

## *Eritrean and Eritrean American Health Assessment*

**Addn Araya, McNair Scholar  
The Pennsylvania State University**

**McNair Faculty Research Advisors:**

**Rhonda BeLue, PhD  
Associate Professor of Public Health Sciences  
Department of Health Policy and Administration  
College of Health and Human Development  
Pennsylvania State University**

**Lori A. Francis, Ph.D  
Associate Professor of BioBehavioral Health  
Department of BioBehavioral Health  
College of Health and Human Development  
The Pennsylvania State University**

### **Abstract**

**Background:** Eritrean Immigrant health and health care access has not been explored, to the same extent as other African immigrants. Given the increasing population of Eritreans in America, understanding Eritreans health status will be important for developing public health policy for African communities. **Methods:** An anonymous 1-point cross sectional survey, including 28 questions, assessed information on chronic disease status, health care access, health status, and demographics. Surveys were distributed through social media forums such as Twitter and Facebook. Cross-tabulations were used to draw descriptive conclusions. **Results:** Of 101 completed surveys, 63.3% of participant's insured actually having had a routine checkup in the last year. 45.5% uninsured did not visit a doctor due to cost. 54.5% did not have one doctor thought of as their personal health care provider. **Discussion:** Future research with community-based participation may help to further understand the needs of Eritrean and Eritrean-American communities to create culturally appropriate health interventions.

### **Introduction**

#### **African Immigrant Health in the U.S.**

According to the 2008-2012 Census of the 1.6 million foreign-born from Africa in the U.S., 36 percent were from West Africa, 29 percent from East Africa, 17 percent from the Northern region, 5 percent from South Africa, and 5 percent from Central Africa (U.S. Census Bureau, 2014). But even with the increasing number of East Africa populations, Ethiopia, most closely culturally related to Eritrea in the horn of Africa, consists of one of the largest African-born populations but has the second lowest educational attainment among these having a bachelor's degree or higher at 26.2 percent (U.S. Census Bureau, 2014). Nigeria, at 60.9 percent,

and Egypt, at 63.9 percent, both have the highest percentage of educational achievements beyond bachelor's degrees (U.S. Census Bureau, 2014).

A lack of education can result in poor basic communication of health needs in specific populations, ultimately leading to bad health outcomes. Researchers have failed to observe that health literacy can include the variables of culture and ethnicity as potential barriers to understanding and utilizing of U.S. health care system (Shaw, 2009). Furthermore, low health literacy is most prevalent in ethnic minorities, low-income, and elderly populations (Shaw, 2009; McLean, 2013; Gonzalez, 2008; Lucas, 2003). Additionally, ways in which African populations in general view chronic disease, health care, and health issues vary from region to region.

Although papers have examined culturally appropriate health care interventions for African immigrants, often these studies are combining findings from participants across the continent of Africa, which includes a variety of cultural differences. Furthermore, the use of the data found in African populations is often used to observe the "immigrant health effect," comparing the health of Africans to Black people in America. Although important data exists, including findings that immigrants appear to have lower rates of hypertension compared to American-born Blacks, such data should not dismiss the importance of further reducing these numbers in the African community (Hyman, 2000). Drawing most data from West Africans, which may be due to language barriers, cultural differences on views on health care, or the educational barrier mentioned, can limit healthcare providers' opportunities to reach out to other African communities to access their health care needs (Adeyinka, 2014).

Health disparities in the U.S. are still prevalent, and with the immense growth and diversity of cultural backgrounds present, the country is not equipped with culturally appropriate health care or education. Awareness of cultural norms and ideals faced in different populations is important to establish health interventions. More specifically, African immigrants represent one of the fastest growing groups of immigrants to the United States. Between 1990 and 2000, the total number of African immigrants increased by 166 percent (Venters, 2011). Eritrean populations originating from the Horn of Africa are increasing in the U.S. population, with many pockets of communities in places such as Washington, D.C, Washington State, Texas, and California. With this growth in mind, as future or current public health specialists, we must have an understanding of populations and how we can reach them to begin health care interventions.

