SITUATING HEALTH AND WELL-BEING IN THE ATLANTA AND TRINIDAD AND TOBAGO TRANSNATIONAL CONTEXT

by

LISA SHANTI CHAUDHARI

(Under the Direction of Virginia Nazarea and Susan Tanner)

ABSTRACT

This study investigates the ethnoecology of a transnational community focusing on changes in health knowledge and perceptions influencing health practices. I use a multi-sited approach integrating classic ethnographic techniques and cross-disciplinary methods such as GIS to study the Atlanta and Trinidad and Tobago transnational community. This complementary approach based on an ethnoecological and biocultural framework is used to: 1) document and compare the ethnoecology between both locations, 2) assess and compare health, 3) examine health practices, and 4) evaluate health and well-being perceptions. This study allows us to set a baseline from which the relatively young, but growing Trinidad and Tobago community in Atlanta can be compared to other established communities (e.g. New York and Toronto).

Findings point to a disjuncture between physical and perceived health status, highlighting the complex nature of well-being in migrant communities. The Atlanta community results indicate poor physical health, yet self-rated health is superior. Investigating health practices through individual health network maps and geo-narratives

show us that place and space are significant factors across locations. Health resources close to home represent a large proportion of resources accessed. In Atlanta, a sense of "home" is an underlying factor behind behavior. When looking at health perspectives, key concepts consistent across locations include food-diet, the ocean, and relaxation. The distinctions in the level of importance or presence of themes illustrate transformations in health and wellness concepts. A multilevel health approach that takes elements from a variety of health categories (e.g. biomedical, ethnobotanical) is common to both locations.

This project demonstrates how a comprehensive and layered picture of well-being in this transnational setting is critical and how its complexity can be reflected at varying levels. By assessing specific dimensions of knowledge, perceptions, and practice, I explore the interplay of factors influencing the human environment relationship to determine significant elements that promote health and well-being of this community. I look at how research in this particular transnational community contributes to recent conversations in ethnoecology, migration and health studies. Finally, I discuss the applicability and value of cross-disciplinary methods for local health projects.

INDEX WORDS: Ethnoecology; ethnoecology of health; urban ethnoecology; well-being; health behavior; biocultural anthropology; Trinidad and Tobago; Caribbean; transnationalism; migration; inland gateway immigrant cities; Atlanta; GIS; photovoice; multi-sited research

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DEDICATION

To my family, thank you for your unwavering support.

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CHAPTER 1

INTRODUCTION

An estimated 1,3000,000 immigrants settle in the United States annually, entering the country though both formal and informal channels according to the U.S. Center for Immigration Studies. Researchers and specialists have stated that we still have much to learn about how the health perceptions and practices immigrants bring from their native culture and how these interact with the American health care system (Chavez 2003). It behooves us to understand the health profiles of this diverse population within the U.S as they influence society at multiple levels. Immigrant groups are constantly and distinctly negotiating between the native knowledge systems they bring with them and the multiple opportunities and obstacles they face in their host community which result in differential health outcomes.

It has been documented that immigrant populations in metropolitan locations are usually healthier than the national population despite multiple socioeconomic factors suggesting that they would experience poorer health profiles (Dey and Lucas 2006, McDonald and Kennedy 2004, Palinkas and Pickwell 1995). The measurements taken to determine health are selective and are predominantly physical measurements. The initial health advantage immigrants experience usually declines with time (Himmelgreen et al. 2004). A biocultural approach to studying changes and adaptations of immigrant health includes sociocultural, political and biological factors in addressing specific human-

environment interactions (Armelagos et al. 1992, Goodman and Leatherman 1998). This research looks at the multiethnic and multidimensional transnational population of Trinidad and Tobago in Atlanta and traces the community to its native Trinidad and Tobago, the place they invariably call “home.” This community has been understudied, perhaps because of the relatively small size of the two-island nation, the high level of apparent integration into the host societies, and high levels of achievement compared to some immigrant groups. However, there are a number of interesting and valuable questions surrounding the health and well-being of this transnational community that deserve attention. Classic migration models, such as unidirectional migration, have been reassessed by specialists and new migration strategies are being evaluated and theorized.

Health is a complex state linked to environmental, physical, spiritual, sociocultural and political aspects in migrant settings and in the Caribbean in general (Montenegro and Stephens 2006, Pedersen and Baruffati 1985, Wolder Levin and Browner 2005). In this, ethnoecology is a suitable approach to investigate the multidimensional aspects of health as it evaluates these elements from a local lens or perspective. Ethnoecology can be defined as a discipline that examines three interrelated levels of human-environment relationships: knowledge, beliefs and practices that human societies display in their interaction with local ecosystems (Toledo 1992, Toledo 2002). The ethnoecology of health specifically focuses on health and well-being, and in this case includes transnational and urban elements. There is a recent growing body of literature that looks at transformations of knowledge systems under different cultural and migration contexts (Balick et al. 2000, Ceuterick et al. 2008, Pieroni and Vandebroek 2007, Volpato, Godínez, and Beyra 2009, Waldstein 2006). These studies suggest the practical

importance of understanding knowledge transformations in the experiences of both migrant and host communities while also advancing several theoretical areas within ethnoecology.

In this work, I examine a dynamic migration strategy, transnational migration, where migrants straddle living in two nation-states, participating in familial, social, political, economic and other arenas in both locations. Specifically, I focus on the Caribbean nation of Trinidad and Tobago where transnational migration is a common strategy. Furthermore, the Caribbean region is at the core of the current phase of transnational scholarship (Basch, Schiller, and Szanton Blanc 1994, Foner 2001, Glick Schiller, Basch, and Blanc Szanton 1995, Levitt and Jaworsky 2007). This makes Atlanta and Trinidad and Tobago an opportune setting to study transnationalism's layered and multidirectional influences on the health and well-being of these communities. Moreover, a multi-sited approach allows a comparison between these linked communities and how they are adapting and transforming perspectives, practices and knowledge sets.

A multilevel healthcare approach to health and wellness has been documented in immigrant communities (Pickwell 1999). This approach combines healthcare resources all along the biomedical to ethnomedical spectrum. A set of recent studies examines the use of multiple health and healing systems in migrant and urban contexts (Balick et al. 2000, Ososki et al. 2002, Pieroni et al. 2005, Waldstein 2006). Within these multilevel strategies, migrants beliefs and local knowledge and are influencing their health practices. Simultaneously other factors interplay like access to healthcare resources and socioeconomic conditions.

Purpose of the study

The purpose of this study is to document and analyze the ethnoecology of the Trinidad and Tobago transnational community, paying particular attention to health and well-being. Although many ethnoecology studies in remote settings have found a general loss of knowledge (Maffi 2001), the changes occurring in migrant communities, especially transnational migrant communities are not well investigated or well understood yet. This study will investigate the multiple changes that are occurring suggesting resilience: local knowledge may be selectively highlighted, health practices altered, and health values shifted in a transnational context. This projects draws on ethnoecological theory to determine how the state of transnationalism impacts knowledge repertoires, sense of place, and health networks. This thesis addresses selected areas of knowledge, perspectives, and behaviors related to local experiences of health and well-being which can be more effectively examined by combining classic anthropological approaches with cross-disciplinary ones that are not often used in anthropology. By doing so, we can investigate the multiple layers and interconnectedness between health measures, participant perspectives, current health strategies, and their transformations in a transnational context. This approach is especially effective for studying the dynamic and diverse experiences in the transnational Atlanta, and Trinidad and Tobago community.

In this particular setting, the documentation of specific dimensions of the ethnoecology complex of knowledge, beliefs and practice will set a base for the Atlanta community and add to studies in Trinidad and Tobago. Since the Trinidad and Tobago community in Atlanta is relatively young, this study can contribute to other studies of Trinidad and Tobago communities abroad while also adding to current studies on the "New Ellis Islands" or inland gateway immigrant cities (Camarota and Keeley 2001). I

chose to integrate multidisciplinary methods and theories to determine if the combination of these particular methods afforded a more comprehensive understanding of health beliefs and practices beyond the knowledge gained from using a classic ethnographic approach. After documenting and analyzing the data drawn from cognitive methods, anthropometrics, subjective health measures, Geographic Information Systems (GIS), photovoice, and narratives, this dissertation finds that transnational migration as a migration strategy is important in maintaining local knowledge systems. The state of transnationalism may both promote and deter health and well-being at a number of different levels.

Research questions

This study poses the following research questions:

1. a. What is the state of ethnoecology of health among Trinidadians and Tobagonians in both locations?

b. Does the state of transnational migration positively or negatively impact overall health of the Atlanta community?

2. a. What do current health seeking behaviors look like mapped out as health networks? What patterns emerge from these maps?

b. How do the health networks contextualized with geo-narratives assist in understanding patterns in health behavior?

3. a. What differences in health and well-being perceptions exist between the Atlanta and Trinidad-Tobago communities?

b. How does the power of visual combined with narrative data contribute to the understanding of transnational perceptions of health and well-being?

The first research question is purposefully broad. I did not know what to expect in the Trinidad and Tobago community in Atlanta, and data gathered in Atlanta was going to inform what level of ethnoecological work would be done in Trinidad and Tobago. The literature review in chapter two elaborates on some predictions of possible transformations in local knowledge based on the relatively parsimonious and recent migrant ethnoecological studies. I focus on exploring in depth, the health concepts and behaviors of this transnational community keeping in mind opportunities to integrate the anthropological approach into public health efforts while doing justice to the reality of the community at hand (research questions 2 and 3). To achieve this depth and the possibility of use in larger-scale applied health studies I use a mixed-method approach, which is not new to anthropology.

The second set of questions integrates Geographic Information Science (GISci) theory and methods with geo-narratives to examine health behavior. Through GIS, I analyze patterns in health practices, and some of the drivers behind choices made are clarified. The decision-making processes behind health practices in this transnational community are valuable in understanding the multiple influences behind larger immigrant health patterns. To answer the third question, I employed visual and narrative methods to investigate health perceptions. Exploring different angles of defining, understanding, and

seeing health from the eyes of the participants' allows us a more multilayered understanding of the local vision of health. It also allows the participants a different position, a position of power in that they are given the actual tool with some guidance to create the majority of the data in their own space and time. This insider's perspective enables us to determine what remains significant and why the changes occur in a context where enduring and multiple links to home and home culture are common. The perspective from within helps us understand transformations of local knowledge systems in a globally connected world, since urban ethnoecology and migrant ethnobotany are no longer paradoxes.

Justification of research sites

Caribbean migration and anthropology have played pivotal roles in developing the latest revision of transnational migration theory that surged in the early 1990s (Basch, Schiller, and Szanton Blanc 1994, Foner 2003, Foner, Rumbaut, and Gold 2000, Levitt and Jaworsky 2007). Significant advances in transnational theory continue to be generated in Caribbean scholarship. In host country settings, mainly metropolitan cities such as New York and London, new immigrant gateway cities are increasingly being researched and classic migration theories are being reevaluated. Currently, there is research being done in specific areas of transnational research such as transnational health studies (Gastaldo, Gooden, and Massaquoi 2005, Hilfinger Messias 2002). These areas of research are contributing to re-theorizing migration models such as segmented assimilation, but they also investigate the practical impact of distinct migration models on migrant communities and the communities they influence.

The Caribbean region, long defined by its culture of migration (Pessar 1997, Puri

2003), has experienced drastically altered material landscapes due to remittances sent by family members residing in international urban settings (Levitt 2001, Thomas-Hope 2002). Transnational scholarship emphasizes the changing nature of states, though other definitions of transnationalism include movement of people, ideas, money, goods, information, religion and behaviors (Duany 2005, Levitt and Jaworsky 2007). As individuals move, they negotiate their new environments, maintain active ties to "home," and carry with them a knowledge base from which they operate and view the world in order to meet needs and desires. The lens through which transnationals operate is in constant modification and embedded in the host and native communities where assimilation and enduring ties are not incongruous. This constant dynamism can impact the human-environment relationship specifically in the context of health and well-being in a number of ways including incorporating host country ethnomedical practices or experimenting with propagating culturally significant plants in Atlanta. The case of the transnational Atlanta and related Trinidad and Tobago communities provides a unique opportunity to contribute the interface of migration, ethnoecology and health scholarship from an anthropological perspective.

Trinidad and Tobago

Trinidad and Tobago is considered to be a middle-income developing nation based on its industrial activities. When considering the islands separately, there is a distinct divide in natural resources and in the industrial and employment activities between the two islands. Due to the geologic differences, Trinidad has a higher level of biodiversity and amount of arable land. The country's economy is focused on natural

resource export industry, all of which as concentrated in the southern part of the Trinidad. Politically, Trinidad and Tobago is a two-island nation state that is divided into boroughs (Blouet and Blouet 2002, CIA World Factbook 2011). The recent and significant changes that have occurred on the islands provide an interesting setting in which to investigate changes in local perspectives, knowledge and practices for health and well-being.

Geography and agriculture

Trinidad is a continental island of the Caribbean basin that separated from the South American mainland relatively recently in geological terms (Figure 1.1). It is located at 10˚27' North latitude and 61˚14' West longitude covering an area of approximately 4,800 km^2. It is a comparatively large island and had diverse vegetation and land fauna. However, few zooarcheological and archaebotanical investigations have been undertaken to explain the current state of the natural environment on the islands (Newsom and Wing 2004). Trinidad is geologically related to the South American continent rather than being of volcanic origin like the proximal Lesser Antilles islands. A mere seven miles from Venezuela, it has a significant amount of valued natural resources including natural gas, petroleum, and the largest asphalt lake in the world. Most of these are located in the southern regions of the island (Blouet and Blouet 2002). These southernmost territories in the West Indies have a tropical climate with a rainy season and a dry season.

Tobago is a much smaller island at 300 km^2 located north of Trinidad at 11˚9' North latitude and 11˚40' West longitude. It is much more rural and is reliant on subsistence-based activities such as fishing, although fishermen collaborate to sell their

ocean catch as a cooperative to Trinidad and other places. Tobago is considered more idyllic, the pace of life is slower, and life is more peaceful than in Trinidad according to both Trinidadians and Tobagonians. Local and international tourism is more developed and is a main source of capital revenue for this island (Blouet and Blouet 2002).

Both islands have a diverse environment and agriculturally fertile land. Agriculture, however, is not developed or well supported. As a result, food imports of perishable and non-perishable goods are necessary. The household expenditure on food is sizeable given the constantly rising food prices locally. Foods imported form the Caribbean region and from further away are increasing in cost as well. This trend has incited a government response to a decreasing household food basket in both quantity and quality. One such governmental program consists of "grow boxes" where all the inputs, such as seeds, boxes, soil, and fertilizer are provided free of charge and a government agriculture extension officer will assist with the initial setup (2005). This is one measure implemented in urbanized areas where land is scarce and home gardens were on the decline. Many people express their interest in growing their own food not merely for economic purposes. There is an interest to get back to their agricultural roots as many adults grew up picking fruits, growing vegetables, fishing and raising livestock mainly for household subsistence. Others who still have larger family plots in the countryside try to keep orchards and grow vegetables, although distance, time and access to agricultural inputs varies widely. The grow box scheme has transformed the urban agriculture and environment scene to a minimal degree.

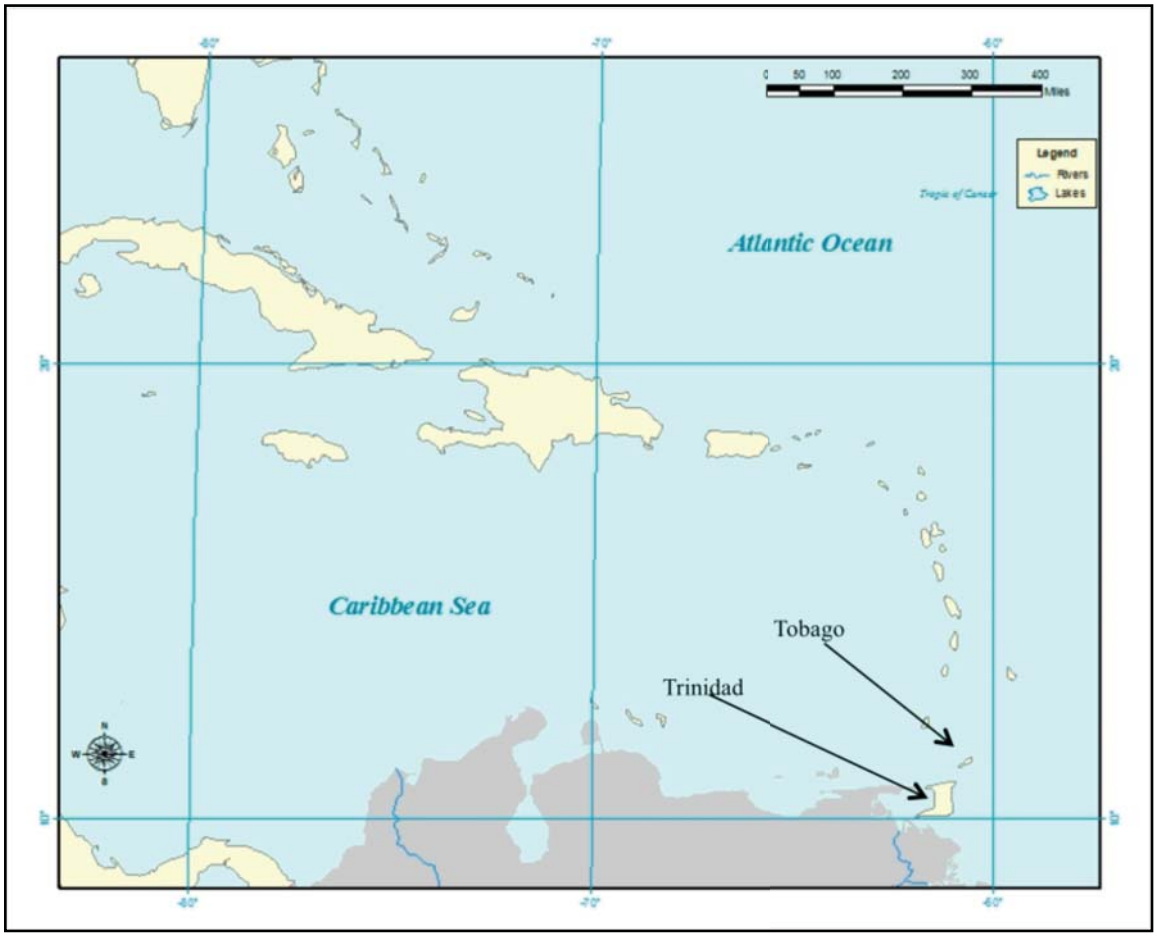


Figure 1.1 Trinidad and Tobago situated in the Caribbean

Colonial history

The colonial history of the island began with Columbus' arrival in 1498. At that time, Trinidad was inhabited by Arawak and Tobago by Carib indigenous communities. Shortly after the European colonizers arrived, indigenous communities succumbed to death by exposure to diseases they had never encountered as in many parts of the Caribbean, South and North America. The islands exchanged colonial hands 22 times with the British having control of the islands the longest and right before gaining

independence. Slaves from different parts of Africa were brought to the islands until the abolition of slavery in Britain in 1834. After this practice was stopped, indentured laborers mainly from the subcontinent of India were brought from the mid 1800s to the early 1900s. Both Africans and Indians were laborers in the harsh conditions found in the sugarcane plantations that abounded on both islands. In 1889, the two islands were consolidated into one colony. The islands gained independence in 1962 and became a republic within the Commonwealth of Nations in 1976. British influences can be observed in many areas of society including the health systems, the education system, and the legal system (Anthony 1988, Blouet and Blouet 2002).

Cultural setting

Archaeological evidence shows that as early as 5,500 B.C. human migration took place in the Caribbean region. These people did not produce pottery based on evidence found on Banwari Trace in Trinidad. Sometime between 5,500 B.C. and 2,000 B.C., migrations resumed or continued up the Lesser Antilles archipelago from Trinidad, the South American Mainland or both (Keegan 1994:266; Newsom and Wing 2004:30). There is evidence from sites occupied between 500 B.C.-2,000 B.C. in the Southern Lesser Antilles supporting the hypothesis that the primary route of migration was from Trinidad and northern South America (Davis 1988a, 1982; Keegan 1994:266). Allaire's work indicates that most sites in the Lesser Antilles are on the leeward side supporting the idea that colonists came from Greater Antilles (1997a).

As a result of a long history of colonial swaps, descendants of African slaves and Indian indentured laborers brought to work on plantations make up most of the nation's

population contemporarily (John 1988, Leela 2003). Today, Trinidad is a multiethnic population that stems from large-scale historical waves of migration that began after Columbus "discovered" the island, and waves of in- and out-migration continue to shape society today. Official estimates indicate that approximately 40% are Indo-Trinidadian and 40% are Afro-Trinidadian. The rest of the population is made up of mixed, European, Chinese, Libyan, Syrian and other Latin American descendants (Blouet and Blouet 2002). The current population of both islands is estimated at 1,230,000 inhabitants (CIA World Factbook 2011). Tobago's much smaller population of approximately 52,000, represents about four percent of the nation's population and is largely made up of people of African descent. However, my pilot study and dissertation work have clearly revealed that ethnicity and race categories are not clear-cut. The now common use of hyphenated categories (Indo- and Afro-) are relatively recent political constructions (Chaudhari 2007, Leela 2003).

As immigrants in the U.S., Trinidadians and Tobagonians of African and mixed heritage in general have tried to distinguish themselves from the local black population. The Trinidad and Tobago community is sensitive to the negative stereotypes and general low success rates (e.g. educational attainment, income levels, employment opportunities) of African Americans. At the same time, they may not engage in redressing unequal terms of employment or unsatisfactory gender dynamics. This has also been found among other immigrant communities as well (Levitt and Schiller 2004). One the other hand, Trinidadians (and Tobagonians) of Indian descent tend to associate with each other or with other local Indian immigrant groups for the most part (Foner 2001, Foner 2003). Early waves of post 1965 migration (the year of the U.S. Immigration and Nationality

Act which heightened immigrant entry to the U.S.) represented a massive drain of professionals from Caribbean island nations. Yet, current statistics indicate that established Caribbean communities in the U.S. do not fare as well when looking at general education and income indicators. In addition to this, widespread discrimination is linked to measurable adverse health effects (Anderson 1990, Buddington 2002, Mahoney 2004).

Current healthcare system

Trinidad and Tobago's healthcare system today is based on the British healthcare model, which provides free universal healthcare across the islands. There are 13 regional hospitals that are located in the more densely urbanized areas of Trinidad with one in Scarborough, Tobago (Mahabir and Gulliford 1997, Walt et al. 2002). In addition, there are roughly 100 community healthcare clinics or centers that are located all over the islands as primary care facilities. The Regional Health Authorities are responsible for the provision of health services.

In general, the level of satisfaction with the public healthcare system is low as people continually speak of slow service, misdiagnosis, impersonal doctor attitudes, and a self-serving attitude of the medical professionals (Rudzik 2003, Singh, Haqq, and Mustapha 1999). The government also provides free medication to treat a dozen chronic conditions through the Chronic Disease Assistance Program. Private healthcare facilities are seen as more efficient and of higher quality with a much higher price attached. Also, since my first travel to the islands, people have mentioned that healthcare professionals

encourage patients to go to private facilities when attending public healthcare facilities, to the benefit of the professionals.

Atlanta

Atlanta, Georgia represents one of the new inland immigrant cities in the U.S. The traditional immigrant receiving states such as California, New Jersey, New York and Florida and their metropolitan cities are waning in their popularity. Inland, historically low immigrant receiving states such as South Carolina, Georgia, Tennessee have seen their immigrant population rates rise to twice the national average in recent decades (Gozdziak and Martin 2005, Singer 2004, Singer and CUMPB 2003). Atlanta is no exception in the increasing number and diversity of immigrants, including the growing Trinidad and Tobago immigrant community. Walcott's study of Buford highway's multiethnic space gives us a glimpse of the multiplicity of nationalities, types of immigrants, and use of space along a relatively limited stretch of land (2002). As one of the "new Ellis Islands," Atlanta also faces many challenges and is a prime setting to investigate new trends in immigration and to reevaluate migration models that were established in under different circumstances.

Since Trinidad and Tobago is a relatively small two-island nation, its immigrant population is often consolidated into the larger Caribbean community of Atlanta and therefore the estimated population size is unreliable. In 1997, the population of the Trinidadians and Tobagonians in Atlanta was estimated at 8,000 (Walcot 2002). Other statistics indicate that 2,300 Trinidadian and Tobagonians live in Atlanta with the highest concentration in DeKalb County (Atlanta Regional Commission 2005-2006). Figure 1.2

shows the study area and highlights the counties in and around the Atlanta metropolitan area where study participants lived and sought healthcare. Recent American Community Surveys (2006 and 2008) indicate the population to be between approximately 6,500 and 7,800 between 2006 and 2008 out of a population of about 9,500,000 in greater Atlanta. It should be noted that the Caribbean is known for using migration as a livelihood strategy historically and contemporarily as there are thousands more that mention Trinidad and Tobago as their place of ancestry (e.g. roughly 6,000 in 2008 were estimated to be of Trinidad and Tobago descent) (U.S. Census Bureau 2006, 2007, 2008). Although this is a relatively small immigrant community, and studying it is more feasible from a practical standpoint, its limited size is also a reminder of the danger in excluding many smaller communities within studies, especially communities that can be lumped into other larger geographic or ethnic categories.

To date, I have not found any work examining this particular Caribbean community in Atlanta; the bulk of research on Trinidadians and Tobagonians in the U.S. is conducted in New York where 49% live, and in Florida, the second largest Trinidad and Tobago community in the U.S. (Mahoney 2005). The small yet dispersed Trinidad and Tobago community in Atlanta represents an opportune case study to understand aspects of transnationalism, ethnoecology, health and well-being beliefs and strategies. For instance, the positive or negative impact of transnationalism on health perceptions and beliefs can be examined. Future studies can compare health effects of transnational migration to other migration strategies as we try to further examine the role of culture in migrant health. This study will add to the growing literature on urban ethnoecology as one current trend examining local knowledge system transformations in a globalized

world. This research also adds to migrant health studies that include biocultural concepts of migration adaptations to their host environment. This relatively contained community presents a typical anthropological opportunity to examine research questions that can be then compared and used in longitudinal studies.

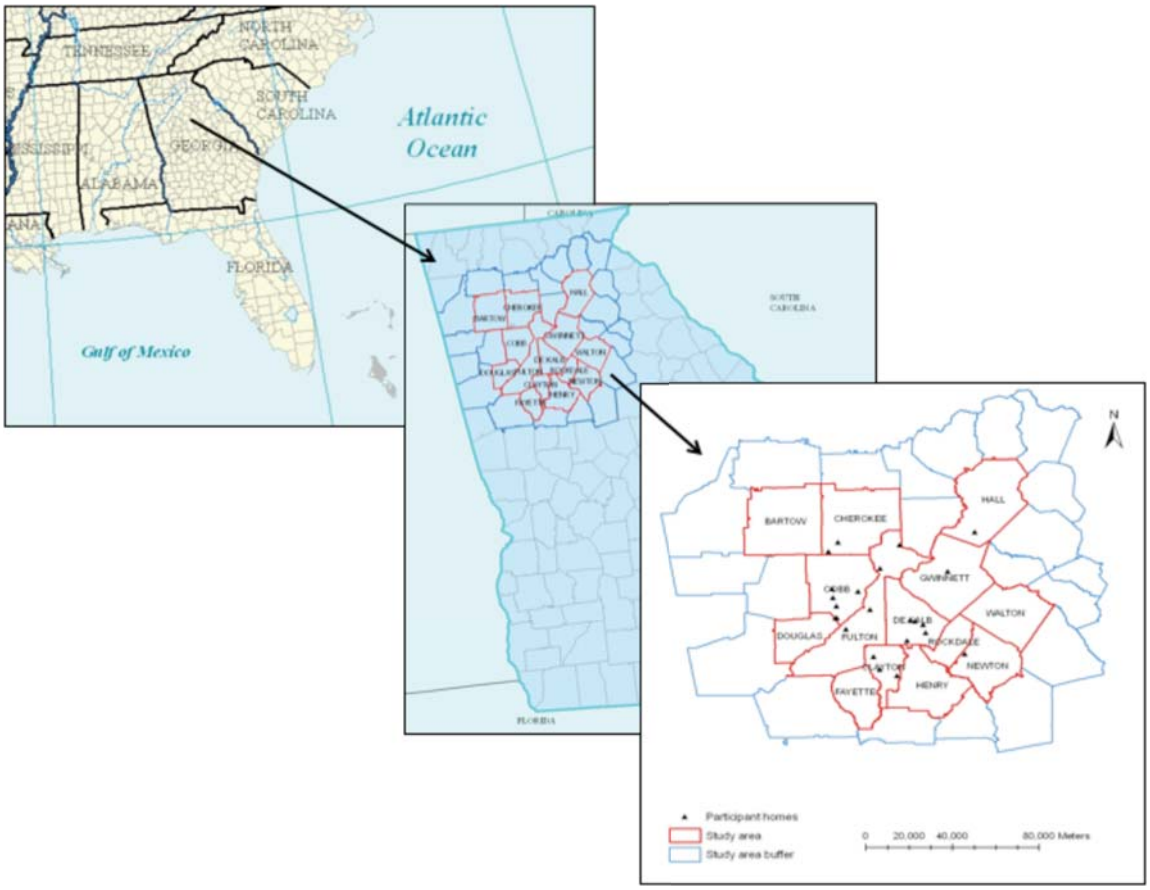


Figure 1.2 Atlanta study area

Research design and methods

This study draws on research that was conducted between January of 2008 and March of 2009 among the Trinidad and Tobago community in and around Atlanta, Georgia. The research study was approved by the University of Georgia's Human Subjects Institutional Review Board, under the project number 2008-10320-1. Unlike many immigrant communities that create ethnic enclaves, this immigrant community

lives in a dispersed pattern throughout urban and suburban areas in and around Atlanta's metropolitan region. This dissertation research was preceded by seven weeks of pre-dissertation fieldwork in Trinidad and Tobago during June and July of 2006. Pre-dissertation fieldwork allowed me to investigate various aspects of my dissertation project including assessing the viability of my research interests in Trinidad and Tobago and methods testing. The small sample of participants interviewed and the small-scale approach used allowed me to delve deeply into understanding this particular community.

I spent a total of nine months in Atlanta interviewing individual participants, conducting focus group discussions, and doing participant observation. I attended Trinidad-Tobago organization meetings, assisted and participated on panels and different events. I was invited to *satsangs* (a gathering where an elder or religious expert gives a spiritual talk) where Hindus from Trinidad and other Caribbean islands assembled to practice their religion. I was even interviewed by a local television station focusing on Caribbean culture and news. The community in Atlanta was very open to my research, interested in what I was doing, and willing to share their culture and opinions with me. In general, they were open to finding participants back home in Trinidad and Tobago that fit my sampling criteria, which was not always easy to accomplish as discussed later in this section.

I spent over three months living in Trinidad and Tobago between August and November of 2009, arriving with a list of participants and their contact information. My previous work in Trinidad and Tobago and the network of friends and colleagues I had developed were instrumental to implementing this very intense research schedule. However, time and budgetary consideration had to be included in fieldwork decisions. I

lived in three different locations, finally settling near the University of the West Indies in Saint Augustine, located very near the East-West corridor, close to both the bus route and the regular road. The relatively accessible public transit network was key to my successful navigation throughout the island. I was in the islands during a particularly rainy season that included several unprecedented flooding events that limited some of my fieldwork.

I traveled to participants' places of work and residences or sometimes they came to my place of residence. Because a connection was made between participants on the islands and a friend or family member in Atlanta, it seemed that participants were even more willing to accommodate meeting me when possible, and I had little problem having them come to my residence. Many participants were concerned that I ventured throughout the islands alone and used public transportation. They often warned me to be careful because of the increase in crime and general changing attitudes facing the Trinidad, and to a lesser extent, the Tobago community. Unfortunately, I had to consider these factors in my movements around the island as kidnapping, murder and other violent crimes have risen dramatically compared to even a few years ago.

Most participants both in Atlanta and Trinidad-Tobago asked me about my heritage, certain that my parents were from the islands and that I was U.S. born, which could explain my lack of accent. I had to assure them that to the best of my knowledge I do not have any ancestors from Trinidad and Tobago. I melded easily into the crowd although I was recognizable after a while in many areas of the island with my portable stadiometer and bright waterproof bag that safely kept my equipment dry as I met my participants all over both islands rain or shine. The majority of the participants I

interviewed lived in Trinidad. However, I made three trips to Tobago to interview participants living there. The environment in Tobago was very different. I traveled once via a short ride by plane, though most of the time I took a large hydrofoil ferry between both islands. Tobago is much more green, more rural and most people live a slower paced life. There are well-maintained roads throughout the island. However, public transportation was less available, but people were more friendly and willing to give people rides. Interestingly, I was considered to be an international tourist or a local tourist, and an "East Indian" from Trinidad. The change in dynamics between the two very different islands was interesting.

Given the difficulty of accessing the majority of community members in Atlanta, I used a non-probability sampling method assisted by gatekeeper individuals or community organizations. In Atlanta, I conducted in-depth interviews with 24 people (fifteen women and nine men ranging in age from 25-74 years (Figure 1.3). In Trinidad and Tobago, I conducted forty-five interviews with friends and family of the Atlanta participants (Figure 1.4). The initial design planned for matching participants in Atlanta by age and sex to their friends and family living in Trinidad and Tobago. In reality it was difficult to match Atlanta participants to two individuals matched by age and sex.

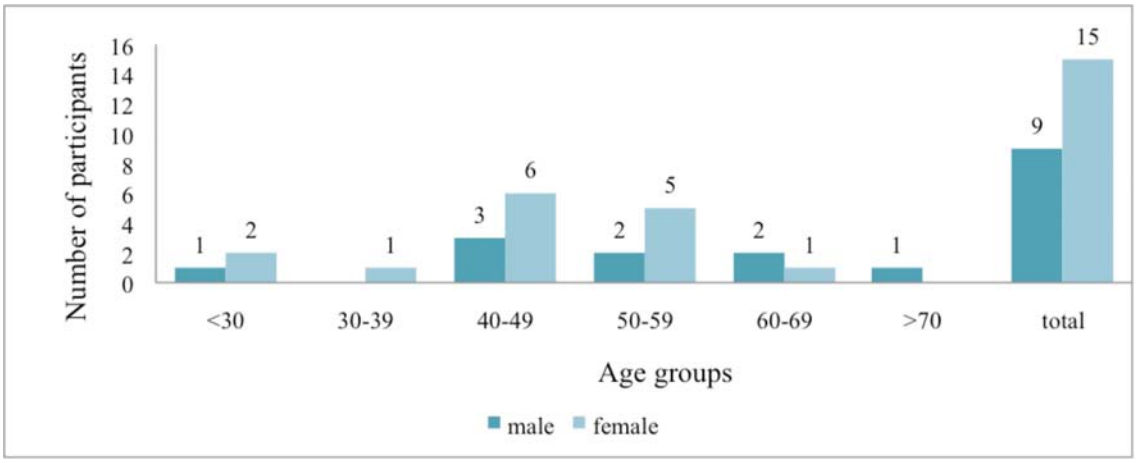


Figure 1.3 Age and sex distribution of the Atlanta community

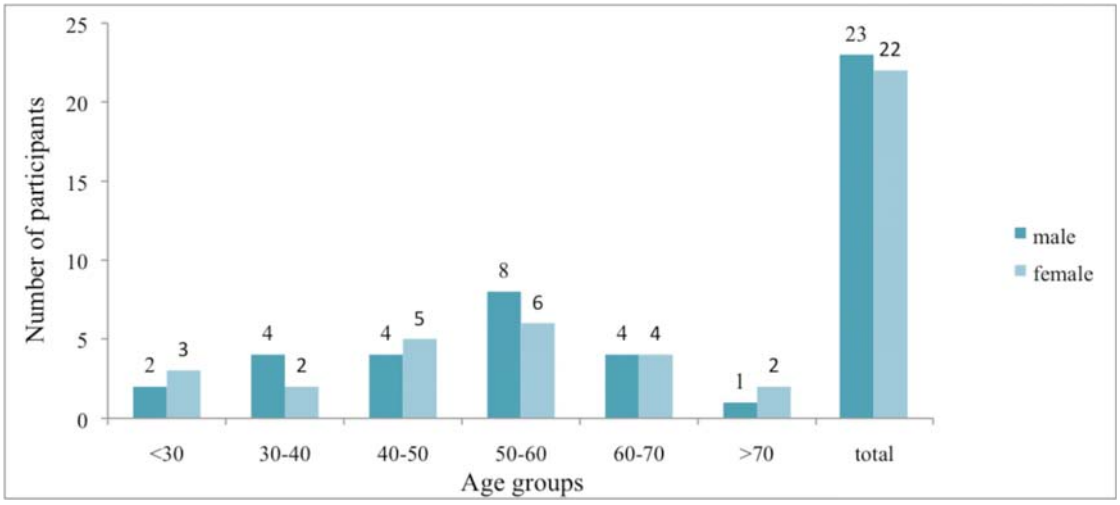


Figure 1.4 Age and sex distribution of the Trinidad and Tobago community

Table 1.1 Distribution of participants by site, age and sex

Age	Atlanta		Trinidad & Tobago		
	Male	*Female*	*Male*	*Female*	*Total*
<30	1	2	2	3	***8***
30-40		1	4	2	***7***
40-50	3	6	4	5	***18***
50-60	2	5	8	6	***21***
60-70	2	1	4	4	***11***
>70	1		1	2	***4***
Total	***9***	***15***	***23***	***22***	***69***

A combination of qualitative and quantitative methods was used to obtain the data necessary to address the research questions. Participants took part in two interviews or one long interview session. During the time that we shared, interviewees participated in quantitative anthropology exercises including free listing about health resources, pile sort activities on health resources and plants, and recent health recalls. Participants were asked to talk about all the locations they listed in the health resources list in what I call geo-narratives. The geo-narrative and health resource lists were used in combination to examine current health behavior using GIS and narrative analysis. I also took anthropometric measurements including height, weight, and waist circumference. Additionally, photovoice methods were used to capture information on health perspectives. Participants were given a camera or their used their own and had the time to take 10-12 photos between the first and second interview or prior to the interview if there was only one session. Participants were instructed to take pictures of representations of health and well-being from their lens. More detailed information on the research methodology including data preparation and analysis is included in each chapter.

Organization of the dissertation

This chapter provides a context for the analysis of ethnoecology of health in a transnational setting. The two field sites of Atlanta and Trinidad and Tobago include a new inland gateway immigrant city and an island nation in the Caribbean region that has been the focus of transnational scholarship. Combined, they provide a pertinent setting to evaluate this community's health beliefs, knowledge and practices using a multi-sited approach. Variables were chosen to provide a platform for comparison between the two sites. This chapter sets the stage for placing the choice of sites for this study in environmental, cultural, historical, and political context. This chapter also provides an overview of the range of classic anthropology methods and interdisciplinary methods used to answer the research questions.

Chapter two provides a look at the theoretical perspectives that influence the framework of this study. The first section expands on the ethnoecological framework that the study is based on, including subsections on the foundations of ethnoecology, shifting local knowledge systems, and ethnoecology of health. The second section looks at biocultural health. Subsections look at conceptualizations and measures of health and well-being. In another subsection I look at immigrant health. The next section provides an overview on migration, focusing on transnationalism and Caribbean migration. A final section addresses the role of place in integrating various facets of migration, health and ethnoecology.

Chapter three presents a selective outlook on health assessment and the state of ethnoecology of health of the Atlanta and Trinidad and Tobago communities. Classic methods were used to evaluate current patterns of ethnoecological knowledge focusing

on plants used for health purposes and healthcare resources accessed. Data are evaluated by location to reveal patterns of knowledge. Findings from these specific domains of knowledge indicate that knowledge is being lost, but they also indicate that knowledge is shifting. Some plants may no longer be commonly used in Atlanta, yet their continued value is clear. Some elements shifted from frequent use to symbolic significance where individuals creatively search for ways to acquire and propagate certain plants in their Atlanta environment.

Chapter four will provide a perspective on the health strategies of Trinidadian and Tobagonian migrants in Atlanta and back home. In this chapter, I GISci theory and methods with personal geo-narratives on what individuals currently do to maintain their health, seek wellness and get better. From information provided by participants on where they go, whom they see, and what they do to keep well and to fight illness, individual healthcare networks or maps were created using GIS. Comparison variables include gender, age, and location to examine the healthcare networks displaying current patterns of healthcare participant practices. The narratives in combination with their explanation on what healthcare resources they access added a dimension that furthers our understanding of drivers behind participants' current health behavior.

Chapter five provides an assessment of the beliefs this transnational community has on health and well-being. This chapter uses a participatory method of photovoice that places the camera, and thus the platform, in the hands of the participants, who were asked to take photographs of what health and well-being meant to them. This approach was used to evaluate the remaining area in the ethnoecology complex of perceptions. The images and narratives from the photo elicitation discussions are a useful combination to

explore the understanding and experience of health and well-being among community members. The visual narratives and data were analyzed as well as the most salient categories that emerged. Most of the salient themes were identical in both sites; however, there are key differences in the layers or the perspectives from which the two communities construct their concepts of health and well-being.

Chapter six is a conclusion chapter that summarizes the overall findings of the research with a particular emphasis on the patterns observed in this transnational community. This chapter also includes discussion on the applicability and value of the new methods used and suggests new uses of other methods. This chapter discusses the significance of this research and future directions.

CHAPTER 2

LITERATURE REVIEW

Medical anthropologist, Leo Chavez (2003) aptly stated that there is still a lot we have to learn about how the health-related beliefs and practices immigrants bring from their native cultures interact with the U.S. healthcare system. There are only a few studies that address the interplay between healthcare, perspectives on health, and behaviors in specific immigrant communities in the U.S. The World Health Organization (W.H.O.) defined health as "a complete state of physical, mental, and social well-being and not merely the absence of disease and infirmity" (W.H.O. 1946). Evans and Stoddart define well-being as a "sense of life satisfaction of the individual" (Evans, Stoddart, and Marmor 1994). These broad definitions are difficult to measure and assess in a given culture and even more challenging in a multicultural setting. Defining and measuring health and well-being has been a challenge (McElroy and Townsend 2004) and many times biomedically oriented research portrays a lack of understanding of local cultural and social indicators (Baer 1996, Izquierdo 2005, Lindenbaum 2005, Wolder Levin and Browner 2005).

Immigrant health studies vastly underplay the role of cultural indicators, although acculturation scales have been implemented when evaluating immigrant health (Hollenberg et al. 1997, Singh and Siahpush 2002). To further complicating the picture, it has been documented that immigrant communities in metropolitan locations, especially

voluntary migrants, are usually healthier than the national population at least in their first years, despite multiple socioeconomic factors and a general consensus that migrating is a negative health experience (Buddington 2002, Portes and Zhou 1994, Schmitz 2003). Some studies have tried to examine how culture plays a protective or detrimental factor in a subgroup's well-being (Chavez, Flores, and Lopez-Garza 1992, Himmelgreen et al. 2004). The incorporation of "culture" in health studies in general and in biocultural anthropology has been challenging (Dressler 2005). Focusing on immigrant health requires a theoretical framework that is encompassing and able to appropriately capture local experiences. This is particularly true in a transnational migrant setting where knowledge and perspectives that influence health behaviors are multilayered and dynamic.

In this chapter several key theoretical lines that are relevant to the framework of my research are discussed. To begin with, the basic tenets of ethnoecological theory are a fundamental lens informing how I investigate human-environment relationships and how they contribute to health and sickness. Ethnoecology allows a systematic examination of the interrelationships between knowledge, beliefs and practices (Nazarea 1999, Toledo 2002). At the same time, ethnoecology is flexible in the methods that can be employed. It is a useful approach in interpreting local knowledge and experiences even in evolving settings, which is the case with the Atlanta and Trinidad and Tobago community. Understanding a transnational community's worldview and organization is necessary in interpreting health patterns. I first discuss the foundations of the subdiscipline of ethnoecology to reveal how it is a relevant framework for the structure of this research. This if followed by a review of the literature on shifting knowledge systems. Many

seminal works in ethnoecology were undertaken in remote and native settings. However, more recent work includes evaluating the role of acculturation, modernization, or other rubrics of change in the indigenous setting (Ellen, Parkes, and Bicker 2000b, Maffi 2001, Reyes-García et al. 2005). The third subsection is a review of the sparse literature available on the ethnoecology of health. My interest goes beyond the treatment of specific ailments or a focus on plants like ethnomedicine and ethnobotany to be more encompassing and general in examining health and wellness which can be more appropriately addressed by the term ethnoecology of health.

