gain understanding of Fijian's perceptions of their food environment and identify key motivators behind food choice, Bronfenbrenner's (1994) exosystem subsystem was used to inform data collection. Exosystems are of particular interest in this study because of the indirect, powerful influences they have on the inner subsystems. Demographics, an exosystem, contribute to the development of a food environment and influences individual food choice. This study classified four environments (physical, social, economic, and information) within an exosystem (demographic) that result in the creation of a food environment. With these environments as the background, all data collection methods focused on the influence of each for an individual and his or her food choice.

Several instruments and recording processes were used to collect multiple forms of data in order to gather accurate and reliable information from the Fijian people. Figure 2 illustrates the initial methods of data collection that occurred during each phase of the study. According to Maxwell (2005), triangulation or collecting information using a variety of methods can decrease the potential for limited or biased conclusions. Using interviews and observations together to gather information can develop a more detailed, accurate explanation of a phenomenon. As stated previously, the quantitative data will not be analyzed for the purposes of this study.

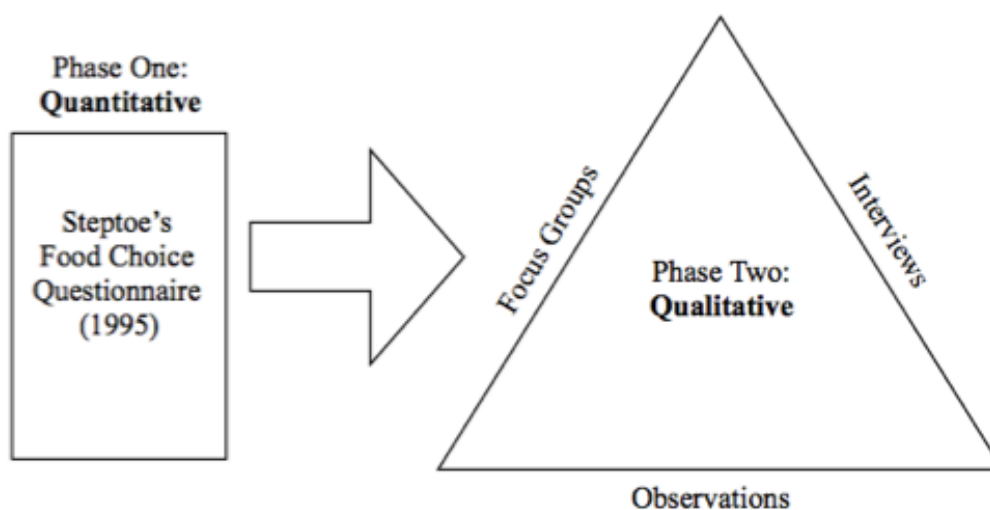


Figure 2. Sequential explanatory mixed method design.

Phase One: Quantitative Research Methods

The food choice questionnaire was created to identify a number of factors that influence food choice at the individual level (Stepptoe & Pollard, 1995). With the food choice questionnaire (Stepptoe & Pollard, 1995), subjects were asked to endorse the statement “it is important to me that the food I eat on a typical day . . .” for each of the 36 questions by responding to a 4-point Likert scale. The importance scale ranged from one representing “not at all important” and four “very important.” Appendix A provides a copy of the entire survey. However, due to limitations, the results of this survey will not be analyzed in this paper.

Phase Two: Qualitative Research Methods

Questions during this phase of the research process focused on discovering physical, social, economic, and information environmental influences on individual food choice. All data collection methods have the common goal of seeking to explore the

meaning of the food choice experience. Consistent motivators for food choice were identified and analyzed for themes.

In-depth interviews were conducted at an individual level to obtain detailed data. Specifically, open-ended questions were used to prompt exploration of all levels of phenomenon. Questions were designed to receive detailed and comprehensive answers, hoping to create a larger representation of the phenomena. Audiotapes were used to recall responses and identify themes.

The second data collection strategy used was focus groups of three-ten individuals assembled by purposive sampling to answer questions pertaining to the research question. During the experience, the researcher specified ground rules and created an open forum for free discussion where participants felt comfortable to respond. Through focus groups, deeper insight into group interactions, behaviors, attitudes, and beliefs were collected. Rigorous attention to objectivity was crucial for obtaining optimal understanding of phenomenon.

Data collection techniques such as observation have the ability to create a greater degree of understanding through the ability to study phenomena in context (Harris et al., 2009). For this study, observations consisted of the researcher documenting the behavior of participants to describe the setting, processes, activities, and interactions related to the phenomenon from the perspective of the participants. Through this process, spontaneous conversations occurred that directly related to the phenomena. Ample observation opportunities were effective in answering the research question and included observing grocery shopping or going to the market, being apart of food preparation, and joining

family meals. Field notes were used to document more in-depth information related to the food choice patterns of participants.

Participants

With the aid of HELP International, a humanitarian program, male and female adult participants were randomly selected from each demographic to answer the food choice questionnaire for phase one of study.

After phase one questionnaires were complete, participants were invited to engage in phase two (interviews, focus groups, and observations). For confidentiality purposes the names of participants were changed.

Data Analysis

Qualitative research tends to produce findings that can't be derived from standard statistical procedures or other means of quantification (Harris et al., 2009). Through this naturalistic approach of gaining knowledge, qualitative research can seek to understand the phenomena of Fijian food choice. For the purposes of qualitative research, the individual researcher becomes the instrument for data collection and analysis by observing behavior through taking notes, evaluating documents, and analyzing the phenomenon in it's natural setting (Harris et al., 2009). Interviews and focus group results were documented using narrative form with direct quotations presented as data. For this type of research, it was imperative that the researcher create a complex narrative that takes the reader into multiple dimensions of a problem or issue and displays it in all of its complexity from the participant's point of view (Creswell, 1998).

Rather than definitive outcomes, processes are the emphasis in analyzing qualitative research. For this study's question, qualitatively analyzing data collection materials generated a theory and hypothesis around the phenomenon studied, while identifying themes relevant to culture, traditions, symbols, perceptions, and languages of the participants. Often in qualitative research, data collection and analysis happen simultaneously (Harris et al., 2009).

Summary

Because of limitations, conducting a mixed method study was not appropriate for this study, as quantitative methods and results were not reliable. Steptoe and Pollard's food choice questionnaire was administered to fulfill the quantitative portion of the original mixed method design. Due to unforeseen limitations, the food choice questionnaire data were not analyzed in this study. The main focus of this study was to explore the research question through lens of qualitative phenomenology. The researcher was given the opportunity observe and document Fijian culture to study in the context of the food choice. Special consideration was given to demographic variables, specifically the physical, social, economic, and information environmental influences on individual's food environments.

CHAPTER 4

RESULTS AND DISCUSSION

Introduction

The purpose of this study was to analyze the environmental influences of food choice in different demographics of Fiji. This chapter is designed to analyze researchers observations and experiences while identifying the environmental factors of food choice in Fiji.