## **Previous Research Methods and Culturally Appropriate Health Interventions**

### ***Surveys, focus groups, and one-on-one interviews***

Studies on the Eritrean community have used methods such as focus groups, surveys, and one-on-one interviews. A cross-generational survey found that among 40 participants, two-thirds knew someone with diabetes and 3 of the 40 participants had diabetes (McGuigan, 2010, p1). "Most middle-aged and older adult respondents named lifestyle factors such as poor diet, lack of exercise, and stress as contributing factors to diabetes;" they mentioned diet and exercise as primary treatments, with few acknowledging medications. (McGuigan, 2010 pp. 1-2). In addition, both Ethiopian and Eritrean participants had concerns about becoming addicted to medication and Western medication being too strong, as well as other concerns (McGuigan, 2010). These same interviewees expressed the need for intensive counseling and education to build knowledge within their communities, but such counseling and education may not always be cost effective (McGuigan, 2010). Few published studies reveal a thorough health assessment or

specific health interventions molded to fit the needs of Eritrean populations at risk for chronic disease.

A multidisciplinary intervention for diabetes in Eritrea, including the training of diabetes educators, enhanced physician education, patient-teaching materials, and glucose monitoring promotion, worked in improving sustainable diabetes care in developing countries (Windus, 2007). This study alone reveals that when immigrants are migrating, they might be arriving with chronic illnesses. Research abroad and interviews in Eritrean communities in Seattle indicate a need for education on how to prevent such health outcomes, as well as a need for disease management over a lifetime. Expanding the field of research on specific populations in Africa will directly impact health care outcomes in different areas across the U.S. for the benefit of the people and the health care system.

Focus groups have made great strides in understanding the beliefs Eritreans have about health concerns, such as psychosocial barriers to obtaining preventive dental care for children; barriers for HIV testing; and differences among acculturation experiences, food beliefs, and perceived health risks (Amin, 2012; Lindkvist, 2015; Wilson, 2014). Important findings from these studies include barriers stemming from cultural health beliefs, such as denial and fear of social isolation as a result of having HIV and roots in cultural beliefs from experiences in Eritrea, such as traditional eating habits (Amin, 2012; Lindkvist, 2015; Wilson, 2014; Ghezehay, 2010). Having used focus groups as a method to reach a community, we see that the community, when receiving health interventions, is receptive to speaking about its views and possibly its needs, which will allow health care providers to fulfill these needs.

### ***Social media as community outreach***

Community based participatory research is an approach to improving health status in communities based on recommendations and participation of the community to bring about the change they would like to see. Social media as an outlet to easily reach this community has been used to target specific immigrant populations, usually distributed in their native language. To encourage Vietnamese women to get pap tests, one health intervention took data from their previous study, which included suggestions from Vietnamese women on the best way of reaching them through social media (Lam, 2003). Working with Vietnamese language TV networks, newspapers, radio stations, as well as creating posters and information pamphlets, they found that, post-intervention, more woman knew about cervical cancer, also increasing the number who went to get pap tests (Lam, 2003). Social media in this case was used as the community thought best, specific to their language needs, in overcoming a cultural barrier to better health. Lam also employed the use of community forms to receive feedback on their intervention strategies of social media, helping to refine their intervention as suggested by the community.

Identifying community leaders as a way to reach the community, Keimer used them to distribute informational flyers and posters for Turkish immigrant communities (Keimer, 2011). Finding that their target audience was hard to recruit for the study, it revealed barriers of limited time to participate, location as an issue, and the content not being of interest to them. Using the community to help identify, and potentially solve, issues they face allows for health care providers to better understand the structural or cultural barriers faced by populations.

What is missing in the research for African immigrants is the assessment and utilization of social media forums such as Facebook and Twitter to assess health status and risk. Eritrean

immigrants living in the U.S. adopt a new way of living, and reaching the community through focus groups interventions may be limiting. This paper will begin to look into ways to further reach Eritrean populations. Furthermore, the research will first use the strategy of reaching these populations through survey form on Facebook and Twitter, as well as a health assessment based on responses to questions about health care access, exercise, chronic disease, and health status.

## **Methods**

### **Participants**

Eritrean American and Eritrean participants were recruited from different forums/pages on Facebook and Twitter. These residents were reached by posting the survey link and a short message explaining the purpose of the survey. Public Eritrean Facebook pages, personal messages, and the sharing of posts by participants themselves were the main forms of distribution. Eligibility to participate was determined by age (18+), being a U.S resident or citizen, and Eritrean or Eritrean-American status.

### **Procedure**

An anonymous 1-point cross sectional survey, including 28 questions from the Behavioral Risk Factor Surveillance System (BRFSS), was distributed through social media forums including Twitter and Facebook. Consent was given on the first page of the survey, only allowing access to the survey to those answering “yes”. Included in the survey were questions of U.S citizenship or residency and confirmation of being Eritrean; these questions were added after about 100 submissions. Survey stuffing was disabled (not allowing access once a survey was completed).

