Cultural adaptation resources for nutrition and health in new immigrants in Central North Carolina.

By: Sharon D. Morrison, Lauren Haldeman, Sudha Shreeniwas, Kenneth J. Gruber, and Raleigh Bailey

Morrison, Sharon, D., Haldeman, Lauren, Shreeniwas, Sudha, Gruber, Kenneth J., & Bailey, Raleigh. (2007). Cultural adaptation resources for nutrition and health in new immigrants in Central North Carolina. *Journal of Immigrant and Minority Health*, *9*(3), 205-212.

Abstract:

This paper presents results of a study that was conducted for the purposes of describing available human services resources relating to nutrition, physical health, and behavioral health for new and recent immigrants (predominantly Mexican immigrants, but groups from Southeast Asia and continental Africa as well) in Guilford County, NC. Sixty-five service providers were determined to represent cultural adaptation resources providing either direct and/or ancillary assistance to limited English proficient immigrants. Seventeen direct assistance providers specialized in food and nutrition programs, but only 2 had targeted programs for addressing food scarcity, insecurity, and nutritional deficiencies in immigrant households. Four of 15 direct physical health services providers had clinical care or specialty programs for immigrants. Finally, 5 of 16 direct behavioral health care providers offered mental health treatment and counseling services adapted specifically for targeted immigrant groups. These findings highlight the limited development of the existing human services network to increase its capacity to provide nutrition and health related services to a growing community of diverse immigrant groups. These descriptive results underscore a need for additional local level or community based resources to be directed towards increasing the community's ability to provide essential human services to population groups not yet language proficient and acculturated to "American community standards."

Keywords: cultural adaptation resources | nutrition | health | immigrants | North Carolina | immigrant health

Article:

Introduction

International migration to the Southeastern United States has created a rapidly evolving demographic profile that is increasing in magnitude and complexity. This international migration is primarily from Latin America triggered by an economic boom in the U.S. and collapsing economies in Mexico and much of Central America. Manufacturing and agriculturally related industries from the Southeastern U.S. in particular, recruited Mexicans and Central Americans to meet labor demands in the South [1]. This Latino immigrant labor base was further established through migrant and seasonal labor supported by the federal Immigration Reform and Control Act (IRCA) of 1986. IRCA included the Seasonal Agricultural Workers (SAWs) provisions allowing long-term migrant workers to apply for U.S. residency [2].

Historically, Latino immigrants had gathered in the six states of California, New York, New Jersey, Texas, Florida and Illinois. More recently however, states such as Virginia, North Carolina and Georgia are accounting for larger proportions of in-migrants, as measured by settlement patterns of legal permanent residents [3]. In North Carolina (NC) between 1990 and 2000 U.S. Census estimates the Latino1 immigrant population grew 394%, from 76,726 to 378,963 [4]. Accordingly, the U.S. Census reported that North Carolina had the fastest growing Latino immigrant population in the nation during that decade. For 2003 the U.S. Census estimated the NC Latino population at 466,704 [5]. While these numbers also include Latino children born in the United States, the large size of this population reflects the cultural and linguistic differences that the growing Latino population presents to the state [1].

Adjusting and adapting to life in North Carolina is stressful for many of these international newcomers. They typically are faced with navigating a new language, culturally unfamiliar food and nutritional systems, and a confusing array of health and social services. Recent immigrants are unfamiliar with the opportunities and options for obtaining adequate nutrition and primary health care for maintaining health status, and are less likely to receive timely and optimal health care [6]. Additionally, they experience cultural reorientation that is often disruptive to traditional family and gender roles [7]. Many are from impoverished backgrounds and are poorly equipped or unskilled for earning a living in this system [8]. These stressful experiences have far reaching and long-lasting consequences, including an impaired ability to adequately access vital resources such as safe housing, food, finances, and health care for sustained daily survival within the host community [8].

Because of their limited job skills and low education levels, many new immigrants experience reduced capacity for economic advancement. Coupled with poor access to safe and nutritious food, social assistance, and health services, new immigrants often become marginalized from mainstream systems of care. This marginalization plays out in terms of increasing disparities in health status. For example, Latino immigrant children and adults living in poor and food insecure households (i.e., households with impaired accessibility to nutritious and culturally appropriate foods) are more likely to be obese or overweight and suffer from health conditions such as Type II diabetes than children in poor white households [9, 10]. High rates of food insecurity commonly seen in new immigrant households are of concern as this has been associated with the

development of negative health consequences such as hypertension and cardiovascular disease [11]. In addition, high food costs affect nutritional choices and dietary intake, resulting in diets deficient in essential vitamins and minerals [12–14].