Qualitative Results

The following interviews were conducted and recorded. What then emerged was themes of environmental factors that affected food choice, all further addressed in Chapter 5. These categories or themes can lay the foundation for future discussion and analysis in food choice phenomenology. In the following descriptions, names of participants have been changed to protect identity. Any other identifiable factors have been adjusted, to ensure confidentiality. Through these text-based descriptions, it is hopeful that the environmental factors that influence food choice in Fiji will emerge. While the interviews include specific environmental influences, one interview cannot possibly capture the totality of the participant's relationship to food and their personal food decisions. Direct quotations are used throughout description to give voice, and clarify responses, and provide emphasis on environmental influences.

As it was previously addressed in the theoretical framework, the researcher has divided the exosystem environment into four classifications of environments that have

the potential to influence food choice (a) physical environment, (b) social environment, (c) information environment, and (d) economic environment. Questions were aimed at analyzing each of these environments and their particular influence on the participant in their decisions related to food. All descriptions have been enriched by researcher observations and field notes.

Urban Participants

Most of my time spent as a volunteer was spent in the city of Lautokia, the second largest city in Fiji. Although it was a big city for Fiji, it wasn't near a comparison of an urban center in America. But compared to a village in Fiji, cities had many more options for supermarkets and restaurants. Different supermarkets lined the streets with advertisements and loud attractive music. The advertisements in cities were much more condense than what could be found in villages. The following are excerpts from my field note journal.

I noticed a lot of billboards in Suva. They advertised cookies, tin items, sausages, tang and other convenience foods but especially Coke. When you enter any supermarket, there were even more ads. Comparatively, there are much less ads than America.

Cars were plentiful in cities compared to villages. Villages had dirt roads, Suva and Lautokia only had paved. Public transportation system much more efficient and condense in city.

Priya.

“You become obese and lazy if you don't eat healthy.”

At 50, Priya, a Fijian mother of three children, just recently ended her position working for an NGO, to stay at home and as she referred to it “sustain her family”. Her husband had also just recently retired from his position at the Lautoka sugar mill. She

did not mention how the family now stayed sustained with no current employment. Originally from Suva, she came to Lautoka through marriage. Lautoka, the second largest city in Fiji, is known as the Sugar City because of its sugar cane belts. The Lautoka Sugar Mill is the largest employer for the population surrounding.

Physical environment. Priya talked about her new garden a lot during the interview. This garden was a new pet of hers she started successfully four months ago. She remarked how she now had time to garden, where as before, when she worked full-time, she never had time for a garden. She had a garden a while ago, but was not successful with it as dogs got into it a lot. This was a major barrier she faced with gardening in the city. Many stray dogs run all over the place and often get into yards, and ruin gardens. In effort to eliminate this possibility, she put up sticks and some type of barrier, which seemed to help somewhat.

Since she isn't working as much, she goes to the supermarket a lot less, "just to replenish her foods stuff." The supermarket takes 15-20 minutes to get to on the bus, with all the stops on the way. In the past she usually bought bread from The Hot Bread Store, a popular bread chain all over Fiji. But because of the new dynamic of her being home more often, she has started to make bread at home more often.

Social environment. A native Fijian dish often cooked in Priya's home is fish and lolo. Lolo is basically fresh coconut milk, which is then used as a broth for the meat. Priya prefers to eat with people, "because it's fun and you have a bigger appetite." She remarked how when she eats alone, she doesn't eat as much, and she doesn't like this. Food is a very social thing for her and she enjoys sharing it with people, especially her family.

Informational environment. When asked about her community and how they ate, Priya answered “not healthy, I know this by listening to the news, so I know there is a lot of non-communicable diseases.” This answer gave a lot of insight into her knowledge of the current condition of Fiji. Two conclusions can be made about Priya. First of all, Fiji’s attempted effort to inform the public of a concern has reached her. Second, she had connected this concern to health and the food choices that her community is making. When asked the follow-up question of what could her community do to eat better, she said, “ build your own gardens and eat food that is simple and nutritious.”

She blamed the “Western World” for advertising efforts she noticed around Fiji. The advertising is used to “entice families to eat there and make money for themselves.” Two eateries she referred to in the interview were *Chicken Express* and *McDonalds*.

Priya remarked how home economics taught her much about nutrition and how to eat healthy in school. Her home economics courses taught her how to cook, and gave them simple recipes to make. Irish stew is one recipe she remembered, made from all the “health foods, like leaner meat, vegetables, potatoes, spring onion and noodles”. She recalled that nurses also came to her school and taught about health when they did their periodic health checks.

Economic environment. When Priya left work she “stopped shopping once a week and now only goes once every other week” as she “had to look to other means to survive”. Priya loves her garden and feels it a worthwhile sacrifice because of its money saving ability. Since she’s gardened, she claims that she has “woken up” and has

minimized unnecessary eating for her family. She vented that she feels vegetables are especially expensive in the market, and that gardening has saved her a lot more money.

Priya's family eats mostly fish, and some chicken because of its cheap price. When she previously worked, she mentioned that they ate other meat a lot more, but since has cut this out, much to her children's dismay. "Meat is expensive and it is something we now cut out."

Fish is especially cheap for her family, actually being delivered right to their doorstep. The "Ika" Van, as she calls it, comes around to areas and delivers fresh fish to surrounding urban neighborhoods.

We have a van that goes by. Fisherman catch fresh fish then they come to our area almost every second day. We start hearing "fish, fish" or the Fijian name of the fish and then we just go out. All the housewives come with your bowl or your basin. And it's quite reasonable. Seven dollars for a dozen small fish. I feed my family 2 meals.

Temo.

"Prefer to grow my own garden, but the land space that I have in the city would not work."

"Fish, for us on the Islands, very nutritious to us. We believe that fish is the best meat. I grew up on the islands, so this is how I think."

Temo (age 42) is the third generation in his family to live in Suva. His family originally came from a small village on Susui Island. He said he visits the island when he has time, lamenting on its beauty and boasts as the "best beaches in Fiji." Temo is blessed with nine children from his native Tongan wife. His wife's family goes to the states often, so sometimes he's left with all the kids when she goes to visit. He lived in Tonga for 16 years with his wife, before they moved back to Fiji in 2006. He was the president of the rugby club in his community.

Physical environment. With such a big family, he would like to have a bigger garden, but does not have adequate land in his urban demographic to support one. However, they do have a small garden that grows a little bit of bele leaf. Temo's family relies on the Market for fresh produce. It seems that Temo had figured out the best way to get the freshest and cheapest produce from the local farmers at the Market. The day to go is Saturday, which seems to be the shopping day for all of Fiji, "It's pretty common to all households in Fiji. Saturday is shopping day." All of the local farmers go to one grand location on Saturdays in the middle of the city center that they call the Market. Here you can find fresh vegetables, fruit, and fish for a reasonable price.