### **Measures**

#### ***Behavioral risk factor surveillance system (BRFSS)***

The Behavioral Risk Factor Surveillance System is a telephone survey collecting annual data on health risks, chronic disease, and use of preventative care services. Pulling from the 2014 survey, questions were taken from the chronic disease, health care access, health status, exercise, and demographics sections as measures.

Chronic disease information included five questions about whether the participant or a family member, has ever had, or been told they have had a heart attack, angina or coronary heart disease, stroke, cancer, or diabetes. Health care access information included whether they had any kind of health coverage (including Medicaid, HMO’s, etc.); having someone they considered their personal doctor or health care provider; whether money was a factor for not seeing a doctor in the past year; and the time since their last visit for a routine checkup (12 months, 1-2 years, 2-5 years, 5+ years, Don’t know/Not Sure, or Never).

Health status included one self-assessed question about general health including answer choices “excellent” (1), “very good” (2), “good” (3), “fair” (4), “poor” (5), or “don’t know/not sure” (6). Exercise also included one question asking “yes” or “no” to engaging in exercise outside of work in the last month (running, walking, gardening, etc). Demographics included

height, weight, age, sex, race identification, military services, marital status, the number of children in the home less than 18 years of age, highest academic achievements, employment, annual household income, renting or owing a home, and whether physical/mental/emotional problems may limit activities.

## **Participant Recruiting**

### ***Facebook and Twitter***

Facebook pages “Eritrea Meadi Deki Hade Libi” (Eritrea, children of one heart-563 members); “Eritrea Niana, Nhna N’Eritrea” (Eritrea for us, us for Eritrea-414 members); “I am Eritrean and I am proud” with 680 members; and “We are all Isaias Aferwki” with 9,009 members are pages used to share news about political issues and policies being passed in Eritrea. The main initiative is to keep those in the diaspora informed. They also host communities for people to share any other news locally they may have.

“YFPDJ and Young Eritreans” with 5,058 members; “Harrisburg YFPDJ” with 27 members; “YFPDJ: Hidri Dallas Chapter” with 472 members; and Young PFDJ with 4,724 members are groups specific to the organization of “Young People’s Front for Democracy and Justice (YFPDJ).” YFPDJ is a nationalist Eritrean Diaspora Youth Organization branch. This is where political news is shared, but also things pertaining to identity and community for those in the Diaspora. Many of the topics discussed are from the National conference held annually, last year’s topic being identity. Many videos are posted on what the different *hidri* (youth) across the U.S. are doing for their Eritrean communities locally.

Finally, there is the “21<sup>st</sup> anniversary of the Eritrean Independence” which is an older page but has 12,843 members. It is now the 24<sup>th</sup> anniversary of Eritrea’s liberation from Ethiopia. It is a page that updates the Eritrean communities across the U.S. about the festivals/celebrations happening in D.C., since there is a big population there.

Twitter was used as a way to directly contact individuals in the Eritrean community through the hashtag Eritrea. Through the Facebook page of YFPDJ, a Twitter page link was found allowing reaching contacts quicker through personal tweets. Individuals were asked to take the survey for the Eritrean and Eritrean American Health Assessment. In addition, participants on Facebook and Twitter were able to retweet or repost the survey to their personal pages. The number of friends each participant reposting or retweeting had was accounted for and added to the total number of contacts.

## **Variables and Analytic Strategies**

Overall, 276 submissions were recorded and descriptive conclusions were made using IBMs Statistical Package for the Social Science (SPSS). Small conclusions based on the data collected included a bivariate analyses exploring health risk by SES; chronic disease history and health risk; whether online surveys are an effective method to collect data from this community; how often Eritreans engage in exercise; and cross tabulations of how much health care access Eritreans and Eritrean Americans have and utilization of their access. For the purpose of a descriptive study, submissions were used to generate hypotheses for future health interventions or methods to reach Eritrean populations in the U.S. based on research of these varying methodologies.

## Results

### Response Rate

Taking into account the number of members on the various Facebook pages and the number of friends or twitter followers of those who reposted the link, about 64,936 points of contact were made. There is no data on how many of these contacts are repeats or whether they actually had the chance to view the link/survey. 276 participants did give consent to take the survey with 220 actually completing the survey. Of the 220 who completed the survey, 101 were recorded after the addition of the question confirming their being Eritrean or Eritrean-American.