The second area of influence is biocultural anthropology. Within this section I discuss the challenge of defining health and well-being and measures of health that influenced my approach to understanding and determining health status in the Trinidad and Tobago transnational community. The next focus in this section is immigrant health. There are a number of seemingly contradictory findings in immigrant health studies. New arrivals are generally the healthiest of their native community in many ways and biomedical measurements of health indicate this. However, migration is a very stressful experience which undoubtedly is not only difficult to measure, but will also affect health status depending on the migrant's environment.

Migration is the third area I address in this chapter. I start with the development of the current phase of transnationalism to understand the unique setting this migration strategy brings to my research project. The second focus is on Caribbean migration to help set the stage further regarding contemporary regional human movements. A final section addresses the role of place in bringing together the three broad areas of ethnoecology, biocultural anthropology and migration. The concept of place allows for

specific cultural and environmental elements to be included in studying health and well-being of this transnational community in both Atlanta and Trinidad and Tobago.

Ethnoecology

Ethnoecology as defined by Toledo (1992) is a discipline that explores three interrelated levels of human-environmental relationships: knowledge, beliefs and practices that human societies display in their interaction with local ecosystems. This project draws on ethnoecological theory to determine how migration impacts knowledge repertoires, sense of place, and health networks. As a discipline, ethnoecology has concentrated on how local knowledge and behaviors develop by determining local environmental knowledge, from classification typologies to cultural and resource management options (Berlin 1992, Berlin, Breedlove, and Raven 1966, Conklin 1954, Conklin 1961, Ellen 1993, Nazarea 1999).

As ethnoecological studies no longer solely focus on remote and indigenous communities, a recent trend incorporates migrant, transcultural, urban and health components in distinct combinations. Gladis looks at how immigrant gardens in Bonn, Germany provide a space to continue tilling the soil and growing plants form home, while also increasing their plant knowledge and skills through a more diverse gardener network (Gladis 2003). Another study in Brazil looks at the meaning of home gardens in rural to urban migration (WinklerPrins and de Souza 2005). The findings show that these gardens serve as a connection to rural roots as well as a source of food production. These studies also look at different types of migration patterns and their effects on health and wellness strategies that will be discussed in the ethnoecology of health subsection below.

Foundations

Since the inception of ethnoecology in the l950s to its present day objectives, it has sought to systematically look at human and environment interrelationships from the local lens. Ethnoecology attempts to elucidate how indigenous or local communities see, organize and experience elements in their environment from their locally infused worldviews. Ethnoecology remains a significant framework for understanding situated knowledge. While ethnoecology is focused on the role of cognition and behavior within a set environment, specifically from the perspective of those being researched, it also allows space for interpretation, methodological variety, discussion and inclusion of other disciplines.

Conklin (1954, 1961), Frake (1962), Goodenough (1957) and Sturtevant (1964) set the stage for anthropological investigations towards the emic, moving away from the researchers' interpretations of the local in the first stage of ethnoecology. In these seminal works, we see how this change from the omniscient, all-knowing researchers moves towards a systematic methodology to document and understand indigenous interpretations of the world dubbed ethnoscience. This shift to represent traditional knowledge was a move towards giving credence to the local, the indigenous, the research subject within academic and subsequently applied arenas. However, these works have been critiqued for "eticizing the emic", and maintaining hegemony by not giving a just voice to the local.

A second ethnoecology stage ensued that was more prolific and widespread. This second wave utilized cognitive theory and linguistics. It can be divided into the structuralist-intellectualist camp and the adaptationist-utilitarian camp. The former camp

is represented by Berlin and Atran (Atran 1985, Berlin, Breedlove, and Raven 1966, Berlin, Breedlove, and Raven 1974) whose position is that indigenous classification of objects can be set into universal categories. The other camp, represented by Hunn and Ellen (Ellen 1993, Hunn 1982, Hunn 1989), argues that indigenous people classify what is useful to them in more detailed and sub-categorized manner, while creating general categories for those items they see, but perhaps only use occasionally, and as such do not necessarily have significant roles in their daily lives.

Despite critiques of seminal studies, methodological debates, study implications, and responses to the critiques (Fowler 1977, Hardesty 1977, Harris 1974, Hays 1982, Hunn 1982), the umbrella term of ethnoecology is highly relevant today in order to understand changes in local perspectives and adaptation of behaviors as globalization connects people through human migration, flows of goods and information, trade regimes, exchange of knowledge and materials. At the same time the vast diameter of this umbrella leads us to question and deliberate over what is and what is not "ethnoecology." The following section reveals how shifting knowledge systems blur the boundaries even more, though an evident theme is the social and dynamic construction of landscape whether in urban, rural, underdeveloped or highly industrialized environments.

Shifting knowledge systems

Ethnoecology's interface with knowledge systems, also commonly known as indigenous knowledge systems (IKS) traditional ecological knowledge (TEK), has been applied in arenas such as development and conservations projects. As activists and intellectuals call for a halt of the rapid and complete loss of indigenous knowledge, recent

scholarship exposes the very adaptable, responsive, emotive and utilitarian changes knowledge systems have been undergoing. Critics wrote of the unrealistic representations of indigenous ways as romanticized, unchanging knowledge, and harmonious lifestyles (Dei, Hall, and Rosenberg 2000, Ellen, Parkes, and Bicker 2000b). Here, the focus is on work that addresses changes in knowledge systems and transmission due to external influences and the "rediscovery" of indigenous knowledge as management tools. A general trend towards using ethnoecology as a more inclusive and responsive framework adheres to the shifts in academic and applied circles to look at resilience and maintenance, and not preservation of inexistent petrified knowledge systems.

The literature in general addresses the production of knowledge that includes responses to changes in the environment, cultural significance and beliefs, and utilitarian adaptations in addition to sensuous and emotive components. A trend addresses the political and economic contexts that encourage redirection of knowledge systems. This literature describes loss of indigenous knowledge systems, especially in the rapidly changing tropics where knowledge is often documented in oral form, in languages that are dwindling in importance and legitimacy, and where environments are succumbing to a general decline in biological diversity (Maffi 2001). Questions of power, recognition, and agency focus on how political and economic climates are forcing a hegemonic global monoculture while another trend highlights local movements and everyday resistance people choose to be part of to create lifestyles and livelihoods where they are the principal architects (Barrera-Bassols and Toledo 2005, Brosius 1997). What results are knowledge systems that shift, some towards a return to what was left behind, others to

include heterogeneous elements, while others undergo a creolization where original and imported elements are melded together (Menjivar 2002).

While the overall loss of access to resources, knowledge, and local ways is on the rise and alarming, there is a body of research that looks at how people are adjusting to ever-changing environments to keep what is familiar and important to them. Migrants living abroad will substitute, experiment with similar looking or smelling produce to retain the cultural, emotional and health values home cooking (Ceuterick et al. 2008, Ray 2004, WinklerPrins and de Souza 2005). Local markets and urban gardens will be created and even flourish abroad (Airriess and Clawson 1994, Corlett, Dean, and Grivetti 2003). Immigrants may be willing to test and introduce local varieties and increase their amount of plant knowledge abroad (Nguyen and Peschard 2003, Pieroni and Vandebroek 2007).

The Global North's attempts at preservation of languages, cultures, and habitats have shifted to looking at how local practices are adapting and changing within their particular context. An important applied focus in academic fields links the transdisciplinary need to approach global sustainability. This can be achieved via local construction and implementation of sustainability while including human health within this framework. Within the broader literature on shifting knowledge systems, I focus on the more limited and recent body of literature about changes in knowledge systems in migrant settings that influence my research interests in determining specific local health knowledge patterns.

Ethnoecology of health

An undercurrent in ethnoecology focuses on how local, indigenous or traditional knowledge defines, perceives and determines health and wellness while responding to contemporary factors (Dei, Hall, and Rosenberg 2000, Marles, Natural Resources Canada, and Canadian Forest Service 2000, Parlee et al. 2005). The focus is not on ethnomedical or ethnobotanical studies as subcategories of ethnoecology; rather the focus is on health, wellness and healing—what I term ethnoecology of health—and ethnomedical or ethnobotanical studies are included under this umbrella. There are several trends distinguishable within the parsimonious albeit growing literature in these areas. One trend focuses on communities that consider the health of the land and people as one (Parlee et al. 2005). Usually these worldviews include supernatural forces to explain certain changes derived from external inputs.

Another trend focuses is on people's utilization of their native knowledge base when they migrate within political boundaries or beyond (Casagrande 2005). All of these studies examine knowledge shifts in urban contexts where migrants face economic, structural and cultural barriers to maintain health while also being exposed to host and other migrant communities' health systems (Balick et al. 2000, Ceuterick et al. 2008, Ososki et al. 2002, Pieroni et al. 2005, Pieroni and Vandebroek 2007, Volpato, Godínez, and Beyra 2009, WinklerPrins and de Souza 2005). These works elucidate how ethnoecological concepts change. Some incorporate selected elements from host community local knowledge, while other make efforts to retain certain practices considered culturally valuable. For example, one study of the Colombian community in

London investigated the changes in “folk pharmacopoeia” where loss, maintenance, substitution and addition are all taking place (Ceuterick et al. 2008).

The creation and use of intricate and unexpected networks to overcome barriers to healthcare reflect that health and well-being are not equally accessible or acceptable throughout distinct cultures or subcultures (Casagrande 2005, Gastaldo, Gooden, and Massaquoi 2005, Hilfinger Messias 2002, Menjivar 2002). These networks indicate pluralism in the approach, knowledge transmission and sometimes revival of ethnoecology of health methods. This research focuses on determining and revealing these invisible and in-between spaces created through assessing local activities and responses to health inequalities and needs. The research also looks at gender differences, mainly female health issues, barriers, knowledge and practices. As women migrate, head of households and are required to be creative in maintaining family health and preventing illness and disease, in their new and usually urban settings (Gastaldo, Gooden, and Massaquoi 2005, Menjivar 2002). For instance, one examination of Guatemalan women’s health practices in California revealed a transnational approach that included many different medical traditions or a multilevel health approach (Menjivar 2002). This multilevel approach (Pickwell 1999) is not new, yet the research focus on these less visible spaces that occur everyday in response to needs and wants is a promising area of study in addressing local responses and activities in the pursuit of a healthy life.

Biocultural anthropology

A biocultural approach to health, wellness, disease and illness is useful in the investigating the interaction of biological, cultural and environmental factors (Armelagos

et al. 1992, Goodman and Leatherman 1998). Political economy aspects key to understand health inequities and inequalities among subgroups within a population is common in biocultural studies (Baer 1996, Goodman and Leatherman 1998). Aspects necessary to examining the larger context of human disease and illness such as poverty and sociopolitical conditions were incorporated into biocultural studies (Crooks 1998, Leatherman 2005). Other biocultural anthropologists emphasize certain biological aspects and evolutionary concepts to measuring health and disease in their investigation of the human health. One such example is the use of adaptation in biocultural analysis that incorporate evolutionary, and environmental factors in understanding health-related questions (Wiley, 1992). Other case studies address that employ a biocultural approach attempt to varying degrees to integrate the biological and cultural assessments of health (Izquierdo 2005, McDade 2002, Pike and Williams 2006). There are still calls for pursuing a more equal standing between the biological and cultural aspects as distancing from the former still remains a challenge, partially because a theory of culture is still not well defined (Dressler 2005, Wolder Levin and Browner 2005). A biocultural approach is particularly relevant in this study that examines a defined yet not well-studied form of migration in terms of its particular impact of health and well-being.

In this section, I begin with the challenges of conceptualizing and defining health and well-being. Then, I overview measures of health, focusing on objective and subjective measurements. The final section touches on studies and the importance of immigrant health. A biocultural approach enables an examination of local realities in a global context and anthropology is well-positioned to examine the complexity and depth of health and illness.

Concepts of health and well-being

The world health organization's concept of health has been cited ad infinitum and critiqued since it defined health in 1946 (see page 26). The laudable move away from a biological state of homeostasis, of delicate balance between organs and processes within the body, was extended to encompass the less tangible, societal and even global factors that promote or deter good health. Health as lofty and broadly conceived as the W.H.O.'s definition is difficult if not impossible to study or measure comprehensively, and to this day researchers and health specialists in all disciplines debate about the applicability of distinct approaches.

The study of health across disciplines in many international and mainstream scenarios has largely focused on the biomedical aspect of health, principally using a pathology-based approach (Wolder Levin and Browner 2005, Worthman and Kohrt 2005). Anthropology has extensively investigated the area of cultural concepts of illness and healing, including how specific groups perceive and define illness and disease based on local organizational models (Oths 1999, Shaw and Kauppinen 2004). Unfortunately, conceptual variations and behavior regarding good health and positive well-being are largely taken for granted in anthropology shown by the lack of empirical studies addressing variation in a systematic and detailed manner. The concept of good health is homogenized and focused on lack burden of disease (Wolder Levin and Browner 2005), yet a few case studies examining local health experiences and concepts describe the seemingly contradictory relationship between improved health and community concepts of health (Izquierdo 2005, McMullin 2005).

Case studies addressing well-being and health from an emic perspective are valuable though few define well-being and health explicitly. The differences between local perspectives of health is important considering anthropology's interest in the human condition as it is locally experienced, in addition to the potential to improve a community's health conditions in a culturally appropriate manner. Izquierdo's study (2005) is a clear case study where external biomedical improvement in the community's health were impressive, yet from the community's conceptualization of health, their current health was much poorer due to the disintegration of social conditions and behaviors. Broad themes linking cultural conceptions of health can be made from the literature such as bodies free of diseases, the ability to engage in subsistence activities, in addition to spiritual components (Brown 1998, Goodman and Leatherman 1998). A critical component is the notion of scale when conceptualizing health and we find that health at the individual, household, community and national levels varies greatly leading to the complex task of modeling and measuring health and well-being.

Anthropologists investigating health and well-being have contended with the notion of how to define health models when studying indigenous or ethnic health (Baer 1990; Foster 1976, 1987; Kleinman 1978; Yoder 1997). Some focus on political economy approaches as key to understanding patterns of health in a community, while others call for the further development of culture theory (Dressler, Oths and Gravlee 1999; Leatherman and Goodman 1998). Applied anthropology has developed models to address culture, knowledge systems and health behavior in health. Many of these approaches have developed as responses to disciplines emphasizing biomedical approaches to health among different populations and communities worldwide and which have too often

resulted in disastrous, inadequate or unacceptable programs (Browner, Ortiz de Montellano, and Rubel 1988, Pelto and Pelto 1997, Tarbes 1989). In this study, I use a biocultural approach to interpret results positioning myself in the middle. I examine the biological measures and investigate how particular cultural concepts may be interacting in producing a community health profile. Determining effective measurements of health and well-being for this particular community while also providing opportunities for comparisons with other studies was challenging.

Measuring health and well-being

There is a great deal of methodological variation in the ways that health and well-being are directly and indirectly measured. In anthropology, methods include Lickert scale questionnaires on psychosocial status, self-rated health questions, qualitative analysis of informant narratives, cultural consonance measures, stress measures, and standard anthropometric measures as. Recent literature illustrates efforts to determine ways to measure perceptions of health and self-rated health comparable to more biomedically inclined measures of health (Farmer and Ferraro 1997, MacPhee 2004, Milligan, Bingley, and Gatrell 2005, Subramanian, Kawachi, and Kennedy 2001). Faithfully measuring health in one culture group is challenging, though cross-cultural applicable models have been devised and contested usually as essentializing complex health and healing systems and experiences (Blaxter 2004, Browner, Ortiz de Montellano, and Rubel 1988, Wolder Levin and Browner 2005).

Migrant health

Studies on the effects of migration on health focuses individual level stress and psychological effects of the migration experience (Buddington 2002, Phinney et al. 2001, Schmitz 2003). The multitude of anthropologically linked studies investigates how the migration experience and involvement into host societies causes differential health effects (Palinkas and Pickwell 1995). The literature focuses on contemporary migration patterns from varied underdeveloped and sometimes rural regions of the world to urban industrialized settings.

One set of works examines the links between individual well-being and surrounding societal, political and economic factors addresses immigrant approaches to access perceived requirements for their well-being. In these studies acculturation, assimilation, westernization and similar contentious concepts are responsible for detrimental health outcomes for most groups as time in host societies increases (Himmelgreen et al. 2004, McGarvey 1999, Newbold 2006, Palinkas and Pickwell 1995, Phinney et al. 2001, Singh and Siahpush 2002). For example, a study looking at the effects of acculturation among Cambodian refugees in the U.S. addresses both possible deterioration and promotion of health with acculturation assessed over time (Palinkas and Pickwell 1995). However culture change is measured and critiqued, the importance of evaluating it from multiple of dimensions and disciplinary lenses is important in our ever-increasingly mobile population. Recent urban immigrant health work also looks at how immigrants are proactive and enterprising when they select from a longer list of healthcare options to fit their needs and beliefs especially as established health care

options remain out of reach. For instance, Dominican women in New York seek a wide range of options to treat specific female illnesses (Balick et al. 2000, Ososki et al. 2002).

Immigrant policy and structural rules have played significant roles in immigrant success. Large-scale studies focus on the links between psychosocial factors to education and income achievement or gaps. There are works that address the value of social networks and social capital in circumventing some of the inherent obstacles that lead to more positive health outcomes as well (Kawachi, Kennedy, and Glass 1999, Ziersch 2005). Work on the healthy immigrant hypothesis is another example of better health status of immigrants compared to native host population (McDonald and Kennedy 2004, Newbold 2006). This literature discusses how the initial health advantage immigrants experience declines with time. This literature also debates the highly selective immigration policies requiring optimal health and methodological weakness of comparing today's immigrants to past immigrant cohorts.

A noteworthy trend addresses how the process of migration deeply uproots, re-roots and generally redefines of one's identity. The psychological health effects are studied even if migration is not experienced as unidirectional, permanent or violent plucking from one's native land and culture into an unfamiliar and hostile environment. In general, migrants face considerable lifestyle changes as they learn the "rules" of their new environment. It is well established that migration is a stressful experience at both pathological and psychosocial levels (Buddington 2002, Palinkas and Pickwell 1995, Schmitz 2003). Studies measuring levels of culture change declare that there is a protective health value in those individuals who retain immigrant community values and behaviors more closely as determined by biomedical indicators (Chavez, Flores, and

Lopez-Garza 1992, Himmelgreen et al. 2004). The global processes affecting health and migration patterns worldwide look at how transnational migration networks and processes change perceptions and practices in the household and social production of health, induce reconstruction of identity linked to psychosocial and other effects.

Limited work is available on changes in perceptions of health, strategies and how these affect behavior and health status in ethnic enclaves or among groups that practice indigenous medicine. A recent study on native Hawaiian concepts of health found that although biological indicators of health had improved, the perception of health by the community had not (McMullin 2005). The definition of health for this Hawaiian community extends beyond freedom from disease. The fluidity and distinct notions of health that occurs across space and time among different types and groups of immigrants is evident throughout the literature. It is vital to develop a complete understanding of local perceptions of health, and for this study, the comparison between the two sites is valuable in interpreting health patterns. This study, which is partially couched within immigrant health studies, looks at a specific form of migration, transnationalism, and how it may benefit or negatively affect the health and wellness of the transnational Trinidad and Tobago community in Atlanta.

Migration

Although international migration studies have traditionally focused on receiving countries (U.S., Canada, specific European nations) and despite varying disciplinary interests, the unilateral view has been balanced with studies on sending nations and communities. Anthropology, geography and sociology have played significant roles in

forming theories, methodologies and choice of geographical foci to address the multiple and multilevel processes that occur during contemporary human migrations. Classic models attempted to unify migration strategies and led to various models and theories such as segmented assimilation, the melting pot phenomena and ethnic enclave formation (Hirschman, DeWind, and Kasinitz 1999). The literature, especially in the American context, has strengthened stereotyping of immigrants, focused on superficial aspects of the immigration process with a focus on cultural habits, food ways, and spatial patterns to the detriment of structural factors enforcing certain migration patterns (Hirschman, Kasinitz and Dewind 1999, Portes 1999, Zolhberg 1999). Despite the critiques, the theoretical developments and refinements that emerged are foundational in conceptualizing migration trends. Later studies have included research on sending nation environments while also continuing to study receiving nations in order to reevaluate classic models as well as theorizing on other migration strategies (Hirschman, DeWind, and Kasinitz 1999).

Theories derived from the seminal studies revolved around the different aspects of push-pull factors based on economic contexts and the changes host communities have undergone. Portes emphasizes a call for midrange theories to explain migration, rather that specific case study results, or superficial trait foci that are then falsely used as theories or explanatory models (Portes and Zhou1994; Portes 1999). The terminology used has also caused much debate in determining the meaning and connotations of such complex concepts as acculturation, assimilation, incorporation and adaptation. Newer research focuses on refining certain useful though hotly contested concepts (e.g. straight line, segmented or downward assimilation) while relinquishing others. Much of the

debate began while studying post World War Two migrations when sizeable increases occurred in the diversity of sending countries and motivations for moving (e.g. political refugees, professionals, students, and family). Even more recent research has called for addressing the perspectives, experiences and lives of second generation immigrants to reexamine older concepts, theories and conclusions that have potential weight in policy settings (Portes and Zhou 1994, Zhou 1999, Rumbaut 1999).

Area studies have addressed questions of locality, regional trends, cultural heritage, and experiences. Mainly through case studies of communities, regions and countries, we are able to understand how the place-based conditions affect the reasons for and type of people leaving native settings and destination choice. In an increasingly connected world, migration flows are just as vibrant though speed, motivations, sending and receiving countries fluctuate depending on political, social, historical and economic factors. A set of works focuses on the role of the state in facilitating or impeding the impulse to move as well as host country reactions. Another undercurrent has addressed gender roles and transformations during the migration process as it has been consistently considered similar across the sexes or made invisible. The focus on specific groups in sending and receiving countries has brought invaluable light to understanding trends and perspectives on the lives and values of immigrants meanwhile contributing to theoretical development. For instance, scholars have examined the contradictory behaviors of immigrants who will accept discriminatory practices at work, yet will not participate in the advancement of minority civil rights. At the same time, household power dynamics are shifting to more equal opportunities with women as breadwinners and men sharing household responsibilities (Portes and DeWind 2007). The focus on sending and

receiving countries provides more depth into the realities of migration and cross-cultural trends resulting. In the next sections, I discuss a particular form of migration, transnational migration, and then Caribbean migration. Both these trends focus on both the geographic specificity of my study and a significant migration strategy that the Trinidad and Tobago community in Atlanta utilizes.

Transnationalism

Transnationalism in its contemporary use has been defined by Glick Schiller, Basch and Blanc-Szanton (1994) as a process where immigrants create, maintain and construct social relationships in both their native and host countries. Rouse (1992) was the first to define the term "transnational migrant circuit" which implied a closed unit, with "circuit" justifiably dropped in the newer definition (Clifford 1994, Glick Schiller, Basch, and Blanc Szanton 1995). Though social relationships are defined as the mainstay of transnationalism, economic and political relationships have significant influences in both settings. In addition to the traditional economic remittances, transnational research has defined the importance of social remittances usually transmitted through social networks (Levitt 2001). Anthropology has been a disciplinary force in the development and honing of the current transnational phase. Anthropology's forte in transnational scholarship is relevant in examining the movement of identities, symbols, information, capitals and commodities.

Transnationalism is not a new phenomenon, though its current focus on "trans" cultural and national in addition to its focus on non-economic aspects of migration is a valuable addition to migration studies (Levitt and Schiller 2004). Transnational work has

questioned a past focus on receiving countries, economic trends and migration models as recent immigrant no longer fit under former acculturation, and ethnic models. The increasing accessibility and ease of communication means, transportation options, and flows of goods and information further innovative and alternative models for transnational communities.

A transnational approach can illustrate the significance of emotive economies that play on the memories and constructions of place facilitated in immigrant ethnic enclaves (Head, Muir, and Hampel 2004, Laguerre 1998, Levitt 2001, McKay 2005, Wise and Chapman 2005). For example, a cross-cultural study of immigrant gardens in Sydney Australia as "environmental engagement" by Head and his colleagues (2004) provides clear evidence of the multiple layers of connection to home and adaptation to host conditions: how the local reality and nostalgia of home is elicited in personal green spaces to reflect memory, tradition, and change. Notable shifts focus on transnational migrants' effects on the local host community they reside in and how multiple aspects of their social life are embedded to varying degrees in both home and home communities. At the same time, studies have also examined sending families, communities and even government structures as they are impacted by transnationalism (Kearney 1995, Levitt and Jaworsky 2007).

Caribbean migration

Caribbean migration seems almost a redundancy as migration is and has been a central force in the Caribbean. Coerced or questionable migration such as slavery and indentured labor introduced significant numbers of immigrants from various parts of

Africa and India to the region. Subsequently the ethnic, economic, ecological and demographic environments of the relatively small islands in the Caribbean were quickly and usually permanently altered. Many islands traded colonial hands, several became plantation economies, and in most cases, indigenous populations were quickly decimated by introduced pathogens. The presence and deliberate absence of people depending on the colonial pressures and qualities of different islands still have contemporary impacts. The focus in this section is on aspects of historical migrations that affect contemporary conditions in the Caribbean. The majority of the literature focuses on colonial and postcolonial intra-island, intra-Caribbean and metropolitan migration.

A multitude of recent transnational and migration studies stem from research conducted in Caribbean destinations. Portes' work, for example, is expansive, looking at elements such as social capital, educational attainment, and adaptation of second generation immigrants (Portes 1998, Portes and Bach 1985, Portes and Grosfoguel 1994). Glick Shiller's geographic focus is Haiti and, the U.S. among other locations. She looks at transnational and diaspora dimensions, and social relations (e.g. gender, class, identity, poverty) (Glick Schiller 1999, Glick Schiller, Basch, and Blanc Szanton 1995, Schiller, Basch, and Szanton Blanc 1992). Transnationalism is commonly employed as a migration model in explaining human movement within the Caribbean context though it is only one of a multiplicity of migration patterns. Other patterns include circuit migration where there is a pattern of migration to and from defined location resulting from a combination of education, economic, emotive and kin factors (Pessar 1997). Marginal or quiet migrations elucidate the importance of migrations within island nations

and to other islands in the Caribbean that are almost invisible in the research, but arguably causing more immediate and noticeable impacts at the local scale (Puri 2003).

Several scholars discuss the need for more studies of second-generation immigrants, whose parents immigrated post World War Two or during immigration reforms between the 1950s to 1970s, to add to work on sending countries, ethnic enclaves and economies and assimilation theories (Portes 1999, Zhou 1999). Other work highlights the trajectory of cultural and ethnic identity, belief systems and adaptations to living lives in one or more country and culture as people try to construct homes and sense of place wherever they are presently living. Though there are a multitude of migration studies in contemporary context, there are few overarching models or theories supporting these studies. For instance, Potter and Phillips' study looks at the disapproval of Barbadians of second generation British-Barbadians considered "mad dogs" (2006). This work only begins to investigate the various levels of objection by Barbadian society of second-generation transnationals attempting to build a life in the land of their parents. It focuses on the interesting case study rather than further refining transnational theory. The inclusion or development of models and theories is valuable given the plurality of responses and outcomes regarding changes in local knowledge systems, educational achievement, income level, and health status. This project is seated within the existing transnational and Caribbean migration literature, while also exploring the understudied Atlanta and Trinidad and Tobago transnational community.

Place

Place is an important concept to bring together several of the theoretical influences in this study. The power of place, the local place experienced in Atlanta and the re-creation of place (Trinidad and Tobago) needs to be highlighted as it impacts health in multiple and sometimes difficult to discern ways. The ways in which a community adapts to a place, whether a changing landscape in Trinidad and Tobago or negotiating one's role within the Atlanta context, will have repercussions on an individual and community's health and well-being. Place is also particularly important in migration studies, specifically transnational migration which is centered around creating and fostering ties to home which can be translated in a number of ways that include the construct of place. The deterritorialization of nation-states and cultures requires a different framework, one which includes place, in understanding migration experiences (Basch, Schiller, and Szanton Blanc 1994, Gupta and Ferguson 1997).

Place in health and well-being

Place is significant construct in understanding how the development, representation and experiences of a place influence transformations knowledge and behavior particularly when looking at health and well-being. Situating knowledge, and understanding how it affects behavior and strategies, involves determining the construction of place for the community along with the role of place in the ethnoecology of health. Place brings together how knowledge specific to place, perceptions and access in a current location can affect health and well-being strategies as people move in search a good life and well-being (Gesler and Kearns 2002, Panelli and Tipa 2007). In this case,

we are dealing with a construction of place that is in part influenced by the current geographic space the transnationals occupe and the interactions they have had with the place they call “home” that are still influencing the lens through which they see and operate in this world. Ethnoecology of health, which is supposed to be located or situated in a transnational setting in this study, is constructed by experiences of two or more places as paradoxical as that may appear. The volume on “Traveling Cultures and Plants” substantiates this claim as the repertoires migrants bring with them are vital, yet these are dynamic and influenced by host experiences that then affect health beliefs and behavior (Pieroni and Vandebroek 2007).

Place then plays multiple roles and reflects how physical location affects a person, what parts of the environment are transmitted in knowledge and which are seen in behavior (Gesler and Kearns 2002, Gupta and Ferguson 1997). Place is used to determine its impact on the dynamic between what is real and imagined. Among immigrants this idea is significant in the way the new and home landscapes are viewed, remembered, constructed and experienced. Studies of health landscapes often stem from Gesler's cultural geography term of “therapeutic landscape” (1992) meant to address human-environment relationships beyond the physical environment. He looks at place’s emphasis on the mind's interpretation of phenomena by explaining that one understands a cultural landscape by understanding the thought behind it. A few works addressing this intersection call for the need to go beyond limitations of physical environments, omitting scales, gendered and cultural considerations of place and the healing or health qualities ascribed to them and expanding into everyday “place-related memories” (Gesler and Kearns 2002). In contrast, anthropological subdisciplines have focused on how landscape

endows cultural memory and even how immigrants create ideal and idealized landscapes (Head, Muir, and Hampel 2004, Wise and Chapman 2005). In landscapes studies across disciplines the mind is a powerful tool in the imagining and creation of place.

Place in migration

Transnationalism, the process where immigrants create, maintain and construct relationships in both their native and host countries needs to incorporate the malleable concept of place (Basch, Schiller, and Szanton Blanc 1994). As migrants straddle two cultures, various paths are creatively carved in order to find a sense of place and emplacement (Nazarea 2005, Nazarea 2006). Diverse migration foci examine how varying migration patterns and time spent in distinct locations contribute to changes in knowledge systems, health beliefs and strategies. Though transnational and multilevel approaches are not novel, my proposed research focuses precisely on determining and revealing those invisible and in-between spaces created by assessing local experiences and responses to health inequalities and needs.

Migrants often feel and find themselves within the category of marginalized individuals, as migrants often have a sense of place divergent to their host society's since cultural associations may be distinct (Connerton 1989, Nazarea 2005). This displacement is not necessarily a painful choice or a violent uprooting as one searches of a better future elsewhere. The interior landscape they arrive with is externalized in certain instances (Van Noy 2003). The migrant feeling "out-of-place" creates a place through knowledge such as plants or recipes and the memories or stories they evoke, by bringing or acquiring culturally significant items, such as Nazarea's discussion of seeds as "living units of

remembrance” (2005). This sense of interior and exterior can be juxtaposed with Relph's “insidedness and outsidedness” (1976). The outsider or immigrant becomes an insider in this physical landscape created by using various tangible and invisible tools. Ethnic enclaves for example, are hotly contested as they are usually in scarce urban spaces while economically successful. They also represent blatant sites of resistance or reaction to mainstream society as the migrant is the insider and the dominant society is the outsider (Chang 2000, Portes and Sensenbrenner 1993, Portes and Zhou 1994).

CHAPTER 3

HEALTH STATUS AND THE STATE OF ETHNOECOLOGY OF HEALTH

Introduction

Little is known about the health and well-being or the ethnoecology of health of the transnational Atlanta and Trinidad and Tobago community. This chapter is positioned at the nexus of transnational migration, health, and urban ethnoecology. I focus on the ethnoecology of health or ethnohealth systems, defined as situated knowledge, beliefs and practices surrounding the production of health and well-being. It encompasses ethnobotany and ethnomedicine, but is more inclusive than a more selective focus on plants or medicinal preparations and rituals. In the case of immigrant communities, there is evidence that recent arrivals enjoy a health advantage over the average national health (McDonald and Kennedy 2004, Newbold 2006). It has also been noted that culture may play a protective role in immigrant health (Chavez 1994, Himmelgreen et al. 2004). However, when it comes to transnational communities, it is not clear how the multiple types of exchanges occurring in both directions affect communities at both ends. Only recently have ethnoecologists and ethnobotanists conducted research in urban locations (Balick et al. 2000, Ceuterick et al. 2008, Maffi 2001, Pieroni and Vandebroek 2007, van Andel and Westers 2010). The acceptance of biological and cultural diversity in urban communities and the study of these systems come at an opportune time given the magnitude of migrant communities worldwide.

Objectives

This chapter has two objectives in investigating the ethnoecology of health of this transnational community. First, I look *at the health assessments and nutritional status of the Atlanta community to examine the effect of the transnational state for overall health*. To do this, I look at the health of the Trinidad and Tobago community as well. Second, I *examine the state of ethnoecology of health of Trinidadians and Tobagonians in both locations.* To attain this, I focus on two domains, health resource and plant knowledge. This case study can be used as an investigation of how migration shapes health and transforms health knowledge. More specifically, this study can test ideas from the literature on different types of knowledge changes that occur in migrant communities.

Health status will be addressed using both physical and self-assessed measures by comparing physical health measures of the community in Atlanta to similar measures in Trinidad and Tobago. It is important to understand how the community assesses its health regardless of physical measures since self-assessed health has been determined to be a better predictor of mortality than other health status measures (Idler and Benyamini 1997). Comparing physical measurements to self-assessed health in each community context allows us to investigate the range of impacts a transnational lifestyle may have in the host and native settings.

The second part of this chapter examines the state of local knowledge in this transnational community. I focus on health resources and plants used for health, healing and medicinal purposes as they relate to the other chapters examining health practice and perceptions. Expert local knowledge has been determined to be significant both to for cultural values and for human survival of a particular group (Balick and Cox 1996,

Conklin 1954, Nazarea 1999). In this case, the local knowledge (beliefs and practices) related to health and wellness is evolving. This community is in contact with and negotiating a new environment and culture(s), while maintaining their local knowledge system reinforced through their current active ties to home.

Since we are dealing with a transnational community that is in a liminal state and has not been well-documented in the academic literature or national assessments, it is important to examine the Atlanta community separately from the Trinidad-Tobago community. The Atlanta community is flourishing, yet relatively small. Trinidadians and Tobagonians are moving from other destinations in the U.S. Many Trinidadians and Tobagonians that have spent more time in the U.S. first arrived in Florida or New York, while others no longer use traditional U.S. immigrant states as a stepping-stone to Georgia. As a result, various exchanges have taken place (e.g. plant seedlings grown in Florida are sent to friends in Atlanta, salves prepared by elders in New York are transported by the Trinidad and Tobago or Caribbean network on the plane). Cultural and material exchanges are selective and occurring in both locations as each. Each community is influencing one another, especially with the increasing methods of connecting communities (Dei, Hall, and Rosenberg 2000, Ellen, Parkes, and Bicker 2000a, Maffi 2001).

Background

Trinidad and Tobago is known to have one of the highest rates of obesity within the Caribbean region with overweight and obesity estimated prevalence of 81% for adult females and 65% for adult males (Ono, Guthold, and Strong 2005). Multination agencies,

such as the Caribbean Food and Nutrition Institutes (CARICOM), have been taking measures to address the issue of non-communicable diseases and focusing on obesity in recent years (e.g. school programs, national health campaigns). Related diseases like type two diabetes affect up to 20% of the adult population between 35-69 years old in Trinidad (Miller et al. 1989). There are numerous factors that contribute to the state of this population's health, including relatively recent and quick epidemiological, nutritional, and economic transitions (Gulliford 1996, Gulliford and Mahabir 1998). The foundation of this two-island nation has been shifting and is not homogeneous between or within each island.

The historically multiethnic Caribbean region has been utilizing medical pluralism for healthcare for many centuries and continues to do so. An intricate multilevel approach, includes components from various health traditions that people commonly use, has been developing and morphing for just as long (Leslie 1980, Montenegro and Stephens 2006, Pedersen and Baruffati 1985). In Trinidad and Tobago, the amalgamation of health systems is not new and today includes informal and formal elements, local experts and professional knowledge, spiritual healers, and local and imported plant materials.

As Trinidadians and Tobagonians adapt to their changing environment, they continue to use the free public health system although with some reservation. Studies evaluating patients' experiences with the public health system suggest that health inequalities within Trinidad and Tobago prevail on many levels: mortality, health practices, and patient satisfaction. Elderly, women, people of East Indian descent, and those with a lower socioeconomic status suffer greater mortality from type two diabetes

(Gulliford and Mahabir 1998). Persons with lower incomes and physical disabilities consume fewer fresh fruits and vegetables and have lower than average BMI values (Gulliford, Mahabir, and Rocke 2003). Another measure of equity was measured through patient satisfaction and confidence with the public healthcare system in Trinidad and Tobago. Overall, those with higher incomes, who consequently have increased access to private healthcare, and those with more complex health problems, were less satisfied with the primary care received (Rudzik 2003, Singh, Haqq, and Mustapha 1999). Most of these studies are limited by providing only quantitative or survey type data.

Medical pluralism is prevalent in Trinidad and Tobago as it is in many multiethnic communities. The use of ethnohealth systems continues to be widespread within Latin America and the Caribbean (Leslie 1980, Montenegro and Stephens 2006, Pedersen and Baruffati 1985). The systems in the Caribbean are highly pluralistic due to the varied colonial history in the region (see Chapter 1). Furthermore, historical migration trends and extended contact between various cultures have created syncretic healthcare systems both in the informal and formal arenas (Bastien 1992, Clement et al. 2005b, Lans 2006). In Trinidad and Tobago, scholars have made policy recommendations to integrate training in integrating ethnomedical, mainly ethnobotanical systems, with the biomedical training health professionals receive. Currently, healthcare professionals are accepting of patient use of medicinal plants, yet professionals have limited knowledge of medicinal plants and their interactions with biomedical practices (Clement et al. 2005a, Clement et al. 2005b). These studies clearly indicate an acceptance of local health knowledge systems, yet there is a problem in bridging this acceptance with expertise in integrating various health systems.

The continued interest in the ethnoecology of health in Trinidad and Tobago is revealed by current studies examining ethnobotanical intersections with biomedicine. Studies show that most plants used for curing asthma, diabetes and other problems come from the backyard, sometimes an open market and the knowledge from the sufferer's social network (Chaudhari 2009, Clement et al. 2005a, Mahabir and Gulliford 1997). Future directions by the health ministry and health authorities in Trinidad and Tobago are likely to incorporate the study of local knowledge, most likely focusing on medicinal plants and their interactions with allopathic medication based on informal personal communications with health care authorities and some of the authors of the papers referenced above. Although this is a laudable attempt to incorporate and validate the value of local knowledge, efforts are aimed at uncovering plants that might be useful for specific diseases such as diabetes (Chariandy et al. 1999, Seaforth 1988).

An immigrant community's health can vary widely. People who migrate may benefit from a so-called healthy immigrant effect (McDonald and Kennedy 2004, Newbold 2006). That is, there is a general trend that recent arrivals to a host country are generally healthier by physical measures compared to the host country's national average. Chronic disease rates like heart disease, and arthritis are generally much lower in recent arrivals, and self-assessed health in generally higher too. There are a number of factors that need to be further considered such as age of entry, country of origin and destination. However, there is strong evidence that the process of migration, even if it is voluntary, is a traumatic experience that has a variety of psychosocial health effects on the immigrant (Buddington 2002, Palinkas and Pickwell 1995, Schmitz 2003). In general, as immigrants' time in their host country increases they are more apt to develop chronic

conditions due to a number of factors, which may include going undiagnosed due to cultural barriers or language differences. Interestingly, it has also been shown that persistence of one's native culture can serve as a barrier against illness and disease (Chavez, Flores, and Lopez-Garza 1992, Himmelgreen et al. 2004, Palinkas and Pickwell 1995). Even though the above studies present conflicting results, migration clearly has significant impacts on a migrant's well-being. It is important to contextualize the specific case within their sociocultural, political, economic and environmental conditions.

As with most immigrant communities, ethnoecology of health models from the natal country may be sought after for a number of reasons like barriers to formal healthcare, cultural relevance, economic reasons, or belief in local health resource effectiveness (Balick et al. 2000, Pieroni and Vandebroek 2007, Waldstein 2006). The erosion of local knowledge systems that include health and wellness knowledge is occurring worldwide as communities are integrating into world markets (Carlson and Maffi 2004, Maffi 2001). In Trinidad, the use of ethnomedicine and ethnobotany is still commonly practiced although the state of knowledge has not been well-studied (Chaudhari 2007, Clement et al. 2005a, Lans 2003). Yet when people migrate, especially to urban areas, there is relatively little known about what happens to indigenous health knowledge and its transformations, therefore generalizations are not common. There is evidence that this knowledge is not completely lost, rather a number of shifts take place (Pieroni and Vandebroek 2007).

The transformations in health knowledge include selective incorporation of host country's system, maintenance, and loss. For example, Turkish migrants in Germany selectively incorporated red beets part that are part of the German pharmacopoeia. Home

country knowledge is maintained among Turkish migrants since access to plant materials is possible due to social networks and relative ease of transportation between Turkey and Germany (Pieroni et al. 2005). Maintenance of knowledge depends on the ecological environments of the home and host countries and access to plant material from home (Ceuterick et al. 2008, Pieroni and Vandebroek 2007). Loss may be compounded by the fact that migrants are marginalized in their communities, therefore practices are more hidden and interest in maintaining them dwindles. On the other hand there is interest in maintaining knowledge precisely because of this marginalization and the interest and pride in a migrant's ethnic identity (Ceuterick et al. 2008, Gladis 2003, Volpato, Godínez, and Beyra 2009).

In Trinidad and Tobago, the current status of the ethnoecology of health has not been assessed although there are some studies looking at specific areas of ethnoecology, such as ethnoveterinary (Lans 2001), women's health (Lans 2007, Mahabir 1997) and ethnopharmacy (Chariandy et al. 1999) case studies. Therefore it is not a surprise that when we consider Trinidad and Tobago's migration history, environmental setting, colonial history and economic activities, the health system used by the population is influenced by many health and medical traditions. As a transnational immigrant community in Atlanta, the state of ethnohealth system has not been documented at all.

Trinidadians and Tobagonians in Atlanta present a particularly interesting case of a transnational community negotiating various factors of their home and host landscapes and cultures. Like other communities, many people choose a multilevel health model (Mahoney 2004, Pickwell 1999), which includes a transnational health network (Hilfinger Messias 2002, Menjivar 2002). The multiethnic community in Atlanta

represents individuals of African and Indian descent, which present additional considerations within the Atlanta sociocultural environment. People of African descent have vocalized feeling a greater sense of place and ease in Atlanta compared to other cities in the U.S. Based on numerous personal communications, they attribute this positive element and feeling of comfort in part due Atlanta's place in the history of U.S. civil rights movement. On the other hand, various Indo-Trinidadians and people of Indian descent from the Caribbean have shared many instances and feelings of being discriminated against in Atlanta. When looking at census data, the majority of Trinidadians and Tobagonians in the U.S. indicated they were "Black or African American" (68.6%), although national statistics indicate that there population is approximately 40% African descent and 40% East Indian descent (U.S. Census Bureau 2006, 2007, 2008). In regards of the community's health, the Trinidad and Tobago community in Atlanta reveals added layers or complexity due to the varied cultural heritage and socioeconomic opportunities that can lead to health disparities.

Methods

Focus groups

I conducted seven focus groups in Atlanta to examine different aspects of migration, health and well-being characteristics and cultural knowledge of the community. Focus group discussion participants consisted of four female and three male groups between the ages of 24 and 70. These individuals were recruited during participant observation opportunities in the Trinidad and Tobago community. In some instances, participants recruited other Trinidadians and Tobagonians within their social

network. The actual discussions were conducted in participants' homes, at Atlanta-Trinidad and Tobago association meeting headquarters or after religious gatherings. These focus groups also allowed me to explore the acceptability of conducting certain parts of the research design like anthropometric measurements and pile sort exercises. At the same time, this setting allowed participants to share their interest and concerns about my research project. Focus group participants were asked to list all the health care resources they currently used and, separately, all plants used for health, healing and medicinal purposes. The focus group free lists yielded a 51 item health resource list of places people go to, things they do and people they seek for health and well-being assistance. The plant list consisted of 76 items. These two lists were also cross-validated with results obtained from pre-dissertation fieldwork in Trinidad and Tobago in 2006.