Since Saturday's are devoted to getting a good deal at the market, Friday evening is usually reserved for Supermarket shopping. The most common things purchased at the Supermarket are tin foods (canned corned beef and tuna), noodles, flour, sugar, rice and toiletries. Temo's family goes to the Supermarket only twice a month, as apposed to going to the Market once a week.

Temo does allow his family to go to fast food sometimes. His kids like to go to McDonald's a lot, probably going once or twice a week. Temo and his wife do not understand their liking for this restaurant, but allow it anyway. There are only two McDonald's in all of Fiji. The location his family often went to was in the heart of Suva, the urban capital. There is one more in Nadi, close to their airport and another urban center.

When asked what meat his family eats the most, he answered with "fish and chicken" immediately. This meat is the most available protein on the island, making it also the cheapest option. Fish remains the easiest to come by.

Social environment. He proclaimed that his family is non-traditional in Fijian gender roles. He reflected that usually it is typical for the man to “make the money, gather the food, then the women cooks it”, as the woman spends much of her time at home. In his home, his wife did all the shopping and the cooking. When she was away in the states or Tonga, visiting her family, this responsibility fell on him.

Every Sunday his family had the tradition of preparing Lovo, a native Fijian method of preparing food by wrapping meat in palm fronds or banana leaves and burying it with hot stones in an earth oven for many hours. On top sits various root crops including dalo (the potato like root of the taro plant), cassava (the root of the tapioca plant), and uvi (wild yam). The following is Temo’s quotes as he pondered all that surrounded his family’s tradition:

Lovo is the taste of heaven, taste you can’t get from somewhere else. I’d rather make my own. It’s mostly done with hands...Us in the Pacific, if they stay in the states for long, that is the first thing they want to eat, is Lovo.

It is tradition to think that our forefathers was strong, because they eat Lovo using the earth and stones. They also eat more vegetables and leaf product. But now we are just too lazy and we don’t eat the stem anymore.

I have seven sons. My 3 oldest sons, one does Tae Kwon Do and the others play Rugby. I think one of the things that made them really strong, especially their bones, is eating these kinds of traditional foods. And I teach them how to do it and we eat the stem.

During my interview with Temo, he shared his Fijian’s culture and hospitality surrounding food. “I would rather always share my food with people. That’s the one thing about us in the Pacific is, while I’m eating I would invite anyone, even those we don’t know, to come and eat with me”. I experienced this hospitality as a volunteer. I was welcomed to partake in many meals, even if it meant the giver was sacrificing much to feed me.

Informational environment. Temo claimed that in grade school, he learned about nutrition. “They taught us mostly to go back to our traditional way of eating. No meat, no oil. Now almost every food you buy is made with oil.” For Temo, his grandmother became a source of good information concerning nutrition. He believed that she was very nutritious, by making sure that he “had vegetables and not much cassava.” Cassava is not as good for you because it is considered a high starchy carbohydrate. He connected her old age to healthiness, and assumed that she lived to the age of 85 because of the healthy food she ate.

When asked about the health of his community, Temo did not have much good to say. He recently went to the hospitable, where he was told that the age group of 40 to 55 in Fiji is dying.

The food is the reason, no more healthy food. A lot of my friends have diabetes and high blood pressure. They are eating fast foods, hardly eat Lovo or other traditional foods. Also noodles, is a big problem, because they are fast and not healthy. Very cheap, packed foods have really replaced a lot of things. It wasn't that way before. Suva has a problem more than villages. People are lazy to go down to the market and buy tomatoes and lettuce and make real food. When you turn 40, the bomb starts ticking. If you take care of your food, you don't have to worry about dynamite.

His advice for creating a healthier community was to stop being lazy, and start playing more sports.

Economic environment. One comes to know the money saving tricks of a lived environment. Saturday is designated as shopping day for many Fijians for probably many reasons, but mostly because of the price saving potential. Temo's family in particular sacrifices for a good price, by waking up early in the morning, and arriving at the market at 4:00 AM. Temo explained, “If you want the really good price, you need to

go at four in the morning. That's when the farmers come and sell in bulk. Nice fish, big vegetable. By afternoon, they become marked up.”

When asked what he thought was the typical juice that was consumed the most, Temo gave the answer of tang. But he remarked that tang wasn't always the common juice.

The small packets of tang have become the common thing. It wasn't common before. It's cheaper. It's 70 cents for a packet. Originally we made juice from a lemon, it's the best. But now people are so lazy. When I was young we drank fresh lemon juice all the time.

He blamed the change on people's laziness and the cheap price of the packets for this overwhelming change he's observed.

Temo referred to expensive canned foods as “Palangi (white people) foods, from the Western world”. In order to save his family money, they always try to eat local foods, because of their expense eliminating quality. One example he gave was when they buy dalo from the Market, which they can eat from for three days.

Sonja.

“If you've got land, than it is better to grow your own. We don't have a lot of land in the city.”

Sonja is a Fijian woman from Asawa who moved to Suva when she was married. She has lived in Suva since 1990. She is a cleaning lady, hired full-time by a local church.

Physical environment. Sonja keeps a small garden at her home in the city. She only grows cassava, dalo and bele. Because of this small selection, Sonja is forced to constantly buy vegetables from the market almost everyday. She would prefer to grow her own vegetables if it was an option. On the other hand, she goes to the supermarket

less, only once a week on Saturdays. Usual purchases from the supermarket include rice, sugar, flour, oil, coco, noodles, milk and tin stuff. She also purchases bread from the Hot Bread Store, like many of her neighbors. Unfortunately, there are not whole grain options of bread to buy at the *Hot Bread Store*.

Fish and chicken are the most common meats eaten in Sonja's home, because they are "easier to buy, and less expensive." Sonja herself often goes to the sea and fishes to catch meat for her family. The sea is pretty close to her home.

Social environment. When asked about some of the native Fijian foods she eats, Sonja answered with cassava and dalo, rou rou, and bele. She explained that when she eats foods like these she feels a mixed array of feelings.

I think of my mom and memories of the village. I was brought up in the village. Village is far away from the towns. Kids now don't want to live like the villages. In the villages for breakfast they had tea and cassava. Kids now want bread and cereal.

If she was given the choice, she would rather eat with people. She eats with the mentality of inviting outsiders to join in her eating experience.

Informational environment. In grade school, Sonja claimed that nutrition was one of the subjects she studied. She tried to recall what she learned, and vaguely remembered three main food groups. She needed coaxing to jog her memory, but she finally remembered Energy (carbohydrates), Body Building (protein), and Protective (vitamins and minerals). She remembered this information being in a chart form, and mentioned that this is still how they teach nutrition and that her kids are taught the same way. She said there were not recommended portions for each food group. Other people that taught her about nutrition were nurses that came in for health checks periodically.

During the interview, Sonja exhibited knowledge of basic nutrition principles. Sonja was aware that white meat is much more healthy than red meat. She also noted that water was the most important drink to drink. She mentioned diabetes as a sickness that resulted from not eating healthy.