### Descriptive Results

Basic demographics including age, BMI, self-reported health status, gender, educational level, marital status, employment status, number of children under 18 in household, rent or owning home, and household income are summarized in Table A1. The mean age for respondents was 28, with a mean BMI of 25, considered healthy. Mean self-reported health status of 1.9 indicates most respondents believe they are in either very good or excellent health, supporting the BMI mean outcome.

More than half of the respondents (55.6%) were female. Educational attainments show that more than 80% either completed 1-3 years of college or 4+ years. Only 28.6% of respondents chose “student” for employment status; “wages” was the largest with 58.2%, which may indicate that some students are also working while attending school. Marital status was second largest with 17.6, with most respondents, 72.5%, answering “never married”. About 53.9% of participants made less than 50,000, 19.1% making less than 75,000, and the remaining 27% made 75,000 or more.

54.7% of participants reported that either they, or a family member, had diabetes. Only 12.3% reported myocardial infarction, 10.4% for angina coronary heart disease, and 20.8% for stroke, which are all known for being co-morbid with diabetes. A number of participants also reported that either they or a family member had cancer (29.2%). Most of respondents reported having engaged in exercise outside of work (82.8%), with only 4.4% reporting limitations due to physical, mental, or emotional problems.

Most respondents had access to health care (Table A3), with 63.3% ( $P = 0.03$ ) of insured participants actually having had a routine checkup in the last year (Table A4). A little fewer than half of respondents (45.5%,  $P = 0.03$ ) who were uninsured did not visit a doctor due to cost (Table A4.) More than half of those uninsured (54.5%,  $P = 0.0015$ ) also did not have one doctor they thought of as their personal health care provider (Table A4).

## Discussion

Social media served as an effective way to reach the Eritrean community, with 220 completed responses in about 3-4 weeks. The mean age of 28 was telling of respondents being young and old and actively participating in social media such as Facebook and Twitter. Similar to Lam’s study targeting immigrant Vietnamese populations through social media, our survey was shared through the social networks of our participants. In Lam’s study, they observed the community for 16 years before conducting a successful health intervention. The researchers

spent the time understanding cultural patterns of seeking and sharing information within the Vietnamese community (Lam, 2003). Their findings showed the Vietnamese had a strong emphasis on community ties and found that community leaders were primary distributors of important information, helping to spread information on cervical cancer prevention. Similar to Lam's study findings, Eritrean community leaders worked to distribute the survey. These indications of strong ties between those in the community shows that future research on community outreach can be strategically planned based on the understanding of cultural norms of information sharing (Lam, 2003; Keimer, 2011).

BMI calculated by using self-reported weight and height found a mean of 25, which is considered healthy, although close to being overweight. A mean health status was reported at 1.9 (1 being excellent health and 2 being very good). Interestingly, 82.8% reported engaging in exercise outside of their workplace. The reasons for the mean being close to overweight should be explored, as well as the perception of body size. A study examining overweight prevalence across countries in Africa and other underdeveloped countries found that in the 1990s to 2000s, there was an increase in urban and rural areas, with the exception of Nigeria and Rwanda (Jaacks, 2015). From the 2000s to early 2010, there was an increase in the percentage overweight in both urban and rural areas (Jaacks, 2015). Additionally, a Senegal study looked into the perceptions of body size among Senegalese women, finding that about 27% in the study were overweight, and one-third viewed those overweight, not obese, as being most socially desirable body size (Holdsworth, 2004). Although culturally and geographically different, a South Africa study found the same positive association of overweight, but not obese, body sizes in women (Draper, 2015). Overweight and perceptions of overweight are of increasing concern in Sub-Saharan Africa. Weight perceptions in Eritrea may continue to affect Eritrean immigrants. Furthermore, perceptions about body sizes may interfere negatively with future health interventions to reduce rates of overweight and obese populations.

The prevalence of chronic diseases such as diabetes is highly associated with overweight and obese populations. Overall, 54.5% of participants reported that they or a family member had diabetes. Non-communicable diseases (NCDs) are expected to be reaching about half of the deaths in Sub-Saharan African by 2030 (The World Bank, 2011; Jaacks, 2015). The dilemma faced in these at-risk countries is the economic burden, developing NCDs while still economically developing, cutting resources to prevent bad health outcomes (The World Bank, 2011).