Individual nutritional status and ethnohealth system knowledge

Individual survey sessions were conducted with 24 participants in Atlanta and 45 in Trinidad and Tobago. Interviews included self-rated health, pile sort exercises and anthropometric assessments of nutritional status in addition to demographic information. Some participants did not take part in all of the interview and assessment sections and are further described in the subsections below.

Anthropometrics

Anthropologists use anthropometric measurements such as body weight and proportions to determine nutritional status. I followed procedures as described in the literature to take all anthropometric measurements (Cameron 2004, Centers for Disease

Control and prevention (CDC) 1988, Lee and Nieman 2007a). To determine height I used a portable stadiometer, making sure it was stable and participant's were positioned adequately. I used a Tanita bioimpedence scale to measure body weight. This digital scale also calculated percentage fat through bioimpedence calibrated for sex, age and build of the individual. All research participants removed their shoes and heavy layers such as jackets, accessories such as hats and scarves. Almost all participants had their anthropometric measurements taken; Atlanta (n=24) and Trinidad and Tobago (n= 44) participants.

From these measures I calculated Quetelet's index, commonly known as Body Mass Index (BMI) to determine body weight relative to height, which is weight divided by height squared (BMI= kg/m^2) as a relatively reliable measure of body fatness or adiposity (Lee and Nieman 2007a). I use BMI to compare this community's results to available data in the U.S., Georgia, and Trinidad and Tobago. BMI is not a perfect measure, but is a widely used to determine whether someone is lean, normal, overweight or obese, and by extension, can be used to discuss risk of type two diabetes, hypertension, coronary heart disease, certain cancers, and other health conditions (Lee and Nieman 2007b). In data analysis, I use W.H.O. cutoffs for determining overweight ($25\ kg/m^2 \leq BMI < 30 kg/m^2$) and obese ($BMI \geq 30\ kg/m^2$) individuals.

I used a weighted measuring tape to take waist circumference measurements to determine body fat distribution. I use waist circumference measurements to complement BMI measurements. Waist circumference is now considered to be a better predictor than waist-hip ratio for higher risk of certain diseases, including cardiovascular disease (Balkau et al. 2007, Lee and Nieman 2007a) and diabetes (Lofgren et al. 2004). Current

norms indicate that high-risk waist circumference for adult males is > 40 inches and for females > 35 inches. Waist circumference has been determined to be a better predictor of disease risk for individuals with a BMI < 35 kg/m^2.

Subjective health measures

Additional information to contextualize the information obtained through the anthropometric measurements and pile sort exercises was gathered through participant observation, informal conversations, and other sections of the interviews including a general health history and a recent health recall shared by the participants during the individual interviews. During the health recall section of the interview, participants were asked to rate their own health compared to their peers on a five-point scale: excellent, above average, average, below average and poor. These findings were compared to results from physical measurements.

Cognitive methods

To better understand the status of selective areas of ethnoecology of health, I conducted unrestricted pile sorting exercises using methods outlines in Bernard (1998). (1998). Using lists generated through the focus group data analysis, participants were asked to group like elements into a same pile. They were told that there was no right or wrong way of groups the cards. They were also informed they could make as few or as many piles as they wanted.

I used the ANTHROPAC 4.0 software program to analyze how individuals at the location level tended to classify items on each pile sort list (Bernard 1998, Bernard 2002,

Borgatti 1996a). This analysis resulted in two commonly used statistics. First, Pearson's correlation coefficient allowed me to compare how individuals in each group to the related aggregate matrix for each exercise and each location (Borgatti 1994). Pearson's correlation is a common measure that indicates the degree the individual participant related to the group average. The coefficient values ranged between 0 and +1, with +1 indicating a perfect correlation between the individual participant and the aggregate group (Sokal and Rohlf 1995). Second, the aggregate proximity matrix resulting from the pile sort analysis allows us to consider similarities in responses to examine healthcare resource and plant domains, by entering this matrix into other analyses options (e.g. multidimensional scaling, cluster analysis).

If the range of coefficients is wide, it is possible to either omit the outliers from further analysis, which I chose not to do since my sample size was small in both locations with one exception. One participant in Trinidad and Tobago placed all the plant cards in one pile and her response was omitted from the corresponding analyses. An alternative is to test the consensus method to determine if this model fits the data. Testing for consensus should be done among participants that share a common culture, involve questions from a single domain and each participant should be interviewed individually (Borgatti, 1994). For both the Atlanta and Trinidad and Tobago community, I tested the consensus model for both healthcare resources and plants to determine the degree of agreement among respondents. This analysis allows us to determine the knowledge level of each respondent by looking at agreement patterns among respondents using the individual proximity matrices generated by the pile sort analysis (Borgatti 1996c, Romney, Weller, and Batchelder 1986). The agreement matrix was then used for further

analyses to look at similarities between respondents within each location for the two domains.

From the resulting aggregate proximity matrix (from the pile sort function) for each exercise and location, I used a set of descriptive statistical analyses to represent the various patterns of similarity also in ANTHROPAC: non-metric multidimensional scaling (MDS) and Johnson's hierarchical cluster analysis. These methods are mainly used as a visual representation of complex data to see if there are similarity patterns within a set of object (Bernard 1998, Borgatti 1996a). I used these to further examine the pile sort and consensus model results.

Multidimensional scaling is a multivariate analysis where the similarities are computed into Euclidian distance. A map or plot is the product of this analysis. The optimal configuration along two dimensions and the number of iterations and S-stress value indicate the level of correspondence between items based on distance. The underlying dimensions in MDS are thought to explain similarities between items. The items that are closer to each other on a MDS representation indicate shared categories among the participants. The fewer the iterations performed, the higher the level of correspondence, and a S-stress value between 0 and 0.15 is considered to be statistically significant (Borgatti 1996a, Kruskal and Wish 1978, Weller 1998). This is a valid measure for subjective data such as this pile sort data. This method proved useful for the health facilities exercise, but was more difficult to interpret for the plant exercise. I also performed a simple Johnson's hierarchical cluster analysis using ANTHROPAC with the aggregate matrix (pile sort) and agreement matrix (consensus) (Borgatti 1996b). It

assisted in further examining how participants classified the items in the two domains of interest as it determines which items within a domain go together and in what order.

Findings

Health assessment

General nutritional status results indicate that no one in the Atlanta or Trinidad and Tobago community is underweight (Table 3.1 and 3.2 and Figure 3.1). Across all locations, between 20% and 25% the participants have a BMI within the normal range. The majority of the participants are in the overweight or obese categories. Approximately half the participants in both locations are overweight and between 25% and 33% of the participants are obese. Comparing both communities, there were more participants within the normal range in Trinidad and Tobago than in Atlanta. The overall percentage of overweight and obese participants in Trinidad and Tobago is less. However, there are more overweight men in Trinidad and Tobago than in Atlanta. The percentage of women within the normal BMI range in Atlanta was higher than in Trinidad and Tobago.

In Atlanta, a higher percentage of women are overweight compared to men, though the numbers are small (Table 3.1). However, the pattern for women and overweight participants is similar in Trinidad and Tobago where there were more males within the normal BMI range than women. The other percentages between men and women were relatively comparable in Trinidad and Tobago (Table 3.2).

Table 3.1 BMI results for the Atlanta community

	Male	%	Female	%	Total	%
Underweight	0	0.00	0	0.00	0	0.00
Normal	2	8.33	3	12.50	5	20.83
Overweight	3	12.50	9	37.50	12	50.00
Obese	4	16.67	3	12.50	7	29.17

Table 3.2 BMI results for the Trinidad and Tobago community

	Male	%	Female	%	Total	%
Underweight	0	0.00	0	0.00	0	0.00
Normal	8	17.78	4	8.89	12	26.67
Overweight	9	20.00	12	26.67	21	46.67
Obese	5	11.11	6	13.33	11	24.44

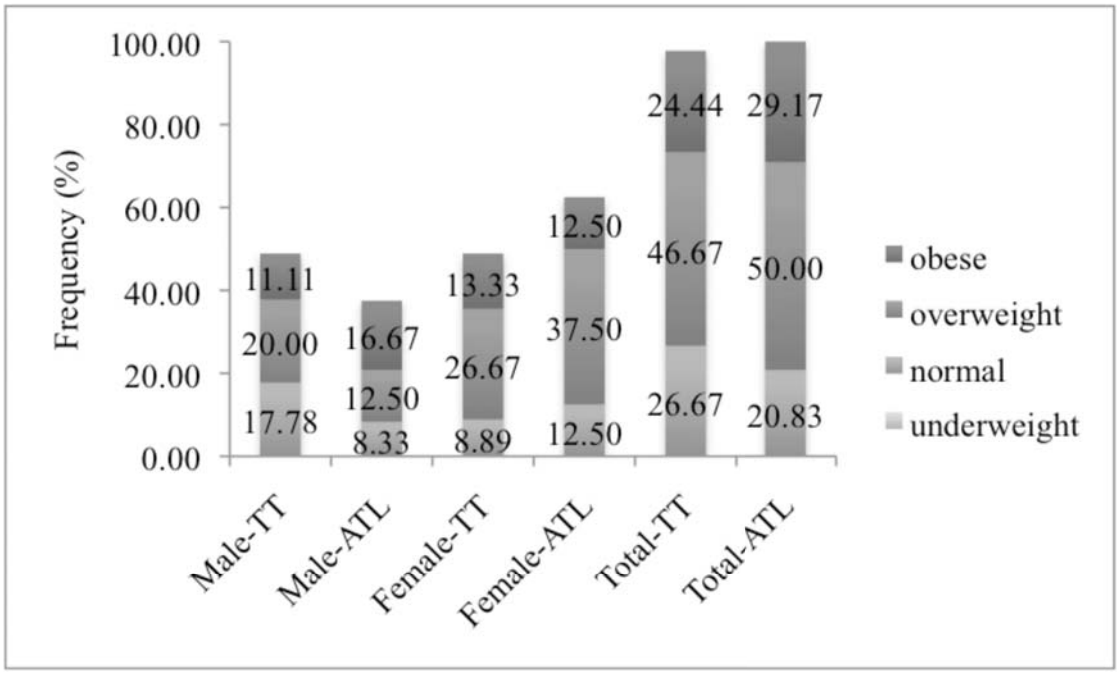


Figure 3.1 Comparing BMI rates by gender and location

Table 3.3 Distribution of high-risk waist circumference among participants

	Trinidad and Tobago			Atlanta		
	N	% of participants	% of gender group	N	% of participants	% of gender group
Females >35 in	13	28.89	59.09	7	29.17	46.67
Males >40 in	4	8.89	17.39	3	12.5	33.33
Total	*17*	*38.64*		*10*	*41.67*	

I evaluated waist circumference measurements since this serves as a better indicator than hip-waist ratio to determine high-risk disease factors. Table 3.3 provides results on the distribution of people with a high waist circumference in this study population. The data suggest that women in both Atlanta and Trinidad and Tobago have higher waist circumference than men. Women at high-risk represent approximately 29% of the community, and they represent between 46-59% of their gender group. In both locations, men have lower waist circumference than the women participants. In Atlanta, the number of men with high waist circumference is greater than for male participants in Trinidad and Tobago. In the Atlanta community, between 17-33% of males have high waist-circumference. Looking at risk by location and gender, the high proportion of overweight individuals is significant. I was also interested in understanding more about how the participants themselves evaluated their current health condition.

Looking at self-determined health of the Atlanta community, they considered their health to be at least average or higher: 16.67% of the sample rated their health average, 62.5% rated their health above average, and 20.83% rated their health as

excellent (Table 3.4). Comparing self-assessed health to the physical measurement results, it is apparent this group determined their health to be generally positive. Even though most of the participants were overweight or obese, the majority determined their health to be very positive.

For the Trinidad and Tobago community, only 4.5% of the community rated themselves as having health below the average of people in their age group, 33.33% indicated their health as average, 42.22% as above average and 20% as excellent (Table 3.4). This community rated its health less favorably than their counterparts in Atlanta, but still had a sense of being in better health than their peers. These results contrast with the other indirect health indicators involving physical measurements. Paradoxically, this community had slightly better statistics regarding community level BMI and waist circumference measures yet viewed their own health to be less favorable than their peers in Atlanta.

Participants in both communities also provided health histories and health recalls that are not fully examined here. There were a variety of illnesses and diseases listed. In Atlanta, chronic diseases, diabetes and hypertension were common. Other health mild problems such as colds and headaches were also widespread. When discussing their health background and talking about the "old times," the majority of migrants spoke of simpler times that were favorable to health and wellness. Although they had had less access to medical services people felt that people lived longer and were generally healthier before migrating for the Atlanta community. Stress was often said to be nonexistent or minimal before migrating. Life in general was thought to be less

Table 3.4. Self-rated health results by location

	Atlanta (%)	Trinidad and Tobago (%)
Poor	0	0
Below average	0	4.44
Average	16.67	33.33
Above average	62.5	42.22
Excellent	20.83	20
Total	*100*	*100*

complicated and healthier though participants said that they had to work hard and live a harder life before migrating. Fruit was easily picked from trees, and participants said, "fruit was our junk food." The transnationals also talked about monthly purges to cleanse the systems and easily accessible medications, often times made from local plant products they acquired from trips abroad or searching ethnic markets in Atlanta. Nostalgia may have influenced the generally ideal environment most participants depicted when talking about their lives growing up in Trinidad and Tobago.

State of ethnoecology of health

Healthcare resources in Atlanta

The Pearson's correlation coefficient values for Atlanta group healthcare resources pile sorting exercise ranged between 0.067- 0.749. The large range for the correlations between individuals and the aggregate matrix, and the average results for the highest scorers prompted me to do a consensus analysis for this exercise. However, I still analyzed the pile sort results using MDS and hierarchical clustering techniques. The two dimensional MDS plot data had a S-stress level of 0.097 and illustrated that healthcare

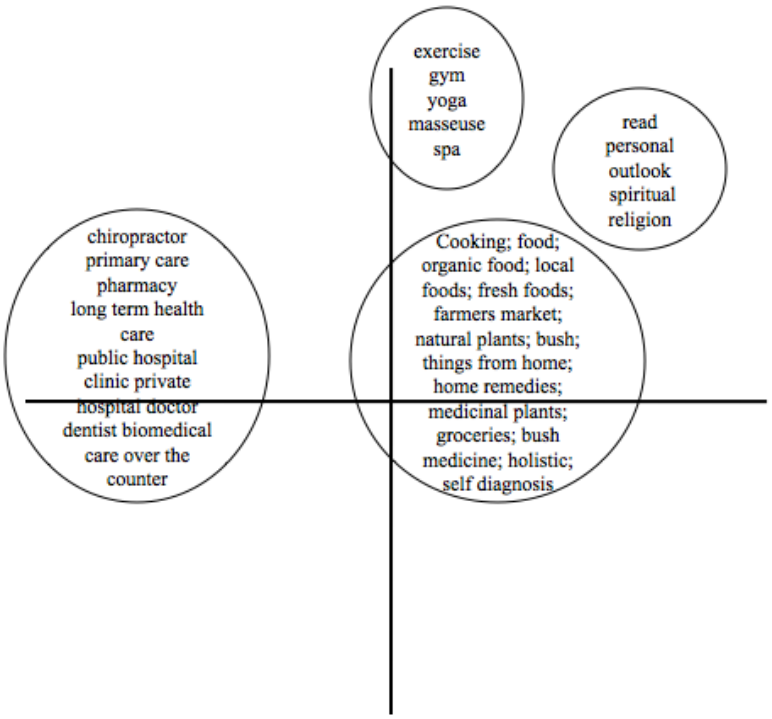


Figure 3.2 MDS plot of healthcare resources for the Atlanta community

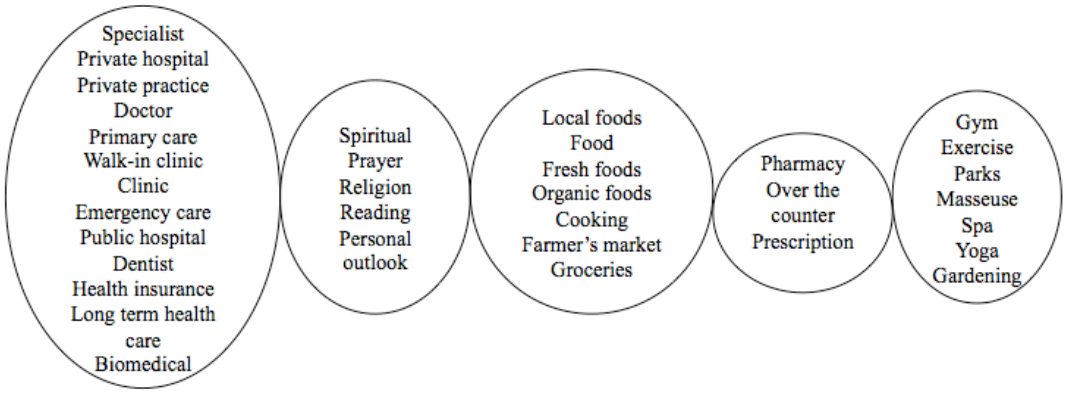


Figure 3.3: Healthcare resource clusters for the Atlanta community (based on Johnson's hierarchical clustering analysis)

resources were divided into four groups by this community (Figure 3.2). The horizontal axis can be interpreted to represent a biomedical to non-biomedical resource dimension from left to right. I label the largest category (15 items) *cultural healthcare resources*. It included food-medicine, ethnobotanical, ethnomedicinal and local natural items.

The second largest was the most isolated group included *biomedical* items both private and public with 11 items. The third category was closer to the middle of the horizontal dimension and along the edge of the horizontal dimension with five items that can be categorized as *taking care of the body*. The fourth category, *metaphysical,* was close to the cultural category and included four items. The hierarchical clustering results (Figure 3.3) reveal several similarities when compared to the MDS map, however I determine additional information to be most similar by participants. Figure 3.3 shows the five groups with the leftmost group and top items showing highest levels of similarity. There is evidence of shifting classification when compared to the Trinidad and Tobago community results. The status of gardening for this community is associated more as a physical activity within the repertoire of healthcare resource category than as a part of the food for health and healing category (see Discussion and conclusion section below).

The consensus method analysis results indicated that the consensus model fits and we are dealing with one culture group. The resulting agreement matrix was then used to perform both multidimensional scaling and hierarchical clustering analyses giving us further insight regarding which participants responded to the healthcare pile sorting exercise most similarly. The MDS analysis S-stress was 0.055 and resulted in two groups: one large group just to the left and below the origin. The other group consisted of two respondents at the lower right of the plot. The characteristics of the participants in

this group revealed little since there was a mix of men and women, ages, migration and health histories. The Johnson's hierarchical clustering results indicated comparable results. There were five clusters of different sizes with a total of 20 participants. Once again, upon closely looking at the history and characteristics of the individuals, there were no clear characteristics revealing why respondents were grouped together. The largest group was made up of participants with a particularly encompassing perspective on health and well-being that included various categories to balance life. The second group was made up of participants that tended to be more flexible and open in their outlook towards health having undergone a set of challenging life circumstances, although not necessarily including specific health conditions.

Healthcare resources in Trinidad and Tobago

The Pearson's coefficient range for the Trinidad and Tobago sample was between 0.198 – 0.763. These correlations reveal that there are a few outliers and that there is also a wide range of knowledge within this group. The aggregate matrix and the individual matrices were used to perform further analyses identical to those conducted on the Atlanta sample. The results from the Johnson's hierarchical clustering analysis revealed seven groups in Figure 3.4. We note there are various similarities with the Atlanta results. The Trinidad and Tobago community tends to separate their healthcare resources into more groups and ethnoecology of health resources based on local plants was an important additional category that did not appear in the Atlanta results. Gardening was part of the food category while it is placed in the physical activity category in Atlanta. Supplements are more significant in this location, which is similar to results I found

during fieldwork in Trinidad in 2006. The MDS map results were unacceptable since the S-stress was above 0.15.

The consensus model was tested and results showed that the consensus model fits for this community as well. For the MDS analysis, the S-stress was above 0.15 and therefore the results were unacceptable. The hierarchical clustering analyses revealed eight groups of respondents. The groups that responded with a higher level of similarity were larger, but once again, there were no identifying characteristics common among group members except for the first group with almost half the respondents being above 65 years old.

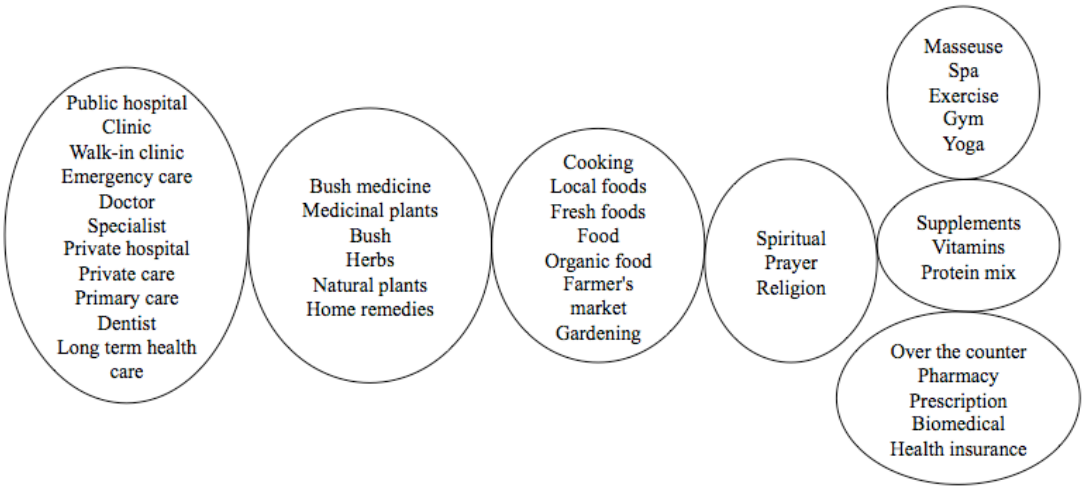


Figure 3.4. Healthcare resource clusters for the Trinidad and Tobago community (based on Johnson's hierarchical clustering analysis)

Plant knowledge in Atlanta

The Pearson's correlation coefficient range for the Atlanta participants plant knowledge was 0.180 to 0.627. MDS results for both the pile sort and consensus matrices were unacceptable due to S-stress levels above 0.15. The hierarchical clustering results revealed 14 groups at the 0.5149 level and above (Figure 3.5). Plant categories used here were determined and cross-validated using participants observation, focus group and individual interview data, ethnobotanical literature and results from pre-dissertation work in Trinidad and Tobago in 2006. The largest group includes plants used in foods for seasoning and health purposes. Participants also tended to group plants partially by type of use such as plants used for teas, cooling drinks, and general cleansers. The tea category includes: fevergrass, green tea, orange peel. Popular cooling drinks are made sorrel and mauby bark. Aloes and senna pod are common general cleansers taken internally. This group had knowledge of the plants for health and healing purposes and even some plants introduced from their host country (rosemary and bay leaf), in addition to reclassification of certain plants. Overall the categorization is at a more general level such as preparation (e.g. teas).

Narrative and participant information suggest that general ethnobotanical knowledge among transnationals in Atlanta is being lost. At the same time there is evidence of shifting significance of the use of plants for health and healing to a more symbolic purpose. Various participants in Atlanta grew plants from the homeland, but these plants were no longer grown as much for food-medicine or healing as they were considered links to home and to memories of time the islands. Often the ethnobotanical plants growing around the house were described in terms of stories related to their

acquisition, usually including long distances and an interstate social network. The plants were triggers for stories from home or from childhood. These stories usually involved grandparents or elders and their multiple uses and preparations of plant, and the stories provided the additional benefit of transferring knowledge to the younger generation. These memories sometimes triggered other sensory memories such as the dreadful or peculiar taste of certain plant preparations.

The consensus model was tested and fit. The Johnson's hierarchical clustering analysis results indicated four groups with a total of 20 participants. It was very difficult to determine one or a set of common characteristics between participants within a group once again. The group with the highest level of similarity included participants who knew about medicinal plants and tended to use a lot of them for health and healing purposes. The other groups had no common characteristics that could explain the similarity in sorting the medicinal plants.

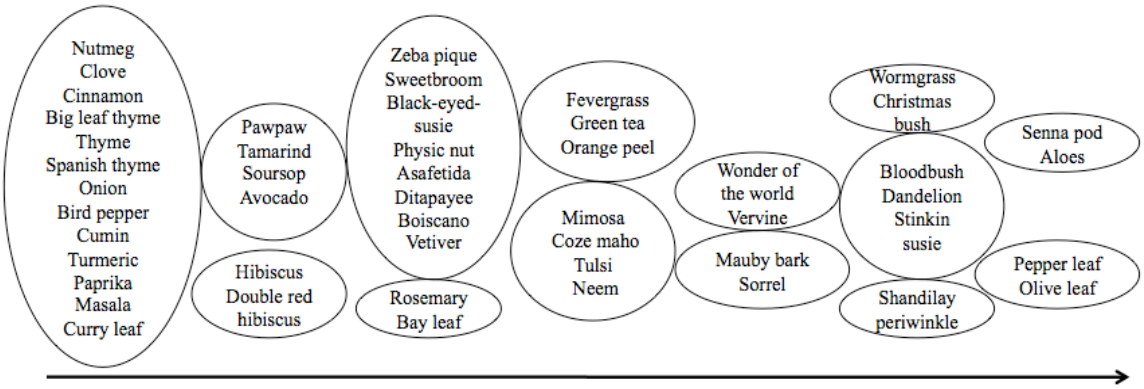


Figure 3.5. Plant groups for the Atlanta community starting with the highest level of similarity (left and top)

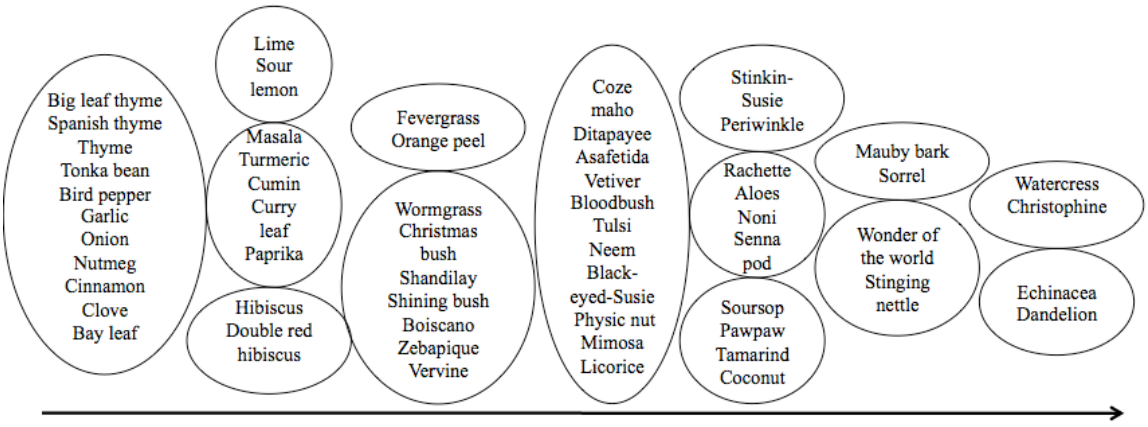


Figure 3.6. Plant groups for Trinidad and Tobago community starting with the highest level of similarity (left and top)

The Pearson's correlation coefficient ranged from 0.141 to 0.678. The MDS results were invalid due to an unacceptable S-stress level. The groups derived from the hierarchical clustering analyses can be examined in 14 discernable groups in Figure 3.6. There is evidence that there is a more detailed level of knowledge of the plants in Trinidad and Tobago compared to Atlanta; these participants tended to classify plants by the most common use of the plant. Some of these categories include plants for fevers, internal cleansers, and popular international herbal plants. Fevergrass and orange peel were most frequently mentioned for fevers, although they had other uses. We can note that the Atlanta group put these two items together as well, but included green tea, since fevergrass and orange peel are normally prepared as teas to reduce fevers. Rachette, aloes, noni, senna pods are still widely used as cleansers. Echinacea and dandelion are

herbs popularly used internationally, not native to Trinidad and Tobago, found in stores. Many were familiar with them and several mentioned using them at some point. The largest group was the foods for cooking, flavoring and health; although, unlike the Atlanta community, they differentiated those that derived from East Indian culture. The local plants were separated into one group including very commonly available and used plants. Another group included plants known name, but their uses are lesser known by these participants. Like the Atlanta results, there was one large group of plants that was not widely known or used by the community and included local ethnobotanical plants almost exclusively.

The consensus method was performed for the same reasons as above and the model fit since. The MDS S-stress result was just below the maximum of 0.15. There was only one group that was discernable along the upper right corner of the MDS map plotted on the Euclidean plane. This group consisted of 20 participants but there was no clear indication of underlying similarities among these participants. The hierarchical clustering results also revealed only one group with 23 participants. Based on participant observation and other interview questions, the only common characteristic in this group of participants is that they tended to know more about plants for health and healing purposes and used more plants.

Participants' migration histories provided additional insight into how they organized elements of these two cultural domains discussed above. All participants in Atlanta had lived in the U.S. more or less permanently for six years up to several decades. Higher frequency and longer trips to Trinidad and Tobago seem to indicate similarities between members of groups in the consensus modeling results. The age at

which participants left home for the first time or the length of time spent away from Trinidad and Tobago does not seem to be a factor in how people categorized items. Ethnic identity was another factor that could explain how individuals perceived and categorized items. Ethnic identity was linked to the frequency and duration of travel to Trinidad and Tobago. This identity also included friends and family visiting the U.S., and virtual networks especially among the younger participants (e.g. chatting online, phone texting, using skype).

Discussion and conclusion

The goal of this chapter was to investigate the objective and subjective health assessments of participants in Atlanta and Trinidad and Tobago. I also compared their knowledge specifically their understandings of healthcare resources and plant use for health. Here, I focus on two key findings. First I discuss the disconnect between self-rated health and objective health results. Second, I explore the range of transformations that have taken place in the ethnoecology of health of the transnational community.

Subjective and objective health

Immigrants are a fast growing portion of the U.S. population; they are said to represent 11.5% of the population in 2002, and ten percent of Latin American immigrants are coming from the Caribbean (Dey and Lucas 2006). The current immigrant population in the U.S. is more diverse in terms of country of origin and type of migration strategies uses. This is due to a host of factors such as global politics, more accessible transportation, and increased methods of communications. The health of immigrants is

significant to healthcare policy makers and the healthcare system because of the vast effects migrant health has on the U.S. On the other end of the migration spectrum, the native country is also affected by migration. In the case of Trinidad and Tobago, a relatively small nation, outside influences have considerable impact. These may include goods purchased, changes in preferences and behaviors of return or transnational migrants, or foreign commercial enterprises setting mainly in Trinidad. Trinidad and Tobago has been integrating these influences in addition to undergoing economic and nutritional transitions in recent decades. These have significantly impacted lifestyle preferences, health beliefs, practices and outcomes. My research, with its various limitations, gives us important insight into health assessments that can be compared to other large-scale studies.

In general, this transnational community had rated its own health to be very good since the majority indicated they had either *excellent* or *very good health*. The Atlanta community regards its health to be exceptionally good. The U.S. Behavioral Risk Factor Surveillance System also asks questions on health status. Studies evaluating self-rated health status in both Georgia and the U.S. for 2009 were relatively similar for all five self-rated health categories: 21-21.6 excellent, 31.5-34.7 very good, 30.1-31.5 good, 10.9-11.3 fair, and 3.7-4.1 poor. In comparison, the Atlanta community rated itself at the same level for *excellent health*, double the rate for *very good health* and almost half the U.S. level for *good health.* The rates were much lower for the *fair* and *poor health* categories. However when adding other physical measures of health status, this community appears to be in poorer health than state and national averages. When we compare the Atlanta community results for self-assessed health to those in the “Black” or

"Asian" foreign-born population categories, this community fares much worse: 64.4-65% are in excellent or very good health, 23.4-25% are in good health and 10-12% are in fair or poor health (Dey and Lucas 2006).

Self-rated health status is a subjective measure, yet is a good indicator of mortality according to several studies (Idler and Benyamini 1997). Self-rated health status can take into account many different aspects of health and wellness that health status measures based on physical measures cannot assess. As an migrant community, Trinidadians and Tobagonians rate themselves as healthier than their peers, which may not be surprising for an immigrant community. As time goes by the purported initial health advantage of immigrants declines, and even becomes worse than the national average. Yet studies comparing immigrant health in the U.S. underscore that health status can vary widely across immigrant subgroups (Dey and Lucas 2006).

If we compare the BMI rates of the Atlanta community to state level and national statistics we can see some differences. Although the sample size is small and non-random, here I evaluate this small community to other studies as a further point of comparison to explain objective and subjective health differences of this community. 35.9% of the general U.S. population had a BMI under 25, 36.2% were overweight and 27.2% was determined to be obese in 2009 (Centers for Disease Control and Prevention (CDC) 2009). Compared to state level statistics, in Georgia in 2009 34.7% had a BMI under 25, 36.7% were considered overweight and 27.7% of were considered obese (Centers for Disease Control and Prevention (CDC) 2009). However when looking further into U.S. rates of obesity this community seems to be faring better only in comparison to U.S. born "Blacks or African Americans." Between 1998-2003, 10.7% and

33.1% of U.S. born “Asian” and “Black” populations were determined to be obese, compared to 5.1% “Asian” and 18.5% “Black” foreign-born adults (Dey and Lucas 2006). Within this non-representative sample we see a much higher rate of overweight participants, but lower rate of obese participants compared the national population. The Atlanta transnational community had higher rates in both the overweight and obese categories compared to both Georgians and Americans. These results corroborate conclusions from other studies looking at health outcomes of immigrant communities who have resided in their host country for a longer period of time (Himmelgreen et al. 2004, McDonald and Kennedy 2004).

The discrepancies between self-rated health and physical measures is concerning and not easily explained. The Dey and Lucas study (2006) on physical and mental health concluded that recent “Black” immigrants rated their health substantially higher than “Black” immigrants who have been in the U.S. for five or more years. This study also showed that immigrant “Blacks” enjoyed better health than their U.S.-born counterparts, and it also indicates that immigrant subgroups tend to have better health measures in some areas compared to their U.S. born counterparts despite poorer socioeconomic conditions and access to healthcare facilities. This study expanded on here, which uses the National Health Interview Survey conducted by the CDC is not unique (Dey and Lucas 2006). When trying to compare other studies’ results to my findings, there are various factors to consider. Many of the participants have lived in the U.S. for decades and consider themselves to be both Trinidadian and Tobagonian and American, although all are foreign-born. The healthy immigrant effect should have dissipated for long-time residents and may be evident for immigrants who have been in the U.S. less time. The

former seems to be true, but the latter does not when looking at physical health status measures.

The higher than average BMI rates can be explained by a variety of factors. BMI rates are not the most effective cross-cultural method to determine the level of obesity in a community. However it is relatively non-invasive, simple to measure and is comparable to other studies. On the other hand, the comparison here is between a non-representative group to a much larger sample population. The participants were generally wealthier and had more access to food, transportation and public healthcare. The rapidly changing food environment in Trinidad and Tobago is influencing food choices and preferences as international franchises are sought after rather than local cuisine. The idea of a well-rounded figure is still desirable as seen in many countries (Pieroni et al. 2007, Quinlan 2004).

Ethnoecology of health

Other sections of the interview, participant observation and informal comments indicate that access to a wider variety of health resources is a benefit for several participants in both locations. Some viewed public and formal healthcare infrastructure as inadequate or unattainable. The knowledge of the plethora of healthcare resources including the maintenance of practices and beliefs from home, or exploring alternatives to the biomedical system in the U.S. is often a result of need and lack of access. These results, specifically pertaining to ethnobotanical uses has been substantiated by other urban ethnobotany studies (Ceuterick et al. 2008, Corlett, Dean, and Grivetti 2003, Pieroni et al. 2007, van Andel and Westers 2010).

The results of the status of ethnoecology of health in the domains of healthcare resources and plants reveal that multiple transformations are occurring: loss, continuity, and shifts. I found examples of loss as more specific knowledge of local plants was not discernable in the results. During the exercises and interviews people laughed at their inability to recall plant names or expressed a sense of sorrow for not remembering what they used commonly as children. More general knowledge of plants and health resources particular to Trinidad and Tobago is clearly retained by the Atlanta transnational community. One shift is the acquisition of new knowledge and practices with the adoption of commonly used plants in the U.S. like rosemary and bay leaf. Although bay leaf is found and used in Trinidad and Tobago it was clearly linked to rosemary that is not found in Trinidad, and the predominant uses and preparation mentioned were those linked to U.S. practices.

In native settings, with globalization and market integration, loss of knowledge is widespread (Ellen, Parkes, and Bicker 2000b, Maffi 2001). In immigrant settings traditional knowledge, beliefs and practices are only starting to be been documented (Balick et al. 2000, Ceuterick et al. 2008, Pieroni and Vandebroek 2007). Different influences seem to be behind the loss of local knowledge taking place in Atlanta and Trinidad and Tobago. Most participants in Trinidad and Tobago live in more urban areas and have been exposed to more outside influences than individuals living in rural areas. Plant material, ethnobotanical and ethnomedical experts are not easily accessed in Atlanta. Importing experts from Trinidad and Tobago take place sometimes as was seen in the Hindu community of Trinidadians. Local religious practitioners that also used plants for healing and food for health were directly brought from Trinidad for a specific

purpose by a group of individuals form the Atlanta community. Some studies show evidence of the negative potential that shifting away from the preparation and consumption of traditional foods can have on immigrant health (Palaniswamy 2007). Further investigations into the drivers of ethnoecology of health loss needs to be conducted.

We also see a continuity of ethnoecology of systems in Atlanta and Trinidad and Tobago. There are many similarities between the sets of knowledge surrounding plants and health resources in both locations. This pattern may be due to acceptability of and access to health resources in both locations. We have seen that plants are used in multiple contexts at once. Food for health and medicinal purposes in addition to nutritional purposes is significant in both locations (Etkin 1986, Johns 1990, Pieroni and Price 2006). Food and health traditions from one's culture and home are also maintained as ethnic identifiers in some instances. This aspect has been seen in a variety of recent studies including work on Colombians use of ethnobotany in London (Ceuterick et al. 2008) and use of vegetables among South Asians in Northern England (Pieroni et al. 2007) and Haitians in Cuba (Volpato, Godínez, and Beyra 2009) or the use of plants among Surinamese in Netherlands (van Andel and Westers 2010). Purchasing and preparing a plant or food particular to one's culture is a source of pride and cultural identity. At the same time, this pride serves as a coping mechanism as migrants constantly negotiate the terms of their local environment. Continuing to use certain plants remedies may be more symbolic or psychological rather than physiologically useful.

Various types of shifts in the ethnohealth system were found although I focus on one type. Here, plants may serve as triggers, recalling memories from home. They may

also shift from use to cultural symbols. Regardless, they serve to preserve cultural continuity. Sensory memory scholarship provides rich discussion on how memory is experienced through various senses, namely plants and food (Holtzman 2006, Seremetakis 1996, Sutton 2001). Knowledge of the past and culture is kept alive through certain performances, including daily habits (Connerton 1989, Seremetakis 1996). These multiple modalities that allow for the continuity of knowledge are as valuable as other traditional ways of documenting and retaining knowledge (Nazarea 1998, Nazarea 2006).

Certain plants or health practices appear to have shifted as markers of ethnic identity. This can be demonstrated by the increased important of frequently used and ubiquitous plants in the Trinidad and Tobago environment which are difficult to widely propagate in Atlanta. People use them frequently and know the uses and preparations in Trinidad and Tobago like wonder of the world (*Brophyllum pinnatum*). In Atlanta, they have become markers or symbols now as fewer people use these plants. People will grow them as cultural ornaments since they are likely to survive with some experimentation to the Atlanta environment. Although markets in Atlanta carry a much wider variety of plants used for cooking and health purposes in Atlanta compared to a decade ago, access to the plants and plant material from Trinidad and Tobago is restricted due to import restrictions, availability and ecology.

Other shifts in the status of ethnoecology of health are also revealed in the findings. Health systems are dynamic and highly adaptive to the local context. In a transnational setting, an interesting scenario presents itself since there are many and continuous physical as well as virtual and symbolic exchanges between both locations that influence the transformations that are occurring. Certain activities and resources have

shifted their position within the Atlanta community's ethnoecology of health. Gardens in Atlanta were more often ornamental than those on the islands. Many experimented growing plants that are common back home with mixed success in the Atlanta environment. Most gardens in Trinidad and Tobago included a selection of ornamentals, food plants, medicinal and culinary herbs are common. Gardening in Atlanta has shifted from being a means to produce nutritional and medicinal items to being categorized as a physical activity. This is partially due to growing conditions in Atlanta. Many participants indicated they chose or preferred Atlanta because of certain ecological similarities to Trinidad and Tobago to other U.S. cities. Gardening remains significant although transplanted to a different category. The pleasure of gardening, getting in the dirt, the beautiful colors, reaping a harvest is mixed with the memories from Trinidad and Tobago.

A combination of factors has resulted in various transformations of the indigenous knowledge system as it has become a transnational indigenous knowledge system. The transnational migrants carry with them their indigenous knowledge system from Trinidad and Tobago that comprises their worldview and influences choices made. As they maintain one foot back home and one abroad, the knowledge system remains anchored in Trinidad and Tobago, but elements from host knowledge systems are integrated into a dynamic indigenous knowledge system that now transcends political boundaries. In the transnational context, the flow and movement between Trinidad and Tobago, Atlanta and often other destinations within this particular group, sets the stage for an indigenous knowledge system with many opportunities to transform itself. The results show that

some level of knowledge loss is inescapable, but other transformations are also taking place, serving as indicators of the persistence and resilience of ethnoecology.

CHAPTER 4

MAPPING HEALTH NETWORKS: INTEGRATING GIS AND QUALITATIVE DATA IN EXAMINING HEALTHCARE PRACTICES

Introduction

Individual perceptions of well-being and health seeking behavior can offer significant insights into a community's understanding of and interactions with their surrounding healthcare opportunities and environment. This chapter explores how individuals from a transnational community create viable healthcare networks in space and place. I examine how access to healthcare, cultural perspectives and personal factors are reflected in the actual healthcare network an individual creates in the process of attaining self-determined positive health and well-being.

Drawing from field data on health seeking behavior and geo-narratives, I created individual healthcare network maps for 24 participants in Atlanta and 44 participants in Trinidad and Tobago. Using GIS generated maps, spatial analyses were conducted to determine general patterns and trends. Here, I focus on the impact of resource distance from household, as well as gender and age differences. The findings indicate that the number of resources in both locations was similar across gender. Distance from home was important with a large proportion of resources accessed close to home. The predominant categories of health resources access were similar in both locations and

included food-diet, exercise, and biomedical resources. The integration of narrative analysis added information on driving forces behind practices such as lifestyle choices.

I use this particular combination of methods to determine its potential and value in measuring and evaluating health and well-being strategies in a more culturally appropriate manner that can possibly be implemented in applied health studies. This method attempts to add to the intersection of studies on GISci theory and methods, social sciences, and health studies. The complementation of digital techniques to visualize space and place with ethnographic data offers a better understanding of health practices that could be used in other cultural settings and at a larger scale with some refinement. This method is offered as a possible component for local public healthcare studies of subgroups and marginalized populations to evaluate perceptions and use of space. Findings can then inform future studies and policies to improve health in these communities.

Objectives

For this part of the study I asked *what do current health seeking behaviors look like mapped out as health networks? What patterns emerge from these maps?* (E.g. distance from home, frequency of specific healthcare options.) I also examined *what differences exist in the individual health networks by sex and age?* Finally, I am interested in determining *how health networks contextualized with geo-narratives assist in understanding patterns in health behavior*. I investigate the significance of place and personal perspectives of health and well-being by intersecting the spatial dimension

through GISci with visual and narrative analyses through ethnographic data. I also assess the potential of this approach in informing health policy and programs.

Background

The broader objective of this chapter is to understand health and well-being perspectives and strategies as immigrants build ties to their new home and retain strong links to their native culture. In this chapter, I review recent trends discussed and debates in GISci, including how to integrate participant-produced geographic narratives and geographic data, a type of volunteered geographic information. I take into consideration how to visualize and analyze computer assisted mapping of individual health behavior. These maps partially reveal underlying elements of the order in which an individual seeks healthcare from available resources, or their hierarchy of resort. Creating individual health networks using spatial dimensions to examine healthcare behavior is a useful way to compare behavior with available healthcare in addition to understanding the personal and cultural dimensions of achieving well being.