Because of the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) of 1996, most newly arrived immigrants are ineligible for government subsidized health insurance [15]. In fact, new immigrants to the U.S. are less likely to have health insurance (private or public) than their U.S. native born counterparts [16, 17]. As a result, maintaining health and seeking treatment for illness pose considerable financial burdens and health risks to immigrant individuals, families, and the community. This access barrier means that immigrant individuals and households often are not able or willing to seek early intervention or preventive care [17].

While statistics on health issues of most ethnic immigrant groups in the State are sparse, the emerging picture for the newly arrived Latino immigrants in North Carolina suggests that preventative care and early intervention medical services are critically important. State and local data indicate that in comparison with Whites and Blacks, Latinos in North Carolina are the least likely to be insured and less likely to have a regular source of primary health care than U.S. Whites [18]. Moreover, they are at higher risk of alcohol related motor vehicle crashes, more likely to suffer occupational injuries, and more likely to contract vaccine preventable diseases. Latino immigrant children and youth are also at risk for being overweight, with BMI's closely resembling those of their non-Latino White and African-American counterparts who report sedentary lifestyles [18]. We also know, at least anecdotally, that those with limited English language proficiency are less likely to seek medical care for treatable and otherwise preventable medical conditions [18].

If these unfavorable outcomes are allowed to become entrenched, new and recent immigrants will be viewed as net "consumers" of their adopted community's resources rather than as contributors to and creators of new assets. In fact, the disparity in health outcomes positions the newcomers as "health and social liabilities," rather than as cultural and economic assets to the state. As such, North Carolina communities experiencing new immigrant influx are challenged with the task of developing an infrastructure and network of resources to systematically assist with integrating new immigrants and refugees into their new cultural and socioeconomic world.

This article describes a study to document the scope of resources available and targeted to assist newly arrived and recent immigrant groups in this central North Carolina region with varying legal statuses and cultural differences. In particular, the article focuses on cultural adaptation and health promotion for non-acculturated2 immigrant groups. Cultural adaptation is a two-way process. These newcomers are adjusting to the cultural, socioeconomic and health systems of the host community, and the host community is adapting their systems and services to incorporate strategies that allow access and use by new immigrants. The rapidly growing ethnic and economic diversity of this region, combined with the diverse needs of varied immigrant

populations, makes cultural adaptation and health maintenance by community members specifically challenging and poses major challenges to service providers seeking to maximize outreach.

For this study we focused on community level resources that were available to help new immigrants to maintain health and manage illness-related conditions. The term health was defined as physical and behavioral health. Important physical health needs for immigrants include pre-natal and post partum care, and prevention and treatment for cancer, cardiovascular disease, diabetes and HIV/AIDS. Behavioral health issues for immigrants include stress management and counseling and treatment for substance abuse and mental disorders such as PTSD and depression. Included in our definition of physical health is the distinction between food and nutritional needs, and all other health related needs.

Food is an urgent need upon emigrating to a new country and it directly impacts overall health status. Food for proper nutrition is integral to optimal physical and behavioral health in any population; however for new immigrants it is particularly so due to an impaired ability to gain access not only to nutritious foods but to culturally appropriate foods. This impaired accessibility is commonly referred to as food insecurity. Conversely, food security occurs when there is access at all times to enough nutritious food for an active and healthy life [19, 20]. New immigrants and their children are at greater risk for food insecurity because many are not eligible for federal food assistance or nutritional supplement programs [16].

The objective of the study was to identify cultural adaptation resources (CARs) available for assisting immigrant individuals or groups with adaptation and health in a new cultural community. CARs referred to service providers representing public or private agencies and/or programs involved with: direct provision of food/nutrition assistance; primary health care and clinical disease management; and mental health treatment and counseling services to identified immigrant and refugee groups. These categories of service provision represent major areas of disparity among newly arrived and recent immigrants to U.S. society [21]. Food and nutrition assistance were separated out from other aspects of health service provision due to the immediacy of need, the direct and long term impact on health, and the often times overlooked availability of services.