Economic environment. When asked about some of the native Fijian foods she eats, Sonja answered with cassava and dalo, rou rou, and bele. She then went on to say that she feels good when she eats native foods like cassava and dalo, because “you don’t spend your money.” Although, even cassava, she complained, was raising in price and she wishes she could grow it.

According to Sonja, the supermarket is more expensive than the market. She believes this is so because “much of the supermarket is imported, like the rice and beans, potatoes and onions.” Fresh vegetables grown locally are a better deal.

She complained that she did not earn enough money through her job, so therefore food was a bit expensive to buy for her family. “For others that make more, the prices of food are ok for them.” One thing her and her family now have learned is the art of preserving. She has started buying a lot of potatoes when they are cheap and then preserve them for other times in the year. She also buys a lot of rice and flour when it’s cheap and keeps it in her house.

Rural Participants

I was able to spend some time in several rural villages of Fiji as I volunteered for HELP International. Getting into the villages was quite the experience. Most roads that lead in were dirt and several minutes away from any city center. Some villages did not welcome just any visitor, and you had to bestow a gift, usually kava, in order to enter.

Villages were much more lush with crops and animals. The following is an excerpt from my field note journal. “Dirt roads, cows and goats walking the streets. Breath-taking scenery with no buildings. Chickens, huts, and little children were walking along the road barefoot.”

As I stayed in village homes, it was a far different experience compared to the homes in the more urban environment. Because the villagers were farther away from town, they had to plan out and make do by being self-sustainable at home. Many families had cows, or some kind of neighborhood cow connection, where they milked their own in order to get dairy. Pasteurization took place on an outside fire in the front yard. Some families had chicken coops, and most if not all families had some sort of garden.

Rolla. As a volunteer, I was able to spend a lot of time with Rolla and spent many days and nights at his home. During these experiences, his family would feed us and let us participate in meal preparation. I helped prepare meals with Rolla’s wife, and had many discussions with him outside this interview. I was able to observe his way of food making decisions, by preparing and eating meals with him, and by getting to know him and his family.

Rolla, a 60-year-old Indian man, was told that he had diabetes from a doctor 5 years previously. His condition of diabetes played a huge role in his decision making related to food. Because of this condition, he often ate different meals and foods from what the family was eating. After talking with him further about his symptoms, some of the volunteers diagnosed that he might in fact not have diabetes. He checked into it a bit more, and he discovered he did not have that condition. I do not know what type of doctor he first initially talked to or how he was diagnosed, but this false diagnosis

determined much of his eating choices. His information environment didn't seem to be reliable.

Physical environment. Rolla lived in Balata, a town located 30 minutes out of the very rural city of Tavua. He spent most of his time at home outside. He had a garden, where he had a lot of root crops including cassava, cabbage, lettuce, capsicum, and raw raw. He did buy a few choice items in town at the market, but his family relied on their garden heavily. He remarked, "fresh food is better," referring to its taste and nutritional value.

His family hardly ever had to buy chicken, since they raised chickens on their land. They had no need to get milk in the supermarket; since Rolla milked the single cow they had every morning. To make sure it was safe, he just boiled the milk over a campfire twice, and then served it to his family.

Sometimes Rolla's family ate things that were imported, that were available in the local super market, like pears and apples. "We have it once in a while, but Fiji produce most of the time."

Social environment. For Rolla, food wasn't as much of a social thing. "I eat alone, it doesn't matter to me." He claimed he was not really a big community guy. "I don't worry about them, they don't worry about me."

When I asked him about his neighbor's health, he remarked, "[in] Fiji, they don't worry about being overweight. But I do." In regards to his own children's eating habits, he did not feel any ownership. When asked if he ever teaches his children about food and how to eat healthy, he shrugged this question off and said,

Their mother worries about that. The kids food, my wife takes care of it. I bring them fresh vegetables. My girls don't do any physical activity; they just sit at the TV all day (he laughs). It would be different if I had boys.

Informational environment. When talking about rice, Rolla made it clear that he preferred brown rice and then followed this with an explanation that he was diabetic. This statement makes it clear that he had some knowledge on basic nutrition, especially the point that because he was under the impression that he had diabetes, he had to eat more carefully. He also mentioned that he did not eat anything cooked with ghee and hardly ever ate any meat, except for fish.

Overweight for him meant: "...that's when you get all the sickness, ya know. Obesity." When asked about what was considered a healthy food he used two key descriptive words: leafy and green.

Economic environment. His garden was used for his primary source of physical exercise. It was also quite visibly a hobby. Every time I was at his house, he was outside attending to the yard, which included gardening. He did agree, however, that his garden made vegetables cheaper, although he did not seem much interested in this. He claimed that he did not think Fiji had high prices, and thought fish was always sold at an excellent price.

Nilima.

"I like to eat what is grown in Fiji, eh."

Nilima, a Fijian female, was previously from the neighboring island of Vanua Levu, and came to the village of Korovov in 1992. She has lived in this village ever since, where she's currently married and has two children.

Physical environment. Nilima's physical environment is much different than that of someone living in a city. The nearest store is 15 minutes away, surrounded by dirt roads. Her family has a garden, which is a big part of their food source. There they grow cassava, bele leaves, eggplant, lemon tree, guava, among other produce. She does go to the market and supermarket in town about once a week. There she buys eggs, some produce, and as she put it packed stuffs, which includes flour, rice and sugar.

When it comes to eating bread, Nilima makes all the bread her family eats at home, relying only on the ingredients she gets from the supermarket. According to Nilima, this is not an uncommon practice for woman in the village. "We make bread, in the village." One of the families' favorite bread is roti, unleavened Indian inspired flat bread.

Social environment. Kava, a root crop often grown in the South Pacific, is an age-old tradition in Fiji. The ground up roots is used to produce a drink with sedative and anesthetic properties. For Nilima, Kava is a source of social gathering for most of her nights, as six out of seven nights are devoted to this traditional ritual. Typically it's done in the evening, after dinner, until bedtime.

Yes, I think I drink it most of the time, Monday through Sunday (laughing). I can only miss out on one night. It's part of. We sit down. We do the talking. Sometimes its here or another place in the village. At most functions in Fiji, kava is served there. When it's time to have food we have it after kava. If you want more it's up to you.

Nilima enjoys the social part of food. She always prefers to eat with people, because "it's fun and you have a good appetite." When she eats alone, she does not eat as much. For Nilima, this is a very negative attribute of eating alone.

Nilima explained some strong beliefs she had surrounded by the practice of making food in the village.