In relation to health care access in the Eritrea study, 36.7% of Eritreans responding "yes" to having access to health care indicated that they did not visit a doctor in the past year for a routine checkup. Previous research has found that refugee or asylum-seeking immigrant populations coming from countries with less developed health care systems expect hospital referrals to serve their needs in developed countries, which typically rely on primary care to address such needs (Burnett, 2001). Understanding how to utilize the health care system is a struggle for native-born Americans; so examining the understanding of specific African immigrants' beliefs about the system is needed (Bernstein, 2003). Furthermore, this finding raises the need to question and further explore potential barriers, whether cultural, individual, or structural, to utilizing health care even when insured.

Additionally, in 2013, 13.4% of the U.S. population was uninsured and 10.9% of participants in this study were uninsured or did not know if they were insured (Smith, U.S. Census, 2013). A little less than half of those uninsured did not visit the doctor due to cost; more than half also did not have anyone they considered their doctor or personal health care provider.

A lack of education may exist regarding being insured and benefits that are available for use. Furthermore, refugees moving to a new country will need health professionals and organizations to make contact with them to build their network of health care resources (Burnett, 2001). Future research needs to answer why Eritrean and Eritrean-American populations may be uninsured.

### **Limitations**

The age of those active on social media may be limiting of the audience that needs to be reached those who may not know how to use them. Having been a self-reported health assessment, all responses on chronic disease were open to being specific to himself or herself or a family member. Specificity on family history and the participant having the chronic diseases will need to be further researched. BMI was also calculated using self-reported height and weight, which may include estimations rather than confirmed results.

A language barrier may also limit the number of people able to access information online. Future research must be conscious of the possibility of a language barrier. Additionally, the number of responses was limited because the question of whether they were Eritrean was not added until about 100 responses were documented. Overall, 101 responses met all requirements to make conclusions. Furthermore, the method used in the study to keep track of the response rate limited knowing how many people were new and old points of contact. There was no way to know how many of the contacts were repeats, in order to effectively calculate the percentage of people reached compared to the number who completed the survey.

### **Future Research**

Further research must begin to explore views Eritreans may hold about the chronic diseases they have, as well as their methods of management. For example, the rate of diabetes reported was 54.7% with few reporting having diseases usually associated as co-morbid, raising the question of the rate of comorbidity for these populations. With the help of doctors/hospitals, confirmation of chronic disease prevalence and health status of individuals can be produced to begin targeting health issues. Furthermore, exploration and understanding of cultural norms within Eritrean communities will begin to reveal different views in relation to chronic disease management and effective methods of communicating with the community.

As previous research in one Eritrean community showed, fear of becoming addicted to medication, exists; therefore, researchers must understand other beliefs about chronic disease management (McGuigan, 2010). The best methods observed with immigrant populations seem to be community-based participatory research (CBPR) involving the community to identify problems related to health. The most basic barrier is language. To overcome language barriers, the youth may be utilized, as well as the use of photo voice in CBPR to provide a way of communicating concerns through photos. The methods used in Windus's study in Eritrea training diabetes educators, enhancing physician education, developing patient-teaching materials, and more involved the use of those within the Eritrean community who understood the effective ways of communicating with the people (Windus, 2007).

Giving the community a voice and central position in the health related research being conducted would raise questions that may have otherwise been overlooked. Furthermore, having an ethnographic mindset when entering into communities of a different culture will allow the community to show the issues it faces rather than health professionals making educated



assumptions. All these considerations will lay the foundation of research that must be explored before health interventions can take place.

### **Personal reflection**

I was already an active member of the Eritrean social media community, so leaders and members of the Eritrean community who recognized me reposted, asked questions about the study, and emailed their Eritrean friends to take the survey. These actions were also supported with encouragement and recognition for the work I was doing in the development as furthering Eritrean people as a whole through public health. The support received as a member of the community also shows that the community is very close-knit with the quick circulation of the survey, support, and outcome of responses. I found participants who said they were already contacted before I personally sent a message or tweet. Not being a member of the Eritrean community may be a limitation to reproducing this research because another will not be as connected to the community. However, my membership is a bigger advantage for reaching this population for future research.