Ethnoecology allows us to systematically look at relationships between humans and the environment focusing on individuals' practices. Here, I explore how the knowledge and beliefs of a particular community are emerging in the geography of their health practices. Under the umbrella of ethnoecology, I focus particularly on the ethnoecology of health practices of a community that is transnational and predominantly urban. This study will contribute to studies in urban ethnoecology and studies in transnational health that have demonstrated the creativity and diversity in how individuals and groups fulfill their healthcare needs. For example, urban ethnobotany studies have looked at certain

health conditions among Latina women in New York city (Balick et al. 2000, Ososki et al. 2002), while others have looked at transnational ethnobotany among Turkish immigrants in Germany (Pieroni et al. 2005).

In this project, understanding the role of indigenous knowledge and the perspectives of an immigrant community that retains significant and active ties to home while abroad is key to understanding health behavior. Caribbean communities at home and abroad have been fundamental in the investigation and evolution of transnational theory. Foner's (2001) edited volume is a great example of the variety of significant impacts Caribbean communities have both in New York and "back home." To investigate transnational health practices I employ GISci in its theoretical and methodological capacities to represent and analyze how individuals create a network of healthcare resources that fits their circumstances. Here I use GISci as an umbrella term to look at many facets of geographic information from data capturing, storing, and analysis to interpretation and communication (McMaster and Usery 2005).

There is debate about how to define and differentiate GISci from GIS. Both involve the collection, storage, integration, analysis and display of spatially referenced data (Gatrell and Löytönen 1998). Wright and co-authors (Wright, Goodchild, and Proctor 1997) discuss how GIS may be viewed as a tool, a set of techniques and computer-based software programs in addition to hardware that can be used to create geo-referenced data, whereas GISci is the discipline involving a systematic study through observation and experimentation. I use GISci here because I go beyond using software and hardware to display individual healthcare networks, since I analyze healthcare

networks statistically and visually to determine patterns within the study sample using several variables.

I use GIS software and tools to display the representations of individuals' healthcare networks, yet one of my interests is in understanding how we can integrate geographic information including layers of the meaning and positions of place and space within biocultural anthropology. The initial interactions between GIS and health have been in the public health domain, primarily when GIS was incorporated mainly as a visualization tool. GISci has also played a significant part in transforming the map-making process in the health sciences, shifting the focus from representation to analysis (McLafferty 2003, Rushton 2003). The initial, and, to a certain degree, current intersection between health sciences and GIS has largely focused on public health aspects, including epidemiology and environmental sciences. Access to formal healthcare services or disease incidence and distribution of toxic materials are presented (Cromley 2003, Gatrell and Löytönen 1998, Langford and Higgs 2006, McLafferty and Cromley 2002). However, recent literature shows how GISci and health studies are being used to explore geographic locations that were largely unaccounted for due the lack of digital geospatial data, local expertise, and equipment previously. As we see in Perry and Gesler's (2000) article, which looks at physical access to primary healthcare in Bolivia, the authors found that in underdeveloped or remote settings GIS is usually lacking. Once the authors created the GIS database, they demonstrated the feasibility and utility of GIS in improving primary care access in the Bolivian Andes. Foley's (2002) article looks at ways to use GIS in healthcare planning. Specifically, the paper examined how to

incorporate the significant, although largely uncharted role of informal caregivers with formal public health and social services in England.

The drawbacks of GISci use in public health include its focus on visualizations or maps, biomedical standpoint, and urban and developed country settings and formalized healthcare. These limitations are being addressed in literature coupling social science to the GISci and public health framework. Social sciences and GISci have interacted, though this cross-disciplinary approach is young. Like GISci and public health, it suffers from a focus on representing finished products, rather than being a tool to assist in the interpretation and representation of a health problem (Steinberg and Steinberg 2006). GISci and social sciences have influenced each other as seen in various themes within the larger disciplines like narratives and GIS, participatory GIS, qualitative GIS, and volunteered geographic information (Chapin, Lamb, and Threlkeld 2005, Glantz and McMahan 2007, Goodchild 2007, Kwan 2008, Kwan and Ding 2008, Madden and Ross 2009). Glantz and McMahan (2007) elucidate the number of actors and sources required to obtain enough information to develop valuable spatial data that can be used in a participatory way as they look at well-being among elderly in a town in Chiapas Mexico. Chapin and colleagues (2005) review of the uses of GIS as a tool in participatory projects that involve mapping indigenous lands for resource management objectives throughout the world. Kwan and colleagues (2008, 2008) introduced geo-narratives that rely on a mixed-method approach combining GIS, narrative analysis, and geo-visualizations of individual activity patterns. She has looked, in several instances, at how certain larger scale events have affected the spatial movements and activities of certain subgroups in urban communities. This work includes significant networking factors such as using

social networking sites, and emailing, within the examination of daily activity patterns. For immigrant or transnational communities, this approach can contribute to a significant amount of daily interactions, physical or intangible within the space they live. Volunteered geographic information can be included within applied and participatory GIS, but is set apart as it seeks public participation and is more user-driven and falls under a looser use of GIS as a tool (Goodchild 2007, Sieber 2006, Sui 2008). Finally Madden and Ross' article explores the area of possibilities of free available georeferenced data, socio-geographic media, and personal narratives to further the possibilities for human rights studies (2009).

Only recently have the fields of social science, health studies and GISci intersected, yet this area shows promising development and applications. GISci experts have written prolifically on the significance of place, space, geographic information in the social sciences, and the lack of proper integration with the social sciences (Goodchild et al. 2000, Goodchild and Janelle 2004). Others have been discussing the significance of spatial elements and processes within various social science disciplines such as anthropology, sociology, and demographic and political studies where space or location is a key factor; thus spatial data is key (Anselin 1992, Goodchild et al. 2000, Goodchild and Janelle 2004). Many of the advances in GIS, health and social sciences have been in the field of medical geography, which has now shifted into a more appropriately named subdiscipline of health geography or geography of health (Kearns and Moon 2002). Health geography encompasses social theory, the definition and meaning of place, and investigates health and well-being; all of these attributes make rigorous studies more difficult to neatly place into one category, yet resemble reality more closely. The shift in

paradigm from a medical and visualization standpoint has not been radical or quick, yet it is taking place (Kearns and Moon 2002, Sui 2007).

My particular interest lies where these three areas merge: GISci, health studies, and social sciences. I am interested in investigating particular aspects of how immigrant communities that straddle living in two nation-states try to understand and navigate the environment around them for health and well-being; I am also interested in elucidating health inequities and inequalities through a small-scale approach using GISci theory and methods. Gatrell and Löytönen, who refer the intersection of GISci and the "new" public health (1998), discuss the influence of scale and need for mutiple and smaller scales to understand how place can be used in assessing public health concerns such as service delivery, social environment, or different types of access to primary care facilities. The interest in using GISci techniques within public health has a financial component, such as assessing distance of healthcare services and understanding spatial distribution of patient types compared to formal health service locations (e.g. see ESRI's Industry website on GIS for health and human services) (McLafferty and Cromley 2002). However, there are many opportunities to develop methods that address the increasing demand to understand the multidimensional needs of multicultural communities worldwide. From an individual standpoint, health-seeking behavior is much more than physically accessing biomedical practitioners or going to the pharmacy. Developing methods using available theoretical and methodological tools such as GISci in addition to integrating the local perspective of both individual behavior and community perspectives relative to health and healthcare inequalities is key. Medical pluralism includes the use, prevention and treatment methods deriving from a multitude of ethnomedical systems,

including biomedicine, and is commonly practiced in both immigrant and native settings (Bastien 1992, Izquierdo 2005). This health seeking behavior is retained as people migrate and adapt to new locations not only because of limited access to public health infrastructure, financial and other logistical barriers, but also for personal reasons and their interest in maintaining what is familiar and culturally significant. All these elements play a significant role as health beliefs shift and affect personal health strategies (Balick et al. 2000, Pieroni et al. 2005, Pieroni and Quave 2005).

Methods

Health resource listing and geo-narratives in Atlanta, and Trinidad and Tobago

The interview associated with health network maps involved participants creating lists of people they visit, places they go to, and things that they do for their health and well-being. Participants also provided addresses for the items that are locatable on a map or database. I also asked them to expand on the list they had just created. While providing the list, addresses, and other information, the participants were audio-recorded and the transcriptions of this part of the interview were evaluated to determine salient themes.

During the first part of the interviews, participants were requested to create a freely generated list of healthcare options they have used in the last year. In order to create each individual's health network reflecting their preferences and choices, I also asked participants to list all the places they went to, the things they did and the people they consulted when sick or ill, in order to be healthy and to maintain their well-being. Participants were prompted a few times and after a series of other questions we revisited their list of resources to add any additional places or items they may have missed. I

obtained addresses and directions to the locations they listed at the beginning of the interview and added any more locations that came up during the course of the interview.

I was able to obtain all 24 lists and locations of health resources currently used by the Atlanta sample, all nine males and 15 females participated (Figure 1.1). All individuals in sprawling Atlanta had access to working vehicles. For the Trinidad and Tobago sample, I completed 45 lists and locations that included 21 female participants and 23 male participants. One female participant over the age of seventy provided the list of the health care resource locations, but I was unable to obtain addresses for the locations she provided, therefore only 44 maps were created.

Atlanta geodatabase creation

I created a database of all locatable points from the lists and associated narratives for the Atlanta sample in Microsoft Office Excel using county maps and files available online. I also used other online map search engine websites and software to verify and find exact locations of health resources (e.g. maps.google.com and google earth). A geodatabase was created in ArcGIS 9.3. To geocode all locatable points, I created an address locator using publicly available US Census Bureau data in the form of 2008 TIGER/Line data at the county level (U.S. Census Bureau Tiger/Lines shapefiles 2008). The individual county information was manipulated and merged into the study area to be usable for subsequent analysis. All points for all individuals were geocoded using the geocoding extension in ArcGIS 9.3. The majority of the points were interactively geocoded (94%). The remaining 6% of the points were located manually using additional geographic information provided by participants, my familiarity with the area, and other

digital and paper maps. These points were spread throughout fourteen counties in and around the Atlanta metropolitan area (Figure 4.1 and Table 4.1). Figure 4.1 shows an example of both the locations accessed by participants and participant residences using geocoding tools and Table 4.1 indicates the distribution of the points by county. Additional layers were created using these points and used in further analysis including layers with all the point locations of the homes or centers of the network, all individual network points and individual health networks.

Table 4.1 Distribution of healthcare locations in Atlanta by county

County	**Number of locations (point count**	**Percentage (%)**
Bartow	1	0.38
Cherokee	8	3.03
Clayton	13	4.92
Cobb	92	34.85
DeKalb	55	20.83
Douglas	6	2.27
Fayette	2	0.76
Fulton	59	22.35
Gwinnett	9	3.41
Hall	7	2.65
Henry	4	1.52
Newton	2	0.76
Rockdale	5	1.89
Walton	1	0.38
Total	*264*	*100*

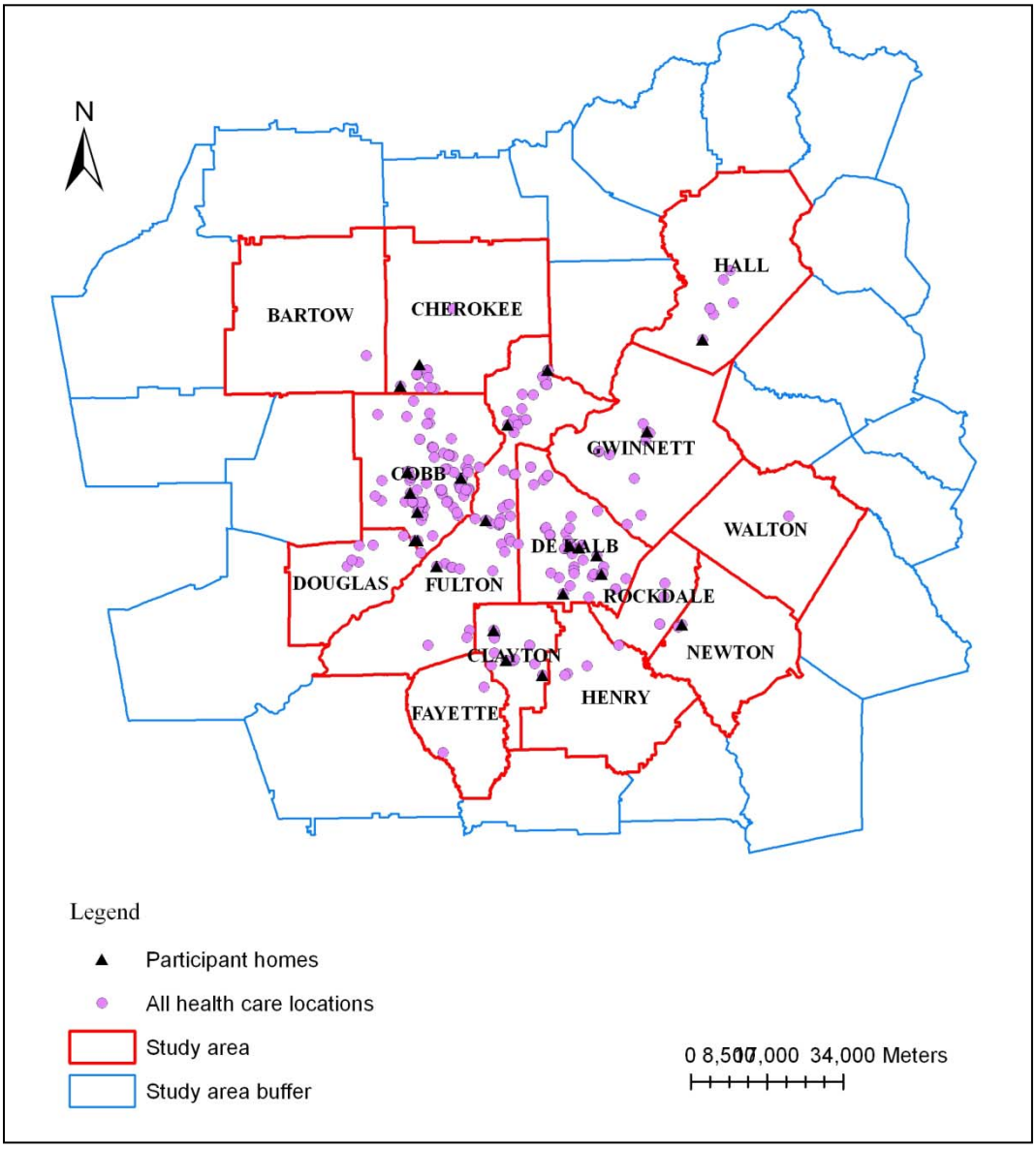


Figure 4.1 View of Atlanta study area and buffer areas

Trinidad and Tobago geodatabase creation

For the Trinidad and Tobago network information, I used similar methods to the Atlanta geodatabase with some differences. I created a database of point and associated data

using Microsoft Office Excel, while also creating a geodatabase in ArcGIS 9.3 that could more readily be joined with other tables, useful once further steps and analyses were performed. A colleague at the University of The West Indies, St. Augustine generously provided me with a dataset that I could use in ArcGIS 9.3. Included in this dataset was a useful road layer (Figures 4.2 and 4.3), with various useful characteristics such as road names and distance columns in the attribute table associated with the layer. This was important and useful, because many underdeveloped countries and countries in transition do not have suitable GIS datasets at all, or datasets are not accessible to the public. In this case, the road layer is not exhaustive. For example, certain more rural location distances could not be calculated due to technical issues with the dataset. These lacunas were relatively consistent throughout the Trinidad and Tobago health networks. The spatial analyses of all Trinidad and Tobago participant networks were affected. For example, no beach locations were included in the spatial analyses, influencing various spatial analyses by lowering the overall distance traveled. Most of the points for one participant living in Tobago did not work with the networks analyst function. This problem, although important, could not be resolved given the scope of this study. This gap in the methodology is partially compensated for by the statistical and narrative analyses. All network points were manually geocoded using my familiarity with the location, detailed address and location information provided by participants, available hard copy maps developed by the land and survey department and tourism department, online map search engine websites and software (e.g. Google Earth).

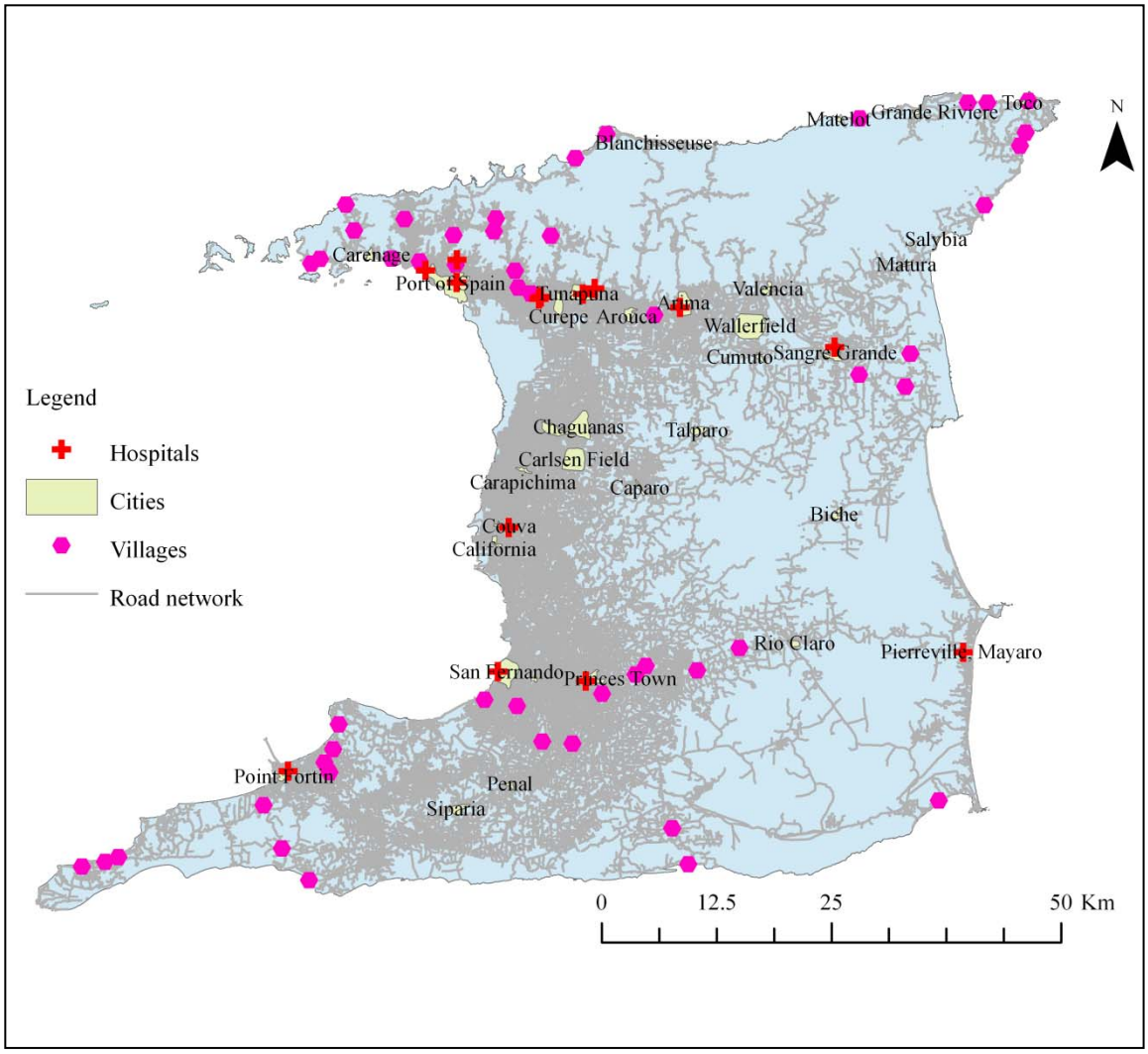


Figure 4.2 Trinidad georeferenced map and associated layers used to create individual healthcare networks

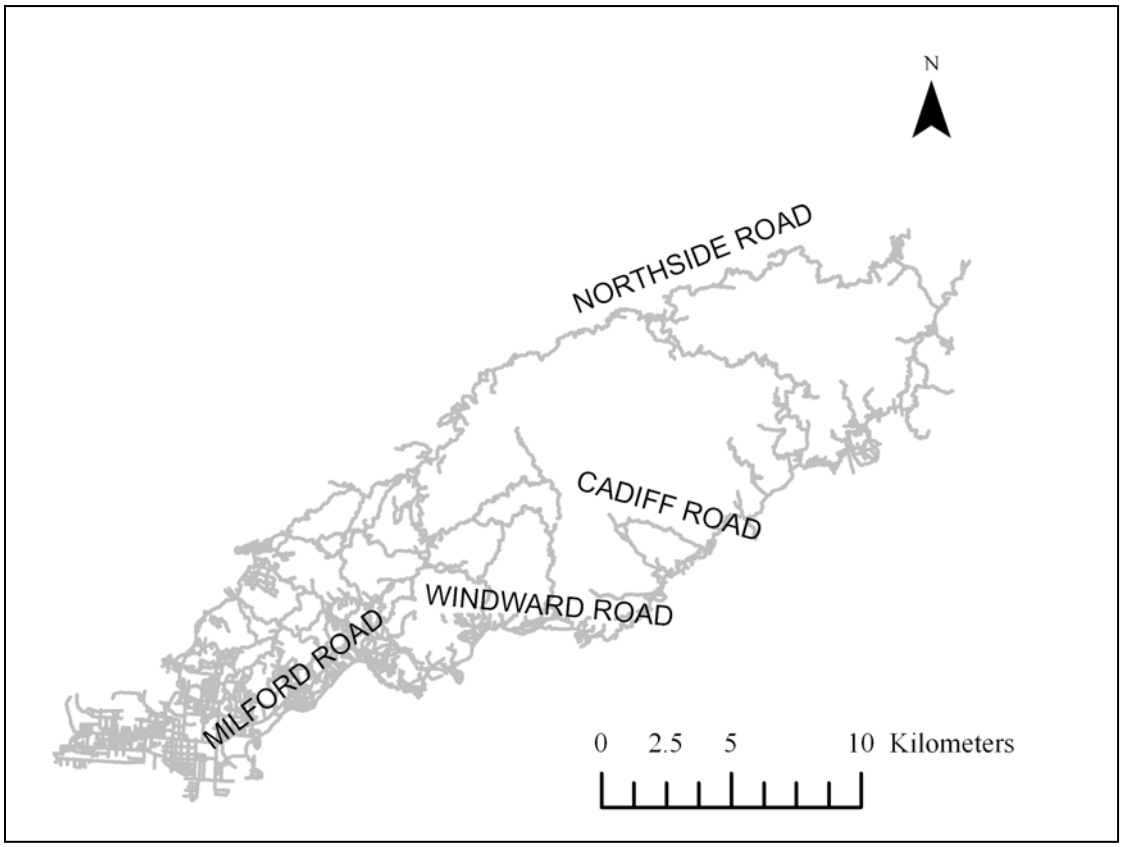


Figure 4.3 Tobago road network used to create individual healthcare networks

Spatial analysis of health networks

To further analyze the networks, network analyst extension in ArcGIS 9.3 was used to not only create geographically referenced points, but also to provide additional data used to examine the networks; e.g. average network distance, total distance, average distance from home for certain types of healthcare options, differences in behaviors between men and women (see Figure 4.4 and 4.5 for examples of individual health network). To use network analyst, it was necessary to create a network dataset to be able to calculate distance and to determine other information. I used information from the Georgia Department of Transportation available at the county level at a 1:12,000 scale,

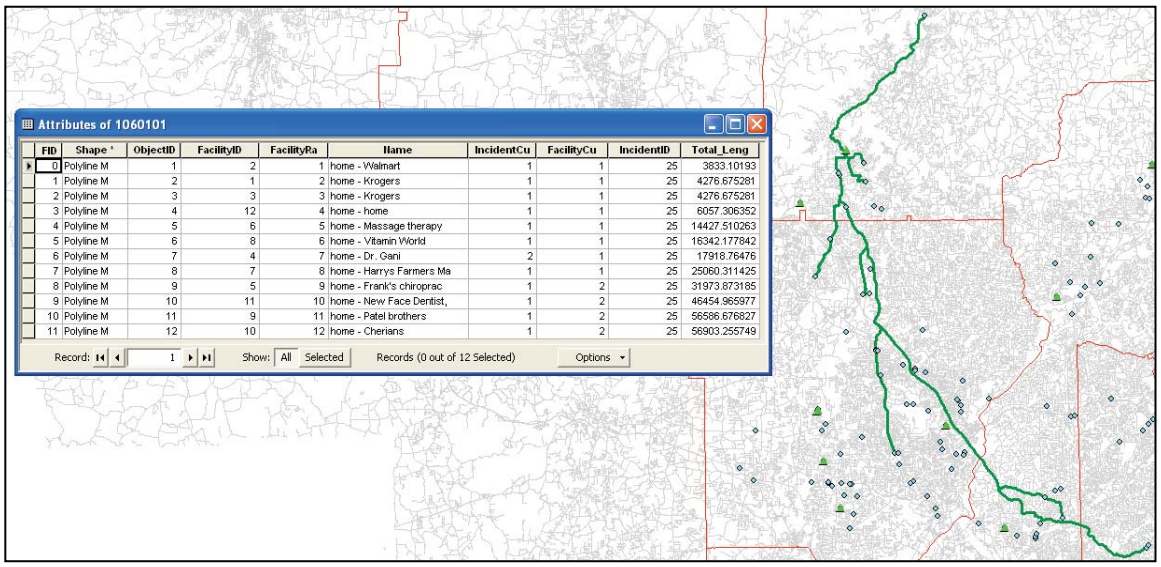


Figure 4.4 An example of a healthcare network and associated attribute table

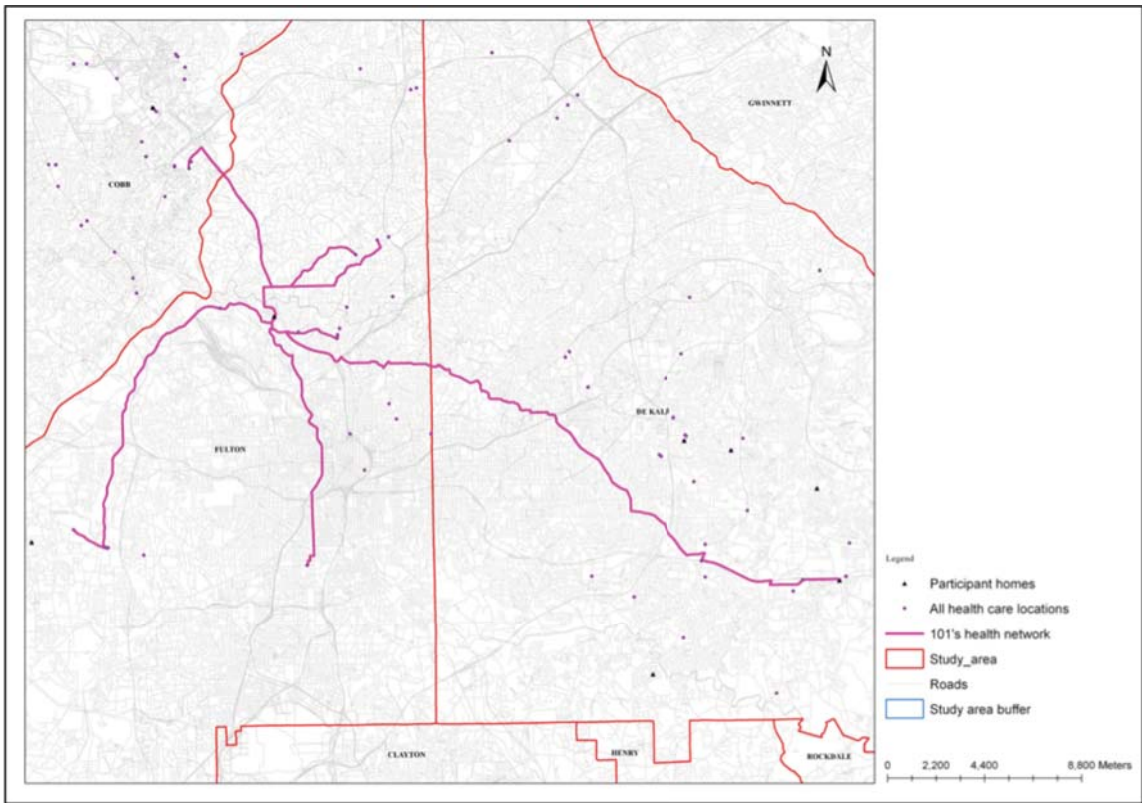


Figure 4.5 An example of a participant's health network

all dated 2003 or later (Georgia GIS Clearinghouse 2009). The final dataset included 14 core counties where individuals resided and frequented for healthcare purposes and a buffer zone consisting of an additional 21 counties (Figure 4.1). A closest facility network was created for each individual to create a visual representation and attribute data for each participant (Figure 4.4).

Descriptive statistical analyses were performed using information from the original databases created and attribute tables from the individual networks in ArcGIS to determine factors such as average distance traveled, total distance traveled, frequency of healthcare categories. The locations listed by each individual were categorized. The healthcare categories were informed using results from pilot research in Trinidad and Tobago in 2006 and analyzing focus group discussions conducted in Atlanta in early 2008 (Table 4.2). Additionally, each map was evaluated visually to determine directionality, patterns, and differences between sex and age groups.

Narrative analysis

The interviews were transcribed using F4 transcription software and qualitative data analysis software, Atlas.ti 5.1 to perform content analysis. This was completed for narratives associated with the health networks to extricate emergent themes and determine salient topics of health and well-being experiences. Prior research in Trinidad and Tobago on similar topics was used to guide this process. I focused on six themes when evaluating the networks via integrative methods.

I created one general theme in certain cases that served as an umbrella for a group of related themes. For example, I combined all discussions about family into one

category. Within the *family* category, *grandparents* is a sub-theme as significant sources of knowledge and knowledge transmission in their hierarchy of resort. However, a few specific aspects of certain themes, such as *mothers* within the family category, were set apart from the rest of the family since they were specifically mentioned in a high enough frequency or as a significant separate item in enough individuals' health networks to merit being an individual theme.

Findings

General patterns and trends of health networks

Individuals in Atlanta, on average have 11 locations in their healthcare network with a range from 7-17 (Table 4.2). The average total distance of the networks is 176 km with a wide range existing between participants' practices, from 35-393 km (Figure 4.6). The range of average distance traveled is 5.5-56 km, representing wide diversity found within the group. In the case of Trinidad and Tobago, the average number of locations in a healthcare network is ten with a range from 3-19 locations (Table 4.2). The average total distance of Trinidadian and Tobagonian networks is 109 km with a wide range among participants, from 48-369 km (Figure 4.7). The range of average distance traveled is 0.2-25.6 km.

It should be highlighted that the only locations that were calculable using the network analyst function in ArcGIS are used here, and as noted in the methods section many networks had points with distances that could not be calculated. This affected Trinidad and Tobago networks more than those in Atlanta. Therefore, the average distance traveled between Atlanta and Trinidad and Tobago should not be compared to each other.

Table 4.2 Range of number of healthcare locations in individual networks

	Atlanta		Trinidad and Tobago	
Age	*Male*	*Female*	*Male*	*Female*
<30	14	11-12	3-16	6-16
30-40		11	6-17	8-17
40-50	11-12	8-19	6-12	4-19
50-60	11-15	6-15	7-12	7-19
60-70	10	7	7-12	4-17
>70	8		12	9

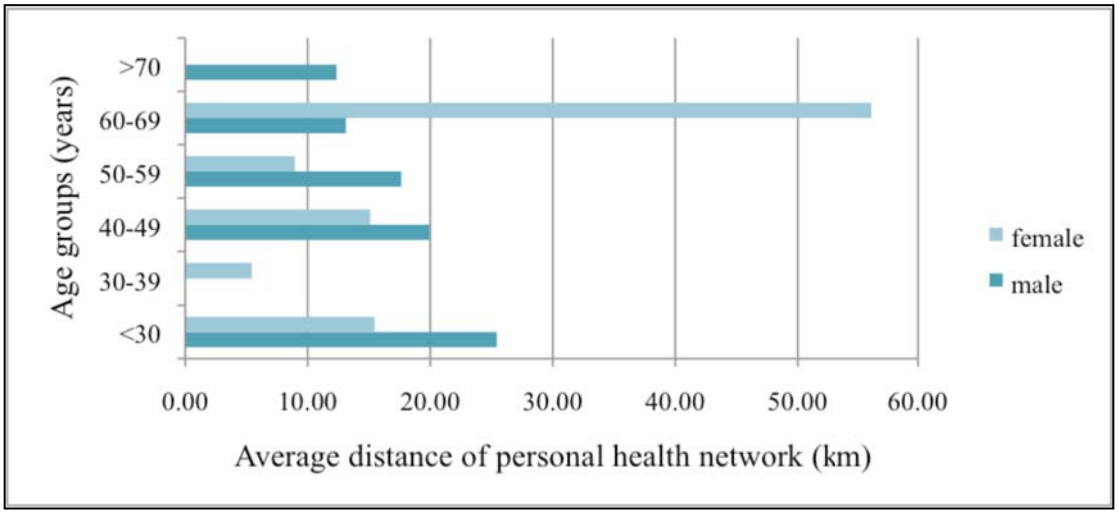


Figure 4.6 Average total distance traveled to healthcare locations differentiated in Atlanta by sex and age

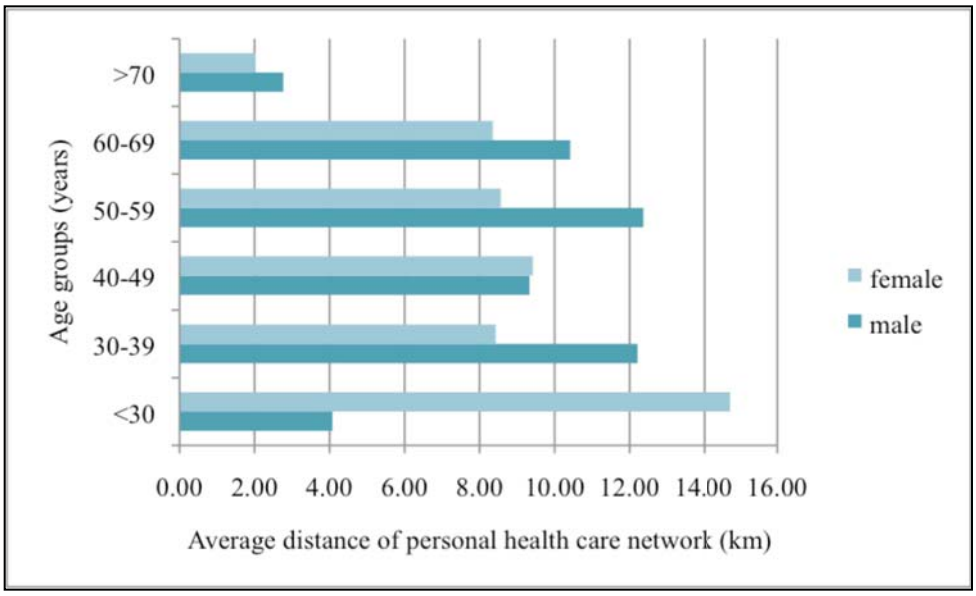


Figure 4.7 Average total distance traveled to healthcare locations differentiated by sex and age group Trinidad and Tobago

In addition, the sprawling nature of Atlanta and the concentrated pockets in Trinidad and Tobago do not allow for a reasonable point of comparison.

In general it should be noted that in Atlanta, the *food-diet*, *exercise*, and *biomedical* categories represent nearly 58% of all points listed. In Trinidad and Tobago, *food-diet, exercise, biomedical and* social *and people network* categories represent 50% of all location in descending order. In the table explaining the categories used (Table 4.3), only the first use for the location listed is considered. Therefore it does not give an accurate representation of how many times an item in a category was mentioned. Participants were generally asked what was the predominant use of the location. In the majority of cases, the predominant use coincided with the first use he or she listed. Following cognitive anthropology theory, the first use listed for a location should be the most salient use of that location in this case. For example, gardens in Atlanta were always

Table 4.3 Categories of health facilities used based on 2006 research in Trinidad and Tobago and focus group interviews in Atlanta, 2008

Category	**Explanation**	**Frequency of points associated with given category (percentage, %)**	
		Atlanta	**Trinidad and Tobago**
Activity	Keep active mental and physically. Specifically mentioned by some participants	0.76	0.00
Beach	Ocean, sea, beach activities, water, soaking in salt water. A category of it's own because of the significance that the ocean, beach and coast hold for Trinidadians and Tobagonians	0.00	1.35
Behavior	Avoidance of certain elements. Things done as preventative measures. E.g. no smoking, little alcohol consumption, enough sleep	1.14	0.58
Biomedical	General physician, biomedical specialists. Private hospitals and nursing homes. This is listed differentiated from public health because of the clear distinction made in Trinidad and Tobago	**10.23**	**9.62**
Center	Home, in the majority of cases this location represents a wealth of health resources	9.09	8.46
Cultural	Activities enjoyed for their cultural value e.g. Theater, concerts	0.76	0.38
DDS	Dentist, always mentioned as maintenance and routine healthcare when listed	1.52	1.15
Entertainment	Activities undertaken to entertain oneself. E.g. hobbies, reading, movies, music	0.00	1.92
Environment	Being in nature, contemplating nature, spending time outdoors	0.00	2.88
Ethnomedicine and ethnobotany	Local herbal plants, local herbalist, medicinal plants grown in the backyard, local chiropractors, local healers. Global naturopathic practices (e.g. echinacea, acupuncture) were not easily separated and included in this category	5.68	5.00
Exercise	Gym, running, hiking, swimming, walking etc. Can be done alone or with others	**11.36**	**12.88**
Family network	Family members as a source of support, stories, knowledge, etc.	0.00	2.69

Food-diet	Comestible items used to maintain good health. This includes culturally appropriate foods that may enhance certain health conditions. This may include highly regimented diets in order to contain a health condition through food-diet and lifestyle	**35.98**	**18.85**
Garden	The activity of gardening that includes growing local and other plants for the sake of the activity, producing local foods, growing food at home for economic purposes and to monitor use of pesticides and other products; seeds may be store bought, hybrids, cuttings, saved seeds, etc.	0.00	0.19
Home remedies	Hybrid use of OTC, local and family knowledge, and ethnomedical practices	0.00	1.54
Over the counter	Drugstore products, non prescription, usually processed or biomedical in nature	3.41	1.92
Personal outlook	Positive outlook, smiling, laughing, treating people well. Also social service, taking personal time/alone time	1.14	0.38
Public health	Health centers, public hospitals, public clinics, family planning	0.00	1.92
Relax	Activities that reduce or relieve stress. Resting and sleeping as relaxation activities	1.52	7.31
Rx (Prescription)	Medication taken as prescribed by a biomedical practitioner	3.41	2.31
Social and people network	Network of individuals sought out for personal support; may provide health information. Network of people participant's maintain ties with other than family	5.68	**8.65**
Spiritual	Going to church, prayer, meditation, going to temple, Orisha practices	4.55	3.46
Supplements	Multivitamins, essence or oils of various elements e.g. vitamin C and cod liver oil	2.27	3.08
Travel	Usually mentioned as source of getting to know the world, also in relation to relaxation	0.00	0.77
Work	Workplace, productive activity individuals engage in. Usually mentioned either as a plus for general well-being or as a cause of stress. Mostly remunerated, but some unpaid social and volunteer work is included	1.52	2.69
Total		*100.00*	*100.00*

associated with the center of the network or household. However, gardens were never the first use for this location and the salience of this category is minimal (Table 4.3). Through these maps, I try to highlight the similarities in categories if not in percent representation for each location before delving into further layers of the maps. In fact, the top five categories for both locations are the same, although in different order.

Everyone interviewed in both sites actively practices a multilevel health approach to meet their health and well-being needs. This multilevel health approach includes health practices throughout the naturopathic to biomedical healthcare range, informal and formal healthcare options such as plant-based infusions and over the counter medications for colds. Multilevel practice has been found in other studies looking at immigrant health seeking behavior.

Distance from household

After noting the differences between total and average distances of healthcare networks for both sites and participants, I investigated if health resources were accessed based on distance. Locations between 0.1-10 kilometers from the household represented approximately 35% of the total locations for both sites. In both locations, I determined the frequency of resources listed that were close to the household since proximity to the home appeared as a significant factor in health practices. In addition, the home was listed as a healthcare location in every participant's network and it represented more than one healthcare resource category (Table 4.3). The home is key since individuals do not have to go far and also it represents important aspects of a participant's healthcare regime across geography, gender and age.

Distance from home is a significant factor in individual healthcare networks. Therefore, there was reason to investigate the resources used near home in more detail (Chaudhari 2007). I created two charts per location to focus on the predominant categories by distance. The first charts included predominant resources close to home, from 0.1-10 km for both locations (Figures 4.8 and 4.9). The second set of charts looked at healthcare resources accessed between 10-90 km from home in increments of 5 km. In Atlanta, the number of locations between 1-10 km from home represents 44.87% of all locations used for health purposes. From 10-20 km, we find 28.06% of all locations in Atlanta. For Trinidad and Tobago, locations between 1-5 km represent 47.88% of all places accessed. Locations between 5-10 km from home represent 13.85%, for a total of 61.73% for locations between 1-10 km from home (Figures 4.8 and 4.9).

Looking at the locations closest to home for each location, we see a few trends similar to the overall findings. The four figures were constructed to examine the predominant category featured within a particular distance category, starting with a close examination of locations under 10 km from the center of the network. The percentage indicated in each section reflects the percentage the predominant category listed represents within that specific distance category. The most common health resource for each distance category represented at least 33% in Atlanta. In Trinidad and Tobago, the most common category reflected approximately 25% or more. As seen in Figures 4.8 and 4.9, the most common categories in both sites were: *food-diet* sources, *biomedical* sources, *social and people network*, and *exercise*. Moving further away from home (> 10 km) in the case of Atlanta, *food-diet* was again the main healthcare resource within each distance category (Figure 4.10). In Trinidad and Tobago we see *biomedical* options, *exercise, family network,*

social and people network, *ethnomedicine*, and *relaxing* (mainly involving the outdoors and) as the most common (Figure 4.11).

In Atlanta, the majority of locations accessed at each distance are for *food-diet* resources. *Food-diet* was not only about keeping physically healthy or body image, but it also consisted of maintaining cultural ties. Participants spoke about creating meals that involved experimenting with a variety of cultural cuisines. Their choice of foodways reflect cultural choices and preferences, access to ingredients, maintaining Trinidadian and Tobagonian identity, and trying to incorporate more healthful eating habits. Trinidad and Tobago cuisine includes a high quantity of fried foods, high salt content, coconut cream, refined sugars, and carbohydrates staples.