In Fiji, what we believe in is this. When we use firewood from early ages to old age, they live long. We believe that when you use kerosene or gas, you don't know what gas is made out of. But firewood, that is a gift given from God, it's natural. We put the firewoods together and we start a fire. No harm will do us, using fire from firewood. Even some of us islanders, they still eat in clay pots, because they don't want to use metal or plastic. I knew an old man from the village, his granddaughter is married here, he had his meals cooked in the clay pot, and he lived such a long life. He would say that, "when you eat food cooked from firewood, no harm will do you. You will live for a long time". He was about 100+ by the time he died. It's tasty too, the firewood. Everybody in the village cooks with fire. Even that lady in the good house, but she still uses firewood. We bake in firewoods, we make cakes in firewoods.

Informational environment. When asked about how Fiji eats, she claimed she listened to the news and had knowledge of the amount of non-communicable diseases there was on the island. Her advice for the community was to "build your own gardens and eat food that is simple and nutritious." In grade school she took nutrition classes. She considers herself healthy, and claims to pass this on to her children. To make sure her kids are eating healthy she says,

I have to cook fresh food for them. I give them leftovers, for them to take to school. I prepare food for them in the morning. Before school, they have healthy food, and then they take the healthy foods with them.

Economic environment. According to Nilima, most of Fiji has good prices, except for rice, meat, and packaged goods. This assumption concurs with reality, since most of Fiji's rice, meat, and packaged goods are imported. In order to save money, Nilima claims, "It's better to grow than to buy." To her, Nilima believes the village life is easier to live with little money compared to the city.

Suva (Fiji's most urban environment) is different. It's a city. They eat better if they work. In Suva if you don't have money, it's very hard to live in Suva, compared to living in the village. We just go to the ocean and catch crabs. Our

fish ponds there, we catch prawns. We eat healthy here. We don't worry about food. In the city, they pay for their rent. We build our own houses, we don't have rent. If you don't have money, you can't put food on the table, back in Suva. But here in the village, you just need to be strong and smart.

Vika.

"I think people should plant, I think they should do more gardening. If you don't eat healthy food you become sick. If you eat too much food you become sick."

Vika is an extremely petite Indian woman that lives in Drumasi, a very rural village quite a bit away from any near cities. Tavua was the central hub and city center for Drumasi, and it was still about an hour ride away. She was 21 years old when we interviewed and had a two-year-old baby girl. Her husband currently worked with Vika's sister's husband, doing carpentry. Vika herself had only worked or been of hire one week of her life.

Physical environment. Vika's family grew a garden, which was much of the support of their fruit and vegetable intake. Plants she grew were eggplant, cabbage, tomatoes, and maize. Her family hardly ever went to the market in town, and relied mostly on the vegetables and fruits their garden or neighbor's gardens produced. Vika went to the supermarket in Tavua maybe once a week by bus, where she would get "groceries," which included mostly flour, dahl, potatoes, onion and garlic. When she was in town, she sometimes bought bread from the hot bread store, but her family did not eat a lot of bread and mostly relied on making roti.

Vika's family never bought milk. Instead, they had worked out a deal with her mother's brother, who owned a cow, where they were able to take just 1 liter once a week. The brother boiled (pasteurized) the milk for Vika's family as part of the deal. Vika was limited with what she shared about this deal. To me, it sounded like her

husband had worked out a deal and was providing a service for the brother's family.

Nonetheless, Vika's family had 1 liter of fresh milk per week for her family of 3. Despite this milk, water is the most common drink by far in Vika's home.

Social environment. Only very rare occasions instilled the event of going out to eat. However, food was a social time for Vika as she said, "...it is fun eating with people." For Vika, common Indian dishes bring back memories of childhood.

Information environment. One memory she has in particular concerning nutrition education was that of her Home Economics classes. She claimed that she learned a lot about cooking in this class. This class is also where she claims she got the majority of her nutrition education.

When I was in form four (Fijian High School standing), at that time I learned about cooking. They teach us how to make pizza. Didn't make at home, because cheese was expensive. Cake was also taught. They also made roti and bean curry. Everyone was supposed to take this class. Sometimes I think about home economics when I cook.

She recalls learning about the three balanced meals, yet she could not remember details of this topic. Her home economics teacher did not have the students prepare these meals, rather "...we made other foods, like the pizza and cake."

Vika admitted that she was not familiar with how to read a nutrition label. But she did describe what she knew "If you buy the bongo wrapper [this is a potato chip brand in Fiji], there's a back, there's a nutrition label. It tells us all about the things in it, and how many grams."

Economic environment. Vika explained that the most common dishes her family ate were roti and curry, using tin meat for the protein. She claimed that for her family, tin meat was cheaper than fresh chicken or fish. This would make sense since she was closer

to the interior of the island, and many miles away from the ocean where fish was available. Sometimes they ate fresh chicken, but “we have to buy from our budget”. Fish was sometimes at a price she was willing to spend, but it depended on a few factors.

Overall, the supermarket was much more expensive than the competitive farmer prices at the market. Despite this, her family still saves even more money by gardening, as she reaffirmed constantly “It helps that I garden. We plant it all. This saves money.”

Summary

The researcher conducted both quantitative and qualitative research in rural and urban demographics of Fiji, with primary significance given to qualitative data. For quantitative data collection, Steptoe and Pollard’s food choice questionnaire (1995) was administered. During data analysis of the quantitative results, it was evident that the data was not reliable or valid. Therefore, priority was given to the qualitative data collected. Qualitative data included observation, field notes, and interviews. Interviews focused on identifying the strongest physical, social, economical, and informational environmental influencers for each individual in regard to their personal food choice. Observations were portrayed through the text of the contrasting food environments of rural and urban Fiji.

CHAPTER 5

CONCLUSIONS

Summary of the Research

Nutrition-related decisions made by the public have posed a national nutritional epidemic for the Islands of Fiji. This study sought to further explore the environmental factors that are the strongest motivators for Fijians in their food choices across rural and urban demographics. Contrary to Bronfenbrenner's ecological systems theory that states that the micro- and meso-environments (a person's family, home, friends, etc.) have a more direct and intimate influence on people's decision making and behavior, this study concludes that the outside environments such as demographic have possibly a substantial impact on decision making.

The physical location where a human chooses to live and make a home influences personal decision-making strategies, specifically related food choice. Data gathered through in-depth interviews focused on viewing the phenomenon through the Fijian perspective, in addition to previous research findings. The purpose of this chapter is to identify significant themes that were found in the food decision-making process across demographics. Findings are organized into the food environments developed based on the theoretical framework informing the current research study.

Physical Environment

The physical location of any environment influences what foods are available for consumption. In Fiji, many of the environment unique foods include tropical climate produce like cassava, taro root, fish, sugar, coconut, and kava, just to name a few.

Cassava, traditionally the most common eaten vegetable on the island, is high in starch and low in dietary fiber. However, because of its low cost and high volume, it is widely consumed.

The rural villages of Fiji are distanced from urban centers, so western influences are not as strong. They are physically located in a place with more plantation opportunities and farther away from stores where they would potentially build a strong store dependency. Urban homes generally do not have as much land to garden compared to rural home, and there are more potential garden disturbances like stray dogs and people. These physical location factors play a huge role in the opportunity to have a self-sustaining food source like a garden. All of these physical factors combine, influencing which foods are available for consumption based on demographic.