## References

- Akinsulure-Smith, A.M. (2014) Exploring HIV knowledge, risk and protective factors among west african forced migrants in New York City. *Journal of Immigrant and Minority Health*. 16,481-491.
- Amin M. & Perez A. (2014) Is the wait-for-patient-to-come approach suitable for African newcomers to Alberta, Canada? *Community Dentistry and Oral Epidemiology*. 40(6),523–531.
- Bernstein AB, Hing E, Moss AJ, Allen KF, Siller AB, Tiggler RB. Health Care in America: Trends in Utilization. Hyattsville, MD: National Center for Health Statistics; 2003. Available at: [www.cdc.gov/nchs/about/major/nhcs/nhcs\\_reports.htm#health](http://www.cdc.gov/nchs/about/major/nhcs/nhcs_reports.htm#health). Accessed August 3, 2015
- BeLue, R. (2015) The role of family in the non-communicable disease management in sub-saharan Africa. (Under review)
- Burnett, A., & Peel, M. (2001). Health needs of asylum seekers and refugees. *BMJ: British Medical Journal*, 322(7285), 544–547.
- Cooper, D. (2010). Eritrean cultural profile. *Ethnomed*: University of Washington: 15. (02705). <http://ethnomed.org>
- Draper CE, Davidowitz KJ, Goedecke JH. Perceptions relating to body size, weight loss and weight-loss interventions in black South African women: a qualitative study. *Public Health Nutr*. 2015 May 26:1-9. [Epub ahead of print] PubMed PMID: 26006784.
- Blanas, D.A., Nichols, K., Bekele, M., Lugg, A., Kerani, R.A., & Horowitz, C.R. (2013) HIV/AIDS among african-born residents in the United States. *Journal of Immigrant and Minority Health* 15,718-724.
- Gee G.C., Ryan A., Laflamme D.J., & Holt J. (2006) Self-reported discrimination and mental health status among African descendants, Mexican Americans, and other Latinos in the New Hampshire REACH 2010 Initiative: The added dimension of immigration. *Am J Public Health*. 96(10),1821-1828. doi: 10.2105/AJPH.2005.080085.7
- Ghezehay K.W., Knight S.E., & Hobday M.B.(2010) Knowledge, attitudes and sexual practices regarding HIV/AIDS among the Eritrean military. *East Afr J Public Health*;7,214-218. <http://www.ncbi.nlm.nih.gov/pubmed/21516957>
- Gonzalez JR, Consedine NS, McKiernan JM, Spencer BA. Barriers to the initiation and maintenance of Prostate Specific Antigen screening in black American and Afro-Caribbean men. *J Urol*. 2008;180:2403–8. doi:10.1016/j.juro.2008.08.031.
- Holdsworth M, Gartner A, Landais E, Maire B, Delpuech F. Perceptions of healthy and desirable body size in urban Senegalese women. *Int J Obes Relat Metab Disord*. 2004 Dec;28(12):1561-8. PubMed PMID: 15278107.
- Hyman DJ, Ogbonnaya K, Pavlik VN, Poston WS, Ho K. Lower hypertension prevalence in first-generation African immigrants compared to US-born African Americans. *Ethn Dis*. 2000;10(3):343–9.
- Jaacks LM, Slining MM, Popkin BM. Recent underweight and overweight trends by rural-urban residence among women in low- and middle-income countries. *J Nutr*. 2015 Feb;145(2):352-7. doi: 10.3945/jn.114.203562. Epub 2014 Dec 10. PubMed PMID: 25644358.
- Jessica C. Smith and Carla Medalia, U.S. Census Bureau, Current Population Reports, P60-250, Health Insurance Coverage in the United States: 2013, U.S. Government Printing