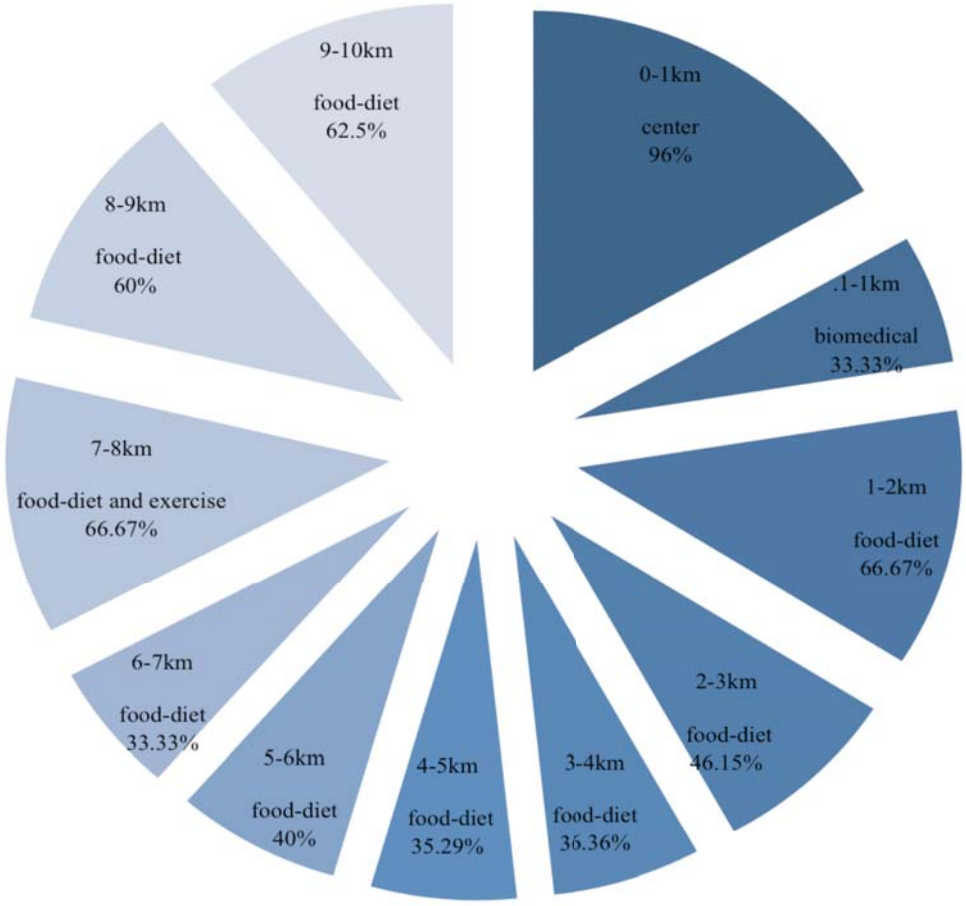


Figure 4.8 Predominant healthcare resource between 0.1-10 km from home in Atlanta

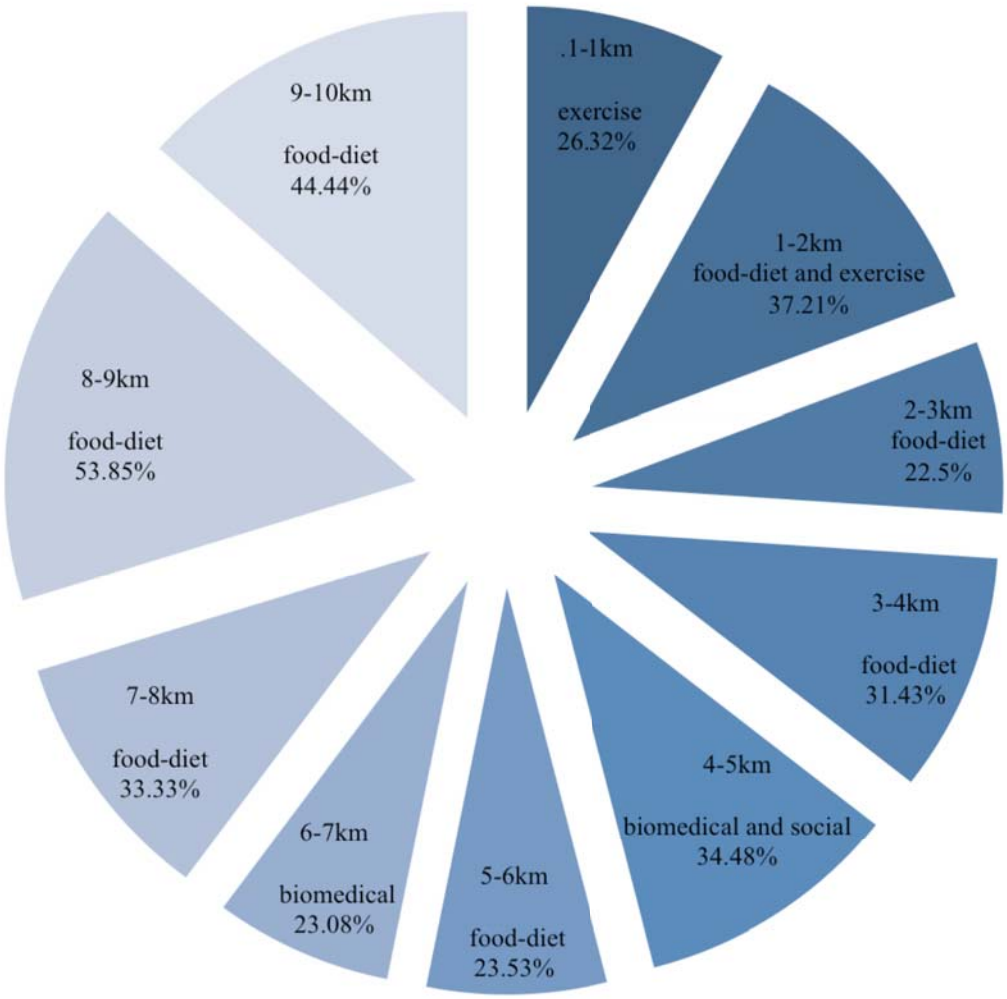


Figure 4.9 Predominant healthcare resource (percent) between 0.1-10 km from home in Trinidad and Tobago

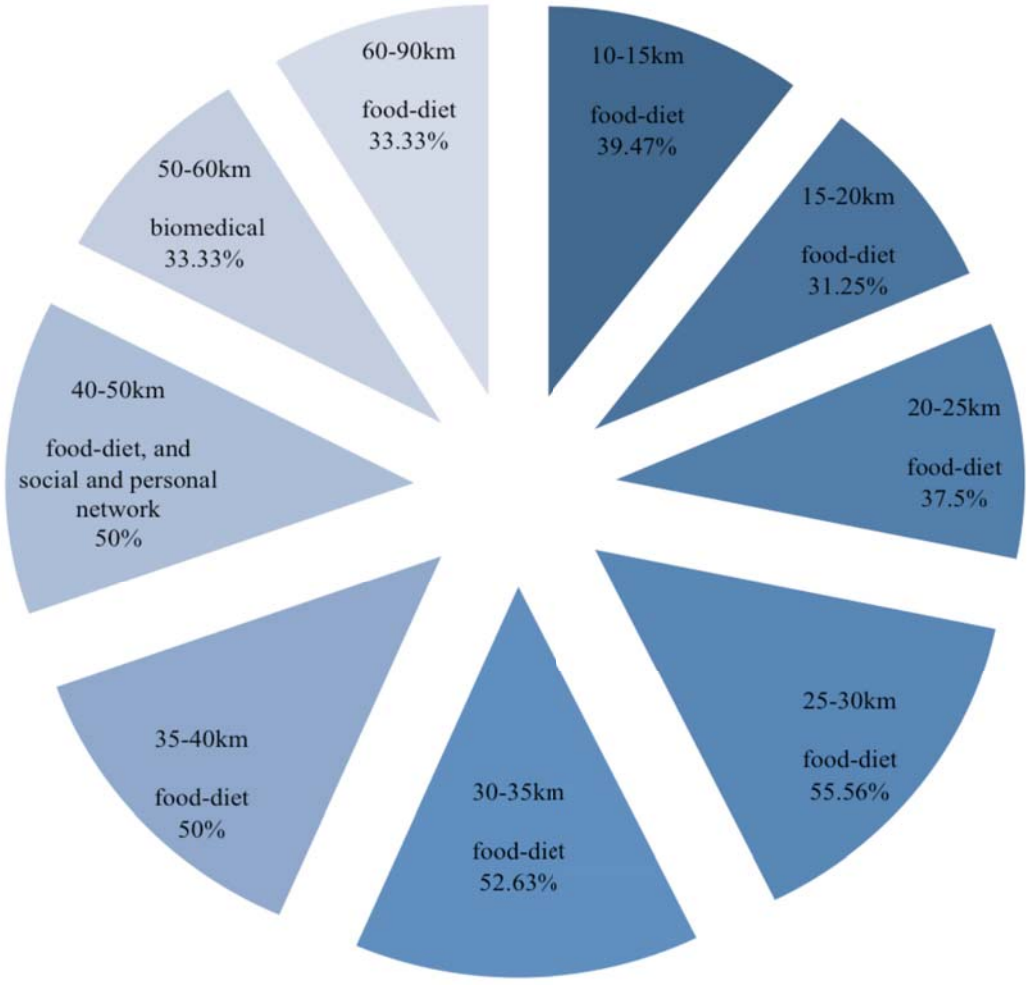


Figure 4.10 Predominant healthcare resource (percent) between 10.1-90 km from home in Atlanta

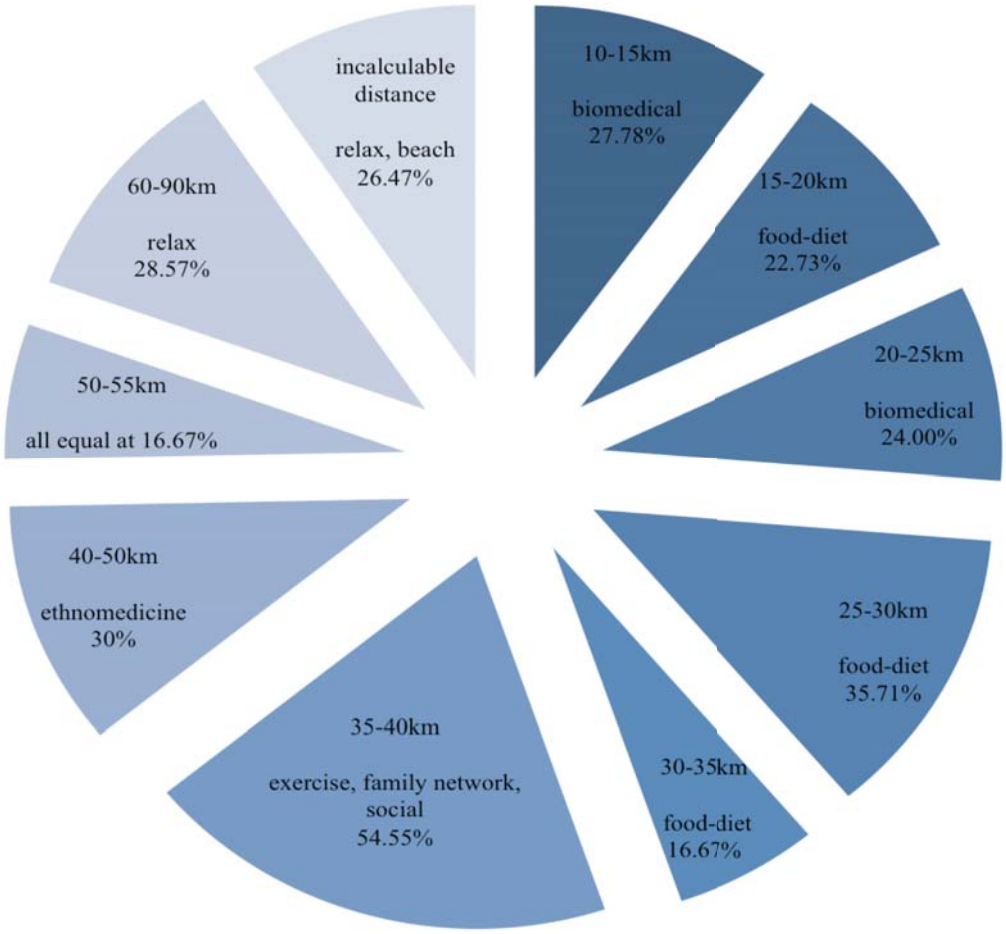


Figure 4.11 Predominant healthcare resource (percent) between 10.1-90 km from home in Trinidad and Tobago

The Methods section in this chapter discusses the exclusion of some locations in the maps and subsequent analyses. For the Atlanta participants, 71% of individuals included at least one location outside of Georgia in their current healthcare network. International healthcare sources are not represented in these maps, although 42% of participants listed at least one international healthcare source. In Trinidad and Tobago, all beach and some rural locations could not be included and these points were located furthest from the

household center node in almost all cases. Overwhelmingly, these two categories pointed to three categories of healthcare resources: the value and importance of *family network* for well-being, *beaches and ocean* as places to relax, central to remembering home and for health and healing; and *vacation* outings for relaxation and rejuvenation. It was difficult to integrate intangible health strategies that were often mentioned, but have no geoferenced location. The common strategies included actively having a *positive outlook* and *laughter/smiling*. The geo-narratives partially fill this gap in indicating the significance of out-of-state and international healthcare resources.

Gender and age differences

When looking at differences between males and females we should first note that 16 of the 24 participants in Atlanta were between the ages of 40-60. Also worth mentioning again is the fact that more women (15) were interviewed than men (9) in Atlanta and the total number of people interviewed in Trinidad and Tobago (45) was higher than in Atlanta (24) (Table 1.1). We note that the highest numbers of places frequented by individuals in the both locations are seen in participants between 40 and 60 years old for both men and women (Table 4.2). On average, women in Trinidad and Tobago had one more location in their network (average = 15.5 locations) than the men (average =14.7 locations). Women traveled one kilometer less (9.3 km) than men (10.3 km) on average. In Atlanta, women had an average of 10.7 locations in their network and men 11.3. Men traveled a little further (17.7 km) on average than women (15.20 km). The number of locations per network differs more by location than by gender. The average distance traveled to each location is also more dependent on location than gender. The latter seems

evident given the expanse of Atlanta. We can also see that men travel further at younger ages in both locations (Figures 4.6 and 4.7). Patterns for women are less clear, yet we can determine that women travel further with increasing age in Atlanta. In Trinidad and Tobago there is more consistency across age groups among women, with younger women traveling further for health resources (Figures 4.7 and 4.8).

By looking at the distribution of places visited for healthcare purposes on the basis of gender we see that in Atlanta *food-diet*, *exercise,* and *social and personal network* resources are most prevalent categories for women and they will travel farther distances to access these resources (Figure 4.11). The most frequent categories by distance among male participants in Atlanta also is *food-diet*. *Biomedical* resources are also of significance and men will travel further distances to reach these locations. It is also notable than men do not access as many resources close to home as women do. This may be supported by the fact that women are primarily responsible for household related healthcare. They are also responsible for households in general and will access locations closer to home to fulfill their general as well as their specific informal or household level healthcare needs as well.

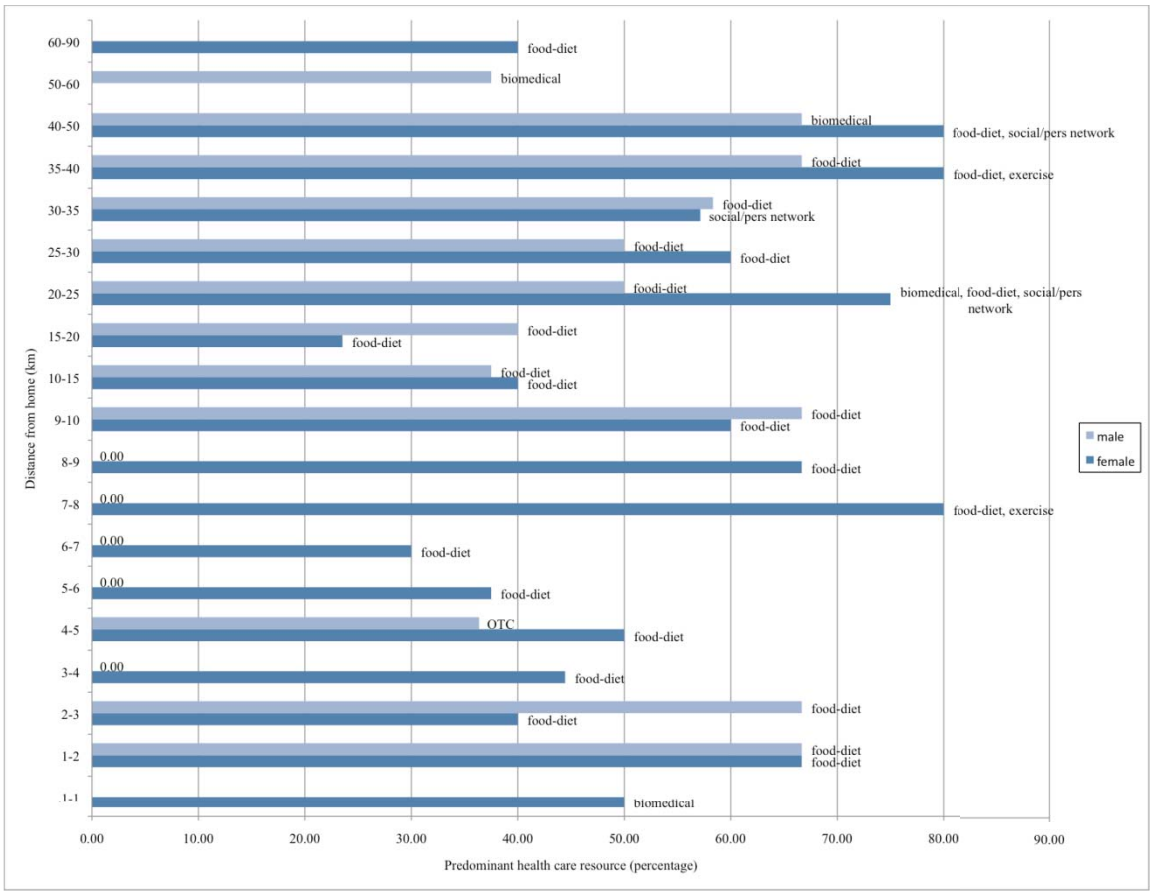


Figure 4.12 Predominant healthcare resource by sex in Atlanta

Focusing on the distribution of types of locations visited by males and females in Trinidad and Tobago, we notice that the predominant categories represent a lesser percentage within that distance range in general for both men and women compared to Atlanta (Figure 4.12). This is in part due to the fact that the sample size in Trinidad and Tobago was larger. *Exercise*, *food-diet*, and *ethnomedical* resources are the more prevalent categories among women in Trinidad and Tobago. Closer to the home, women focus on *food-diet* and *exercise* elements. For men, *food-diet*, *exercise* and *family network* resources stand out. Surprisingly, men will travel far distances to access *family network*

resources, such as talking to family, spending time with parents, etc. Like Atlanta, *biomedical* resources are primary resources within various distance categories among the male participants in Trinidad and Tobago. Closer to home, *exercise* and *food-diet* resources are both prevalent among men and women. The *relaxation* category is interrelated to the beach and ocean in Trinidad and Tobago. And although many of the beach locations mentioned by almost every participant interviewed could not be measured, these locations were almost exclusively the farthest points from the center node or household. The *not available* distance category in this Figure 4.12 represents beach locations mentioned as health resources.

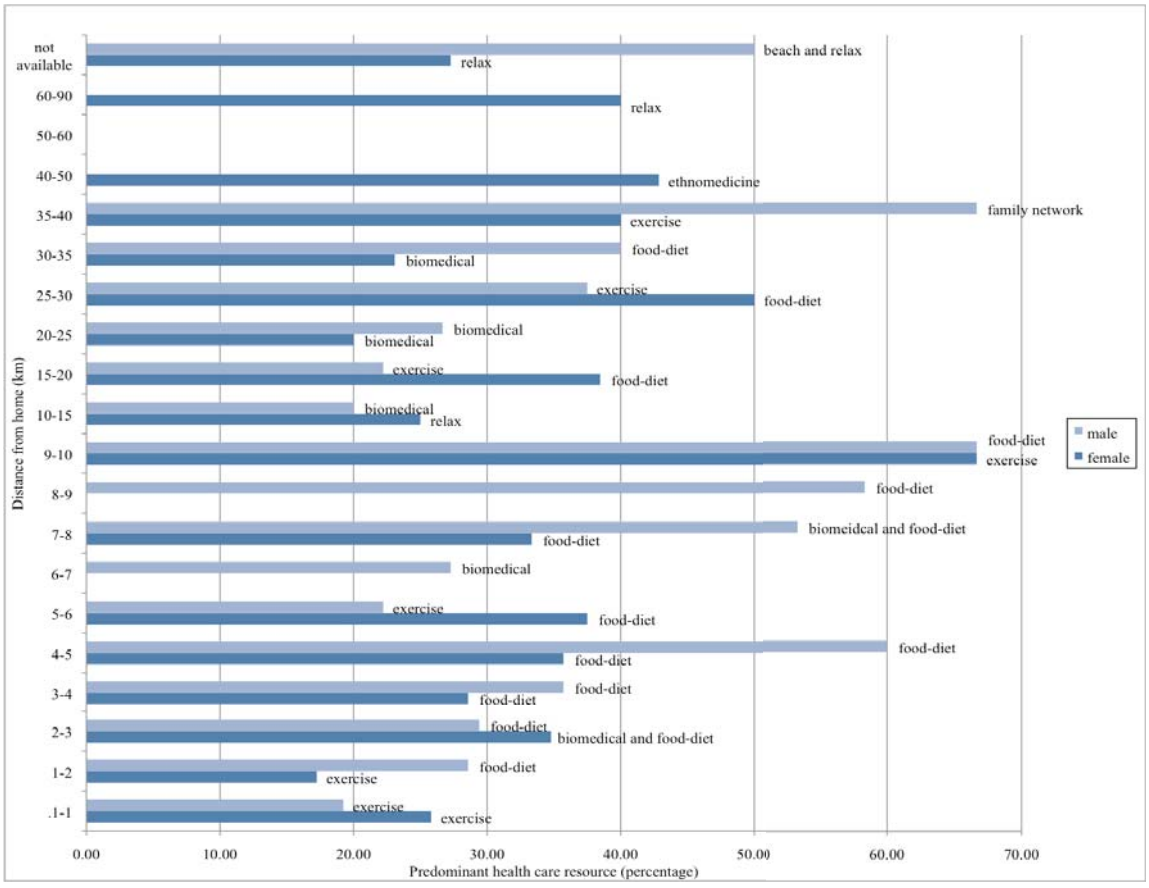


Figure 4.13 Predominant healthcare resource by sex in Trinidad and Tobago

Examining the distribution of healthcare resources by age in the two sites, we see much of the same (Figure 4.14). *Food-diet* dominates once again across sites and age groups. We notice that in the oldest age category, *biomedical* and *alternative* healthcare resources are equal to the *food-diet* category. Using professional healthcare resources is likely due to the fact that the older participants, even though they represented a small percent of the sample in both locations, were experiencing more health concerns that required seeking professional opinions and assistance more frequently than other age groups.

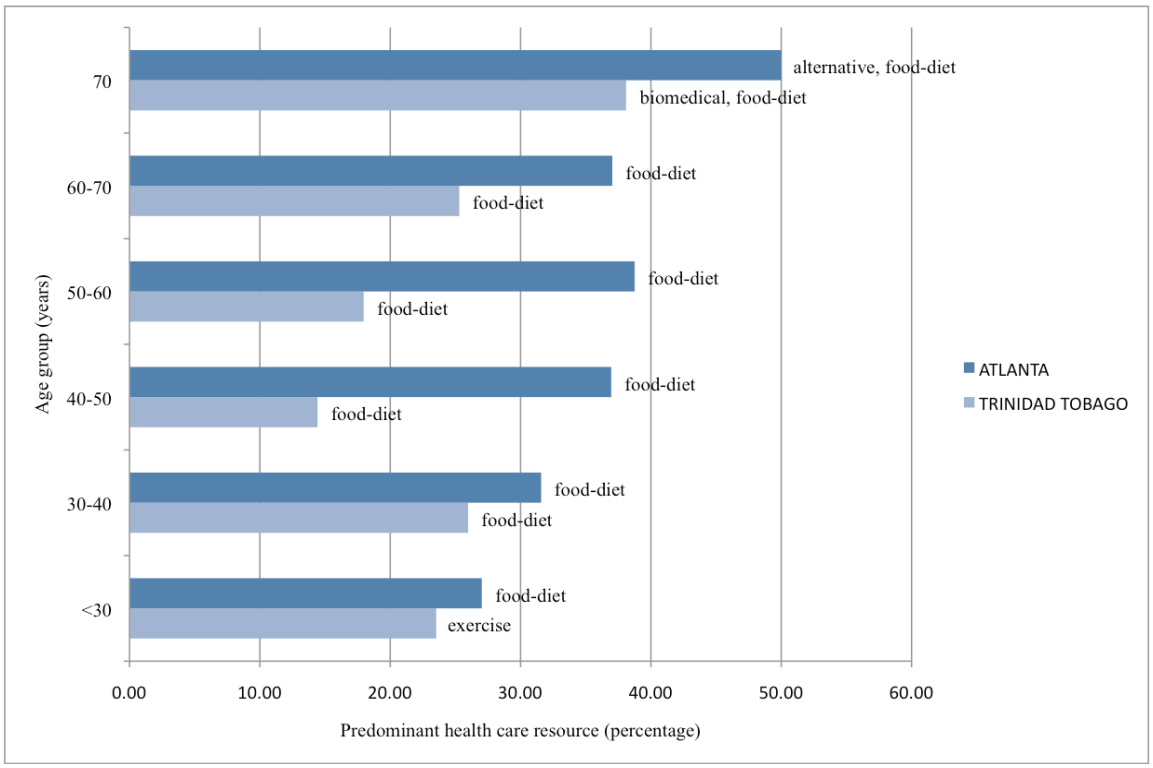


Figure 4.14 Predominant healthcare resources by age in Trinidad and Tobago, and Atlanta

Integrating narrative analysis

As participants made their list and gave location information, they were asked to elaborate on the their choice of healthcare resource in most cases. The thought behind this line of questioning was to understand more about how people define health and well-being in everyday activities and choices made within the last two years, while also capturing past practices and knowledge acquisition that are embedded within current choices. In addition, I intended to determine if there were significant differences between the community in Atlanta and the community in Trinidad and Tobago.

Integrating narrative data analysis with health network analysis provides insights into salient factors affecting health perceptions and practices that cannot be achieved by only examining the health network maps. For example, health across locations was less about biological and physiological health for its own sake, but rather a means to fulfill life. Participants discussed elements of spirituality, reliving the past or "old times" in Trinidad and Tobago, enjoying less "stressful" situations towards personal fulfillment, and more general family and community satisfaction. In what follows, I explore the most salient themes on attaining health and well-being expressed by Trinidadians and Tobagonians in the narratives. Six themes are discussed here: lifestyle, ethnomedical systems, stress, ocean, back home, and balance. All but "back home" were significant to both locations. Comparisons were made only when the distinctions between locations were meaningful, yet we see that in various salient categories participants in both locations have similar views.

In Atlanta, GA and Trinidad and Tobago, participants generally self-rate themselves as a relatively healthy group and utilize a multidimensional approach to attaining positive

health and well-being. Although they consider themselves generally healthy, health histories showed a high occurrence of diseases including cancers, high blood pressure, and type-two diabetes. In response to these conditions, a significant theme was ***lifestyle*** alterations. Those who had certain chronic conditions, several who had easy access to prescription medication, were deterred from doctors' recommendations. One common theme was an aversion to *medication.* Several mentioned not liking "tablets" (tablets is a commonly used term to describe prescription medication, although it can include over-the-counter medication as well). Several participants said something along the lines expressed by one participant whose opinion was that "The effects are worse than the illness." Another participant in Trinidad said she "[Tries] to avoid them at all costs," and another went as far as to say that "I'm always afraid the system will become hooked on medicine." This was the case in both Atlanta and Trinidad and Tobago. A few mentioned having issues swallowing pills which obviously prompted these participants to seek alternatives to not only to prescription pills, but also vitamins, naturopathic solutions in pill or tablet form. One man said: "One of the things I don't do which I think I should include is take supplements. ... Mainly because supplements come in tablet form and I don't like taking tablets." Another man mentioned that "I'm very much into my health, but I don't take any kind of medication. Not even if it's plant based." The aversion to tablets is predominantly linked to the powerful intended effects, the strong and unknown side effects of pharmaceutical medications.

The aversion to pills from a biomedical source was a surprising theme since various people described chronic conditions where the doctor treatment regime included pills. This common theme reflects the interest in changing lifestyle behavior rather than taking

pills. Pills have a negative connotation as it shows a person being hooked on something and having a chronic condition that will not go away with a defined number of treatments. The rise in chronic conditions has increased dramatically in a relatively short time span among the community and world in general, so perhaps this perception of pills will change in the future.

Participants tried to take more control by making lifestyle changes in order to treat chronic diseases and maintain proper health, sometimes self-diagnosing and creating their own inventive multilevel health regimens. One Trinidadian woman said “So if I feel I'm doing something wrong, like not exercising, or due to something, a little [high blood] pressure would come.” She was instructed to take daily tablets, and even though there is a free prescription plan for a number of chronic conditions requiring regular medication, she preferred to avoid this route. The same was true for a man who was diagnosed with high cholesterol. He followed the doctor’s recommendations of taking a pill, but soon after he quit taking the prescribed medication, taking reducing his high cholesterol into his own hands: “I will not eat meat. I would not eat dairy or dairy products. I would increase my cardiovascular activity. I would eat salads, like vegetables, salads. And drink, like herb tea that is related to keeping cholesterol down. That worked for me, in one month my cholesterol move from 256 to 226.” He went on to say, “In three months time it was down to 186 [pounds]. I mean obviously you see that that remedy work, without me having to take one of those cholesterol drug.” The avoidance of pills promotes searching for alternatives, by searching for information and other resources and altering behavior.

A number of common themes fell under the category of ***ethnomedical system*** reflecting looking back at the environment participants grew up in and how it shaped the sense of health hand well-being they have now in both locations. One woman in Atlanta said

"Certain medical difficulties I started having which I did not understand. The doctor was saying, "oh, you're healthy you're good. And I started to remember how my family, they would detox the body, I believe it was once a month. In this country, it seems like people don't do stuff like that. Now people be more conscious of that. But that's how we were in the Caribbean and I don't remember ever getting sick when I was a child, the common cold type of thing. Because they really knew how to build up the immune system. I really believe that by detoxing the body and eating your vegetables and your fruits back in the Caribbean. We didn't have potato chips, we didn't have junk food. Our junk food was climbing the tree and eating the fruit. That was our junk food. And we would put a little bit of salt and pepper on it."

Local knowledge transmission from the elders to the next generation was mentioned as important for dealing with health and well-being by drawing on local resources, but it was highlighted how the knowledge and use of local methods beyond medicinal plants was faltering. This theme represented an interest in reaching back for a lifestyle that is simpler and seemingly healthier at least in memories, both in Trinidad and Tobago and Atlanta: "Home, you see it, you know it, you use it. But when you are away from it, things tend to fade." Plant options and home remedies that include over the counter medication, foods and behaviors were usually the first line of defense when a health situation arose. The older participants mentioned that natural options are usually

preferred and used, because hospitals and doctors were relegated to emergency situations. The cost, distance and time to go the public or private biomedical healthcare services were additional reasons prompting the use of familiar medicinal plants. More importantly, there is a lack of confidence in the biomedical system because it is from an other realm, instituted by colonial power. The contemporary biomedical system is generally accepted as an ineffective and unsatisfactory institution unless you know someone on the inside.

Another frequently mentioned theme affecting life and health was ***stress***. Stress was of particular importance throughout the entire sample regardless of gender, age or location. Participants linked their *personal outlook* as a mechanism to avoid stressful situations. Laughter, smiling and a sense of humor were mentioned as important in everyday activities yet, intangible in the networks. One participant in Atlanta said she "Keep a positive attitude. I am not easily stressed, or I handle stressful situations well, by not worrying." Gardening, spending time in nature, being with plants was mentioned as a relaxation technique and stress reducer: "I'm at home with plants, for relaxation."

Stress reducing activities and mechanisms varied widely. Spiritual dimensions of life and meditation are two examples. Rest and sleep are two ways to recharge and rejuvenate from the hustle and bustle of life as several mentioned it as a chance for the body to repair itself. Traveling and trips many times to the beachside were considered useful to leave daily stresses and recharge. Stress reduction was linked to entertainment, whether as individual activities such as watching television, reading and sewing, or linked to social activities with others virtually through video games or spending time with friends (liming) or the popular cookouts involving many local recipes. Cultural events,

specifically Carnaval time and associated fêtes are associated to a time of year where one can let go and relieve the stress of everyday life in a communal manner since the two islands, including the transnational community becomes involved. Interestingly, participants who returned to live most of the time in Trinidad and Tobago after having lived elsewhere see it as coming home to a place with less stress, although those who had not left the islands generally verbalized how the pace of life has hastened, how attitudes and practices had changed since "long time" generally disapproved of the breakdown in social behavior.

The ***ocean*** as a general theme and its associated elements (salt water, waves, beach) was significant throughout the entire sample. One Atlanta participant put it "To me, sea safer than land, that's how comfortable I am in the sea out there." Another tried to explain the powerful effect of the ocean: "There is something about that end that I like: the water, the rocks, the vegetation and I find that makes ... it has a calming, peaceful effect." A participant aptly summed up local perceptions of the therapeutic effects of the ocean: "There is always this belief that you can go to the beach and to the ocean and take a bath, it makes you feel a lot better." The sound and visual aspects of the ocean environment were mentioned as additional therapeutic effects produced by the ocean as one woman put it, "I also find that one of the thing I find that help me for me is when I watch the sea. The waves go in and out and take some of the troubles with you. And you need sometimes you really need some solitude just to get, to collect your thoughts." In Atlanta, participants sought out the ocean by going on road trips to the beach, making a point of going to the beach often when traveling to Trinidad and Tobago. One Atlanta man highlights this sentiment of the positive memory the ocean has "To me that is my therapy,

going to the beach." Others sought the healthful effects and positive memories of the ocean in other bodies of waters such as lakes and rivers near their homes in Georgia.

The theme of ***back home*** was significant to the Atlanta community. These participants often reminisced on the beautiful scenery, the ocean and multitudinous beaches, but also of other significant elements associated with Trinidad and Tobago. Food is one of those elements central to Trinidad and Tobago culture. One individual summed it up by saying that for "Most Trinidadian[s], their favorite pastime is food." The significance of Trinidad and Tobago cuisine to health and wellness appears to be other than at the nutritional level. Participants were willing to alter and experiment with recipes, but only to a certain degree. Traditional cuisine consists of foods that are generally not considered "healthy" in the U.S. because they center around tubers that are high in carbohydrates. These provisions such as eddoes, yams, plantains, potatoes, cassava are considered to have low nutritional value, especially when consumed in large quantities and not balanced by other ingredients. Rice, bread, and overcooked, though tasty, vegetables dishes are common. Salt, coconut milk, refined sugars, and refined flour are ingredients in most dishes. The networks show how extensively individuals will travel to get the primary ingredients to make dishes from home. Throughout the interviews, many also mentioned going to restaurants that sell prepared food from home as some of the traditional dishes are time consuming to prepare, but also as a way to minimize consuming less healthy but culturally satisfying foods at home.

The following quote sums up the complex and multiple layers of place, cuisine and culture play into a Sunday meal. Often Sunday meal are elaborate and delicious, with many relatively unhealthy dishes are prepared. However, it seems more in Atlanta than in

Trinidad and Tobago, transnational immigrants experiment with the array of other immigrant cuisines and ingredients available that may be both healthy and take less time in food preparation. Callaloo is a dish based on a leafy green, and includes okra, coconut milk, seasoning, meat and seafood. The ingredients are cooked down for a long time to create a stew consistency.

"I eat properly, my daughter says I'm boring. I cook. Well, I combine. I am a true Caribbean-American, right? You wouldn't come down on a Sunday and say find callalloo, macaroni pie and stew chicken and all of that. But you may find, maybe baked fish and maybe chicken, maybe mac and cheese, some pretty rice, some broccoli or spinach. I call it bush. I saw you must have some bush with your rice. But, you know I don't make callalloo and I change up. I think my cooking is very much a reflection of my life, as I am a Caribbean American woman, an Afro-Caribbean American woman. So I would cook curry, and because I don't make the roti skin, I use um fajita, tortilla. So that's how I get my roti."

Balance and holistic approach to health and well-being also emerged as a significant theme and linked to other themes mentioned here. This balance and holistic approach was verbalized in many different combinations, although predominantly in relation to a balanced diet as many linked food not only to culture, home and giving the body necessary elements to run well, but also for health and well-being. This broad conception of food as nutrition, cultural identifier and health tool is common among many cultures. It is perhaps not surprising that many mentioned a similar mantra of trying to "Eat balanced and healthy, a diet low in carbs, high protein, low fats and sweet" as they were being interviewed about their health habits. Participants mentioned

experimenting as they looking for comparable items in other ethnic stores or other sections in the large farmers markets in Atlanta or seek out more information or test pan-naturopathic options both in the Atlanta and in Trinidad and Tobago. This strategy has also been used in looking for herbal and medicinal plants and materials that sometimes were combined in everyday food preparation. Some have learned about other cultures' ethnomedical traditions, including Native American healing materials and techniques. Their creativity spreads further than selecting items from local and other immigrant cultures locally to fulfill their health and healing beliefs. Several participants mentioned a transnational and interstate network to acquire culturally significant plants like wonder of the world also known as leaf of life (*Brophyllum pinnatum*, see Figure 4.15). This plant has multiple health uses for Trinidadians and Tobagonians, but is also a very resistant plant. Many mentioned acquiring leaves from a loved one's yard by transporting and concealing them in books where they will not only be preserved, but continue to grow, defying both agricultural import laws and common ecological concepts. Once acquired, these plants were carefully put in pots so they could survive the colder months indoors as their caretakers moved them around the house seeking ideal conditions for the plant's survival.

Balance with and in nature whether the one crafted at home or the one existing outside was another subtheme: "I believe that if you live in harmony in nature you stay healthy. That is why I have created the environment in which I live" said one Trinidadian man. Home gardens provided another related strategy to balance many important life elements "Gardening is a way for me to also say that there has to be balance in my life"

Figure 4.15 Culturally significant plants used for medicinal and culinary purposes creatively acquired in Atlanta (left) and carefully cared for in both Atlanta and Trinidad (right)

(Atlanta female participant). Personal outlook had significant effect on well-being. Several mentioned that to keep healthy, one had to have a positive outlook on life, understand the interconnections between the physical psychological and physiological, and laugh and smile. Illness and disease was considered as mind over matter where "Most of it or more than a quarter of it [the sickness] is in your mind. That is my concept" (Trinidadian woman). To sum up the theme of balance, a woman in Trinidad told me she calls "It S-P-I-C-E-S. Spiritual, S, P for physical, I for intellectual, C for cultural, E for emotional and the S for social. […] I tell myself once we have a balance of that it makes up your whole self."

Convenience in terms of financial ability and physical access (distance from home, having personal transportation) is a critical component to healthcare choices. There is a clear trend of choosing to alter lifestyle to be healthier and avoid using biomedical

options. A significant percentage had medical insurance, but still preferred not taking medication, while also mentioning considerable costs of healthcare even with their coverage. For all Atlanta participants, access to a working vehicle was considered necessary. This was also a drawback of Atlanta since a little walking could feasibly be incorporated into most participants' daily activities, as was stated by several participants. A few individuals who had recently relocated to Georgia from other U.S. cities like New York highlighted the drawback of not being able to walk regularly and the significant and direct impact of reduced physical activity. At the same time, many mentioned the familiarity and comfort that the Atlanta environment provided: greenery and weather that were more reminiscent of the islands, general lower cost of living, and ease of travel to and from the Caribbean.

Discussion and conclusion

Research on migration and ethnoecology and health resources has found that knowledge and belief systems from which migrants operate remain significant in global and urban contexts (Dei, Hall, and Rosenberg 2000, Pieroni and Vandebroek 2007). This chapter addresses health behaviors of the Atlanta and Trinidad and Tobago transnational community by examining health network maps and associated geo-narratives. In this section, I focus on three main findings. First, I examine proximity to the household as a significant factor in both locations and across age and gender groups. Second, I discuss the predominant resources accessed overall and how they are spatially distributed. Food-diet resources prevail in Atlanta and Trinidad and Tobago. Third, I discuss the value of the specific approach I developed to evaluate health behavior. I discuss some limitations,

although the combination of methods allowed a much richer analysis to understanding the depth and complexity of health behavior. For instance, the role of balance was not a health care resource location, but emerged as a factor influencing behavior.

A multilevel approach to health and well-being is supported by the health behavior networks. This approach that includes resources accessed from multiple medical and health traditions has been noted in other immigrant communities such as Cambodian refugees and Vietnamese immigrants living in urban cities throughout California (Jenkins et al. 1996, Pickwell 1999). Studies among Turkish immigrants living in Cologne, Germany (Pieroni et al. 2005) and Mexican immigrants living near Athens, Georgia (Waldstein 2006) also discuss using multiple types of health system products and methods in immigrant health and healing pursuits. These elements included products available at pharmacies, ethnomedical recipes from the native culture and even the incorporation of elements from the host country ethnomedical system.

Distance of the healthcare resource whatever category it falls under, is a key factor in health behavior. This was clear no matter what age or gender group and across locations. In both locations the relative range of distance of the networks is similar which is somewhat surprising and difficult to explain. However, proximity to home is clearly an important factor with approximately 45% and 62% of locations within 10 km from the household in Atlanta and Trinidad and Tobago respectively. Some health behavior model studies have also found distance as a significant factor to accessing a healthcare resource for people requiring regular biomedical healthcare (Arcury et al. 2005, Gesler and Meade 1988). Other studies in rural and international locations have also shown that the lack of physical access based on increased travel distance to healthcare facilities is significant in

health-seeking behavior (Miller et al. 1998, Perry and Gesler 2000). These studies however, focus on biomedical health facilities and individuals that require regular biomedical care. This study broadens our understanding of the distance factor in accessing healthcare resources no matter the age, gender or health profile. At the same time, we note that due to the universal multilevel healthcare portfolio of participants' proximity to home of health resources is still a key factor regardless of the category the health resource falls under.

Another important finding helps us understand general health practices by examining patterns in predominant resource categories by distance. Food-diet health resources are overwhelmingly represented in both Atlanta and Trinidad and Tobago. Other noticeable resources in Atlanta included exercise and biomedical resources in some distance categories. In Trinidad and Tobago biomedical, exercises and social network resources were important as well. Family and friends that were part of health resources lived closer to participants in Trinidad and Tobago. When looking overall, the categories making up the 50% of resources accessed were very similar in both locations and reflected in resources accessed closest to home: food-diet, exercise in both sites, and social network for Trinidad and Tobago.

The integration of the narrative analysis is significant in examining the layout and general patterns emerging from the networks. For example lifestyle choices, specifically the avoidance of certain elements like taking pills throughout this transnational community is influencing behavior patterns and thus the health networks. Individuals prefer and tried to alter lifestyle behavior rather than relying on taking pills. This was usually done through food-diet and exercise behaviors. Home is important to the Atlanta

community and maintaining a connection to home is done through foodways. This is revealed not only in the narratives, but also in the predominant categories close to home, and the overall most common categories. From previous work in Trinidad and Tobago, I knew there were intangible elements like personal significance and smiling and laughter that would not show up in the network maps, yet were important in interpreting behavior patterns.

A third point of discussion lies in the limitation, appropriateness and value of the approach used here. Mixed methods in anthropology is not new, and the approach here integrating GISci, volunteered geographic information and narratives is just one more example of attempting to improve and broaden specific ways in which to understand the human condition that can be useful to other disciplines. Representing transnational health networks is complex and the method used above was crucial in understanding health patterns of this particular community, yet requires refinement. However, an improvement to this approach would include the depth of each location in the networks. By depth, I refer to two dimensions: the first is in representing the multiple health uses of one location. The second refers to the relative significant of a location to the individual. The ocean was important to both groups, however in Atlanta, the locations mentioned were outside Georgia and the limitation of my geodatabase did not allow the inclusion of these points using the network analyst extension. In Trinidad and Tobago, points accessed outside the island of residence could not be used in the network analysis. The network analyst function was not necessarily designed for this type of use, yet reveals trends such as the importance of food-diet items close to home and the importance of resources like ethnomedicine or social networks farther from home.

The geo-narrative analysis partially addressed this gap. It assisted in understanding the importance of characteristics of the health networks, like the significance of stress, and related to this relaxing, the ocean and spending time with family and friends. Narratives also show that participants in Trinidad and Tobago often used plants gathered or cultivated in and around the house. However this was not the predominant healthcare resource cited and is hidden within the point representing the center of each network, the household. It would be useful to weigh the points to indicate the significance of the location and the number of uses of the location different ways.

The complexity of adequately representing human and health behavior through an integrated approach is being developed and examined by others. The geographer Kwan and her colleagues (2004, 2008, 2008) have been developing methods to study human activity patterns using GIS and qualitative methods to address a number of research areas including health geography. Although she focuses heavily on geocomputation and geovisualization, a recent article includes geo-narratives from oral histories to create daily activity patterns to study the effects of September 11, 2001 in the U.S on daily patterns of Muslim women in Columbus, Ohio (2008). An older article (2004) includes layering of the type of daily activity patterns where space-time layers can show more intricate daily patterns like the international reach of a virtual chat session. It is possible to overcome some limitations of this study by using altered sections of Kwan and her colleagues' work, such as the extensibility diagrams that would allow these multiple scales and types of interactions to be visualized and analyzed (Kwan 2004). Including this approach can be more useful in more accurate representation of transnational health networks.