Social Environment

Overall, in Fiji I observed a similar social environment surrounding food in both urban and rural environments. Fijian's in general like to eat, especially with guests and other people. As I volunteered and went from project to project, whomever I met with was happy to provide food as part of their cultural welcoming. Food was an integrated part of all social gatherings, urban and rural. For instance, an Indian wedding I attended in Ba, a rural community, served four meals to guests over the course of the day and had food available the whole time, despite their quite obvious impoverished circumstance. In Lautokia, an urban center, there were a total of five community fairs that were hosted in the town central where there were rides and entertainment, but most of all food stands that lined the whole park. Eating was the central part of this social event, as was quite evident in the amount and emphasis of food available.

I observed the Fijian social norm in body weight to be a bit heavier in build. In fact, Chi, a hired Fijian chef that worked for Help International, was very thin and complained and lamented this to volunteers often. She wanted to be what she termed “thicker” and even thought her husband would be happier if she put on some more weight. She even explained that she tried to gain weight with no avail. Signs and billboards often had Fijians that were overweight, much to the contrast of America, where expectations are to be abnormally thin.

The community culture of the rural village is different than an urban center in Fiji. This was evident in Nilima’s interview as she explained the difference in priorities for urban environments compared to rural villages. She boasted that in her village they did not have to worry about money as they do in the city, because they just need their hands to live off the land. Other lifestyles were different in the village as well. In rural settings, daily kava ceremonies were much more common. These village communities tended to rely on each other by often sharing food and their personal time together.

Information Environment

Many of the urban and rural participants referred to the traditional ways of eating as healthy, and agreed that the western world brought unhealthy foods. When both groups were asked about their previous nutrition education in grade school, many recalled learning about the three main food groups, energy (carbohydrates), body building (protein), and protective (vitamins and minerals). When asked how much they should get of each food group, most participants were confused. However, most participants knew and vocalized that they should try to get as many vegetables as they could for health benefits.

While living in Fiji, and shopping and eating in country, I observed limited nutritional information on food products. Not all food products had nutrition labels and packages were often misleading. For instance, in the flour section there were 3 kinds of flour offered and the refined white flour said “high in fibre” on front, where the wheat flour said no such thing. The information presented was wrong and limiting for consumers not familiar enough to read the label and discover the truth for themselves.

I had the opportunity to speak with Dr. Tukana from the Ministry of Health in Suva about Fiji’s information environment related to food choice. The Ministry of Health is working closely with the World Health Organization to try and disseminate nutrition and health information to the Fijian public. They are developing campaigns and trying to improve current public health policy. Dr. Tukana clearly emphasized that one thing that was needed was a “mindset change,” or a change in behavior and decision-making. The Ministry of Health, as well as the whole country, is quite aware of the current NCD condition, and measures are being taken to try and improve the information being presented to the public.

Economic Environment

In most of the interviews, money saving was mentioned. It seems that in general, if a food had money saving capabilities it was chosen. One of the money saving methods referred to the most was home gardening. It was very common for families to have a garden in the villages, but this was partly due to more land space. Because of this, rural populations did not have to depend on getting produce from the city, which also saved on potential transportation costs. For urban dwellers, I was surprised at how easy it was to get fresh fruits and vegetables at the local market. Many participants did buy canned or

packaged items, but more relied on fresh local produce because they could get good deals at the central town market.

Recommendations for Future Research

Throughout the course of this study, many interesting topics were introduced that would be worth researching further. Following are questions for potential future research.

What is the lived experience of food-related beliefs for a Fijian rural village dweller? Meeting with rural participants was a very different experience than meeting with an urban participant. Rural homes not only looked different as they were made with more meager materials, but the locations of these homes were much more secluded with extra land available. Rural village ways of thinking was very much self-sufficient driven. Nilima clearly illustrated this when she explained that someone living in a village needed no money, just their working hands. She further spoke of how she didn't trust gas because it was manmade, and felt better about using fire and clay because they came from earth. Some of the inhabitants of the more interior villages of Fiji rarely leave their village, as they have all of their physical needs met within the walls of the small community. Western influences were not as strong in villages, and this was reflected in the lower number of NCD percentages for the rural demographic.

In what specific ways has urbanization directly influenced Fiji's food consumption? This study briefly brushed on this topic, but it would be worth further exploration. For hundreds of years, Fiji was self-sufficient in taking care of their physical need of gathering food. The introduction of the Western ideals when Great Brittan

brought Indian slaves resulted in the urbanization of Fiji. As a result, food consumption patterns changed, specifically in urban demographics. It would be beneficial to examine the percentage of food found in Fijian supermarkets that have a Western influence now, and further explore Fiji's current food manufacturing industry using qualitative research methods.

What is the lived experience for a Fijian woman in relation to her view of her own self-image? During my stay in Fiji, I observed that it was socially acceptable to be a little overweight. Fijian women did not seem to be ashamed of their curves or extra weight. Men in this population seemed to appreciate and approve this body type as well. Chi, the HELP International chef, was very distraught that her high metabolism did not allow her to put on the extra pounds she so desired. One's self concept is influenced by the culture they are a part of, in turn influencing decisions and perceived norms. Although this subject was touched on in this study, it is warranted to investigate further.

One final recommendation for future research focuses on using Steptoe and Pollard's food choice questionnaire (1995). A longitudinal approach to gathering data using this instrument would provide data that would inform future nutrition education programs offered in Fiji. A timespan longer than 6 weeks is needed in order to establish relationships with the Fijian people, conduct the surveys, and analyze data.

Concluding Remarks

It is interesting to analyze the effects of modernization on a developing country such as Fiji. Fiji's traditional diet and way of life was a healthy lifestyle for many years. Western influences, such as processed foods and fast foods with higher fat and sugar

intake, has led to an increase number of non-communicable diseases resulting from weight gain and obesity. Based on the findings of this research study, the urban areas of Fiji have been impacted more by Western. Overall, many of the rural villages have been able to maintain their traditional food preparation and food choice practices. It can be concluded that there are dramatic differences in environmental influences across the rural and urban demographics of Fiji, which is reflected in basic everyday food-related decisions. The environment that an individual lives in poses significant implications for nutritional intake. Overall, this finding can help inform and shape future nutrition education and policy.

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APPENDICES

Appendix A. Instrument

Factors that influence your choice of food

Several different factors influence our choice of food. For every person, there will be a different set of factors that is important. In the next set of questions, we are interested in finding out what factors influence *your choice of food*. Listed below are a series of factors that may be relevant to your choice of foods. Read each item carefully and decide how important the item is to you. Put a tick in the box that best reflects your feelings. Remember, there are no right or wrong answers - we are interested in *what is important to you*.