Methods

Conceptual Approach

The guiding conceptual framework for this project was the ecological model for health promotion [22]. This model offers a comprehensive approach to assessing the presence and

impact of several environmental influences including intrapersonal, interpersonal, organizational, community, and public policy on the health and well being of individuals and groups. The intrapersonal level of the model focuses on resources such as knowledge, beliefs attitudes, and skills that an immigrant must possess to successfully obtain important information and services.

The interpersonal level pays attention to social networks, social support, and peer groups. The organizational level refers to norms, management styles and organizational culture. The community level represents community resources such as health and social services that are relevant to health promotion. Finally, the public policy level includes legislation, regulations and policies in support of adaptation and integration of immigrant groups [23, 24]. We focused on the ecological influences of community level resources (services and programs) and on nutritional and health status of newly arrived and recent (within 5 years) immigrants [25].

The Setting

This project was conducted in Guilford County, located in the Triad region of central North Carolina. The county is one of the most diverse in population in the state, with an estimated 60,000 of its 450,000 population classified as foreign-born, immigrant, or speaking a language other than English at home. The Triad is also the 3rd fastest growing metropolitan statistical area for Latino in-migration, experiencing a 450% increase in Latino population size between 1990 and 2000 [3]. The majority of these Latino immigrants have migrated directly from the Central states of Mexico.

Guilford County is the largest refugee resettlement county in the state, with three national voluntary agency offices under contract with the U.S. State Department to resettle refugees. There is an established Southeast Asian refugee population, which is supplemented by family reunifications and in-migration. The less visible African refugee population accounts for 10% to 20% of the estimated 12,000 African immigrant families living in the region [26]. It is noteworthy that census data do not reflect African immigrant populations. Their numbers are included in the African American population data. However, community organizations and professional estimates place the current numbers of African immigrants and their families at about 12,000 in the county [26, 27]. The stream of African refugees continues to grow as more individuals are resettled as a result of continuing conflict in Liberia, Sudan, Somalia, and the Democratic Republic of Congo. Refugee newcomers are eligible for a broad range of public services, health and emergency services. For example, under the Refugee Act of 1980, they are entitled to Refugee Medical Assistance (RMA) within their first year of residence [28]. By contrast, undocumented immigrants in the State remain ineligible for this and other forms of public assistance and health care services [15].

Data Collection and Analysis

We were primarily concerned with provider descriptions of their services and programs for immigrant clients and clients with limited English proficiency (LEP). We adopted a two-stage eco-mapping approach to the data collection and analysis. The data were collected with the help of a Social Research Assistant who had an MSW degree and experience working with multi-ethnic populations. In Stage 1, we developed a list of potential agencies, organizations and programs in Guilford County using an existing community directory of health and social service providers, the phone book, Yellow and White Pages, and the recommendations of the lay health advisor staff at the Center for New North Carolinians (CNNC) at the University of North Carolina at Greensboro. Several of the CNNC staff are themselves members of the area immigrant and refugee communities and serve as liaisons between new immigrants and community resources. Representatives of the agencies, organizations or programs on this list were contacted and screened with a simple set of queries to categorize each as a source of assistance or service to new and recent immigrants. Queries included the kinds of services/programs/assistance provided immigrants and the methods of delivery. We also requested copies of materials provided or otherwise distributed in languages other than English.

The information obtained from the queries and documents was categorized by project staff. Based on the information obtained in Stage 1, a call back to contacts that indicated a willingness to participate further with the project was initiated. These contacts were of two types: (1) simple information clarification regarding material provided to the project and (2) information gathering in follow-up in-person or phone interviews. Informed consent was obtained (verbally or in writing) from all contacts prior to participating in the follow-up interviews. This process yielded an initial pool of 100 eligible providers.

In Stage 2, we developed a set of working definitions to assist with characterization of programs and services (see Table 1). The aim was to "map" the existing community of providers as "cultural adaptation resources (CARs)" to immigrants and refugees, and identify providers with services or programs are specifically tailored to immigrant features or characteristics and needs. As part of our inclusion criteria, we counted provider agencies and organizations, and in some cases, different service units within the same agency or organization, as part of the sample of CARs if they identified themselves as having formal services or programs open to immigrant clients, and that immigrants comprise a portion of their client population.