More specifically to health and anthropology, Glantz and McMahan's work (2007) looks at integrative international, healthcare research with GIS. This case study on the well-being of the elderly in Mexico shows us how many actors and sources are required to develop a valuable spatial dataset. GIS is used as a participatory method to extract a product that can be visualized and analyzed to inform stakeholders. This paper also indicated the work that is still needed to adequately integrate mapping and participatory methods to obtain interconnected and useful analyses and results.

The complexity of developing an adequate integration of both geographical and cultural aspects in understanding health behavior necessarily includes the study of place. Evaluating role of place in health research is not new, yet is still being theorized and empirically tested. Much of the literature suggests that a quantitative and qualitative approach to operationalizing the role of place on health variation is key, yet still lacks true integration (Cummins et al. 2007, Meade and Earickson 2002). Cummins (2007) presents how context or place needs to be evaluated from a relational perspective that includes multiple scales and type of information, sociocultural aspects, life course patterns, non Euclidean distance, examination of flows of capital (monetary, cultural, etc.) among other characteristics of place. Only until a more representative approach to place in health research is achieved can a more realistic picture of health be evaluated. This in turn can better inform policy and applied public health efforts by incorporating more representational health of a particular community that can both reduce costs and increase positive outcomes.

The interface between place, well-being, and culture has been a challenging one, yet valuable in understanding the multidimensional aspects of human health. Place within an

anthropological investigation of health is key and has benefited from methods and theories from other areas. Use of GIS methods and theory has been established here; its potential in advancing both health studies in immigrant and international settings is clear. The further development of place's role can benefit from other disciplines. Panelli and Tipa's work (2007, 2009) is an example of incorporating environment and culture in the investigation of place-based well-being. The integration of methods deserves further refinement to better assess and understand health and wellness in many environments.

Overall, the approach used in this chapter is evidence of the importance of a more complete understanding of health behavior to examine patterns in health care behavior of this particular group. The similarities across locations (significance of distance, predominant resources) reveal some consistency in health practices even in distinct environments and should be further examined with other groups. The methodological approach, including more novel uses of GIS with classic anthropological techniques, show potential in both being acceptable to groups being studied and applicable in larger scale health studies addressing the needs of migrant communities where health perspectives may not be comparable to the existing biomedically oriented healthcare system in the U.S. In international settings, this methodology with modifications can help in understanding personal and community health activity patterns that might reflect a very different scenario when overlayed with the existing and extensive public healthcare system as in the Trinidad and Tobago case. There remains significant potential in refining efforts to measure health patterns, in conceptualizing transnational health and for applied health research that reflects sociocultural and informal aspects of healthcare.

CHAPTER 5

VISUALIZING HEALTH AND WELL-BEING

Introduction

Visual methods in the form of photovoice and photo elicitation have been used recently in health related research and community-based participatory research (Catalani and Minkler 2010, Hergenrather et al. 2009). An impetus for this approach is to allow the groups that are being represented by researchers and policy makers to be at the forefront in creating more valid and valuable data. Visual data are a powerful and poignant medium to examine particular issues that can appeal to a wider audience. In photovoice, the process is centered on the participant-photographers themselves. The photographs are used to inform multiple players in the policy-making trajectory by promoting social change through the multiple steps of the photovoice process discussed below. I chose this approach because I was interested in comparing perceptions of health and well-being in a transnational migrant community with that of their friends and family's in their home country through the eyes of the participants' beyond narratives.

The photovoice process centers around participant-produced photographs and adheres to the anthropological interest of emic perspective in documenting and analyzing a particular group's health belief system. As McDougall states, anthropology is very much interested in the visual, but does not always know what to do with it (Banks and Morphy 1999). Although visual anthropology is fairly well developed, and the use of

photographs is common in anthropology, photovoice as a participatory action research method as described below has not been widely utilized in anthropology studies. I will make a case to show that this interdisciplinary method and the theory behind it should be considered within various types of anthropological projects, from activist and participatory projects to purely visual anthropology projects.

In this chapter, I investigate health and well-being beliefs and their variation in the Atlanta and Trinidad and Tobago communities. I focus on participant-produced data using basic ethnographic and ethnoecological tenets, photovoice, and photo elicitation to understand the core elements and differences between the communities in their construction of health. Photovoice is a visual method that has been successfully used in health and participatory research settings with a variety of subgroups, including a combination of age groups, genders, cultures and specific health issues, to address both individual and community level health research questions. The research design puts the data collection tool into the participant's hands giving them the space and time to choose the data they wanted to produce and share. I also gathered narratives associated with the photographs representing health and well-being. The use of photovoice with photo elicitation allowed for increased participation in defining this construct in this particular community, while also aligned with core elements in anthropology such as investigating variation in human representational systems.

Objectives

The main objective of this chapter is to delve into one of the three areas of ethnoecology, beliefs, in order to examine this transnational community's perceptions of

health and well-being. I combined visual and ethnographic approaches, photovoice and photo elicitation interviews. Photovoice is a participatory method where research participants are given a camera and minimal instructions on what to photograph (Wang et al. 1998). The inclusion of visual and participatory methods contributes to better understanding of health perspectives in a transnational context. After developing participant photographs, a photo elicitation session was conducted to give the participant the opportunity to discuss what the photographs depicted and how each one represents their particular vision of health and well-being at the individual level. I *examine the differences in health and well-being perceptions that exist between the Atlanta and Trinidad-Tobago communities*. I also want to *examine how the power of visual combined with narrative data contributes to the understanding of transnational perceptions of health and well-being.*

Background

The section below interweaves visual anthropology, the development and refinement of photovoice as a participatory process that is based on a number of theoretical lines including critical consciousness and feminist theories. I overview how community perceptions, specifically regarding health and well-being, can be adequately addressed through an approach that includes participatory, visual and ethnographic components. This section centers on the current use of photovoice and photo elicitation to examine how the multiple layers and patterns of health beliefs can be more fully explored through this process.

Visual methods have been used in anthropology for some time although the interest in including them in research waxes and wanes. Currently, visual anthropology seems to be enjoying a resurgence (Pink 2007, Rose 2009, Stanczak 2007). Collier's standard book, *Visual Anthropology: Photography as a Research Method* was first published in 1967 then revised and expanded for the 1986 edition. This book is used as the foundation for most current visual methods and research in anthropology (Collier and Collier 1986, Harper 2002, Pink 2007). Collier was fundamental in launching the journal *Visual Anthropology* a year later. This period marked a change in the way visual material was viewed in anthropology. With rigorous methodology, visual materials could no longer be considered subjective, unsystematic and non-representative.

With respect to participatory photography, less has been written in anthropology, even in seminal and recent visual anthropology volumes (Pink 2007, Rose 2009, Stanczak 2007). In the preface to her book, Gillian Rose argues that "we need to learn to interpret visual images because they are an important means through which social life happens" (2009). Media coverage of the uprising in the Middle East or the efforts to clean up the destruction of the earthquake and tsunami in Japan in recent months contributes, sometimes significantly, to how we learn about what is happening in societies around the world. One project used photography and film to increase awareness and build connections between Liberians in the diaspora and back home, specifically looking at experiences and strategies used to survive in the U.S. (Chaudhry 2008). The types of images and the ways they can be interpreted are numerous and valuable in many cases. The photographs can be taken by the researcher(s) or they can be photographs already existing in the participant's lives as part of the material culture. Appadurai

reminds us that objects have a social life: thus visual objects can be included within an anthropologist's direct observation of social life (Appadurai 1988, Rose 2009).

As objects, photographs can be valuable as they can provide information, offer additional layers of understanding, and promote reflection. As a research tool, photographs allow the researcher to achieve additional levels of introspection and understanding that interviewing alone cannot easily achieve (Collier and Collier 1986, Rose 2009). As objects that encode a great deal of data, photographs are considered more precise than memory alone. They take participants into the realm of memory, into thinking of domains of their lives they may not normally enter if not for photographic aid (Harper 2002, Rose 2009). Photographs can assist in getting people to talk about difficult or abstract constructs. At the same time, photographs within an interview context can minimize interviewee fatigue due to the length or repetitiveness of interviews. They can also deflect the focus from the interviewer or interviewee to the content and context of the photographs (Harper 2002, Hurworth et al. 2005). Pink emphasizes how ethnographic approaches and visual images complement each other (Pink 2007).

Photovoice was not developed in visual anthropology, but its foundation and objectives are closely aligned with anthropological tenets. Photovoice, as it is currently employed, was first developed by Caroline Wang and her colleagues in the 1990s when she was at the School of Public Health at the University of Michigan, Ann Arbor. It was devised as a participatory method for community-based health research. The foundation of photovoice as participatory action research is based on feminist theory, documentary photography, and pedagogy of critical consciousness (Hergenrather et al. 2009, Wang and Burris 1997, Wang 1999). Wang et al. used photovoice to specifically reach those

people most often excluded from decisions concerning their own community's health issues, thereby making them active players in this process. These communities include marginalized individuals or groups in society that seldom have a powerful voice to affect change in their communities and that lack access to those who make decisions for their communities (Wang and Burris 1994, Wang et al. 1998, Wang 1999). Wang intended photovoice to be used in participatory research projects with the aim of affecting change from local to policy levels. Photovoice aims to give a more meaningful and multidimensional voice to the community engaged in the research by integrating narrative and visual data. Terms such as social justice, empowerment, awareness, and change are typically associated with a photovoice project. It is considered to be part of Community-Based Participatory Research or Participant Action Research repertoires, a method to address social justice issues from a broad perspective such as determining the needs and assets of a community (Wang 1999), or to look at specific health concerns such as prostate cancer (Oliffe and Bottorff 2007).

A central tenet of the photovoice method is taken from feminist theory. The experience and local expertise that the research participants bring are assets that can only be developed from the inside and in this can empower these vulnerable communities. Wang further expands this notion to say that photovoice includes developing participatory projects and policies based *from* rather than *on* a particular group's perspective. The group's knowledge is valued, while also allowing the participants to capture and reflect on sections of their lives through shared experience. Hergenrather and his colleagues' review article (2009) further separates the latter as constructivism or building knowledge and meaning through experience. This is a key element in most of

the photovoice articles they review and those I have read as well; determining what is a priority is part of the reflective process of photovoice. Wang (1999) proposes that photovoice is an alternative to positivist construction of portraying lives, a shift to listening and learning from participants' portrayals. And finally there is a commitment in photovoice. This method is not only for scholarship purposes, but to improve lives, to advocate, and to assist the groups being researched to improve their condition by developing grassroots social action or collaboration.

The other theoretical underpinning used to develop photovoice comes from education, specifically education for critical consciousness. Wallerstein and Bernstein (1988) developed health promotion principles based on Paulo Freire's participatory pedagogy strategies. While teaching adult literacy in Brazil in the seventies, Freire used drawings to foster discussion and reflection in adult literacy (Carlson, Engebretson, and Chamberlain 2006, Foster-Fishman et al. 2005, Strack, Magill, and McDonagh 2004, Wang and Burris 1994, Wang 1999). Freire focused on what people see as significant to their own lives, which he identified through dialogue. By doing so, he engaged the learner as a co-creator of knowledge in order to shift power dynamics to a more equal approach. Freirian principles support the notion that, through shared experience, participants are involved in the process of identifying, understanding and changing their community's issues. He posits that gaining access to information and increasing understanding are requisite for change at the community level. His participatory pedagogy included three levels of consciousness, with the highest being critical consciousness, at which point the learner realizes his or her responsibility and can then

choose to maintain the status quo or effect change. Wang and Burris have used Freire's empowerment pedagogy as it is now known, in developing photovoice.

Documentary photography is used in photovoice in alternative ways where the photographer is trained, but minimally. The documentation of everyday lives and situations and what the photographer and his or her community members see in those photographs is of primary significance in photovoice. The impact and immediacy of visual images are key elements. In this case, documentary photography is nontraditional since the photographer is the participant, rather than a professionally trained outsider. These images are supposed to provide evidence as to what needs to be done whether to incite social change locally or to assist in effecting change at the policy level. It can be said that the photographs in photovoice allow an emic perspective into the research or public health issues at hand, whereas conventional documentary photography would be limited to an etic perspective (Castleden, Garvin, and First Nation 2008, Strack, Magill, and McDonagh 2004). The potential value of photovoice to anthropology is evident as the principles on which it is developed are closely aligned with core elements of anthropology. These elements include trying to understand variation in human representational systems, elucidate an insider's perspective, and examine shifting power dynamics while also contributing to material culture and data production.

Photovoice as developed and utilized by Wang and colleagues has not been included as such in visual anthropology studies: however, various elements of photovoice are clearly found within visual anthropology. Some precursors and iterations of photovoice include *photo novella*, *photo elicitation*, *autodriving*, and reflexive *photography* (Castleden, Garvin, and First Nation 2008, Hurworth et al. 2005, Oliffe and

Bottorff 2007, Wang and Burris 1997). *Photo novella* has been used primarily in teaching language and literacy. *Reflexive photography* and *autodriving* are other terms more closely aligned with *photo novella* where participant produced photos are taken without a specific intention of empowering the participants (Oliffe and Bottorff 2007). Others say that *photo novella* was replaced by the photovoice method developed by Wang (Hurworth et al. 2005, Wang 1999). *Photo elicitation* is sometimes used as an component of photovoice, since it is part of the process as Wang and colleagues developed it (Wang 1999). However, others see photo elicitation as a separate section, where participants discuss, and reflect on the photos they have taken or those that are being shown to them, (Harper 2002, Hurworth et al. 2005, Oliffe and Bottorff 2007). The terms *photo interviewing* and *photo feedback* have been used interchangeably with *photo elicitation*. In some cases, the photographs used in the research may not be participant produced photos. In my research, I use the terms photovoice and photo elicitation since the intention is to increase our understanding of culturally significant undertones of health and well-being in a transnational context with future possibilities of informing community health projects. The participatory component is critical, but the activist dimension is beyond the scope of this study.

The following describes the photovoice method implementation and analysis as developed by Wang and colleagues (1998). I base the photovoice methods used in my research on Wang's with some modifications explained in the Methods section. Photovoice documents and reflects needs and assets although some studies focus on specific issues to garner a perspective largely created by members of the community being researched. These procedures usually encourage group discussion in formulating

the needs and assets as described by the participants with the ultimate goal of inciting social change through local action or by vibrantly exposing the matter to policy makers, which may lead to further opportunities (C. Wang & Burris 1997; C. C. Wang 1999). The first step is to place the tool, the camera, in the hands of the participants. They are trained to use the camera if necessary and a broad theme for taking pictures is either developed as a group or given to the participants. The participants are given time to take photos and return with the camera so that the researcher can process the photos. There is usually at least one follow up session as a next stage. This includes participatory analysis, during which time reflection and dialogue are encouraged. Photographs are selected for discussion by the photographer, or by the group; sometimes, the photograph selection is scaffolded where there are various stages of photograph selection. In this case, the photographer contextualizes the chosen photographs. Themes are elicited and discussed and then the stories may be written down. The findings are sometimes disseminated in various ways, such as community presentation and journal articles. Policy change may also take place although in most projects this stage does not take place. Wang and colleagues (1999) developed an acronym to facilitate the last part of the photovoice method of analysis in what I differentiate as the photo elicitation interview. The acronym is SHOWeD, which is supposed to encourage introspection and storytelling:

What do you **S**ee here?

What is really **H**appening here?

How does this relate to **O**ur lives?

Why does this situation, concern or strength exist?

What can we **D**o about it?

Many projects have used SHOWeD as is, although others have modified it such as adding a question for the "E", How can we become **E**mpowered by our new social understanding? The final stage may include some format (exhibit, newspaper article) to share the visuals and narratives with stakeholders such as community leaders and policy makers.

In the literature, we see that photovoice has been used in several types of studies, but primarily in *women's health research*. Wang has been at the forefront of this subfield working on various aspects of women's community health (1999). Wang and Burris' initial study in rural China examined community health from a woman's perspective asking women to take photos of the spirit of village women's everyday lives (Wang and Burris 1997). Wang and Pies more recently looked at maternal and child health, using photovoice in planning and assessment efforts (Wang and Pies 2004). In both of these studies, they found that photovoice was useful in empowering the community and it enhanced the understanding of community needs by enabling self-reflection and effective communication of the perspectives. Another project looked at access to healthy food among marginalized women in New York City using photovoice to represent and communicate the lack of women's access to healthy food and also to mobilize the women, and communicate their situation to other stakeholders at various levels (Valera et al. 2009). Within the health research field, photovoice has been used in public and community health and clinical settings to explore various aspects of *environment, culture and health*. A border study between El Paso, Texas and Cuidad Juarez, Mexico looked at tuberculosis using photovoice (de Heer, Lacson, and Shedlin 2009). In this case, it was used for effecting policy change as well as increasing tuberculosis awareness, which they

succeeded in doing. Other projects involve sensitive health issues among specific communities. For example, two studies focus on issues specific to African American men. Both studies discuss the value of the photovoice approach (Mamary, McCright, and Roe 2007, Ornelas et al. 2009).

Photovoice has also been used for advocacy purposes, effecting change, addressing social issues beyond the focus on women and specific health issues within the U.S. One study examined civic engagement of a marginalized group using photovoice to look at Latino youth immigration experiences (Streng et al. 2004). This partnership study has the objective of not only raising awareness within the larger community, but also inciting change from the grassroots level. Homeless and indigent conditions were assessed through photovoice and the project was also shared with the community at large, with the objective of inciting change at the personal and community level (Wang, Cash, and Powers 2000). One article used photovoice to evaluate photovoice and determined that, like most projects assessed, this approach assisted in developing a critical awareness, and participants felt an increase in their competence, which incited them into action. The process of using photovoice was safe, afforded reflection, and enabled the participating individuals to feel valued (Foster-Fishman et al. 2005).

Outside the U.S., photovoice has been used beyond women's health issues such as Wang's seminal work in rural China. For example, photovoice was used in a project in Guatemala to explore perceptions of health conditions as seen by traditional birth attendance in rural Guatemala (Cooper and Yarbrough 2010). This article emphasized the increased layers provided by including photovoice to traditional focus group and interview settings. Another project used photovoice to examine the experiences of

women who had completed breast cancer treatment in one aboriginal community in Saskatchewan, Canada. This article makes recommendations on how to include the local culture and beliefs in addition to evaluating the complex political and economic situation of this particular marginalized community and how this is facilitated using photovoice (Poudrier and Mac-Lean 2009). Other projects focus on a multitude of locations and issues like the idea of "good" Muslim girls in Kolkata slums in India (Chakraborty 2009), or connecting communities in the Liberian diaspora (Chaudhry 2008). Photovoice has been used as a tool to critically engage the communities at hand since other traditional methods were considered too challenging or ineffective in certain research settings.

Although photovoice has not been extensively used in *ethnographic and anthropological projects*, recent projects that include photovoice have modified the original set methodology by Wang to be more suitable for the study and community at hand. For example, Melleiro and colleague (2005) used photovoice as a method in their ethnographic research project on pregnant women using hospitals in Brazil. Photovoice was used as a method in combination with text analysis of the narratives recorded and transcribed during individual interviews. The authors concluded that this method was useful not only in heightening the position of the "collaborators" in this phase of their life, but also in triggering their memories during sections of the research project. For example, women and their experience of place was investigated in Belfast, Northern Ireland (McIntyre 2003). However, the model of photovoice at the photo discussion stage had to be altered because it was not suitable for this setting. More examples of ethnographic uses of photovoice are available in Catalani and Minkler's review (2009)

and Oliffe and Bottroff (2007) mention a few more examples in their background section. The examples selected here focus on the adaptation of photovoice in an ethnographic context.

Castelden and colleagues discuss the modification of photovoice to fit their study on environmental issues among the Huu-ay-aht (2008). In fact, this is the only article I have found that openly critiques the model that was created by Wang and colleagues, suggesting that other researchers using the model as proposed by Wang and colleagues are not addressing the inequality, exploitation and injustice they are seeking to address and obliterate. There is a clear need to adjust photovoice to the local community, including cultural preferences and other factors to extract its core values. Some studies that are more ethnographic may be less participatory as described in seminal studies, including more general aspects of visual anthropology.

Photovoice has been an important contribution to understanding the objectives of the research and projects for several reasons. In many of these examples, we see that photovoice has been used and modified as the sole method or in combination with other methods to attain various objectives. Many include photovoice as a Participatory Action Research method that is powerful and key not only in providing another mode of communication for the participants' views of their world in conjunction with their worlds, but also as a way to raise their voice within research. Photovoice allows the communities that are often seen as collaborators in these projects to be agents of change or to provide powerful images and associated data to other stakeholders far away that can directly affect their daily lives by changing or maintaining policy. The photographs allow people to contribute not only with their words, but also produce with another type of data.

The photographs also help shift the focus from the participants or focus group to the photographs themselves and this sometimes enhances participation. In addition, the photographs are usually appreciated by the participants in many contexts. These photographs taken share dimensions that are often not accessible to the researcher, dimensions that allow for additional insight. In cases where language may be a barrier or where the worldview differs from the researcher's, the photographs can help bridge the gap in understanding the issue at hand. Photovoice has been used in various other fields of applied research as a participatory method with the purpose of empowering or rendering the individuals and communities at hand of being more capable of improving their lives especially relating to health issues.

Methods

The photovoice method is a reflexive and participatory exercise designed to document and discuss concepts of health, well-being, disease and illness (Melleiro and Gualda 2005, Wang 1999, Warren 2005). The photovoice technique, as delineated by Wang and colleagues (1999, pages 9-11) was altered for this project. Participants were asked in both Atlanta and Trinidad and Tobago to participate in the photovoice portion of the research project. A disposable or a digital camera was given to the participant at the end of the first interview: only three participants, all in Atlanta, chose disposable cameras. Other participants indicated they could use their own cameras or were more comfortable using their own camera. Only one participant in Trinidad used a film camera, the rest used digital cameras. When only one long interview was conducted instead of two shorter interviews, the explanation for this exercise was given prior to the interview

session, through various email communications and phone conversations. Ultimately, in Atlanta, one male participant did not participate, and two did not provide the digital images despite multiple follow up attempts; 23 participated in the photovoice and photo elicitation. In Trinidad and Tobago, 37 participants completed the photovoice exercise and photo elicitation interview.

Participants were handed the camera and an index card with a set of instructions (this was emailed when only one interview was conducted). Participants were asked to *"take ten to twelve photographs of what health and well-being represents to you"* in order to illustrate concepts of health and well-being. They were purposefully given minimal instructions to influence them as little as possible. Some participants requested additional information and, in these instances, I showed participants photographs taken from a pilot test of the method. Since the time interval between interviews was usually about one to two weeks, most photographs were limited to what took place in the participants' lives in that time frame. They were told that they could take photos of existing photographs if there were key aspects that came to mind immediately and if they determined they would not be able to capture a current photograph of that element that represented health or well-being to them. Others indicated they already had a few photos that would depict exactly what they wanted to share. I decided to allow them to include these if they were relatively current photographs. The participants were given some instructions on how to use the cameras if needed as well.

Due to the dispersed nature of the participants' residency patterns and general schedules in sprawling Atlanta, focus groups interviews to show and discuss the photographs would have been nearly impossible. Since the Trinidad and Tobago

participants were selected based on the participants in Atlanta, focus group discussions of this select group of individuals would have been very difficult as well since they were dispersed throughout the islands. For these reasons, I decided to discuss the photographs with participants individually, an approach that has been used in various ethnographic photovoice projects (Castleden, Garvin, and First Nation 2008, Melleiro and Gualda 2005, Oliffe and Bottorff 2007).

During the second interview or second portion of the interview, the photographs were developed and printed, or displayed. They served as visual stimuli to delve into personal realities of health. Participants were asked to describe in their own words what the viewer was looking at in the photograph (*What do you see here*?) and they were asked to tie it to their experience and interpretation of health and well-being (*How does this represent health and well-being?*).

The individual photo elicitation interviews were recorded and transcribed. The process of comparing and contrasting narratives and visual data was done at the location level in order to determine general distinctions between the two locations that may shed light in understanding the process of change in health beliefs in transnational communities. The content of the photo elicitation narratives was analyzed and salient themes were determined based on frequency and by location. The photographs and associated narratives are subjected to my interpretation to a high degree instead of being systematically reviewed and challenged by the participants, which decreases the participatory nature of this method and perhaps skews the results. Validity and credibility of my interpretations stem from long-term participant observation, testing the photovoice method as presented above, discussing preliminary findings with key informants and

focus groups throughout my time within the community both in Atlanta (1.5 years) and Trinidad and Tobago (4 years).

Findings

Participants generally expressed their satisfaction with the photovoice exercise, and the data they produced were invaluable in creating a more layered understanding of this transnational community's health and well-being beliefs. Most participants shared their enjoyment and creativity in completing this exercise. A few mentioned this exercise was more energy consuming, but put effort and creativity into completing this assignment that went well beyond my expectations. The thoughtfulness and depth of answers were one indication of the value and interest the participant group put into the photovoice section. This experience was successful in providing a platform for creativity and introspection for the participants.

The photovoice and associated photo elicitation interview findings show important similarities and variation between both the Atlanta and Trinidad and Tobago communities' perceptions of health and wellness. Several key themes were salient at the same level in both locations. Others were salient, but at different levels depending on the community. There were also a few key themes that were only significant in one location. Photovoice and photo elicitation also demonstrated that, although a general theme was common and equally significant in both locations, the types of photos, the meaning behind the photos and theme were sometimes quite distinct in each community.

Figure 5.1 shows the significant themes divided by location, based on descending salience in the Atlanta community. The three most significant themes in both locations

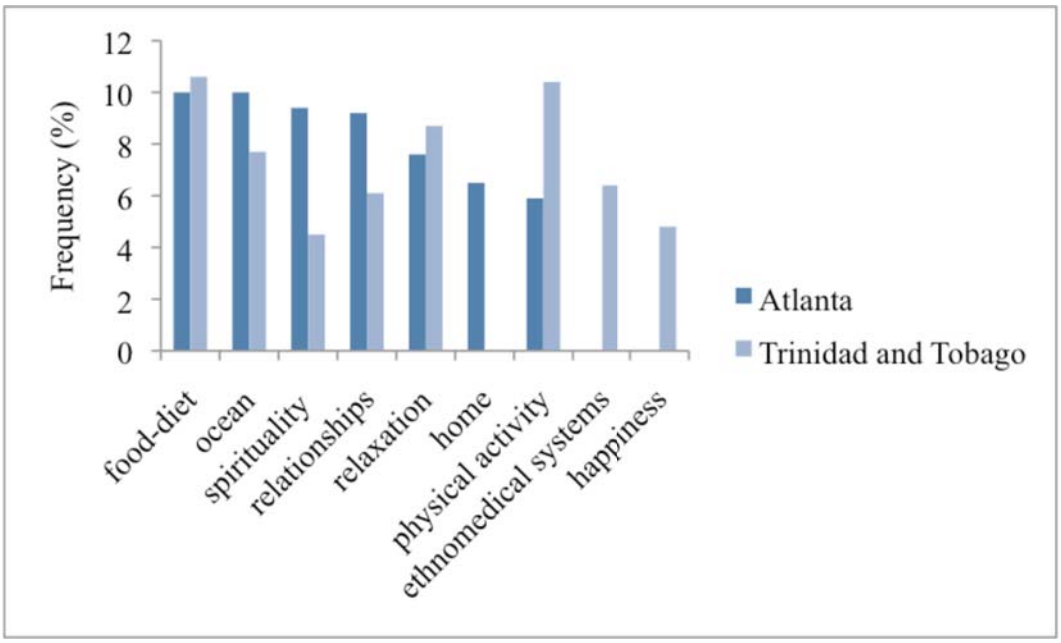


Figure 5.1 Salient health and well-being perception categories by location

were *food*, *ocean* and to a lesser degree *relaxation*. Themes that were salient in both locations, but at different levels, included *physical activity*, *relationships*, and *spirituality*. Three other themes were important, but only in one location and these were related to *home, ethnomedical systems* and *happiness*. Below, I present findings on these themes, how they are similar across locations and how there are subtle to significant differences in certain shared themes.

Food and diet

"That's a healthy sign that you could share a meal with your family and nourish your body so you could be healthy."

Related themes: Healthy choices, native culture, native cuisine, substitution and experimentation with other ethnic cuisines, whole wellness, balanced diet, and fresh foods.

Participants in both locations mentioned food and diet as a way to maintain health and well-being more frequently than any other theme. We have seen in other chapters that food and associated food traditions play a central role in Trinidad and Tobago culture (see discussion in Chapter 4). Through the analysis in this chapter, we see seemingly paradoxical representations and explanations of what is perceived as a healthy diet or meal by location based on a biomedical nutrition framework. Several participants mentioned eating a "balanced meal" or "healthy eating" with certain photographs (Appendix B, Figures 1 and 2). In the photographs, we see a mix of carbohydrates, protein, and vegetables, but not necessarily in the proportions expected for a single meal. There seemed to be a division in what is considered to be a "balanced meal" among the participants in both locations. One group of participants from both locations, took photographs of meals or foods that followed a biomedical understanding of nutrition standards (i.e. food pyramid). There was a clear understanding that more fiber, fresh foods, minimal fried foods, etc. should be included in a daily meal. The other group represented a balanced diet that included more foods and recipes that are culturally important. This way of eating is usually not ideal nutritionally. It included a combination of a high amount of refined carbohydrates, oily foods, salty dishes, and overly cooked vegetables in every depiction (e.g. rotis, fried plantains). This latter group associated a "tasty" meal with balance. Taste is a dimension associated with Trinidad and Tobago culture and cuisine.

Access to ingredients varied in the two locations. In Trinidad and to a lesser degree in Tobago, ingredients for local recipes were easily available in local open markets. The group that aligned healthy and balanced meals with nutritional standards

often included imported and packaged ingredients or elements (e.g. Nestle skim milk and granola cereal in Figure 2, Appendix B). In Atlanta, participants often resorted to substitution because ingredients were hard or impossible to find. For example, coconut powder is used, rather than making the coconut milk prepared at home from a fresh coconut. In other cases, substitution is used to be healthier in one's food choices, such as roasted chicken instead of fried chicken. A small group of participants with access to land tried to grow a portion of their food in the two locations (Appendix B, Figure 3). The overall thought is that the animals and harvests are healthier since the inputs to grow the products are known. Being able to grown their food is either going back nostalgic "old times" for some or simply reinforcing what they learned growing up and had never left. In summary, food is used for health and well-being at multiple levels from eating well based on knowledge obtained from childhood, information from recent healthy diet campaigns, or knowledge acquired at school; furthermore, cultural considerations and an inclination for tasty food also played a role in the conceptualization of health.

Ocean

"This is me, this is my go away place. This is my Zen place. This is where I find my center again."

Related themes*:* nature, relaxation, soothing, sense of home, memories, island identity, spirituality, therapeutic, detoxification, and relationships.

In both locations, the ocean was a powerful theme that emerged although it has distinct meaning in each place. The ocean holds a multitude of meanings for health and well-being in both locations. The following aspects were more frequently mentioned in

Trinidad and Tobago although mentioned in both locations: the salt water detoxifies the body, the sounds of the water are mentally soothing, and the participants believe that ocean water is healing. The sight of the lapping waves is relaxing and the massaging of the waves is therapeutic for the body in general.

In Trinidad and Tobago, the role of the ocean and water was important and access to the multitude of beaches is evidently much higher than in Atlanta located about five hours or a little under 300 miles from the closest saltwater beach. Several expressed that their relationship to the water was on a very deep level such as a young Trinidadian woman who commented, "The water is my element"; and she takes every opportunity to organize trips to the beach, despite the cost and safety of transportation to most beaches (Appendix B, Figure 4). Several linked physical activity, water sports to the ocean and its importance for being healthy. Many participants, who included the ocean as an important component of their beliefs about health and wellness, lamented the difficulty of access (travel time, cost of transportation, and safety of travel in Trinidad) and the infrequency of beach trips. Others incorporated the ocean into their daily lives despite living relatively far away from the ocean. A routine might include reflecting on one's blessings while looking out at the beach from a window every morning or doing meditation exercises to start the day centered.

In Atlanta, the ocean was equally important and often depicted in creative ways. They took photographs of photos, they took photos of nearby lakes, they just added in recent photos from trips to beaches (Appendix B, Figure 5). The ocean represents another set of unique elements to the Atlanta community including a sense of home (discussed below as a separate theme). It represented aspects of health and well-being in similar

ways to those described above, but in addition it represents home, a link to the Caribbean, and Trinidad and Tobago. The ocean brings back fond memories relating to enjoyment and relaxation, both important themes for health and wellness. As one young woman in Atlanta stated, "When I'm depressed, I like to go to some place where I can *see*." However, it was always clear that there is no real substitute for the ocean from home as one Trinidadian in Atlanta put it: "I never go in the water in the lake [in Georgia], because to be honest, apples and oranges, two different things. But the water, just being near the water, it's all I dream about. It's the happiest thing for me, being in the ocean water. But this is the closest thing we can get to here."

Participants have a special connection to the ocean and water that was not easy to verbalize, but was clear in the way participants looked for and searched for words to express the unique position the ocean holds in their construction of wellness. In Trinidad and Tobago the therapeutic elements of the ocean were more frequently verbalized than in Atlanta, most likely due to the easy access to the numerous beaches on the islands. In Atlanta, the ocean was an important construct of health and wellness that included memories, cultural identity, sense of place, peace, balance and happiness.

Relaxation

"*If you can, take the time to smell the flowers, the roses."*

Related themes: stress, socializing, rejuvenating, calming, peace, rest, travel, and vacation.

The theme of relaxation was important to the conceptualization of health and well-being in both Trinidad and Tobago and Atlanta. Throughout this study, the idea of

relaxation and one of its opposites, stress was frequently mentioned (see Chapters 3 and 4). In Trinidad and Tobago, people of all ages frequently mentioned how the pace of life and lifestyles have changed quickly leading to people and communities feeling more "stressed out" as they commonly put it. In Atlanta, life is not necessarily less stressful than it is for the Trinidad and Tobago community, yet feelings of stress and the need to incorporate elements of relaxation were less frequently mentioned. This community may be less prone to mentioning these two elements as part of health and wellness because they have incorporated a different mode of operation and stress is now more of a norm in what is considered to be a fast-paced American lifestyle. Another possible explanation is that as migrants, even transnational migrants, the stress of the migration experience is incorporated into everyday life from the time they move. The importance and recognition of stress and relaxation are minimized compared to their friends and family back home.

Relaxation was visualized in many different ways. Relaxation activities that promoted health and wellness are things one can do alone such as watching a movie, a television show, or listening to music to unwind. Resting was associated with these activities, but was also a distinct activity to bring the body and mind into calmness. A restful and rejuvenating sleep was often associated with relaxation by many in both locations. Other ways involved bringing the body into a state of relaxation through activities like yoga, massage, and meditation. Some took up activities that were both engaging, and relaxing such as crocheting, playing an instrument, or doing crossword puzzles (Appendix B, Figure 12). Relaxation and relaxing activities were mentioned as important to daily life. Other activities included spending time in nature or outdoors alone as like tending one's ornamental or vegetable garden, walking through one of the many

parks in Atlanta, or sitting in a secluded spot in the South of Trinidad (Appendix B, Figure 13). Being in nature was linked to serenity and peace and many would find a spot within these settings to sit and reflect. A minority went further in explaining the physiological benefits of lowering stress levels thanks to this connection to nature and relaxation.

Relaxation was also linked to social activities at home, with family and friends, or outside such as organized sports. Food, drink and music were included (Appendix B, Figure 14). For some, social activities had to be planned; for others these were impromptu. The element of celebration and enjoyment, by sharing with others, was reiterated by many participants. Relaxation for a select group, the more athletically inclined of the participants, was linked to exercise or other physical activity most of the time, such as a soccer game, or going to the gym with a group of friends regularly. The "stress free" or "decompressing" nature of these activities was repeatedly mentioned.

Physical activity

"To me [exercise] is supposed to be a serious part of your daily routine."

Related themes: exercise, fitness, strength, outside, social, and sweating it out.

Physical activity was a more significant theme in Trinidad and Tobago than in Atlanta in their perceptions of what health and well-being means. Physical activity was creatively photographed by many individuals and signified a range of health-related components. Physical activity as a solo or group activity, done indoors or outdoors is considered an important contributor to health and well-being. Exercise for physiological benefits was the most common characteristic link to health and wellness. Some

participants mentioned the cardiovascular benefits of exercising, while others connected it to increased mental capacity (Appendix B, Figure 6). Some meshed other attributes such as doing exercise and socializing at the same time, though this was mainly seen among the athletes in this transnational community. A number of participants in both locations play or played organized sports at some above a recreational level (e.g. league, college, national). Indoor physical activity usually in the gym setting was about exercise, fitness, burning calories in both locations (Appendix B, Figure 8). It was also about maintaining connections to a participant's people network. Others also found it important to exercise even outside their normal routine. One participant on a study abroad trip between the two interviews discussed that even though she was not in her usual element, she was having "fun and [burning] calories" running up and down sand dunes in Chile.

Many participants linked physical activity to being outdoors whether doing yard work, tending to a vegetable patch, hitting the pavement of the Silver Comet trail in Atlanta or routine walks around the perimeter of various savannas (recreational parks) in Trinidad. Sweating associated with physical activity was also linked to the humoral pathology to bring the body into balance for maintenance and illness prevention. As one man put it, "Sweat is important. Perspiring is important for health […] it gets rid of the toxic stuff in one's system" (Appendix B, Figure 7). Physical activity outdoors and the idea of "sweating it out" is associated with trying to get illnesses or toxins out of the system. Another participant in Atlanta said, "This is part of making sure that I stay active physically. […] I get a good workout. It allows me to sweat. The good thing about sweating is it purges my system of all that toxic by way of different prescriptions that I've taken. After I have excreted all this water, I feel better at the end of the day."

Relationships

"The connections created with people in all realms of life are important [to your health]."

Related themes: family relationships, friendship, fellowship, romantic relationships, work relationships, support, stability, happiness, emotional health, comfort, and happiness.

Relationships as a theme, was important in this community's health and well-being system although more so in Trinidad and Tobago than in Atlanta (see Figure 5.1). These relationships included family, friends, work, romantic and other relationships. People in the relationship networks were confidants, allowing others to share information in a safe environment. Individuals in participants' people network provided support and acceptance no matter what the situation. Acceptance was more often verbalized in Atlanta because family members or people from the same cultural background did not always live close by. The social aspect of relationships contributes to health elements including relaxation, forging and nurturing bonds created with other people in various environments. These included weekly dinners, activities outdoors, and group exercise, all of which relieved stress, strengthened social bonds, and allowed spaces to discuss politics and other events (Appendix B, Figure 9). Other events were intergenerational and meant to foster relationships between younger and older people: these included sharing memories and experience, and transmitting knowledge. These photographs taken which supported the theme of relationships included, but were not limited to maas camps (camps or headquarters for each team participating in the annual Carnival) that take place before Carnival in Trinidad, church outings and Atlanta-Trinidad-Tobago association gatherings.

Family connections were significant across locations, gender and age although women spoke of the importance of family more specifically and of the contribution of family doing fine for them to be well. One woman in Atlanta said, “When you relax and you’re among family, it makes you happy and that’s part of being.” Some of this theme’s photos were associated with events that were happy or significant to the participants like graduations, vacations, and family reunions. Others were of more daily or routine events. Women tended to include family photographs and comment that family meant the world to them and that knowing their immediate family was fine meant they were fine even if they were experiencing other hardships or physical issues that negatively impacted their health (Appendix B, Figure 10). Men also represented family relationships as significant to their health, but expressed the importance of family as making sure they provided everything materially necessary for family as well as the joy and comfort of sharing time and experiences with family.

Through the photovoice and photo elicitation exercise, participants reported that relationships contributed to health by creating joy, laughter, happiness and love. Many photos that represented relationships showed friends and family laughing. Other photos of relationships helped participants recall particularly joyful and happy memories. For others there was a feedback cycle between health and happiness: “When you’re healthy, you’re happy. I think once you’re healthy, it brings a mode of happiness as opposed to being ill and diseased and you can’t walk, you can’t move your limbs, you can’t eat all types of foods.” Comfort, stability and security provided through the relationships with people were commonly represented as significant contributors to health and well-being.

The elements of relaxation, familiarity and love of close relationships were important for health and well-being, an idea reiterated by many participants (Appendix B, Figure 11).

Spirituality

"*Spiritual basis and functioning, I think is very important to healthy lifestyle, healthy functioning."*

Related themes: individual and group religious activities, organized religion, lifelong journey, meditation, faith, religious and spiritual syncretism, and nature.

Spirituality holds a more significant place in the conception of health and well-being within the Atlanta community than for the Trinidad and Tobago community. It was the only theme common to both locations that was so distinct in its level of importance by location; in Atlanta nearly photographs of spirituality was the third most important theme (9.4% of the photographs) and in Trinidad and Tobago photographs of spirituality was much less important (4.5%) . Some participants reported that their religious or spiritual affiliations included Seventh Day Adventism, Self-Realization Fellowship followers, Hinduism, Christianity, while others were more amorphous or syncretic in their religious affiliation.

For some, spirituality was a way to follow to be healthy and well: as one young man indicated, church or religion provides a "guiding principle in how to live your life mentally, physically and spiritually." For others, spirituality was a place to access to meditate, and bring calmness and centeredness. Others saw spiritual enlightenment and god in nature in both locations (Appendix B, Figure 15). The beauty, serenity, balance of colors and other elements were mentioned as aspects of nature helping to instill calm and

balance. For the Atlanta community, it appears that religion or spirituality helps ground and guide an individual whereas in the Trinidad and Tobago community, going to church or practicing in a particular religion seemed to be a part of leading a moral life, especially among the older participants. A quotation from one participant summarized the general value of spirituality in this transnational community: “When you have a strong sense of spiritual being, it keeps everything in focus. … That helps your well-being because you have a sense of who you are, what you are about” (Appendix B, Figure 16).

Several participants included a number of religious elements in their personal spiritual and religious practice. The syncretic approach seemed to be a useful method for participants to find a personally meaningful way of including religion as an important element for health and well-being. Most participants indicated growing up in a religious household yet some mentioned things similar to this young lady in Atlanta “I’ve always grown up in a spiritual family … but recently, I’ve kind of started developing my own spirituality.” Another female participant had three photos out of sixteen that related to how various religions were part of her spiritual understanding and practice: a lotus flower was, “one of the beliefs I’ve adopted”, the Hindu symbol, or Aum, “Ties in with all my religious inclinations”, and the star of David was “another part of my studying.” Spiritual elements were in continuous development for a group of participants and so was the manner in which spirituality contributed to health and wellness beliefs.

Like many Caribbean nations, Trinidad and Tobago produces a high number of healthcare professionals that migrate to other locations, namely the United States to practice their profession. Most work in biomedical healthcare fields yet indicated a belief in the power of religion and spirituality in their interpretation of health and well-being in

their own lives. One participant, a professional in the healthcare field has a picture of a sign that said, “Pray without ceasing.” She went on to say that, “I think with prayer, anything is possible. It helps with health and well-being even if you health is bad. You could pray your way through it and it helps a lot.”

Sense of home (Atlanta)

“We try to have something reminiscent of our homeland.”

Related themes: Cultural connection, creating and seeking experiences in Atlanta through cuisine, the ocean, and participation in specific organizations and events.

Photographs depicting a sense of home represent an important category, but to a lesser degree and only for the Atlanta community obviously. This theme transected other significant themes already described in this section, but merited a category of its own because of the value the participants expressed when discussing the photographs and their links to their beliefs about health and well-being. A sense of place or home was seen in various elements such as food, participation in particular associations, and memories of the islands.

The ever-significant ocean interweaved pleasant memories of happy times spent with others or in solitude, enjoying the multiple therapeutic benefits of the salt water, waves and ocean sounds with the critical connection most had to the ocean and its surroundings. For those in Atlanta, the ocean “reminds me of back home. That’s the number one thing … [it] is my getaway.” If not a getaway, a place that reminds them of balance and serenity, it took many back to pleasant memories of their childhood or simpler times (see Appendix B, Figure 17). Some participants focused on selecting

vacations destinations to be at the beach if they were not going “home” because of the sense of comfort and familiarity of being near the beach or in the ocean. Others chose to live near a river or lake in Atlanta: even if it is “apples and oranges,” it was better than being “completely landlocked.”