<i>It is important to me that the food I eat on a typical day:</i>		<i>Not important at all</i>	<i>A little important</i>	<i>Moderately important</i>	<i>Very important</i>
1	is easy to prepare				
2	contains no additives				
3	is low in calories				
4	tastes good				
5	contains natural ingredients				
6	is not expensive				
7	is low in fat				
8	is familiar to me				
9	is high in fibre and roughage				
10	is nutritious				
11	is easily available in shops and supermarkets				
12	is good value for money				
13	cheers me up				
14	smells nice				
15	can be cooked very simply				
16	helps me cope with stress				
17	helps me control my weight				
18	has a pleasant texture				
19	is packaged in an environmentally friendly way				

<i>It is important to me that the food I eat on a typical day:</i>		<i>Not important at all</i>	<i>A little important</i>	<i>Moderately important</i>	<i>Very important</i>
20	comes from countries I approve of politically				
21	is like the food I ate when I was a child				
22	contains lots of vitamins and minerals				
23	contains no artificial ingredients				
24	keeps me awake and alert				
25	looks nice				
26	helps me relax				
27	is high in protein				
28	takes no time to prepare				
29	keeps me healthy				
30	is good for my skin/teeth/hair/nails etc				
31	makes me feel good				
32	has the country of origin clearly marked				
33	is what I usually eat				
34	helps me to cope with life				
35	can be bought in shops close to where I live or work				
36	is cheap				

Please make sure you have answered every item

Appendix B. IRB Letter of Information



Institutional Review Board
4460 Old Main Hill, Suite 214
Logan UT 84322-4460
Telephone: (435) 797-1821
Fax: (435) 797-3769



INSTITUTIONAL REVIEW BOARD

USU Assurance: FWA#00003308

Exemption #2

Certificate of Exemption

FROM: Richard D. Gordin, Acting IRB Chair
True M. Rubal, IRB Administrator

TO: Sandra Bradshaw

Protocol #: 4462

Title: Food Choice in Fiji

The Institutional Review Board has determined that the above-referenced study is exempt from review under federal guidelines 45 CFR Part 46.101(b) category #2:

Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (a) information obtained is recorded in such a manner that human subjects can be identified, directly or through the identifiers linked to the subjects; and (b) any disclosure of human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

This exemption is valid for three years from the date of this correspondence, after which the study will be closed. If the research will extend beyond three years, it is your responsibility as the Principal Investigator to notify the IRB before the study's expiration date and submit a new application to continue the research. Research activities that continue beyond the expiration date without new certification of exempt status will be in violation of those federal guidelines which permit the exempt status.

As part of the IRB's quality assurance procedures, this research may be randomly selected for continuing review during the three year period of exemption. If so, you will receive a request for completion of a Protocol Status Report during the month of the anniversary date of this certification.

In all cases, it is your responsibility to notify the IRB prior to making any changes to the study by submitting an Amendment/Modification request. This will document whether or not the study still meets the requirements for exempt status under federal regulations.

Upon receipt of this memo, you may begin your research. If you have questions, please call the IRB office at [\(435\) 797-1821](tel:(435)797-1821) or email to irb@usu.edu.

The IRB wishes you success with your research.

4460 Old Main Hill Logan, UT 84322-4460 PH: [\(435\) 797-1821](tel:(435)797-1821) Fax: [\(435\) 797-3769](tel:(435)797-3769) WEB: irb.usu.edu EMAIL: irb@usu.edu

Appendix C. Informed Consent



Department of Agriculture Systems Tech. Ed.
2300 Old Main Hill
Logan, UT 84321
Telephone: (435) 797-2230



Page 1 of 2
USU IRB Certificate of Exemption: 05/01/2012
Certificate Expires: 04/30/2015
Protocol #4462
IRB Password Protected per IRB Administrator

INFORMED CONSENT

Food Choice in Fiji

Introduction/ Purpose Dr. Lindsey Shirley in the Department of Agriculture Systems Technology Education at Utah State University is conducting a research study to find out more about environmental factors influencing food choice in Fiji. You have been asked to take part because you meet the eligibility requirements, as you are between the age of 18 years and 50, and reside in either Ba or Suva. HELP International will help in identifying participants for this study. There will be approximately 75 total participants in this research. Sandra Bradshaw, a graduate student, is completing this study for the requirements of her thesis in the Agriculture Systems Technology Education program.

Procedures If you agree to be in this research study, you will be asked to participate in Part One and possibly Part Two of this study. During Part One, you will be asked to fill out a Food Choice Questionnaire which has 36 simple questions. During Part Two, you will be asked to participate in interviews, focus groups and/or observations about food choices. The survey, focus group, and possibly the observations will take no more than 1-2 hours. The interview and focus group sessions will be audio recorded to make sure that information for the research is correct. This study is about the environmental motivators of individual food choice, so you will answer questions and participate in activities related to diet and nutrition, if you choose to participate.

Risks There is minimal risk in participating in this research

Benefits While there are no anticipated benefits to you in participating in this study, the information learned may provide HELP International, a humanitarian program that works in Fiji, with more understanding on how to help design nutrition education programs that may be more beneficial to Fiji's population in the future.

Explanation & offer to answer questions Sandra Bradshaw has explained this research study to you and answered your questions. If you have other questions or research-related problems, you may reach Lindsey Shirley by email, Lindsey.shirley@usu.edu.

Voluntary nature of participation and right to withdraw without consequence Participation in research is entirely voluntary. You may refuse to participate or withdraw at any time without consequence or loss of benefits.

Confidentiality Research records will be kept confidential, consistent with federal and the state of Utah regulations. Only Dr. Shirley and Sandra Bradshaw will have access to the data, which will be kept in a secure folder or on the Sandra's password protected computer. Audio tapes will be stored in a research briefcase and then kept in a locked file cabinet once the student returns to USU. To protect your privacy, personal and identifiable information will be removed from study documents and replaced with a study identifier. Identifying information will be stored separately from data and will be kept until May of 2013. All personal, identifiable information will be destroyed, including the audio tapes on that date.

IRB Approval Statement The Institutional Review Board for the protection of human participants at Utah State University has approved this research study. If you have any questions or concerns about your rights or a research-related injury and would like to contact someone other than the research team,



Department of Agriculture Systems Tech. Ed.
2300 Old Main Hill
Logan, UT 84321
Telephone: (435) 797-2230



Page 2 of 2
USU IRB Certificate of Exemption: 05/01/2012
Certificate Expires: 04/30/2015
Protocol #4462
IRB Password Protected per IRB Administrator

INFORMED CONSENT
Food Choice in Fiji

you may contact the IRB Administrator at (435) 797-0567 or email irb@usu.edu to obtain information or to offer input.

Copy of consent You have been given two copies of this Informed Consent. Please sign both copies and keep one copy for your files.

Investigator Statement "I certify that the research study has been explained to the individual, by me or my research staff, and that the individual understands the nature and purpose, the possible risks and benefits associated with taking part in this research study. Any questions that have been raised have been answered."