Table 1

Cultural adaptation resource classifications

Characteristic	**Definition**
Provider	Agency, organization, group, or individual representative that delivers a service or program to assist immigrant or multicultural populations
Service/Assistance/Program	A deliverable product such as information, education, screening, treatment, care or referral
Physical health	Medical care for disease or injury (incl. diabetes, CVD, HIV/AIDS) or primary health care (screenings, health education, etc.) or treatment by clinical or licensed professional staff; food and nutrition related
Behavioral health	Mental/emotional disorder care (incl. stress) or substance abuse treatment/care services or counseling by licensed or professional staff
Information	Print materials, video/electronic media, phone counseling, website, group classes
Support	Social networking assistance, childcare, meeting space, spiritual/emotional support and counseling
Access	Case management, interpretation/translation, financial assistance, transportation
Referral	Refer or send clients to sources of health related care or food assistance

We also included providers who indicated they specifically designed, implemented, and institutionalized one or more health related services and food/nutrition programs that accommodated the linguistic or cultural characteristics of one or more ethnic immigrant groups. This type of service provision was classified as “targeted”. Examples of “targeted” assistance or services included dissemination of flyers or brochures about services in languages other than English, having trained interpreters on staff to facilitate client-provider communication, or having designated clinic days for a specific cultural/ethnic immigrant group. We did not include providers whose services were informal or sporadic. The resulting map or matrix was put through a verification process with the CNNC staff to ensure the accuracy of our classification. A total of 65 providers met the inclusion criteria. Simple descriptive statistics were performed (counts and frequencies) to determine the distribution of identified CARs.

Results

Sixty-five providers acted as CARSs for new and recent immigrants to the Guilford County area. Some providers served immigrant clients through “direct” provision of primary health care, programming, clinical treatment and specialty services. Others assist their immigrant clients through “ancillary” service provision or program assistance such as information dissemination about health related services, referral to services through case management, access to services through financial assistance, interpretation and transportation, and support through childcare, social group networks and faith-based affiliation.

We grouped the “direct” assistance providers according to whether they were addressing physical health conditions including food and nutrition issues, or behavioral health needs. Twenty providers (30.8%) reported offering direct assistance related to physical health—primary, preventive, and specialty health care to clients including any immigrant individual or family who accessed their facilities. Twenty-two providers (33.8%) gave direct assistance related to food and/or nutrition to clients including immigrant individuals or families. Twenty-three (35.4%) offered direct assistance related to behavioral health including treatment for mental disorders, and counseling for emotional distress or substance use to clients including immigrant clients (See Table 2).

Table 2

Direct service or assistance to immigrant clients (n = 65)

Type	**Counts (%)**
Food and nutrition	22 (33.8)
Physical health	20 (30.8)
Behavioral health	23 (35.4)

Ancillary assistance included information dissemination about programs and services, support for clients and their families, facilitating access to resources and, referral of clients to other programs and agencies. Fifty-seven providers (87.7%) said that they disseminated information about their services to their client population including immigrant clients. Thirty providers (46.2%) offered support to immigrant clients and their families who were in need of food, nutrition education and health related resources. A majority of providers (55) indicated that they assisted with access to CARs for their immigrant clients through interpretation/translation, financial assistance, and/or transportation. Thirty-one (47.7%) providers referred immigrant

clients to resources (e.g., the Women, Infants, & Children (WIC) program, Department of Social Services) more suited to their needs wherever appropriate (See Table 3).

Table 3

Ancillary service or assistance to immigrant clients (n = 65)

Type	**Counts (%)**
Information	57 (87.7)
Support	30 (46.2)
Access	55 (84.6)
Referral	31 (47.7)

Of the 65 providers identified as being involved with direct assistance to immigrant clients, only 17 (26.2%) were exclusive providers of food and nutrition services or programs to clients including culturally diverse immigrant clients and their families. Only two (11.8%) of these providers targeted their programs to addressing food scarcity, food insecurity, and/or nutritional deficiencies in immigrant households. Fifteen (23%) were exclusive providers of health care or promotion services; with 4 (26.7%) of these having disease screening, treatment and education programs targeted to at-risk immigrants. Finally, 16 programs/agencies were exclusive providers of behavioral health related services. Five of these maintained programs targeted to treatment and counseling of disorders and behaviors among ethnic immigrant individuals.

Discussion

This study identified resources available to ethnic minority immigrant and refugee communities in Guilford County, NC, to enable cultural adaptation to their new living situations. We focused on two domains of cultural adaptation: physical (including food and nutrition needs) and behavioral health. We used a qualitative, emergent study design to identify and interview service providers in Guilford County and to enumerate the services they provided to various immigrant/refugee communities. Our broad goal was to develop an information gathering system, which would document resources available for cultural adaptation at the community level to members of immigrant/refugee communities of diverse national, linguistic, and socioeconomic backgrounds.