The value of a cultural connection for a sense of well-being was expressed by many in the Atlanta group in a variety of ways. Due to the relatively small size of the community in Atlanta, the multitude of ethnic, religious and cultural backgrounds within the small community, the connection to home appeared to be elusive sometimes. In addition, the dispersed nature of the small community in Atlanta may have made it more difficult to have a sense of community. The community was adventurous as they searched for elements of home throughout sprawling Atlanta, such as ingredients to make authentic Trinidadian or Tobagonian recipes. For some, the connection to home is a person or association in Atlanta. Some would contact a friend living in Atlanta from back home to remind them of their connection to Trinidad and Tobago. Others depicted the cultural link to home with celebrations such as Caribbean heritage month, which included not only Trinidad and Tobago, but also many other islands of the region. Even though most are staunchly proud of being Trinidadian and/or Tobagonian, they also embraced the larger Caribbean community of Atlanta.

Food was another facet through which participants sought to keep a connection to home. Although many related the nutritionally unhealthy aspects of many dishes from home, the cultural value outweighed this aspect. A typical Sunday meal they prepared at home was a way to “try to have something reminiscent of our homeland.” Others tried to balance their understanding of a nutritionally balanced diet from public health campaigns

and what they fondly remember from growing up back home. However a balanced meal was important as illustrated in Figure 18 (Appendix B). Others tried to grow ingredients, usually herbs and vegetables from home that were difficult to acquire in Atlanta. The seeds or plants they got through creative, if informal avenues. Many were "proud to have it […] it's a good feeling just to have it in your garden." They loved to grow these culturally significant plants in their gardens and reap the rewards, months later, and use the harvests in their cooking (Appendix B, Figure 19). The various aspects illustrated to represent this link have the common theme of a sense of home that is not necessarily bound to place but, more significantly represents an affiliation between people, elements and experiences that are common to this group as a whole.

Ethnomedical systems (Trinidad and Tobago)

"I use the hibiscus for cooling. I use it especially in the dry season time, when, because of the spices that we eat as East Indians, more likely to get rashes and all of that."

Related themes: home remedies, local, cleansing the body, ethnobotany (bush), local plant experts (bush doctors), ethnomedicine, and local healers.

Ethnomedical systems is a theme that emerged as important at a secondary level only in Trinidad and Tobago. This theme includes local medicinal plants, home remedies and other more general practices directly linked to health and well-being reflecting local knowledge and behavior. The lack of high significance of this theme in the Atlanta community is due to a number of scenarios. It likely indicates that there were additional healthcare opportunities in Atlanta and a lack of access to practices and materials from back home, thus indicating a shift away from ethnoecology of health in their construction

of health. Knowledge of ethnoecology of health is faltering and its significance is shifting in Atlanta (see Chapter 3). Although Trinidadians and Tobagonians spoke of the disappearance of local traditions, many still used them and this aspect was important to their representation of health and well-being. However, the decrease in knowledge transmission and contemporary use highlights a shift in categories and significance in this transnational community. This is seen in part in the section above on "sense of home."

For this category, trees, flowers and plants in general that had local medicinal and health values were photographed. Various depictions of the coconut were presented in both locations: the tree as a whole, the jelly of a young coconut, coconut water, and coconut vendors (see Appendix B, Figure 20). The coconut is a highly valued plant for general health in Trinidad and Tobago. The coconut is said to have a general cleansing effect, especially good for the kidneys in addition to being a refreshing and safe liquid to drink if potable drinking water is not accessible. The jelly is thought to be healthy as well. When mature the coconut is used in many forms in most food recipes. Coconut oil is also highly valued as a skin moisturizer, and as a base to be mixed with many other elements, many times the extract of medicinal plants specific to the health condition at hand.

Other medicinal plants were described for their specific uses, but at the same time served as a platform to discuss how grandparents and parents did things in the old days (Appendix B, Figure 21). Many people lamented the loss of practice and knowledge within their generation and youth currently. They also mentioned how hospitals were not accessible or available, and how older generations enjoyed good health and were long-lived in general. However, several commented on the resurgence of interest in natural

health and healing practices in recent years. These health practices are not always local and are more closely linked to what is in fashion. Figure 22 in Appendix B is a tea made up of a combination tea mixed by the participant who happens to be a naturopath by profession. His practice encompasses his training from courses taken in the U.S., knowledge acquired from various local healers in Trinidad and Tobago and a definite religious element.

Locally grown foods were often photographed. For instance, uncultivated plants that are part of the local ethnomedical system were photographed. Other photos were of local varieties of plants serving as nutrition and medicine. Some plants depicted were used as seasonings too, represented local culture, and had various benefits and uses. As the community envisions health in a more inclusive way, the simultaneous multiple use of a plant is common. For instance, shadu beni (*Eryngium feotidum*) is a popular seasoning that must be used fresh and grows widely in Trinidad and Tobago, yet is also commonly used for its cooling properties. Although this is a plant attributed to the East Indian heritage population, the use of this plant is widespread through the whole population and is used to add flavor, but also for a variety of health benefits. In general, the community sees health in a more holistic manner: as one man mentioned, for him, all herbs are good for your health.

<u>Happiness</u> (Trinidad and Tobago)

"Live, laugh, love [...]I think that is just a whole combination of health and well-being."

Related themes: joy, laughter, contentment, family, friends, balance, and relationships.

Happiness was a salient theme at the tertiary level for the Trinidadian and Tobagonian group. Happiness was often correlated to other significant themes such as relationships, relaxation or lifestyle. Happiness was also described by the Atlanta group, but it was not as frequent or as an exclusive theme. Happiness in general, was described by many as an important element in the pursuit of being well and healthy.

Many participants took photos of people laughing, friends, family or something that invoked a memory of a funny moment or made the participant laugh (Appendix B, Figure 23). As one young Trinidadian said, “At the end of the day, make sure that ya laugh!” Others mentioned combinations of the common expression that “laughter is the best medicine.” The gist of an overall lifestyle goal was not only balance and simplicity, but also enjoyment and laughter.

Others gave a more measurable description of the role of happiness and laughter for one’s health. One Trinidadian woman included a scientific and molecular level explanation in her description of the importance of laugher as she took photos of happy times. This Trinidadian participant again emphasized the general health benefit of a “merry heart.” but also specifically describes increase in endorphins levels related to feelings of happiness. Another related the vital importance of happiness and joy especially as a child develops and even mentioned the inverse relationship between getting older and frequency of laughter.

The health benefits of happiness were linked to social interactions (Appendix B, Figure 24) and nature (Appendix B, Figure 25). The simplicity and beauty in nature made some smile and also relieved stress levels. The “special feelings” created by many locations in Tobago or the small islands nearby were important to a few Tobagonian

participants as part of generating their happiness and peace. Nature and social interactions like hiking or going to the beach with family and friends were sometimes depicted in photographs of happiness (Appendix B, Figure 23). Other social interactions marked the importance of joy of others, and not just the physical health of others. Most of these photos depicted the participants' children laughing or smiling. The importance of a person's child's joy and contentment was a salient theme linked to relationships, as this reflected one dimension of health. Happiness is important to the construct of health and well-being with a wide range of depictions of elements in participants' environments that reflect or generate happiness.

Discussion and conclusion

Research on community perceptions of health and well-being reveal that elements constituting health and wellness are not always equated with mainstream biologically and pathologically based definitions of health (Izquierdo 2005, McMullin 2005). Ethnographic approaches highlighted in anthropology are key in examining local perspectives of constructs like health and well-being. However, a purely narrative-based approach is not always suited to the community at hand or to particular research interests. The incorporation of other established approaches could reveal additional layers and subtleties in the examination of certain issues like concepts of health and well-being.

This chapter examined the conceptualization of health and well-being among the Trinidad and Tobago and Atlanta community through photovoice and photo elicitation. Key findings discussed in this section include an examination of the most salient themes in both locations: food-diet and the ocean. Then, I discuss emerging differences between

both locations. Important themes to both communities are not equally significant or conceptualized. Then I discuss the growing divergence in health and well-being conceptualizations between the two communities. I finish by discussing the limitations and value of the approach used to determine perceptions of health.

Food-diet as an important theme related to health was found in the health behaviors of both communities (Chapter 4). However, examining the photos illustrates variation within what people thought of as important foods to maintain health and well-being. A few examples of food shown in Appendix B reveal what healthy eating and good eating looks like and means for these communities. Healthy eating was more aligned with Western ideas of nutrition like the familiar U.S. food pyramid. This theme included a lot of ingredients or foods that are not locally produced, like low-fat dairy products, high fiber cereals and weight-reduction products. Many of these foods must be imported or processed and/or purchased in larger supermarket, rather than local markets or green grocers. Good eating was more aligned with local recipes and concepts of nutrition where a baked fish, a small serving of fried plantains, rice, and a small serving of fresh salad represented a typical healthy and tasty meal. At the same time food environments and food behaviors have changed relatively quickly for the majority of the population with the recent nutritional transition (Gulliford, Mahabir, and Rocke 2003). The different roles of food and the types of food available have changed, too, where fast food—whether international chains or local chains—is popular despite its high cost.

In Atlanta, we need to consider the additional role that food-diet represents. Although participants discussed trying to eat healthier, foods from home were important. However the difficulty in accessing the “right” ingredients was sometimes a deterrent.

Also, the time needed to prepare a lot of dishes was another factor which meant that dishes from home using family recipes were not followed. Others would get their dose of Trinidadian and Tobagonian food at the few Trinidadian restaurants around Atlanta. In this way, the frequency of indulging in foods that were not nutritionally healthy, yet culturally nutritious was contained. As suggested in discussing findings in other chapters, participants may emphasize healthy dietary habits and following nutritional rules because of the project's focus on health and well-being. It would be interesting to see if there are significant differences and if so, what type of differences between food preferences and actual food intake in future studies.

The ocean is another highly relevant element in the construction of health and well-being in this transnational community. However, there is a clear divergence in the meaning and place that the ocean and its surrounding elements hold for the Atlanta community. The place of the ocean and associated elements is linked more to memories and a sense of cultural identity for the Atlanta community. Many have found creative ways to remember the ocean, even though they reside primarily in landlocked Atlanta. The strong attraction to the ocean and beach was depicted in multiple ways. It could be by scheduling all out of town trips to ocean destinations, even if they are not going to Trinidad and Tobago. Others organize outings to the various lakes and rivers in Georgia or choose to live near a lake or river setting in order to be near the water if the ocean is not attainable.

The ocean is much more than an islander's link to home: it is a central part to certain lifestyles. In Tobago, the smaller and more rural island, the beach and ocean are never far. Getting sustenance from the ocean on a daily basis personally or going to the

local fish market is common and preferred. This may take more time and effort, but many denounced the lack of fresh fish on the larger island, indicating a range of perspectives even between the two islands. Overall in Trinidad and Tobago the ocean represents a key element in the multiple layers of therapy it provides, from being in contact with the water to absorbing its benefits through other senses. It is often a site where the contemporary busy Trinidadians and Tobagonians go with friends and family to relax. This is perhaps more appropriate to Trinidadians who live on a larger island, with a lot more traffic, longer commute times, sparse public transportation to beach locations and a general increasing fear about personal security. The significance of the ocean to the encompassing health belief system of this community is aptly described using photovoice and photo elicitation.

Physical activity is another common significant theme to both communities although its level of significance by location varies as does the conceptualization by location. Through the multiple media employed, we see that physical activity is about trying to be fit and increase healthy habits. It is also linked to health and well-being as it is often associated with being with others and sharing time with other people in an individual's social network. The setting can vary from personal and community gymnasiums, to soccer fields, hiking and other outdoor activities. Participants did not necessarily participate in physical activity as much as they thought they should, but to the community as a whole it is an important part of health and well-being. I found it interesting that activities outdoors and with other people were mentioned by many participants in both locations. However, general health statistics including my measurements for this community indicate that the population is generally overweight.

Understanding the role that physical activity has played and how it is transforming in both locations is significant. For instance, in Trinidad, the more hectic pace of life and the increasing security issues have drastically affected health practices of the participants of this study. In Tobago, going to swim or hike is much more attainable and practiced. In Atlanta, many participants tried to make time to go to parks, join a gym, create a gym at home, or incorporate physical activity near the home. Those who recently moved to Atlanta commented on the difficulty of getting around without a car or some sort of motorized transportation making physical activity another element to add to their schedules instead of it being included within their normal daily routine.

Other themes were salient, but appeared to be so in only one location, further proving a growing separation in the conceptualization of health and well-being between these communities. Ethnomedical systems, sense of home and happiness were significant to only one location. Lifestyles in both locations varied widely and even within each community, experiences of health and what represents wellness could potentially vary more than across locations. In line with findings on ethnoecology of health status (Chapter 3), loss of local knowledge and lack of knowledge transmission is happening in both communities, but more so in Atlanta. Local ethnomedical materials and experts are difficult to find. The older generation, depending on their own history, may not be imparting all the local knowledge they know to the younger generations. Since they may be outside of the environment in which they grew up, transmission of knowledge is more selective. On the other hand, we see how cultural and local knowledge is still significant in Trinidad in the sense of home theme. In fact, this theme includes many dimensions like food, cultural events, and keeping in touch with changes on the islands. So the knowledge

may be more general and the local knowledge is shifting categories or themes in the transnational Atlanta community and not merely being lost.

The results indicate that the use of photovoice coupled with photo elicitation was valuable in enabling a broader and deeper understanding of the significant elements that shape the complex web of health and well-being perceptions of the transnational and native home communities. This approach allowed us to see the differences in similar themes by location and examine themes relevant to only one location. The depth of analysis would not have been possible using a survey or in an interview setting. The use of a different medium, photography, was valuable in exploring dimensions such as happiness and sense of home, dimensions that were not well understood through other methods (see Chapter 3 and 4). In addition, the majority of participants embraced this method as seen in many photovoice projects. Analysis of the photographs with associated narratives gave participants freedom and power to produce what they chose to depict. This combination of methods can fall under the goals of participatory research methods, which was part of the original intention for photovoice.

For this particular setting, however, it was necessary to reevaluate the photovoice method from Wang's formulation. For a community-based participatory method, her explanation of the method is quite formulaic and although invaluable to this study, could not be used as it was originally described (Wang and Burris 1997, Wang 1999). First, because this study focused on a transnational community, it was necessary to allow participants to include photos beyond their surrounding environment. I emphasized that it was preferable for the participant to take photographs in their current environment and many decided to get creative in photographing what represented health and well-being for

them. This was especially significant for the community living in inland Atlanta since the ocean, the sea, and related elements formed a particularly salient theme, yet were not readily accessible in Atlanta. In this study, as in many qualitative studies, I attempted to provide sufficient guidelines while not wanting to constrict participant data production. As a result, the data I obtained falls into a much larger range than predicted. In the case of this participatory method, the photovoice methods used had to deviate from the initial guidelines to fit the particular setting (Castleden, Garvin, and First Nation 2008).

I was pleasantly surprised at the interest participants showed during this exercise. Many went out of the way to complete this "homework assignment" taking it very seriously and enjoying themselves at the same time. Some participants opted to use their personal cameras. Others were excited about using a digital camera for the first time. Some had not used digital technology much and were worried about breaking the camera I provided. Beside the varying reactions to utilizing photographic equipment, many were concerned with the limited timeframe they had to take the photos and others were worried about the limitation I set on the numbers of photographs they should take. In general, both communities were enthusiastic about taking photographs and participating in this take-home assignment, although a few indicated they simply did not have the time to take photographs. Some within this latter group suggested an alternative that included searching for photographs from their digital albums, while others declined to participate in this section of the project. I was impressed with the artistic ability of the participants, with their eagerness to participate despite little direct reward to them. I was most impressed by the insightful comments participants offered during the photo elicitation phase of this exercise. Through their photographs, participants revealed many more

layers and connections between elements depicted in the photograph, their realities and the links to health and well-being than they had during the purely interviewing stages of the research. This methodology was the most exploratory phase of the research project and one that succeeded in both entertaining and keeping the participants fully engaged from start to finish.

The salient themes of this community's perceptions of health and well-being reveal the wide range of dimensions and the multiple layers within each dimension that make up this construct. These findings can contribute to projects directed at improving the health of this community by addressing key concepts that are manifested in health knowledge and practice as well. The approach used was valuable in encouraging introspection from the participants. Because the photovoice method shifted the focus away from the participant to the participant-produced photographs, the tension of being in the spotlight was diminished and participants were proud to focus on the photographs and stories associated with them. With modification, photovoice and photo elicitation can significantly add to health studies by allowing an alternative to the traditional interviews or surveys. At the same time participants take more ownership and invest more when they are more equal players in a project, even if the end goal does not reach policy level change. This chapter provides evidence of the value a deep understanding of health and well-being perspectives to better understand the beliefs and realities of particular communities from a more emic perspective.

CHAPTER 6

CONCLUSIONS

The goals of this dissertation were to examine the ethnoecology of the Trinidad and Tobago and Atlanta transnational community, specifically focusing on changes in health knowledge and perceptions that influence health behavior. This is significant in order to advance one current trend in ethnoecology that examines the transformations of knowledge systems in urban, migrant and global settings. This study is also important as transnational migration is a more common strategy undertaken by international migrants worldwide. However, the effects of transnationalism on health and well-being remain unclear, although investigating these effects has important implication to migrant health, health policy change, and applied health studies.

In order to answer the research questions posed, this dissertation had the following objectives: 1) Document selective areas of the ethnoecology of health of the transnational Atlanta and Trinidad and Tobago community; 2) Compare health status and the state of ethnoecological health; 3) Create health networks to examine patterns of health practices; and 4) Evaluate the beliefs about health and well-being within the study population.

In this conclusion, I discuss the following findings that address the objectives delineated above. 1) There is a disjuncture between the health status as determined by physical assessment and self-evaluating measures. Atlanta transnationals perceive their

health to be superior, whereas the physical results indicate poorer health compared to other immigrant communities. 2) Although there is a general loss of situated knowledge occurring in both sites, a variety of transformations are taking place in Atlanta indicating the persistence and value of situated knowledge. 3) Place is important in two distinct ways. The physical location or distance of health resources is significant to health practices. A sense of place is one driver behind many health choices made by the Atlanta participants. 4) The use of mixed-methods to evaluate health practices and beliefs were important in defining and examining elements of the ethnoecology of health within a transnational context.

These objectives and findings continue to advance core elements of anthropology in assessing the variability, diversity and evolution within a specific community, focusing on the insiders' viewpoint in the description and analysis of health and well-being. Specifically, this study examines the types of transformations that are occurring in the ethnoecology of health. Findings suggest loss, maintenance, as well as multiple types of shifts are occurring. These findings support results in other urban ethnoecology and transcultural health studies (Casagrande 2005, Ceuterick et al. 2008, Pieroni et al. 2005, Pieroni and Vandebroek 2007, Volpato, Godínez, and Beyra 2009). Transnational health networks are important health strategies for certain migrant communities (Gastaldo, Gooden, and Massaquoi 2005, Hilfinger Messias 2002, Menjivar 2002). This study purports the general finding that the transnational migrant benefits from living in two nation-states. However, the actual impact of the transnational state on health and well-being appears to be more oppositional. This study offers a perspective that can be

compared with other communities as we seek to understand and solve human problems where knowledge transformations, health, urbanism and migration interplay.

In this dissertation, ethnoecological and biocultural perspectives frame the study of the ethnoecology of health in the Atlanta and Trinidad and Tobago transnational community. This first chapter introduced Trinidad and Tobago with an overview of its current and historical context, ethnic and migration histories, and healthcare environment to contextualize one end of the transnational community of interest. Furthermore, this two-island nation is in the Caribbean region where the current phase of transnational scholarship developed. Atlanta is the other site and represents one of the recent inland gateway immigrant cities in the U.S. and these cities are becoming significant sites of research reevaluating classic migration models. In combination, the multi-sited approach employed in this study is useful given the limited size and relatively recent development of the Trinidad and Tobago community in Atlanta. Tracing participants back to their friends and family living in the islands was relatively feasible allowing for a useful and insightful platform for comparison to evaluate differences and changes taking place.

Ethnoecology of health focuses on the transformations of local knowledge and beliefs through experiences and their manifestation in health behavior. Place, which includes culture and environment broadly conceived, influences the local lens. In this case study, place transcends nation-states and the lens through which the Atlanta community sees and operates becomes a transnational one. This study clearly demonstrates the complexity of place and space for health. For instance, place is important as seen in the significance of a sense of home in the conceptualization of health for the Atlanta community. In examining health practices through health networks and

narratives, place again appears as an influence behind the choices made in health resources physically accessed by the Atlanta transnational community.

The theoretical areas of focus discussed in the introduction and literature review chapters include ethnoecology, migration, biocultural health and place. Ethnoecology, with its center on culture and environment, is constantly fluctuating and tested on the ground (Nazarea 1998, Nazarea 2005). Cultural memories, and practice of local knowledge that are most salient to users are critical in maintaining biodiversity and conservation, whether for survival or as acts of resilience in the face of multitude of external forces that facilitate the decimation of local environments and cultures (Nabhan 1989, Nazarea 2005). There are various scholars who underscore the importance of biodiversity for human health and healing systems globally and illustrate how these produce a feedback cycle (Grifo and Rosenthal 1997, Maffi 2001).

Place is another factor that is seen as significant to health and well-being of individuals in communities (Gesler and Kearns 2002, Gupta and Ferguson 1997, Panelli and Tipa 2007). And a place-based approach to health is valuable in understanding the human-environment context within which health and well-being are produced. Yet in an international migrant context, local knowledge systems transform in perhaps more drastic ways since the host context can be significantly different than the native context (e.g. rural-urban or tropical-temperate). These shifts are difficult to expose and disentangle as local health systems in migrant settings are often quietly accessed or deliberately hidden. Certain elements may become more important, identity may become more significant, and creativity is a common exercise in the pursuit of culturally acceptable health and well-being. Ceuterick's (2008) and Pieroni's (2007) articles are two examples in which

some of these changes are closely examined: substitution, maintenance and addition to the Colombian and Turkish migrants' ethnomedical practices. In chapters three, four and five, specific areas where various combinations of the intersection of these four concepts occur are examined in studying the ethnoecology of health in the Atlanta and Trinidad and Tobago transnational community.

Chapter three addressed ethnoecology of health by looking at two areas, health assessment and knowledge status in both locations. A key finding shows the discrepancy between physical health status and self-rated health status in the Atlanta community. The ability to maintain active ties to the home community may lead to an inaccurate reading of personal health. I found a disjuncture between results of physical and self-determined health assessments. This was more pronounced in the Atlanta participants than among their friends and family in Trinidad and Tobago. The studies on transnational health networks indicated the value and significance of these networks due to restricted access to healthcare resources in the U.S. (Gastaldo, Gooden, and Massaquoi 2005, Hilfinger Messias 2002, Menjivar 2002). These studies examine the importance of a transnational approach to healthcare, however all of these focused on qualitative health measures. For example, Hilfinger Messias' study (2002) on Brazilian women's transnational health networks and Menjivar's study (2002) on undocumented Guatemalan women's health seeking behavior find that the main benefit of living in two nation-states for health is due to the insurmountable obstacles to formal healthcare in the U.S. The social well-being may be enhanced by transnational ties, and to a certain degree physical health, but overall health and well-being in a transnational context is not well understood yet.

The status of ethnoecology of health is also examined in this chapter specifically looking at health resources and plants. A key finding indicates that loss of knowledge is taking place across both sites. The general loss of local knowledge in native settings has been documented in studies around the world (Maffi 2001, Wester and Chuensanguansat 1994). However in Atlanta, transformations are also taking place that suggest the continued value of local knowledge and culture. Some plants are shifting categories; they are no longer easily accessible but have become mainly cultural symbols or symbols of ethnic identity. Other elements are being substituted when possible. Transformations in ethnobotany and ethnomedicine in urban and migrant communities has been documented in recent studies that find similar transformations occurring (Balick et al. 2000, Ceuterick et al. 2008, Pieroni et al. 2005, van Andel and Westers 2010, Volpato, Godínez, and Beyra 2009). Studying the dynamics in ethnoecology seen in this and other recent studies is important as global exchanges will continue to exert their influence at home and in migrant communities. The increasing ease of various types of exchanges is making it possible to retain important elements from home that can promote health and wellness; Trinidadians and Tobagonians can go to large international farmers' markets in Atlanta to find more fresh vegetables from home than ever before. The migrants' choice of retaining and shifting their local knowledge systems may be overt or subtler acts of resilience, while also adapting to the host culture. As transnationals have more opportunities to maintain links to home, their position along the continuum may change even more frequently than other types of migrants.

Chapter four investigated health practices by creating individual health networks using GIS complemented with geo-narratives. The findings indicate that a multilevel

health approach, which included using elements from along the naturopathic to biomedical spectrum, in their environment of medical pluralism was ubiquitous across gender, age and geography. These findings are supported by numerous immigrant health studies and studies of indigenous health behavior around the world (Leslie 1980, Montenegro and Stephens 2006, Pickwell 1999, Sussman 1981, Whitaker 2003). One important finding of the study of health resources was the significance of the proximity between health resource and the participant's household in both communities. A large proportion of health resource locations, whether they were for health maintenance, illness prevention, or curative treatments, were located close to the household. For women, food-diet, exercise and social-personal health network resources were the most significant categories and they would travel further distance to access these resources. For men, food-diet resources were significant, but biomedical resources were also important and they would travel longer distances to reach these resources. The narrative analysis added a layer of understanding to the trends found in the GIS network analysis, specifically uncovering drivers behind some of the health practices. Among the salient themes a sense of place, specifically items linking to "home" emerged for the Atlanta participant geo-narratives. Although similarities across gender and locations exist, Atlanta participants were selectively including elements from their current space that linked to home. Many included social links to home as part of their health network, like weekly meals with the Trinidadian social network or "skyping" with Tobagonians living in the states or being active in Trinidad and Tobago associations based in Atlanta. The sense of place was a key factor in their everyday experience and health practices, and participants creatively included this element as it was fount at various levels of their healthcare networks.

Chapter five investigated what health and well-being looks like from a transnational perspective from the eyes of the community. The results indicated that a number of similarities in salient themes representing health and well-being in both locations: food-diet, the ocean and relaxation. There were variations in the significance of certain themes by location when examining factors relating to perceptions of health. For instance, the overall belief in a healthy diet was not equal across locations. Physical activity, spirituality and relationships were other important themes in both locations, but at different levels. A few themes emerged as significant to only one of the two locations. For example, sense of home was a significant theme only for the Atlanta community's conceptualization of well-being. Although there are similarities in the highly significant elements in health perceptions across locations, there are differences suggesting a shifting in the foundation of how health is perceived in the transnational Atlanta community. For instance, happiness and ethnomedical system themes do not appear as significant themes for Trinidadians and Tobagonians residing in Atlanta. Although they maintain active and substantial ties to home, there is a distancing from the local health system. The difficulty in finding ethnomedical practitioners and limited access to adequate ethnobotanical materials in the relatively small community in Atlanta are factors to consider. The complementary approach of photovoice and photo elicitation was critical in adding depth to the understanding of key themes in addition to clarifying varying dimensions within the themes that make up this transnational community's perceptions of health and well-being.

The last point reinforces that a mixed-method approach was critical in examining the ethnoecology of health of this transnational community. The GIS networks coupled

with the geo-narratives was necessary to not only visualize and analyze health practices, but also to understand certain driving forces behind health resources accessed. For instance, lifestyle and a balanced approach to health influenced the choice in many participants' health networks. Chapter five addressed perceptions of health and well-being using photovoice and photo elicitation and the combination of these methods allowed for increased levels of participation and an additional data medium. The findings reveal the more subtle differences in similar salient themes across locations that most likely would not have been exposed without this reflexive approach. The value of photovoice to anthropology is evident as the principles on which it is developed are closely aligned with core elements of anthropology. These elements include trying to understand variation in human representational systems, elucidate an insider's perspective, and examine shifting power dynamics while also contributing to material culture and data production.

In the context of the Atlanta and Trinidad-Tobago community, the use of mixed-methods is important for several reasons. First, there is no published documentation of the Atlanta community; second, the value of documenting knowledge, beliefs and practices, even if it was not comprehensive, is an important measure for future research. For the Trinidad and Tobago community, ethnoecology studies have focused on selective areas such as work on women's health or ethnopharmacy and other studies are dated (Lans 2001, Lans 2006, Mahabir 1997). Third, the use of these combined methods can add valuable data in applied health studies that seek to determine and address health problems in specific communities. For instance, similar methods to those employed in chapter four can be used to understand and improve refugee women's health practices in

Atlanta, Georgia. These methods can be feasibly included in applied health projects that are larger scale than this study to add valuable layers of understanding of the communities at hand and potentially improve outcomes for the individuals in these studies.

However the mixed-methods presented a number of points of improvement. In chapter 4, the network analysis with the current geodatabase setup is currently unable to measure locations between Trinidad and Tobago or out-of state and international locations for the Atlanta community. The integration of GIS, health and the social sciences is developing, and this study exemplifies the potential in further refining a mixed-method approach in applied health studies. Regardless the combination of methods chosen, these will have to be modified for the specific participating community (Castleden, Garvin, and First Nation 2008). A number of other areas in this study would benefit from further development. Some studies have indicated that transnational health networks are a strategy to mitigate the lack of access to healthcare in the host setting, and other studies have discussed the health immigrant hypothesis. It would be valuable to further investigate how the state of being a transnational migrant influences health outcomes.

This study is consistent with anthropological inquiries seeking to comprehend the dynamics of human-environment relationships to specifically assess their impact on health and disease. This dissertation advances current trends in ethnoecological studies examining the multiple transformations occurring in migrant, transcultural and urban settings. It also contributes to immigrant health studies in understanding the multiple roles of a particular migration state—the increasingly common transnational strategy—on

health and wellness. In a fluid and dynamic transnational context, separating the different elements that affect knowledge, influence perceptions, and in turn impact practices is key. Understanding the interplay of these elements is significant not only in further developing the newer areas of theoretical development like transnational or transcultural ethnobotany, but also in adding to useful approaches in applied local health efforts attempting to improve lives and livelihoods.

REFERENCES

2005. "Grow boxes for food security in Trinidad and Tobago."

Airriess, C. A., and D. L. Clawson. 1994. Vietnamese Market Gardens in New Orleans. *Geographical Review* 84:16-31.

Anderson, J. M. 1990. Work and Health: Considerations for Immigrant Women. *Anthropology of Work Review* 11:3-7.

Anselin, L. 1992. *Spatial Data Analysis with GIS: and Introduction to Application in the Social Sciences*. University of California, Santa Barbara.

Anthony, M. 1988. *Towns and Villages of Trinidad and Tobago*, 2nd edition. Marabella: Printmaster Limited.

Appadurai, A. 1988. *The social life of things: commodities in cultural perspective*: Cambridge Univ Pr.

Arcury, T. A., W. M. Gesler, J. S. Preisser, J. Sherman, J. Spencer, and J. Perin. 2005. The effects of geography and spatial behavior on health care utilization among the residents of a rural region. *Health Services Research* 40:135-156.

Armelagos, G. J., T. Leatherman, M. Ryan, and L. Sibley. 1992. Biocultural synthesis in medical anthropology. *Medical Anthropology: Cross-Cultural Studies in Health and Illness* 14:35 - 52.

Atlanta Regional Commission. 2005-2006. English-Speaking Caribbeans. *Global Atlanta Snapshots: A Look at Ethnic Communities in the Atlanta Region*:1-6.

Atran, S. 1985. The Nature of Folk-Botanical Life Forms. *American Anthropologist* 87:298-315.

Baer, H. A. 1996. Toward a Political Ecology of Health in Medical Anthropology. *Medical Anthropology Quarterly* 10:451-454.

Balick, M. J., and P. A. Cox. 1996. *Plants, people, and culture: the science of ethnobotany*. *Scientific American Library series ; no. 60*. New York: Scientific American Library.

Balick, M. J., F. Kronenberg, A. L. Ososki, M. Reiff, A. Fugh-Berman, B. O'Connor, M. Roble, P. Lohr, and D. Atha. 2000. Medicinal plants used by Latino healers for women's health care in New York City. . *Economic Botany* 54:344-357.

Balkau, B., J. E. Deanfield, J. P. Despres, J. P. Bassand, K. A. A. Fox, S. C. Smith Jr, P. Barter, C. E. Tan, L. Van Gaal, and H. U. Wittchen. 2007. International day for the evaluation of abdominal obesity (IDEA): a study of waist circumference,

cardiovascular disease, and diabetes mellitus in 168 000 primary care patients in 63 countries. *Circulation* 116:1942.

Banks, M., and H. Morphy. 1999. *Rethinking visual anthropology*: Yale Univ Pr.

Barrera-Bassols, N., and V. M. Toledo. 2005. Ethnoecology of the Yucatec Maya: Symbolism, Knowledge and Management of Natural Resources. *Journal of Latin American Geography* 4:9-41.

Basch, L. G., N. G. Schiller, and C. Szanton Blanc. 1994. *Nations unbound: transnational projects, postcolonial predicaments, and deterritorialized nation-states*. Basel, Switzerland ; Langhorne, Pa.: Gordon and Breach.

Bastien, J. W. 1992. *Drum and stethoscope: integrating ethnomedicine and biomedicine in Bolivia*. Salt Lake City: University of Utah Press.

Berlin, B. 1992. *Ethnobiological classification: principles of categorization of plants and animals in traditional societies*. Princeton, N.J.: Princeton University Press.

Berlin, B., D. E. Breedlove, and P. H. Raven. 1966. Folk Taxonomies and Biological Classification. *Science* 154:273-275.

—. 1974. *Principles of Tzeltal plant classification; an introduction to the botanical ethnography of a Mayan-speaking people of highland Chiapas*. *Language, thought, and culture*. New York,: Academic Press.

Bernard, H. R. 1998. *Handbook of Methods in Cultural Anthropology*. Walnut Creek, CA: AltaMira Press.

—. 2002. *Research Methods in Cultural Anthropology: Qualitative and quantitative approaches*. Walnut Creek, CA: AltaMira Press.

Blaxter, M. 2004. *Health*. Cambridge, UK, Malden, MA: Polity.

Blouet, B. W., and O. M. Blouet. 2002. *Latin America and the Caribbean: a systematic and regional survey*, 4th edition. New York: John Wiley & Sons.

Borgatti, S. P. 1994. Cultural domain analysis. *Journal of Quantitative Anthropology* 4:261-278.

—. 1996a. "ANTHROPAC," 4.0 edition. Natick: Analytic Technologies.

—. 1996b. *ANTHROPAC 4.0 Methods Guide*. Natick: Analytic Technologies.

—. 1996c. *ANTHROPAC 4.0 Reference Guide*. Natick: Analytic Technologies.

Brosius, J. P. 1997. Endangered Forest, Endangered People: Environmentalist Representations of Indigenous Knowledge. *Human Ecology* 25:47-69.

Brown, P. J. 1998. *Understanding and applying medical anthropology*. Mountain View, Calif.: Mayfield Pub. Co.

Browner, C. H., B. R. Ortiz de Montellano, and A. J. Rubel. 1988. A Methodology for Cross-cultural Ethnomedical Research. *Current Anthropology* 29:681-702.

Buddington, S. A. 2002. Acculturation, psychological adjustment (stress, depression, self-esteem) and the academic achievement of Jamaican immigrant college students. *International Social Work* 45:447-464.

Camarota, S. A., and J. Keeley. 2001. *The New Ellis Islands: Examining Non-traditional Areas of Immigrant Settlement in the 1990s*: Center for Immigration Studies.

Cameron, N. 2004. "Measuring growth," in *Methods in human growth research*. Edited by R. C. Hauspie, N. Cameron, and L. Molinari, pp. 68-107: Cambridge Univ Pr.

Carlson, E. D., J. Engebretson, and R. M. Chamberlain. 2006. Photovoice as a Social Process of Critical Consciousness. *Qualitative Health Research* 16:836-852.

Carlson, T. J. S., and L. Maffi. 2004. *Ethnobotany and conservation of biocultural diversity*. *Advances in economic botany; v. 15*. Bronx, N.Y.: New York Botanical Garden Press.

Casagrande, D. 2005. "Globalization, Migration and Indigenous Commodification of Medicinal Plants in Chiapas, Mexico," in *Globalization, Health and the Environment*. Edited by G. Guest, pp. 83-106. New York: Atlamira Press.

Castleden, H., T. Garvin, and H.-a.-a. First Nation. 2008. Modifying Photovoice for community-based participatory Indigenous research. *Social Science & Medicine* 66:1393-1405.

Catalani, C., and M. Minkler. 2010. Photovoice: A Review of the Literature in Health and Public Health. *Health Education & Behavior* 37:424-451.

Centers for Disease Control and prevention (CDC). 1988. "Body Measurement (Anthropometry)." Edited by C. f. D. Control. Rockville.

Centers for Disease Control and Prevention (CDC). 2009. *Behavioral Risk Factor Surveillance System Survey Data. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention.*

Ceuterick, M., I. Vandebroek, B. Torry, and A. Pieroni. 2008. Cross-cultural adaptation in urban ethnobotany: The Colombian folk pharmacopoeia in London. *Journal of Ethnopharmacology* 120:342-359.

Chakraborty, K. 2009. "The good Muslim girl": conducting qualitative participatory research to understand the lives of young Muslim women in the bustees of Kolkata. *Children's Geographies* 7:421-434.

Chang, T. C. 2000. Singapore's Little India: A Tourist Attraction as a Contested Landscape. *Urban Studies* 37:343-366.

Chapin, M., Z. Lamb, and B. Threlkeld. 2005. Mapping Indigenous Lands. *Annual Review of Anthropology* 34.

Chariandy, C. M., C. E. Seaforth, R. H. Phelps, G. V. Pollard, and B. P. S. Khambay. 1999. Screening of medicinal plants from Trinidad and Tobago for antimicrobial and insecticidal properties. *Journal of Ethnopharmacology* 64:265-270.

Chaudhari, L. S. 2007. "Patterns in health care knowledge and behavior in urban Trinidad and Tobago," in *Society for Applied Anthropology*. Tampa, FL.

—. 2009. Mapping health care networks in Trinidad: integrating ethnographic data and GIS. *International Cartographic Conference Proceedings*.

Chaudhry, S. 2008. Coming Home: Connecting Older Liberians in the Diaspora with the Family and Friends at Home. *Refuge* 25:60-68.

Chavez, L. 2003. "Immigration and Medical Anthropology," in *American Arrivals: anthropology engages the new immigration, School of American Research advanced seminar series*. Edited by N. Foner, pp. 197-227. Santa Fe: American Research Press.

Chavez, L. R. 1994. The Power of the Imagined Community: The Settlement of Undocumented Mexicans and Central Americans in the United States. *American Anthropologist* 96:52-73.

Chavez, L. R., E. T. Flores, and M. Lopez-Garza. 1992. Undocumented Latin American Immigrants and U. S. Health Services: An Approach to a Political Economy of Utilization. *Medical Anthropology Quarterly* 6:6-26.

CIA World Factbook. 2011. "Trinidad and Tobago," vol. 2011.

Clement, Y., A. Williams, D. Aranda, R. Chase, N. Watson, R. Mohammed, O. Stubbs, and D. Williamson. 2005a. Medicinal herb use among asthmatic patients attending a specialty care facility in Trinidad. *BMC Complementary and Alternative Medicine* 5:3.

Clement, Y., A. Williams, K. Khan, T. Bernard, S. Bhola, M. Fortune, O. Medupe, K. Nagee, and C. Seaforth. 2005b. A gap between acceptance and knowledge of herbal remedies by physicians: The need for educational intervention. *BMC Complementary and Alternative Medicine* 5:20.

Clifford, J. 1994. Diasporas. *Cultural Anthropology* 9:302-338.

Collier, J., and M. Collier. 1986. *Visual anthropology: Photography as a research method*: Univ of New Mexico Pr.

Conklin, H. C. 1954. An Ethnoecological Approach to Shifting Agriculture. *Transactions of the New York Academy of Science* 17:133-143.

—. 1961. The Study of Shifting Cultivation. *Current Anthropology* 2:27-61.

Connerton, P. 1989. *How Societies Remember*: Cambridge University Press.

Cooper, C. M., and S. P. Yarbrough. 2010. Tell Me--Show Me: Using Combined Focus Group and Photovoice Methods to Gain Understanding of Health Issues in Rural Guatemala. *Qualitative Health Research* 20:644-653.

Corlett, J. L., E. A. Dean, and L. E. Grivetti. 2003. Hmong Gardens: Botanical Diversity in an Urban Setting. *Economic Botany* 57:365-379.

Cromley, E. K. 2003. GIS and Disease. *Annual Review of Public Health* 24:7-24.

Crooks, D. L. 1998. "Poverty and Nutrition in Eastern Kentucky: The Political Economy of Childhood Growth," in *Building a new biocultural synthesis: political-economic perspectives in human biology*. Edited by A. H. Goodman and T. L. Leatherman, pp. 339-355. Ann Arbor: University of Michigan Press.

Cummins, S., S. Curtis, A. V. Diez-Roux, and S. Macintyre. 2007. Understanding and representing 'place' in health research: a relational approach. *Social Science & Medicine* 65:1825-1838.

de Heer, H., R. Lacson, and M. Shedlin. 2009. Voices and Images.

Dei, G., B. Hall, and D. Rosenberg. 2000. *Indigenous knowledges in global contexts: Multiple readings of our world*: University of Toronto Press.

Dey, A., and J. Lucas. 2006. *Physical and mental health characteristics of U.S. and foreign-born adults, 1998--2003*. National Center for Health Statistics.

Dressler, W. W. 2005. What's Cultural about Biocultural Research? *Ethos* 33:20-45.

Duany, J. 2005. The Rough Edges of Puerto Rican Identities: Race, Gender, and Transnationalism. *Latin American Research Review* 40:177-190.

Ellen, R., P. Parkes, and A. Bicker. 2000a. *Indigenous environmental knowledge and its transformations: critical anthropological perspectives*: Routledge.

—. Editors. 2000b. *Indigenous environmental knowledge and its transformations: critical anthropological perspectives.* Amsterdam Harwood Academic.

Ellen, R. F. 1993. *The cultural relations of classification: an analysis of Nuaulu animal categories from central Seram. Cambridge studies in social and cultural anthropology; 91*. Cambridge England; New York, NY: Cambridge University Press.

Etkin, N. L. 1986. *Plants in indigenous medicine & diet: biobehavioral approaches.* Bedford Hills, N.Y.: Redgrave.

Evans, R., G. Stoddart, and T. Marmor. 1994. "Producing health, consuming health care," in *Why are some people healthy and others not?: The determinants of health of populations*. Edited by R. Evans, M. Barer, and T. Marmor, pp. 27-64: Aldine.

Farmer, M. M., and K. F. Ferraro. 1997. Distress and Perceived Health: Mechanisms of Health Decline. *Journal of Health and Social Behavior* 38:298-311.

Foley, R. 2002. Assessing the applicability of GIS in a health and social care setting: planning services for informal careers in East Sussex, England. *Social Science & Medicine* 55:79-96.

Foner, N. 2001. *Islands in the city: West Indian migration to New York.* Berkeley: University of California Press.

—. 2003. *American arrivals: anthropology engages the new immigration*, 1st edition. *School of American Research advanced seminar series*. Santa Fe: School of American Research Press.

Foner, N., R. G. Rumbaut, and S. J. Gold. 2000. *Immigration research for a new century : multidisciplinary perspectives*. New York: Russell Sage Foundation.

Foster-Fishman, P., B. Nowell, Z. Deacon, M. A. Nievar, and P. McCann. 2005. Using Methods That Matter: The Impact of Reflection, Dialogue, and Voice. *American Journal of Community Psychology* 36:275-291.

Fowler, C. 1977. "Ethnoecology," in *Ecological anthropology*. Edited by D. L. Hardesty, pp. 215-243. New York: Wiley.

Frake, C. O. 1962. Cultural Ecology and Ethnography. *American Anthropologist* 64:53-59.

Gastaldo, D., A. Gooden, and N. Massaquoi. 2005. Transnational health promotion: social well-being across borders and immigrant women's subjectivities. *Wagadu Journal of Transnational Women's and Gender Studies* 2.

Gatrell, A. C., and M. Löytönen. 1998. *GIS and Health*: Taylor & Francis Ltd.

Georgia GIS Clearinghouse. 2009. "Map Data and Aerial Photography," vol. 2009.

Gesler, W. M. 1992. Therapeutic landscapes: Medical issues in light of the new cultural geography. *Social Science & Medicine* 34:735-746.

Gesler, W. M., and R. A. Kearns. 2002. *Culture/place/health*: Psychology Press.

Gesler, W. M., and M. S. Meade. 1988. Locational and population factors in health care-seeking behavior in Savannah, Georgia. *Health Services Research* 23:443.

Gladis, T. 2003. The neglected diversity of immigrant gardens in Germany - examples from Bonn *Schriften zu Genetischen Ressourcen* 22:108-120.

Glantz, N., and B. McMahan. 2007. Formative Research and Participatory GIS Mapping: Elder Well-being in Chiapas, Mexico. *Practicing Anthropology* 29:6-14.