Lindsey Shirley
Principal Investigator
435-797-3410
Lindsey.shirley@usu.edu

Sandra Bradshaw
Student Researcher
801-499-1699
Sandra.brads39s@gmail.com

Signature of Participant By signing below, I agree to participate.

Participant's signature

Date

Appendix D. Fiji Immigration Department Research Approval



Fiji Immigration Department

Ministry of Defence, National Security & Immigration

P.O. Box 2224, Government Buildings, Suva, Republic of Fiji • Phone: 3312622 • Fax: 3301653

Email: immigration@govnet.gov.fj • Web: www.immigration.gov.fj



P.O.Box 1079
LAUTOKA

Phone: 6661706
Fax: 6668120

02nd July 2012

File: FIL/P/4(b)

Ms. Sandra Bradshaw
Model Towns Charitable Trust
Suite 5 Reddy Dimond Building
Marine Drive
P.O.Box 245
LAUTOKA

**IMMIGRATION ACT, 2003
PERMISSION FOR A VISITOR TO STUDY**

In exercise of the powers conferred upon the Permanent Secretary of Defence, National Security & Immigration under section 9(3) and 9(7) of the Immigration Act 2003, I have been directed to authorize the person whose particulars appear hereunder attend research attachment at the above organization while holding a valid visitor's permit.

<u>NAME</u>	<u>PASSPORT</u>	<u>NATIONALITY</u>	<u>Validity</u>
Ms. Sandra Bradshaw	466229839	USA	14/6/2012 - 24.7.2012

The sum of \$190.00 has been paid vide RR# 799117 of 28/06/2012.

This Authority is not valid for re-entry purposes into Fiji.

Yours faithfully,



L. Loloma [Mrs.]
for **ACTING IMMIGRATION MANAGER WESTERN**

Appendix E. Fiji Immigration Department Application Materials

MINISTRY OF EDUCATION, NATIONAL HERITAGE, CULTURE & ARTS

MoE RESEARCH AGREEMENT FORM (MoERAF)

REQUEST TO CONDUCT RESEARCH IN FIJI

Please read the instructions carefully before completing this form

- a) It is mandatory that proper authorization is sought from the Permanent Secretary for Education before any research is conducted in Fiji.
- b) It is also mandatory that a copy of the final research report is submitted to the Permanent Secretary for Education, upon successful completion of the research. This will be properly archived at the Ministry of Education.
- c) The Ministry of Education reserves the right to publish the findings of the report, of which the author will be duly acknowledged.
- d) The following documents are also required when submitting this form:

- Applicant's Curriculum Vitae
- Support letter from the Institution approving the Research
- A copy of the Research Proposal

A. Applicant's Personal Details

1. Name of Applicant(s).....Sandra Bradshaw.....
2. Email:.....Sandra.brads39s@gmail.com.....Telephone(s):.....(801)499-1699.....
3. Academic status: (tick/check where applicable)
 - Undergraduate student
 - Post-graduate studies
 - Master's Degree
 - PhD
 - Tertiary institution Faculty staff
4. Mailing address.....1069 N. 900 W. Clinton, UT 84015.....


B. Title of Proposal: Food Environments: What role do demographics play in Fijian's decision making related to food choice and overall nutrition behavior?

Name of University/Organization/Affiliation	Utah State University
Supervisors' names and contact details- address and phone contacts	Lindsey Shirley (435) 797-3410 2920 Old Main Hill Logan, UT 84322-2920 Lindsey.shirley@usu.edu
Study Tenure/Length of study- please provide the exact dates.	Study will last 5-6 weeks, on site in country

Indicate Y (Yes) or N (No) or NA for Not Applicable:

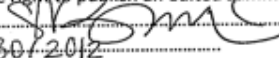
- Detail applicant's prior approved research in Fiji N/A
- Indicate if this research is part of a larger study or extends a previous study NO
- Has this or any part of this research been previously rejected? NO

I/We declare that the information in this form is true and correct.

Signature (i)  (ii) Sandra Bradshaw
Date: 5/30/2012 Date: 5/30/2012

Binding Agreement between the Ministry of Education and the Researcher (s)

I/We agree to provide the Ministry of Education with a copy of the Research Report/Thesis. I/We grant the Ministry of Education the right to publish an edited summary of my/our research.

Signature (i)  (ii) Sandra Bradshaw
Date: 5/30/2012 Date: 5/30/2012



MODEL TOWNS CHARITABLE TRUST

BUILDING HOMES | REBUILDING LIVES

SUITE 5, REDDY DIMOND BUILDING, MARINE DRIVE
 P.O. BOX 245, LAUTOKA, FIJI ISLANDS
 PHONE 6650042

18TH MAY 2012

Department of Immigration
 Lautoka

Re: Visitor's permit for Sandra Bradshaw

This is to confirm Ms Sandra Bradshaw intends to undertake research studies on "*Food Environments: What role do demographics play in Fijian's decision making related to food choice and overall nutrition behavior?*". She will be carrying out the research in association with Help International.

Help International is a non-profit organization carrying out work in areas of public health, education and entrepreneurship and business. Help International is based in United States of America.

Model Towns Charitable Trust has been working in partnership with Help International on various community development projects since 2011.

We would appreciate if you could help facilitate Ms. Bradshaw's visitor's permit. Please do not hesitate to contact me should you require more information.

Yours sincerely

Susan Naidu
 Community Development Manager

Clean, green and family based
Providing families with legally titles secure land lots, basic services, cyclone resistant homes and family support for advancement



**MINISTRY OF EDUCATION, NATIONAL HERITAGE
CULTURE & ARTS, YOUTH & SPORTS**

Quality Education for Change, Peace and Progress



Resident Address: Marela House, 19 Thurston Street, Suva, Fiji.

Ph: (679) 3314477

Postal Address: Private Mail Bag, Government Buildings, Suva, Fiji.

Fax: (679) 3303511

Our Reference: RA/15/04/12

Date: 19th June, 2012.

Sandra Bradshaw
Utah State University
USA.

Re: Official Approval to conduct Research Studies in Fiji

We are pleased to inform that your request to conduct research studies on the topic '*Food Environments; What role do demographics play in Fijian's decision making related to food choice and overall nutrition behaviour*', has been approved.

This approval is for the period as specified from the 24th June to the 24th July, 2012.

As a condition for all research approvals, a copy of the final research paper must be submitted to this office upon completion. This will be reserved in the MOE Research library and will be availed for reference by Senior Ministry and Government officials.

Moreover, it is important to note that the Ministry of Education reserves a right to publish the final report or an edited summary of it.

Please liaise with the Immigration Department in regards to the issuance of your Research Permit.

We further wish you success in your research.

Ravai Antonio [Mr]

for **Permanent Secretary for Education, National Heritage, Culture and Arts.**

cc. Research File