Our methodology listed providers of services, classified the services as either direct or ancillary, and listed whether the services were open to all, or included a component specifically targeted to or customized for a specific immigrant/refugee ethnic group. While there appeared to be a general willingness among service providers to extend services to new groups, there also was a disparity between their intentions and the outreach and customization that would facilitate effective access. While several providers described themselves as targeting efforts to specific immigrant groups, closer examination indicated that their offerings were typically limited to ancillary assistance, e.g., providing a subset of bilingual materials, or having one bilingual staff person. A coherent and comprehensive set of culturally and linguistically appropriate services including outreach and education, service provision, and uptake facilitation was typically absent. Also absent was any overall county or region-wide health center that could co-ordinate services for immigrant/ethnic minority communities in general.

An interesting finding in interviews with key informants was the identification of informal ethnic service providers (e.g., ethnic grocery stores, community gardens, faith-based groups, ethnic community elders and lay healers) who were assisting immigrants with adaptation and integration into the host community. These people provided assistance that bridged a gap between culturally and economically sensitive resources and immigrant cultural adaptation needs. However, these providers varied widely in their knowledge of the range of formal or direct services available and their ability to provide appropriate referrals in a timely and systematic way. This disparity between services (formal and informal) and intended recipients is perhaps one of the reasons why Guilford County, one of the most diverse counties in North Carolina, still lags in providing appropriate service information and access to its newer inhabitants, increasing the potential risk of life threatening or capacity limiting disease or undernutrition.

Our findings identify several significant issues with regard to nutrition and health service provision to communities that are extremely diverse in immigration status, national origin, ethnicity, and socioeconomic status. Among the U.S. national public health goals outlined in Healthy People 2010, obesity and overweight and behavioral health, specifically mental health services are major priorities [29]. Mental health services are recognized as being notably lacking among ethnic minority groups and rural populations. However, while the focus on obesity includes the issue of inappropriate nutrition, the issues of inadequate nutrition and food insecurity are not brought to the forefront. This is of critical importance since many immigrant communities face substantial food insecurity. Because obesity is generally more of a problem for long-term U.S. residents, more immediate food/nutrition issues such as access to sufficient amounts of food and adequate nutrition cannot be ignored or considered as a less important health risk issue [30, 31].

A limitation to the study was the voluntary nature of the sample and the willingness and ability of representatives to provide information about efforts to target their services to specific groups. In cases in which the organization was relatively large, our respondents were only able to

comment on the features and characteristics of their specific program. To compensate for this we interviewed several representatives within each large organization. We also used the CNNC's lay health advisors who typically interacted with the organizations to "corroborate" reported activities. This provided considerable validity to our findings. Another sampling limitation is that there was no original up-to-date list of providers. So we had to locate providers through a number of means including snow-ball sampling to identify potential providers who were not included in current published listings [32]. The lay health advisors helped to identify individual or organizational resources that met the criteria for inclusion in our provider sample. The project on the whole represented a first attempt at enumerating available resources for community cultural adaptation. With this in mind, there is likely to be a difference in perspectives and interpretation between the researchers' and service providers' assessment of feasible service provision. Our definition of service provision was very elastic and largely provider determined. Moreover, our method did not purport to be a systematic evaluation of service provision. Any disparities that we identify are based on emergent patterns and require verification through systematic research and evaluation methods. Additionally, in many instances, particularly regarding less formal service entities, service providers and the services they provide may shift and change depending on external circumstances. Therefore this type of community-based resource identification would have to be periodically updated.

Implications

The basic model of a healthy community for immigrants is one that includes mutual adaptation between existing community resources and systems (individual and institutional) and those of the new immigrant groups arriving [33]. This mutual adaptation requires orientation to new ways of doing things. In the case of service providers, it means meeting new demands created by the nutritional and health related needs of culturally and linguistically different immigrant groups. Service providers need to develop cultural awareness, economic sensitivity and linguistic competence when working with these groups [34, 35]. This project's enumeration of available health promotion services for Guilford County immigrants is a critical step in mapping the resource base and existing sensitivity to the integration of immigrants and refugees. It provides a snapshot of how service providers are reacting and responding to the demographic and epidemiological changes that often occur from immigrant influx and refugee resettlement into new host communities.