Glick Schiller, N. 1999. "Transmigrants and nation-states: something old and something new in the U.S. immigrant experience," in *The Handbook of International Migration: the American Experience*. Edited by C. Hirschman, P. Kasinitz, and J. DeWind, pp. 94-119. New York: Russell Sage.

Glick Schiller, N., L. Basch, and C. Blanc Szanton. 1995. From Immigrant to Transmigrant: Theorizing Transnational Migration. *Anthropological Quarterly* 68:48-63.

Goodchild, M. F. 2007. Citizens as sensors: the world of volunteered geography. *GeoJournal* 69:211-221.

Goodchild, M. F., L. Anselin, R. P. Appelbaum, and B. H. Harthorn. 2000. Toward Spatially Integrated Social Science. *International Regional Science Review* 23:139-159.

Goodchild, M. F., and D. G. Janelle. 2004. Thinking Spatially in the Social Sciences. *Spatially Integrated Social Science*:3-22.

Goodenough, W. H. 1957. *Cultural anthropology and linguistics*. Georgetown University Monograph Series Language Linguistics.

Goodman, A. H., and T. L. Leatherman. 1998. *Building a new biocultural synthesis: political-economic perspectives on human biology*. *Linking levels of analysis*. Ann Arbor: University of Michigan Press.

Gozdziak, E., and S. Martin. 2005. *Beyond the gateway: Immigrants in a changing America*: Lexington Books.

Grifo, F., and J. Rosenthal. 1997. *Biodiversity and human health*. Washington, D.C.: Island Press.

Gulliford, M. C. 1996. Epidemiological Transition in Trinidad and Tobago, West Indies 1953-1992. *International Journal of Epidemiology* 25:357-365.

Gulliford, M. C., and D. Mahabir. 1998. Social inequalities in morbidity from diabetes mellitus in public primary care clinics in Trinidad and Tobago. *Social Science & Medicine* 46:137-144.

Gulliford, M. C., D. Mahabir, and B. Rocke. 2003. Food insecurity, food choices, and body mass index in adults: nutrition transition in Trinidad and Tobago. *International Journal of Epidemiology* 32:508-516.

Gupta, A., and J. Ferguson. 1997. *Culture, power, place: explorations in critical anthropology*. Durham, N.C.: Duke University Press.

Hardesty, D. L. 1977. *Ecological anthropology*: John Wiley and Sons.

Harper, D. 2002. Talking about pictures: a case for photo elicitation. *Visual Studies* 17:13-26.

Harris, M. 1974. Why a Perfect Knowledge of All the Rules One Must Know to Act Like a Native Cannot Lead to the Knowledge of How Natives Act. *Journal of Anthropological Research* 30:1974.

Hays, T. E. 1982. Utilitarian/adaptationist explanations of folk biological classification: Some cautionary notes. *Journal of Ethnobiology* 2:89-94.

Head, L., P. Muir, and E. Hampel. 2004. Australian backyard gardens and the journey of migration *Geographical Review* 94:326-347.

Hergenrather, K. C., S. D. Rhodes, C. A. Cowan, G. Bardhoshi, and S. Pula. 2009. Photovoice as Community-Based Participatory Research: A Qualitative Review. *American Journal of Health Behavior* 33:686-698.

Hilfinger Messias, D. K. 2002. Transnational Health Resources, Practices, and Perspectives: Brazilian Immigrant Women's Narratives. *Journal of Immigrant Health* V4:183-200.

Himmelgreen, D. A., R. Perez-Escamilla, D. Martinez, A. Bretnall, B. Eells, Y. Peng, and A. Berm˙dez. 2004. The longer you stay, the bigger you get: Length of time and language use in the U.S. are associated with obesity in Puerto Rican women. *American Journal of Physical Anthropology* 125:90-96.

Hirschman, C., J. DeWind, and P. Kasinitz. 1999. *The handbook of international migration: the American experience*. New York: Russell Sage Foundation.

Hollenberg, N. K., G. Martinez, M. McCullough, T. Meinking, D. Passan, M. Preston, A. Rivera, D. Taplin, and M. Vicaria-Clement. 1997. Aging, Acculturation, Salt Intake, and Hypertension in the Kuna of Panama. *Hypertension* 29:171-176.

Holtzman, J. D. 2006. Food and Memory. *Annual Review of Anthropology* 35:361-378.

Hunn, E. 1982. The Utilitarian Factor in Folk Biological Classification. *American Anthropologist* 84:830-847.

—. 1989. "Ethnoecology: the relevance of cognitive anthropology for human ecology," in *The relevance of culture*. Edited by M. Freilich, pp. 143-160. New York: Bergin and Garvey.

Hurworth, R., E. Clark, J. Martin, and S. Thomsen. 2005. The use of photointerviewing: Three examples from health evaluation and research. *Evaluation Journal of Australasia* 4:52-62.

Idler, E. L., and Y. Benyamini. 1997. Self-Rated Health and Mortality: A Review of Twenty-Seven Community Studies. *Journal of Health and Social Behavior* 38:21-37.

Izquierdo, C. 2005. When "health" is not enough: societal, individual and biomedical assessments of well-being among the Matsigenka of the Peruvian Amazon. *Social Science & Medicine* 61:767-783.

Jenkins, C. N. H., T. Le, S. J. McPhee, S. Stewart, and N. T. Ha. 1996. Health care access and preventive care among Vietnamese immigrants: Do traditional beliefs and practices pose barriers? *Social Science & Medicine* 43:1049-1056.

John, A. M. 1988. *The plantation slaves of Trinidad, 1783-1816 : a mathematical and demographic enquiry*. Cambridge Eng. ; New York: Cambridge University Press.

Johns, T. 1990. *With bitter herbs they shall eat it: chemical ecology and the origins of human diet and medicine*. *Arizona studies in human ecology*. Tucson: University of Arizona Press.

Kawachi, I., B. P. Kennedy, and R. Glass. 1999. Social Capital and Self-Rated Health: A Contextual Analysis. *American Journal of Public Health* 89:1187-1193.

Kearney, M. 1995. The Local and the Global: The Anthropology of Globalization and Transnationalism. *Annual Review of Anthropology* 24:547-565.

Kearns, R., and G. Moon. 2002. From medical to health geography: novelty, place and theory after a decade of change. *Progress in Human Geography* 26:605-625.

Kruskal, J. B., and M. Wish. 1978. *Multidimensional Scaling*. Newbury Park, NJ: SAGE Publications.

Kwan, M.-P. 2004. GIS Methods in Time-Geographic Research: Geocomputation and Geovisualization of Human Activity Patterns. *Geografiska Annaler Series B: Human Geography* 86:267-280.

—. 2008. From oral histories to visual narratives: re-presenting the post-September 11 experiences of the Muslim women in the USA. *Social & Cultural Geography* 9:653-669.

Kwan, M.-P., and G. Ding. 2008. Geo-Narrative: Extending Geographic Information Systems for Narrative Analysis in Qualitative and Mixed-Method Research. *Professional Geographer* 60:443-465.

Laguerre, M. S. 1998. *Diasporic citizenship : Haitian Americans in transnational America*. New York: St. Martin's Press.

Langford, M., and G. Higgs. 2006. Measuring Potential Access to Primary Healthcare Services: The Influence of Alternative Spatial Representations of Population. *The Professional Geographer* 58:294-306.

Lans, C. 2001. *Creole remedies: case studies of ethnoveterinary medicine in Trinidad and Tobago*: Wageningen Universiteit.

—. 2003. Struggling over the direction of Caribbean medicinal plant research. *Futures* 35:473-491.

—. 2006. Ethnomedicines used in Trinidad and Tobago for urinary problems and diabetes mellitus. *Journal of Ethnobiology and Ethnomedicine* 2:45.

—. 2007. Ethnomedicines used in Trinidad and Tobago for reproductive problems. *Journal of Ethnobiology and Ethnomedicine* 3:13.

Leatherman, T. 2005. A Space of Vulnerability in Poverty and Health: Political-Ecology and Biocultural Analysis. *Ethos* 33:46-70.

Lee, R. D., and D. C. Nieman. 2007a. "Anthropometry," in *Nutritional Assessment*, Fourth edition. New York: McGraw Hill Higher Education.

—. 2007b. *Nutritional assessment*: Mosby St. Louis.

Leela, T. 2003. The Politics of Hybridity: Race, Gender, and Nationalism in Trinidad. *Cultural Dynamics* 15:153-181.

Leslie, C. 1980. Medical pluralism in world perspective [1]. *Social Science & Medicine. Part B: Medical Anthropology* 14:191-195.

Levitt, P. 2001. *The transnational villagers*. Berkeley: University of California Press.

Levitt, P., and B. N. Jaworsky. 2007. Transnational Migration Studies: Past developments and Future Trends. *Annual Review of Sociology* 33.

Levitt, P., and N. G. Schiller. 2004. Conceptualizing Simultaneity: A Transnational Social Field Perspective on Society. *International Migration Review* 38:1002-1039.

Lindenbaum, S. 2005. The value of a critical ethnographic engagement: comments on the social production of health. *Social Science & Medicine* 61:751-753.

Lofgren, I., K. Herron, T. Zern, K. West, M. Patalay, N. S. Shachter, S. I. Koo, and M. L. Fernandez. 2004. Waist Circumference Is a Better Predictor than Body Mass Index of Coronary Heart Disease Risk in Overweight Premenopausal Women. *The Journal of Nutrition* 134:1071-1076.

MacPhee, M. 2004. The weight of the past in the experience of health: time, embodiment, and cultural change in Morocco. *Ethos* 32:374-396.

Madden, M., and A. Ross. 2009. Genocide and GIScience: Integrating Personal Narratives and Geographic Information Science to Study Human Rights. *The Professional Geographer* 61:508 - 526.

Maffi, L. 2001. *On biocultural diversity: linking language, knowledge, and the environment*. Washington D.C.: Smithsonian Institution Press.

Mahabir, D., and M. C. Gulliford. 1997. Use of Medicinal Plants for Diabetes in Trinidad and Tobago. *Rev Panam Salud Publica* 1:174-179.

Mahabir, K. 1997. Traditional Medicine and Women Healers in Trinidad, University of Florida.

Mahoney, A. M. 2004. *The health and well-being of Caribbean immigrants in the United States*: Routledge.

—. 2005. *The health and well-being of Caribbean immigrants in the United States*: Routledge.

Mamary, E., J. McCright, and K. Roe. 2007. Our lives: An examination of sexual health issues using photovoice by non-gay identified African American men who have sex with men. *Culture, Health & Sexuality* 9:359-370.

Marles, R. J., Natural Resources Canada, and Canadian Forest Service. 2000. *Aboriginal plant use in Canada's northwest boreal forest*. Vancouver: UBC Press.

McDade, T. W. 2002. Status Incongruity in Samoan Youth: A Biocultural Analysis of Culture Change, Stress, and Immune Function. *Medical Anthropology Quarterly* 16:123-150.

McDonald, J. T., and S. Kennedy. 2004. Insights into the `healthy immigrant effect': health status and health service use of immigrants to Canada. *Social Science & Medicine* 59:1613-1627.

McElroy, A., and P. K. Townsend. 2004. *Medical anthropology in ecological perspective*, 4th edition. Boulder, Colo.: Westview Press.

McGarvey, S. T. 1999. "Modernization, psychosocial factors, insulin, and cardiovascular health," in *Hormones, health, and behavior : a socio-ecological and lifespan perspective*. Edited by C. Panter-Brick and C. M. Worthman, pp. 244-280. Cambridge; New York: Cambridge University Press.

McIntyre, A. 2003. Through the Eyes of Women: photovoice and participatory research as tools for reimagining place. *Gender, Place & Culture: A Journal of Feminist Geography* 10:47.

McKay, D. 2005. Migration and the Sensuous Geographies of Re-emplacement in the Philippines. *Journal of Intercultural Studies* 26:75-91.

McLafferty, S. L. 2003. GIS and Health Care. *Annual Review of Public Health* 24:25-42.

McLafferty, S. L., and E. K. Cromley. Editors. 2002. *GIS and Public Health*. New York: Gulliford Press.

McMaster, R., and E. Usery. 2005. *A research agenda for geographic information science*: CRC Press.

McMullin, J. 2005. The call to life: revitalizing a healthy Hawaiian identity. *Social Science & Medicine* 61:809-820.

Meade, M., and R. Earickson. 2002. *Medical Geography*. New York: Gulliford Press.

Melleiro, M., and D. M. R. Gualda. 2005. Phtovoice as a strategy for data collection in an ethnographic research. *Ciencia y enfermera* 11:51-57.

Menjivar, C. 2002. The ties that heal: Guatemalan immigrant women's networks and medical treatment. *International Migration Review* 36:437-466.

Miller, G. J., G. L. A. Beckles, G. H. Maude, D. C. Carson, S. D. Alexis, S. G. L. Price, and N. T. A. Byam. 1989. Ethnicity and Other Characteristics Predictive of Coronary Heart Disease in a Developing Community: Principal Results of the St James Survey, Trinidad. *International Journal of Epidemiology* 18:808-817.

Miller, I., T. Smith, S. Mellor, L. Rare, and B. Genton. 1998. The effect of distance from home on attendance at a small rural health centre in Papua New Guinea. *International Journal of Epidemiology* 27:878-884.

Milligan, C., A. Bingley, and A. Gatrell. 2005. Digging deep: Using diary techniques to explore the place of health and well-being amongst older people. *Social Science & Medicine* 61:1882-1892.

Montenegro, R. A., and C. Stephens. 2006. Indigenous health in Latin America and the Caribbean. *Lancet* 367:1859-1869.

Nabhan, G. P. 1989. *Enduring seeds : native American agriculture and wild plant conservation*. San Francisco: North Point Press.

Nazarea, V. D. 1998. *Cultural memory and biodiversity*. Tucson: University of Arizona Press.

—. 1999. *Ethnoecology: situated knowledge/located lives*. Tucson: University of Arizona Press.

—. 2005. *Heirloom seeds and their keepers: marginality and memory in the conservation of biological diversity*: University of Arizona Press Tucson, USA.

—. 2006. Local Knowledge and Memory in Biodiversity Conservation. *Annual Review of Anthropology* 35:317-335.

Newbold, K. B. 2006. Chronic Conditions and the Healthy Immigrant Effect: Evidence from Canadian Immigrants. *Journal of Ethnic & Migration Studies* 32:765-784.

Newsom, L., and E. Wing. 2004. *On Land and Sea: Native American Uses of Biological Resources in the West Indies*. Tuscaloosa: University of Alabama.

Nguyen, V.-K., and K. Peschard. 2003. Anthropology, Inequality, and Disease: A Review. *Annual Review of Anthropology* 32:447-474.

Oliffe, J. L., and J. L. Bottorff. 2007. Further Than the Eye Can See? Photo Elicitation and Research With Men. *Qual Health Res* 17:850-858.

Ono, T., R. Guthold, and K. Strong. 2005. WHO Global comparable estimates. *New York: Global Infobase*.

Ornelas, I. J., J. Amell, A. N. Tran, M. Royster, J. Armstrong-Brown, and E. Eng. 2009. Understanding African American Men's Perceptions of Racism, Male Gender Socialization, and Social Capital Through Photovoice. *Qualitative Health Research* 19:552-565.

Ososki, A. L., P. Lohr, M. Reiff, M. J. Balick, F. Kronenberg, A. Fugh-Berman, and B. O'Connor. 2002. Ethnobotanical literature survey of medicinal plants in the Dominican Republic used for women's health conditions. *Journal of Ethnopharmacology* 79:285-297.

Oths, K. S. 1999. Debilidad: A Biocultural Assessment of an Embodied Andean Illness. *Medical Anthropology Quarterly* 13:286-315.

Palaniswamy, U. R. 2007. "The Changing Scene of Health Promotion and Disease Prevention Strategies Due to Migration of Indians from the Asian Subcontinent to

the United States," in *Traveling cultures and plants : the ethnobiology and ethnopharmacy of migrations, Studies in environmental anthropology and ethnobiology v. 7*. Edited by A. Pieroni and I. Vandebroek, pp. 86-104. New YOrk: Berghahn Books.

Palinkas, L. A., and S. M. Pickwell. 1995. Acculturation as a risk factor for chronic disease among Cambodian refugees in the United States. *Soc Sci Med* 40:1643-53.

Panelli, R., and G. Tipa. 2007. Placing Well-Being: A Maori Case Study of Cultural and Environmental Specificity. *EcoHealth* 4:445-460.

—. 2009. Beyond foodscapes: Considering geographies of Indigenous well-being. *Health & Place* 15:455-465.

Parlee, B., F. Berkes, Teetl'it, and Gwich'in. 2005. Health of the Land, Health of the People: A Case Study on Gwich'in Berry Harvesting in Northern Canada. *EcoHealth* V2:127-137.

Pedersen, D., and V. Baruffati. 1985. Health and traditional medicine cultures in Latin America and the Caribbean. *Soc Sci Med* 21:5-12.

Pelto, P. J., and G. H. Pelto. 1997. Studying Knowledge, Culture, and Behavior in Applied Medical Anthropology. *Medical Anthropology Quarterly* 11:147-163.

Perry, B., and W. Gesler. 2000. Physical access to primary health care in Andean Bolivia. *Social Science & Medicine* 50:1177-1188.

Pessar, P. R. 1997. *Caribbean circuits: new directions in the study of Caribbean migration*, 1st edition. New York: Center for Migration Studies.

Phinney, J. S., G. Horenczyk, K. Liebkind, and P. Vedder. 2001. Ethnic Identity, Immigration, and Well-Being: An Interactional Perspective. *Journal of Social Issues* 57:493-510.

Pickwell, S. M. 1999. Multilevel Healing Pursuits of Cambodian Refugees. *Journal of Immigrant Health* 1:165-179.

Pieroni, A., L. Houlihan, N. Ansari, B. Hussain, and S. Aslam. 2007. Medicinal perceptions of vegetables traditionally consumed by South-Asian migrants living in Bradford, Northern England. *Journal of Ethnopharmacology* 113:100-110.

Pieroni, A., H. Muenz, M. Akbulut, K. H. C. Baser, and C. Durmuskahya. 2005. Traditional phytotherapy and trans-cultural pharmacy among Turkish migrants living in Cologne, Germany. *Journal of Ethnopharmacology* 102:69-88.

Pieroni, A., and L. L. Price. 2006. *Eating and Healing: Traditional Food as Medicine*: Haworth Press.

Pieroni, A., and C. L. Quave. 2005. Traditional pharmacopoeias and medicines among Albanians and Italians in southern Italy: A comparison. *Journal of Ethnopharmacology* 101:258-270.

Pieroni, A., and I. Vandebroek. 2007. *Traveling cultures and plants: the ethnobiology and ethnopharmacy of migrations*, 1st edition. *Studies in environmental anthropology and ethnobiology v. 7*. New York: Berghahn Books.

Pike, I. L., and S. R. Williams. 2006. Incorporating psychosocial health into biocultural models: Preliminary findings from Turkana women of Kenya. *American Journal of Human Biology* 18:729-740.

Pink, S. 2007. *Doing visual ethnography: Images, media and representation in research*: Sage Publications Ltd.

Portes, A. 1998. Social Capital: Its Origins and Applications in Modern Sociology. *Annual Review of Sociology* 24:1.

—. 1999. "Immigration theory for a new century: some problems and opportunities," in *The Handbook of International Migration: the American Experience*. Edited by C. Hirschman, P. Kasinitz, and J. DeWind, pp. 21-33. New York: Russel Sage Foundation.

Portes, A., and R. L. Bach. 1985. *Latin journey: Cuban and Mexican immigrants in the United States*. Berkeley: University of California Press.

Portes, A., and J. DeWind. 2007. *Rethinking migration: new theoretical and emperical perspectives*: Berghahn Books.

Portes, A., and R. Grosfoguel. 1994. Caribbean Diasporas: Migration and Ethnic Communities. *The Annals of the American Academy of Political and Social Science* 533:48.

Portes, A., and J. Sensenbrenner. 1993. Embeddedness and Immigration: Notes on the Social Determinants of Economic Action. *American Journal of Sociology* 98:1320.

Portes, A., and M. Zhou. 1994. Should Immigrants Assimilate? *Public Interest* 116:18-33.

Potter, R. B., and J. Phillips. 2006. "Mad Dogs and Transnational Migrants?" Bajan-Brit Second-Generation Migrants and Accusations of Madness. *Annals of the Association of American Geographers* 96:586-600.

Poudrier, J., and R. T. Mac-Lean. 2009. "We've fallen into the cracks": Aboriginal women's experiences with breast cancer through photovoice. *Nursing Inquiry* 16:306-317.

Puri, S. 2003. *Marginal migrations: the circulation of cultures within the Caribbean*. *Warwick University Caribbean studies*. Oxford: Macmillan Caribbean.

Quinlan, M. B. 2004. *From the bush: the front line of health care in a Caribbean village*. *Case studies in cultural anthropology.* Belmont, CA: Wadsworth/Thomson Learning.

Ray, K. 2004. *The Migrant's Table: Meals and Memories in Bengali-American Households*. Philadelphia: Temple Unversity Press.

Relph, E. 1976. *Place and Placelessness*: Pion.

Reyes-García, V., V. Vadez, E. Byron, L. Apaza, W. Leonard, E. Perez, and D. Wilkie. 2005. Market Economy and the Loss of Folk Knowledge of Plant Uses: Estimates from the Tsimane of the Bolivian Amazon. *Current Anthropology* 46:651-656.

Romney, A. K., S. C. Weller, and W. H. Batchelder. 1986. Culture as consensus: A theory of culture and informant accuracy. *American Anthropologist* 88:313-338.

Rose, G. 2009. *Visual Methodologies: an Introduction to the Interpretation of Visual Materials*. Los Angeles: Sage.

Rudzik, A. E. F. 2003. Examining health equity through satisfaction and confidence of patients, in primary healthcare in the Republic of Trinidad and Tobago. *Journal of Health Population and Nutrition* 21:243-250.

Rushton, G. 2003. Public Health, GIS and Spatial Analytic Tools. *Annual Review of Public Health* 24:43-56.

Schiller, N. G., L. G. Basch, and C. Szanton Blanc. 1992. *Towards a transnational perspective on migration : race, class, ethnicity, and nationalism reconsidered. Annals of the New York Academy of Sciences v. 645*. New York, N.Y.: New York Academy of Sciences.

Schmitz, P. G. 2003. "Psychosocial factors of immigration and emigration: an introduction," in *Migration: immigration and emigration in international perspective*, 1 edition. Edited by L. Loeb Adler and U. P. Gielen. Westport, Connecticut: Praeger.

Seaforth, C. E. 1988. *Natural products in Caribbean folk medicine*: University of the West Indies.

Seremetakis, C. N. 1996. *The Senses Still: Perception and Memory As Material Culture in Modernity*: University of Chicago Press.

Shaw, I., and K. Kauppinen. Editors. 2004. *Constructions of health and illness: European perspectives*. Aldershot, England

Burlington, VT: Ashgate.

Sieber, R. 2006. Public Participation Geographic Information Systems: A Literature Review and Framework. *Annals of the Association of American Geographers* 96:491-507.

Singer, A. 2004. The rise of new immigrant gateways. *Washington: Brookings Institution*.

Singer, A., and CUMPB. 2003. *The Rise of New Immigrant Gateways*: Center on Urban and Metropolitan Policy, the Brookings Institution.

Singh, G. K., and M. Siahpush. 2002. Ethnic-immigrant differentials in health behaviors, morbidity, and cause-specific mortality in the United States: an analysis of two national data bases. *Hum Biol* 74:83-109.

Singh, H., E. D. Haqq, and N. Mustapha. 1999. Patients' perception and satisfaction with health care professionals at primary care facilities in Trinidad and Tobago. *Bulletin of World Health Organization* 77:356-360.

Sokal, R., and F. Rohlf. 1995. *Biometry: The Principles and Practices of Statistics in Biological Research*, 3rd edition. New York: WH Freman and company.

Stanczak, G. 2007. Visual Research Methods: Image, Society, and Representation. *SAGE Publications (CA)*:376.

Steinberg, S. J., and S. L. Steinberg. 2006. *GIS: geographic information systems for the social sciences: investigating space and place.* Thousand Oaks, Calif.: SAGE Publications.

Strack, R. W., C. Magill, and K. McDonagh. 2004. Engaging Youth through Photovoice. *Health Promot Pract* 5:49-58.

Streng, J. M., S. D. Rhodes, G. X. Ayala, E. Eng, R. Arceo, and S. Phipps. 2004. Realidad Latina : Latino adolescents, their school, and a university use photovoice to examine and address the influence of immigration. *Journal of Interprofessional Care* 18:403-415.

Sturtevant, W. C. 1964. Studies in Ethnoscience. *American Anthropologist* 66:99-131.

Subramanian, S. V., I. Kawachi, and B. P. Kennedy. 2001. Does the state you live in make a difference? Multilevel analysis of self-rated health in the US. *Social Science & Medicine* 53:9-19.

Sui, D. Z. 2007. Geographic Information Systems and Medical Geography: Toward a New Synergy. *Geography Compass* 1:556-582.

—. 2008. The wikification of GIS and its consequences: Or Angelina Jolie's new tattoo and the future of GIS. *Computers, Environment and Urban Systems* 32:1-5.

Sussman, L. K. 1981. Unity in diversity in a polyethnic society: The maintenance of medical pluralism on Mauritius. *Social Science & Medicine. Part B: Medical Anthropology* 15:247-260.

Sutton, D. E. 2001. *Remembrance of Repasts: An Anthropology of Food and Memory*. Oxford: Berg.

Tarbes, M. G. G. 1989. On Cross-cultural Ethnomedical Research. *Current Anthropology* 30:75-76.

Thomas-Hope, E. M. 2002. *Caribbean migration*, University of the West Indies Press edition. Barbados: University of the West Indies Press.

Toledo, V. M. 1992. What is ethnoecology?: origins, scope and implications of a rising discipline. *Etnoecológica* 1:5-21.

—. 2002. "Ethnoecology: A Conceptual Framework for the Study of Indigenous Knowledge of Nature," in *Ethnobiology and Biocultural Diversity*. Edited by J. R. Stepp, F. S. Wyndham, and R. K. Zarger, pp. 511-522. Athens: University of Georgia Press.

U.S. Census Bureau, A. C. S. 2006, 2007, 2008. *Place of Birth for the Foreign-born Population- Universe: Foreign-born population excluding populations born at sea*.

U.S. Census Bureau Tiger/Lines shapefiles. 2008. in *Tiger/Lines shapefiles*, vol. 2009.

Valera, P., J. Gallin, D. Schuk, and N. Davis. 2009. "Trying to Eat Healthy": A Photovoice Study About Women's Access to Healthy Food in New York City. *Affilia: Journal of Women & Social Work* 24:300-314.

van Andel, T., and P. Westers. 2010. Why Surinamese migrants in the Netherlands continue to use medicinal herbs from their home country. *Journal of Ethnopharmacology* 127:694-701.

Van Noy, R. 2003. *Surveying the Interior: Literary Cartographers and the Sense of Place*: Univ of Nevada Pr.

Volpato, G., D. Godínez, and A. Beyra. 2009. Migration and Ethnobotanical Practices: The Case of Tifey Among Haitian Immigrants in Cuba. *Human Ecology* 37:43-53.

W.H.O. 1946. Preamble to the Constitution of the World Health Organization. *Official Records of the World Health Organization*:100.

Walcot, S. M. 2002. Overlapping Ethnicities and Negotiated Space: Atlanta's Buford Highway. *Journal of Cultural Geography* 20:51.

Waldstein, A. 2006. Mexican migrant ethnopharmacology: Pharmacopoeia, classification of medicines and explanations of efficacy. *Journal of Ethnopharmacology* 108:299-310.

Wallerstein, N., and E. Bernstein. 1988. Empowerment Education: Freire's Ideas Adapted to Health Education. *Health Education Quarterly* 15:379-94.

Walt, G., R. Antonius, S. Dokoui, H. Gray, E. Haqq, M. Hadley, S. Lalta, and R. Roberts. 2002. The historical development of human resources policies in the health sector of four Caribbean territories: imitated or created? *Health Policy* 62:85-101.

Wang, C., and M. A. Burris. 1994. Empowerment through Photo Novella: Portraits of Participation. *Health Education & Behavior* 21:171-186.

—. 1997. Photovoice: Concept, Methodology, and Use for Participatory Needs Assessment. *Health Educ Behav* 24:369-387.

Wang, C., W. Yi, Z. Tao, and K. Carovano. 1998. Photovoice as a participatory health promotion strategy. *Health Promotion International* 13:75-86.

Wang, C. C. 1999. Photovoice: A Participatory Action Research Strategy Applied to Women's Health. *Journal of Women's Health* 8:185.

Wang, C. C., J. L. Cash, and L. S. Powers. 2000. Who Knows the Streets as Well as the Homeless? Promoting Personal and Community Action through Photovoice. *Health Promotion Practice* 1:81-89.

Wang, C. C., and C. A. Pies. 2004. Family, Maternal, and Child Health Through Photovoice. *Maternal & Child Health Journal* 8:95-102.

Warren, S. 2005. Photography and voice in critical qualitative management research. *Accounting, Auditing & Accountability Journal* 18:861-82.

Weller, S. C. 1998. "Structured interviewing and questionnaire construction," in *Handbook of methods in cultural anthropology*. Edited by H. R. Bernard, pp. 365-409. Walnut Creek: Atlamire.

Wester, L. L., and D. Chuensanguansat. 1994. "Adoption and Abandonment of Southeast Asian Food Plants," in *Peopl-Plant Relationships: Setting Research Priorities*. Edited by J. Flagler and R. P. Poincelot, pp. 83-92. New York: Food Products Press.

Whitaker, E. D. 2003. The Idea of Health: History, Medical Pluralism, and the Management of the Body in Emilia-Romagna, Italy. *Medical Anthropology Quarterly* 17:348-375.

WinklerPrins, A. M. G. A., and P. S. de Souza. 2005. Surviving the City: Urban Home Gardens and the Economy of Affection in the Brazilian Amazon. *Journal of Latin American Geography* 4:107-126.

Wise, A., and A. Chapman. 2005. Introduction: Migration, Affect and the Senses. *Journal of Intercultural Studies* 26:1-3.

Wolder Levin, B., and C. H. Browner. 2005. The social production of health: Critical contributions from evolutionary, biological, and cultural anthropology. *Soc Sci Med* 61:745-750.

Worthman, C. M., and B. Kohrt. 2005. Receding horizons of health: biocultural approaches to public health paradoxes. *Social Science & Medicine* 61:861-878.

Wright, D., M. Goodchild, and J. Proctor. 1997. GIS: Tool or science. *Annals of the Association of American Geographers* 87:346-362.

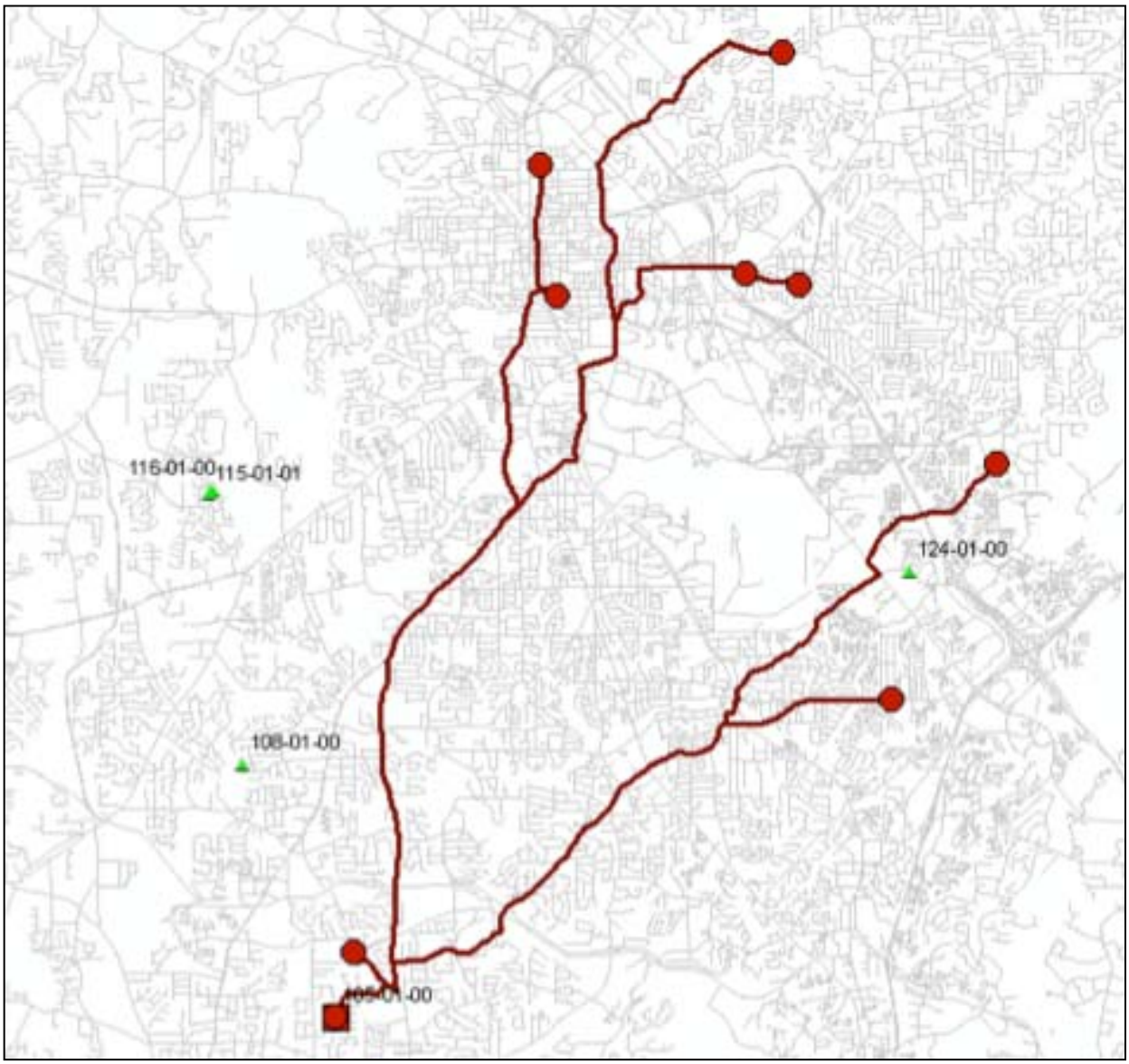
Zhou, M. 1999. "Segmented Assimilation: Issues, Controversies, and Recent Research on the New Second Generation," in *The Handbook of International Migration: the*

American Experience. Edited by C. Hirschman, P. Kasinitz, and J. DeWind, pp. 196-211. New York: Russell Sage.

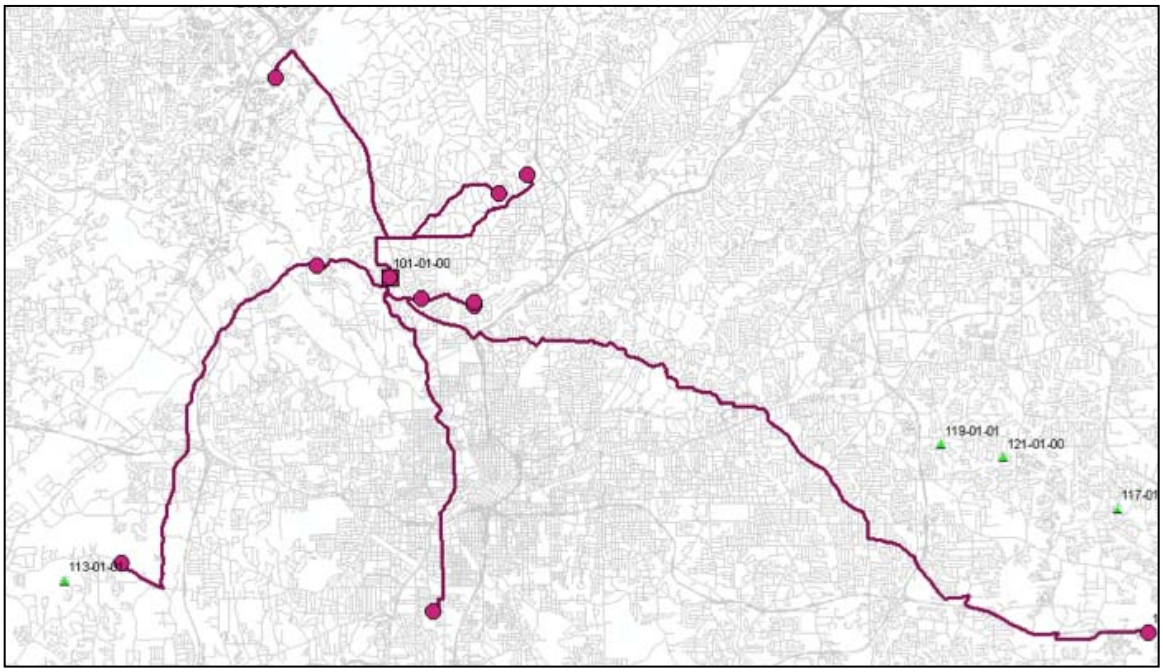
Ziersch, A. M. 2005. Health implications of access to social capital: findings from an Australian study. *Social Science & Medicine* 61:2119-2131.

APPENDIX A

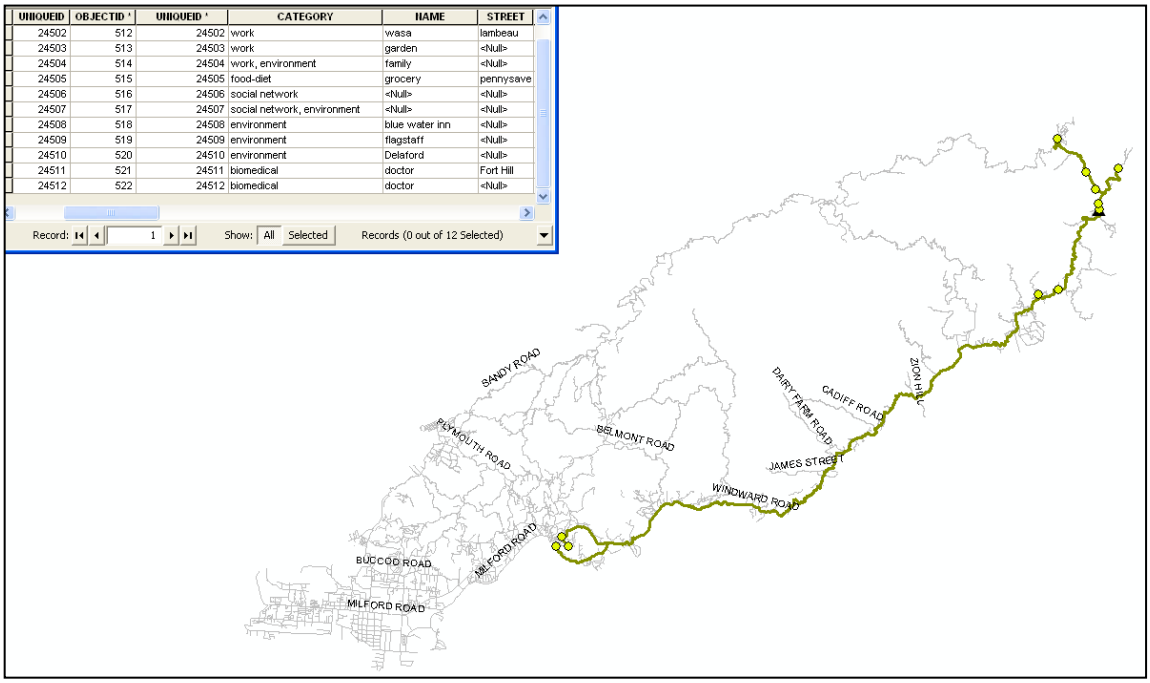
An example of an individual healthcare network map in Atlanta



An example of an individual healthcare network in Trinidad



An example of an individual healthcare network and associated attribute table in Tobago



UNIQUEID	OBJECTID *	UNIQUEID *	CATEGORY	NAME	STREET
24502	512	24502	work	wasa	lambeau
24503	513	24503	work	garden	<Null>
24504	514	24504	work, environment	family	<Null>
24505	515	24505	food-diet	grocery	pennysave
24506	516	24506	social network	<Null>	<Null>
24507	517	24507	social network, environment	<Null>	<Null>
24508	518	24508	environment	blue water inn	<Null>
24509	519	24509	environment	flagstaff	<Null>
24510	520	24510	environment	Delaford	<Null>
24511	521	24511	biomedical	doctor	Fort Hill
24512	522	24512	biomedical	doctor	<Null>

Record: 1 Show: All Selected Records (0 out of 12 Selected)

APPENDIX B

Examples of photographs taken by participants for the photovoice and photo elicitation exercise

Food-diet

Figure 1

Figure 2

Figure 3

Ocean

Figure 4

Figure 5

Physical activity

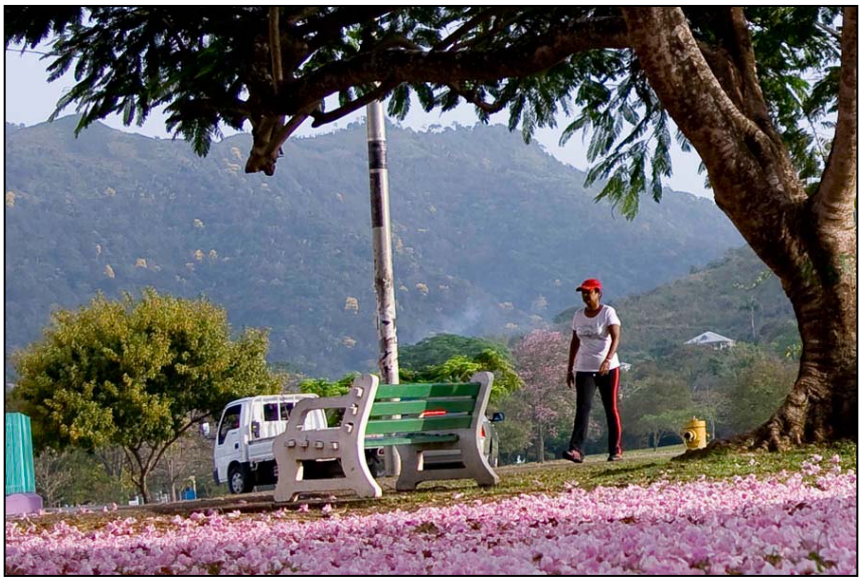


Figure 6

Figure 7

Figure 8

Relationships

Figure 9

Figure 10

Figure 11

Relaxation

Figure 12

Figure 13

Figure 14

Spirituality

Figure 15

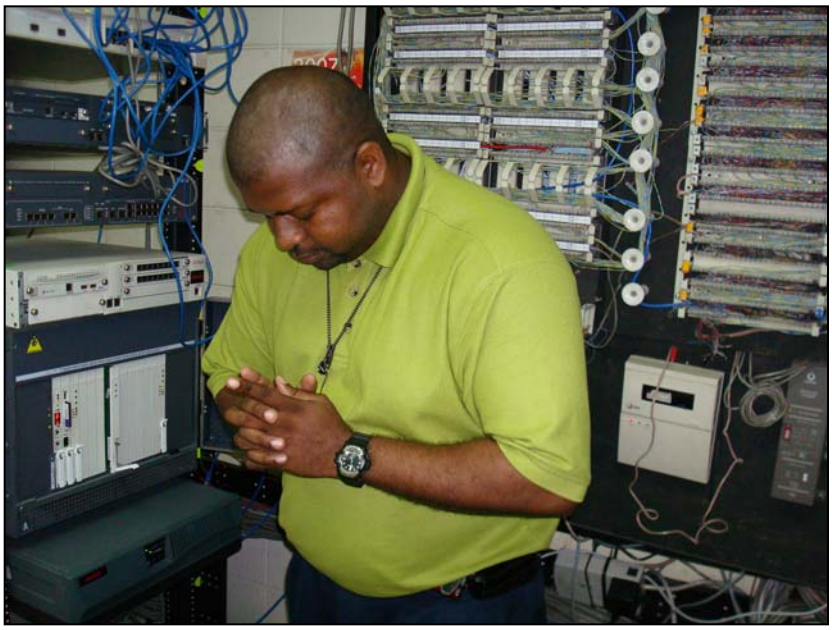


Figure 16

Sense of home

Figure 17

Figure 18

Figure 19

Ethnomedical systems

Figure 20

Figure 21

Figure 22

Happiness

Figure 23

Figure 24

Figure 25