- Office, Washington, DC, 2014.
- Keimer KM, Dreas JA, Hassel H. [Recruiting elderly with a migration and/or low socioeconomic status in the prevention study OptimaHI 60plus](#). *J Prim Prev*. 2011 Feb;32(1):53-63. doi: 10.1007/s10935-010-0221-9. PubMed PMID: 20652635.
- Lam TK, McPhee SJ, Mock J, Wong C, Doan HT, Nguyen T, Lai KQ, Ha-Iaconis T, Luong TN. [Encouraging Vietnamese-American women to obtain Pap tests through lay health worker outreach and media education](#). *J Gen Intern Med*. 2003 Jul;18(7):516-24. PubMed PMID: 12848834; PubMed Central PMCID: PMC1494888.
- Leclere FB, Jensen L, Biddlecom AE. Health care utilization, family context, and adaptation among immigrants to the United States. *J Health Soc Behav*. 1994 Dec;35(4):370-84. PubMed PMID: 7844331.
- Leigh A. Willis, Jenevieve Opoku, Ashley Murray, Tiffany West, Anna Satcher Johnson, Gregory Pappas, Madeline Y. Sutton, (2015) Diagnoses of Human Immunodeficiency Virus (HIV) Infection Among Foreign-Born Persons Living in the District of Columbia. *Journal of Immigrant and Minority Health* 17:, pages 37-46.
- Lindkvist P, Johansson E and Hylander I. Fogging the issue of HIV – Barriers for HIV testing in a migrated population from Ethiopia and Eritrea. *BMC Public Health* 2015;15:82.
- Lucas JW, Barr-Anderson DJ, Kington RS. Health status, health insurance and health care utilization patterns of immigrant black men. *Am J Public Health*. 2003;93(10):1740–7.
- McGuigan, C. (2010). Diabetes In The Eritrean and Ethiopian Community: Cultural Information and Recommendations for Diabetes Educators. *Ethnomed*: University of Washington: 15 (02705). <http://ethnomed.org>
- McLean C, Campbell C, Cornish F. African-Caribbean interactions with mental health services: experiences and expectations of exclusion as reproductive of health inequalities. *Soc Sci Med*. 2003;56(3):657–69.
- Shaw, S. J., Huebner, C., Armin, J., Orzech, K., & Vivian, J. (2009). The role of culture in health literacy and chronic disease screening and management. *Journal of Immigrant and Minority Health*, 11, 460-467.
- The World Bank Human Development Network. The growing danger of non-communicable diseases. Acting now to reverse course. 2011. [http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2011/11/30/000386194\\_20111130023857/Rendered/PDF/657850WP0Box360C00WBDeepeningCrisis.pdf](http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2011/11/30/000386194_20111130023857/Rendered/PDF/657850WP0Box360C00WBDeepeningCrisis.pdf). Accessed 1 Aug 2015.
- U.S. Census Bureau. (2014, October) *American Community Survey Briefs*. Retrieved June 8, 2014, from <https://www.census.gov/content/dam/Census/library/publications/2014/acs/acsbr12-16.pdf>
- Venters, H., Gany, F. African immigrant health. *J Immigr Minor Health*. 2011 Apr;13(2):333-44. Doi: 10.1007/s10903-009-9243-x. Epub 2009 Apr 4. Review. PubMed PMID: 19347581
- Wilson, A., Renzaho, A. (2015). Intergenerational differences in acculturation experiences, food beliefs and perceived health risks among refugees from the Horn of Africa in Melbourne, Australia. *Public Health Nutrition*, 18, pp 176-188. doi:10.1017/S1368980013003467.

- Wafula, E.G. & Snipes, S.A. (2014) Barriers to health care access faced by black immigrants in the US: Theoretical considerations and recommendations. *Journal of Immigrant and Minority Health* 16,689-698.
- Windus, DW., Ladeson, JH., Merrins, CK., Seyoum, M., Windus, D., Morin S., Tewelde, B., Parvin, Ca., Scott, MG., Goldfeder, J. (2007). Impact of a Multidisciplinary Intervention for Diabetes in Eritrea. *Clin Chem.* 2007 Nov;53(11):1954-9. PubMed PMID: 17954497.
- Whiting, D.R., Hayes, L., & Unwin, N.C. (2003). Challenges to Health Care for Diabetes in Africa. *Journal for Cardiovascular, 10, 103-110.* Doi: 10.1097/01.hjr.0000060846.48106.6d

## Appendix A

Table A1

Demographics (n=101)