Our findings indicate that there is a gap between the services that providers lay out for their perceived constituencies, and the structural barriers that impede access. Substantial effort to bridge this gap is needed. In order to achieve a more efficient level of service design and delivery, it appears necessary to move far beyond basic provision of bi/multi/lingual staff and literature. The basic program/service planning level has to take cognizance of the community issues, including those of legal eligibility, community awareness, transportation, childcare issues,

and ongoing familiarity with and sensitivity to family and community dynamics that are idiosyncratic to each immigrant ethnic group.

Our findings imply a greater need for ongoing co-ordination between service providers and the community. Practical ways to achieve this would be to institutionalize or encourage greater co-operation with existing community networks of lay health advisors, community leaders, non-profit groups and immigrant advocates through periodic exchanges of dialogue. To facilitate this, service providers should incorporate funding for lay health advisor liaisons, trained interpreters and professional development programs into their ongoing activities budgets [36]. Fostering such networks is critical for service providers and community members to stay abreast of rapidly altering demographic, cultural and service provision factors. Our views accord with those of immigrant advocates and prominent state and local policy makers [37, 38].

Acknowledgments

Support for this project was provided by the External Proposal Development Incentive Program (EPDIP) through the Office of Research and Public/Private Sector Partnerships at the University of North Carolina at Greensboro. We would like to acknowledge and thank our social research assistant and project coordinator, Stephanie Willis for her contributions and dedication to the study; Garren Brannon, our student research assistant; lay health advisor staff at the Center for New North Carolinians who served as key informants and assisted in identifying participants for the project; all agencies and providers who participated in the interviews for their time and perspectives.

References

1. Bailey R. New immigrant communities in the North Carolina piedmont triad: integration issues and challenges. In: Gozdziak EM, Martin SF, editors. Beyond the gateway: immigrants in a changing America. Maryland: Lexington Books; 2005. pp. 57–85

2. Immigration Reform and Control Act of 1986 (IRCA). Public L. 99–603, Sec. 303

3. Simanski J. Mapping trends in US legal immigration 1980–2003 Working Paper, Office of Immigration Statistics Management Directorate, US Department of Homeland Security available on line at: http://uscis.gov/graphics/shared/statistics/publications/TrendsRpt1980–2004.pdf accessed 1st January 2006

4. North Carolina State Demographics: Estimates of the population of North Carolina, 2000. Raleigh, NC; 2003

5. U.S. Census Bureau, Population Division, Annual Estimates of Population by Race Alone and Hispanic or Latino Origin for the US and States: July 1:2003. Released September, 2004

6. LeClere FB, Jensen L, Biddlecom AE. Health care utilization, family context, and adaptation among immigrants to the United States. J Health Soc Behav 1994;35(4):370–84

7. Dion KK, Dion KL. Gender and cultural adaptation in immigrant families. J Soc Issues 2001;7(3):511–22

8. Congress of the United States, Congressional Budget Office: a description of the immigrant population. November 2004

9. Kaiser LL, Melgar-Quinonez HR, Lamp CL, Johns MC, Sutherlin JM, Harwood JO. Food security and nutritional outcomes of preschool-age Mexican–American children. J Am Diet Assoc 2002;102(7):924–9

10. Cook JT, Frank DA, Berkowitz C, Black MM, Casey PH, Cutts DB, Meyers AF, Zaldivar N, Skalicky A, Levenson S, Heeren T, Nord M. Food insecurity is associated with adverse health outcomes among human infants and toddlers. J Nutr 2004;134:1432–8

11. Adams EJ, Grummer-Strawn L, Chavez G. Food insecurity is associated with increased risk of obesity in California women. J Nutr 2003; 133(4):1070–4

12. Mazur R, Marquis G, Jensen H. Diet and food insufficiency among Hispanic youths: acculturation and socioeconomic factors in the third National Health and Nutrition Examination Survey. Am J Clin Nutr 2003;7:1120–227

13. Anderson SA. Core indicators of nutritional state for difficult-to-sample populations. J Nutr 1990;120(11S):1557–600

14. Bickel G, Nord M, Price C, Hamilton W, Cook JT. Measuring food security in the United States: guide to measuring household food security, rev. Alexandria, VA: USDA/FNS/OAE; 2000

15. Gamm LD, Hutchison LL, Dabney BJ, Dorsey AM, editors. Rural healthy people 2010: a companion document to healthy people 2010. Volume 1. College Station, Texas: The Texas A&M University System Health Science Center, School of Rural Public Health, Southwest Rural Health Research Center; 2003

16. Personal Responsibility and Work Opportunity Reconciliation Act of 1996, Pub. L. No. 104–93, 110 Stat. 2105

17. Carrasquillo O, Carrasquillo A, Shea S. Health insurance coverage of immigrants living in the United Status: differences by citizenship status and country of origin. Am J Public Health 2000; 90:917–23

18. North Carolina Institute of Medicine: NC Latino Health, 2003: A Report from the Latino Health Task Force. Durham, NC; 2003

19. Bickel GW, Andrews MS, Klein BW. Measuring food security in the United States: a supplement to the CPS. In: Hall D, Stavrianos M. editors. Nutrition, food security in the food stamp program. Alexandria VA: USDA Food and Consumer Service; 1996

20. Hamilton WL, Cook JT, Thompson WW, Buron LF, Frongillo EA, Olson CM, Wehler CA. Household food security in the United States in 1995: summary report of the food security measurement project. Alexandria, VA: USDA/FCS/OAE; 1997

21. Kandula NR, Kersey M, Lurie N. Assuring the health of immigrants: what the leading health indicators tell us. Annu Rev Pub Health 2004;25:357–76

22. McLeroy KR, Bibeau D, Steckler A, Glanz K. An ecological perspective on health promotion programs. Health Educ Quar 1988;15:351–77

23. Richard L, Potvin L, Kishchuk N, Prlic H, Green LW. Assessment of the integration of the ecological approach in health promotion programs. Am J Health Promo 1996;10(4):318–28

24. Stokols D, Allen J, Bellingham R. The social ecology of health promotion: implications for research and practice. Am J Health Promot 1996;10(4):247–51

25. Gregson J, Foerster SB, Orr R, Jones L, Benedict J, Clarke B, Hersey J, Lewis J, Zotz K. System, environmental and policy changes: using the social-ecological model as a framework for evaluating nutrition education and social marketing programs with low income audiences. J Nutr Ed 2001;33:S4–15

26. Center for New North Carolinians: New North Carolinians in Guilford County: Demography of refugee and at-risk immigrant communities: 2004 Population profile. Greensboro: NC; 2005

27. Faith Action International House. 2002 Annual Report on the Hispanic/Latino Population in All 100 North Carolina Counties. Greensboro, NC

28. Section 412(a)(6) of the Immigration and Nationality Act (the “IN4 as amended by the Refugee Act of 1980 (the “Act”) 8 U.S.C. 1522(a)(6): Refugee Act of 1980, Pub. L. No. 96–212

29. US Dept. of Health and Hum. Serv. (2000) Healthy People 2010. Understanding and Improving Health and Objectives for Improving Health, Washington, DC

30. Kaplan MS, Huguet N, Newsom JT, McFarland BH. The association between length of residence and obesity among Hispanic immigrants. Am J Prev Med 2004;27(4):323–6

31. Goel MS, McCarthy EP, Phillips RS, Wee CC. Obesity among US immigrant subgroups by duration of residence. JAMA 2004;292(23):2860–7

32. Bernard HR. Research methods in anthropology: qualitative, quantitative approaches. 3rd Walnut Creek CA: Altamira Press; 2002

33. DeSantis L. Building healthy communities with immigrants and refugees. J Trans Nurs 1997;9(1):20–31

34. Truelove M. Services for immigrant women: an evaluation of locations. Can Geogr 2000;44(2):135–51

35. Arcia E, Skinner M, Bailey D, Correa V. Models of acculturation and health behavior among Latino immigrants to the US. Soc Sci Med 2001;53:41–53

36. Casey MM, Blewett LA, Call KT. Providing health care to Latino immigrants: community-based efforts in the rural Midwest. Am J Pub Health 2004;94(10):1709–11

37. Holtzman J. Immigrant access to public benefits in North Carolina: overcoming barriers to participation. Raleigh, NC: North Carolina Justice and Community Development Center; 2002

38. Martinez HN, Manson AB. Health disparities among North Carolina's Latinos: our point of view. NC Med J 2004;65(6):356–8

Footnotes

1 The term "Latino" is used here interchangeably with the U.S. census term, "Hispanic," recognizing that different constituencies have differing preferred terminologies for the same base population.

2 Non-acculturation used here refers to lack of proficiency with English and minimal assimilation to mainstream American cultural systems.