| <u>Variable</u>                                     | <u>M (Sd)</u>                    | <u>%</u> |
|---|----------------------------------|----------|
| Age   | 28 (9.5)                         |          |
| BMI   | 25 (7.9)                         |          |
| Health Status                                       | 1.9 (.37)                        |          |
|   | Excellent – 1                    | 30.8     |
|   | Very Good – 2                    | 43.9     |
|   | Good – 3                         | 21.5     |
|   | Fair – 4                         | 2.8      |
|   | Don't Know/ Not Sure – 5         | .9       |
| Gender  |                                  |          |
|   | Male                             | 44.4     |
|   | Female                           | 55.6     |
| Educational Level                                   |                                  |          |
|   | Grades 9-11                      | 1.1      |
|   | Grade 12 or GED                  | 13       |
|   | College 1-3 years                | 40.2     |
|   | College 4 years or more          | 45.7     |
| Marital Status                                      |                                  |          |
|   | Married                          | 17.6     |
|   | Divorced                         | 6.6      |
|   | Separated                        | 2.2      |
|   | Never Married                    | 72.5     |
|   | Member of an unmarried couple    | 1.1      |
| Employment Status                                   |                                  |          |
|   | Wages                            | 58.2     |
|   | Self-employed                    | 9.9      |
|   | Out of work for less than a year | 1.1      |
|   | A homemaker                      | 1.1      |
|   | A student                        | 28.6     |
|   | Unable to work                   | 1.1      |
| Number of children in home<br>under 18 years of age |                                  |          |
|   | 0                                | 57.6     |
|   | 1-2                              | 33.7     |
|   | 3-4                              | 7.6      |
|   | 5-6                              | 1.1      |
| Rent or Own Home                                    |                                  |          |
|   | Own                              | 38.9     |
|   | Rent                             | 45.6     |
|   | Other arrangements               | 10       |
|   | Don't know/Not sure              | 1.1      |
|   | Do not want to answer            | 4.4      |
| Annual household income                             |                                  |          |
|   | Less than 25,000                 | 15.7     |
|   | Less than 35,000                 | 20.2     |
|   | Less than 50,000                 | 18       |
|   | Less than 75,000                 | 19.1     |
|   | 75,000 or more                   | 27       |

Table A2

Health Conditions (n=101)

| Variable   | Answer Choices       | %    |
|--|----------------------|------|
| Myocardial infarction                              | Yes                  | 12.3 |
|  | No                   | 84.9 |
|  | Don't know/ Not Sure | 2.8  |
| Angina or coronary heart disease                   | Yes                  | 10.4 |
|  | No                   | 84.9 |
|  | Don't know/ Not Sure | 4.7  |
| Stroke   | Yes                  | 20.8 |
|  | No                   | 72.6 |
|  | Don't know/ Not Sure | 6.6  |
| Cancer   | Yes                  | 29.2 |
|  | No                   | 68.9 |
|  | Don't know/ Not Sure | 1.9  |
| Diabetes   | Yes                  | 54.7 |
|  | No                   | 40.6 |
|  | Don't know/ Not Sure | 4.7  |
| Engaged in exercise                                | Yes                  | 82.8 |
|  | No                   | 16.2 |
|  | Don't know/ Not Sure | 1    |
| Limited by physical, mental, or emotional problems | Yes                  | 4.4  |
|  | No                   | 95.6 |
|  | Don't know/ Not Sure | 1.1  |

Table A3

Access to care (n=101)

| Variable   | Answer Choice                   | %    |
|--|---------------------------------|------|
| Health care coverage   | Yes                             | 89.1 |
|  | No                              | 8.9  |
|  | Don't know/ Not Sure            | 2    |
| Time in past 12 months when not seeing doctor due to cost    | Yes                             | 20.8 |
|  | No                              | 78.2 |
|  | Don't know/ Not Sure            | 1    |
| Having one person as personal doctor or health care provider | Yes, only one                   | 54.5 |
|  | More than one                   | 27.7 |
|  | No                              | 14.9 |
|  | Don't know/ Not sure            | 3    |
| Time since last doctor visit for physical/routine checkup    | Past year (less than 12 months) | 60.4 |
|  | Within past 2 years             | 23.8 |
|  | Within past 5 years             | 11.9 |
|  | 5 or more years                 | 4    |

Table A4

Cross Tabulations (n=92)

| Variable   | Insured %<br>N=9 | Uninsured %<br>N=83* | P-value |
|--|------------------|----------------------|---------|
| Do you have one person you think of as your personal doctor or health care provider?   |                  |                      |         |
| -Yes   | 55.6             | 45.5                 |         |
| -More than 1   | 31.1             | 0                    | 0.0015  |
| -No/Don't know/Not sure*   | 13.3             | 54.5                 |         |
| About how long has it been since you visited a doctor for a routine checkup? (a routine checkup is a general physical exam for a specific injury, illness, or condition) |                  |                      |         |
| -Within the past year (anytime less than 12 months ago)  | 63.3             | 36.36                |         |
| -Within the past 2 years (1 year but less than 2 years ago)  | 22.22            | 36.36                | 0.03    |
| -Within the past 5 years   | 12.22            | 9.09                 |         |
| -5 years or more   | 2.22             | 18.18                |         |
| BMI (SD)   | 24.5 (4.51)      | 31.2(21.3)           | .3784   |
| Was There a time in the past 12 months when you needed to see a doctor but could not because of cost?  |                  |                      |         |
| -Yes   | 15.8             | 45.5                 | 0.03    |