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From the Democratic Republic of the Congo to North Carolina: An Examination of Chronic Disease Risk

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Abstract

Refugees from the Democratic Republic of the Congo are one of the largest refugee groups globally and in the US, however, there is limited research with this group. Therefore, objectives of this study were to examine: 1) obesity and hypertension rates, 2) diet and lifestyle behavior changes, and 3) diet, lifestyle and social factors of obesity and hypertension risk of Congolese refugees in the US. This cross-sectional data collection utilized a survey developed specifically for this project. Clinical and anthropometric measures including height, weight and blood pressure were also obtained. Data analysis included descriptive and regression analysis. Participants (n=48, >18 years, 55% female) reported consumption of a traditional diet with an emphasis on starchy foods, dark leafy greens, legumes, fish and fruit. Adverse dietary changes and reductions in physical activity were reported. Of the sample 63% were overweight or obese and 91% exhibited elevated blood pressure. Sociodemographic factors including age, sex, and changes to lifestyle (diet, physical activity) were not significantly associated with BMI or diastolic or systolic blood pressure. Findings in this study reveal both lifestyle and clinical risk factors associated with chronic disease as well as potential health care and health literacy barriers. Results from this study may be utilized by practitioners and/or researchers to tailor culturally appropriate future health promotion and/or care to address and reduce health disparities commonly experienced by African refugees.

Introduction

In 2016, the largest group of refugees arriving in the United States (US) were from the Democratic Republic of the Congo (DRC). [1] Congolese refugees currently make up the 6th largest refugee group in the world. [2] Prior to arriving in the US, most Congolese arrived from refugee camps in neighboring countries where healthcare access and support are minimal. Healthcare in refugee camps prioritizes communicable disease(s) and emergency services and identification and/or management of chronic diseases (CDs) may be easily neglected. [3]

Although refugee camp data is limited, there is evidence that CD and obesity risks are elevated within the Congolese population. Overweight and obesity rates as high as 55% have been identified in the Congolese refugees in Rwanda. [3] Hypertension is the most frequently observed non-communicable CD with Congolese refugees. [3] Excess weight and obesity and related CDs including hypertension and diabetes mellitus are consistently identified with the Congolese prior to arrival. [4,5,6]

In addition to these pre-arrival risks, the process of acculturation, upon arrival in the US, further increases the risk of adverse CD related health outcomes. Acculturation is defined as the adoption of behaviors and values of the host country—these changes are associated with a decline in health, commonly referred to as the "immigrant paradox." [7] Aligned with this theory of acculturation, rates of obesity, hypertension and type II diabetes in African refugees are higher than in other refugee groups in both the US and in Canada. [8,9,10] Furthermore, for every year that a refugee resides in the US, their risk of developing hypertension increases. [8,9,10]

In combination with CD related disparities in African refugee groups, evidence also ex-

ists of barriers to accessing quality health care including lack of insurance, language, general literacy, health literacy, as well as the lack of cultural competency of the healthcare providers. [11,12,13] Barriers to accessing healthcare impacts timely diagnosis and management of CDs. Refugees have also been found to utilize primary and preventative healthcare services less often than the general population, further increasing their risk of CD related disparities. [11,14] Access to healthcare is essential for the identification and management of hypertension—especially due to the limited physical symptoms associated with the condition. Once hypertension risk is identified, non-pharmacological, low cost medical management typically focuses on weight, the promotion of dietary changes, and increased physical activity (PA). [15]

While lifestyle and weight are included in hypertension management, these factors are commonly adversely impacted as acculturation occurs over time, potentially further increasing risk. The longer refugees and/or immigrants reside in the US, the greater the likelihood PA decreases and weight increases. [16,17,18,19] Dietary changes further contribute to weight gain and poor health. Loss of healthful and traditional African foods, such as cassava and fish, have also been found to occur overtime, with the preservation and consumption of healthful traditional African vegetables associated with access to cultural staples. [16,20] These dietary and lifestyle changes (e.g. reduced PA) are particularly relevant, as they may either compound or moderate obesity and hypertension risks in an already vulnerable population.

Lastly, health and nutrition behaviors and risks of Congolese refugees are poorly understood due to the large gaps in the literature. For example, samples are often categorized as "African refugees" due to the diversity of nationalities and most individual groups in previous studies. [8,12] We would like to make it clear that when this category is used, it has commonly been for the above reason, however, we and others acknowledge its limitations and the poor representation of the individual cultures, ethnicities and nationalities of African refugees. [12] Furthermore, the use of this category, and the large gaps within the individual African refugee groups, further necessitates research with the refugees from the DRC, as well as other specific African refugee groups.

In summary, refugees from the DRC have an increased propensity to experience obesity and hypertension prior to their arrival in the US. Post-arrival dietary, lifestyle and socio-environmental changes in the US likely further exacerbate these risks. The lack of research with refugees from the DRC makes tailored support and culturally competent, clinical and community-based efforts to address health disparities difficult. Therefore, the objectives of this study were to examine: 1) obesity and hypertension risk post-resettlement, 2) diet and lifestyle behaviors and changes associated with obesity and hypertension risks, and 3) social and environmental contextual factors of obesity and hypertension risk with Congolese refugees resettled in the US.

Methods

Design

This cross-sectional study utilized a paper and pencil survey developed specifically for this project. This convenience sample included Congolese participants (n=48) over 18 years of age who spoke English, Kinyarwanda, French and/or Swahili. Participants were recruited in collaboration with a Congolese staff member from a local resettlement agency using flyers and snow-ball recruitment. This staff member provided cultural guidance and acted as a community liaison during the project. This contact also identified languages for study materials, assisted with flyer development and distribution, and identified host families for data collection. Flyers were developed and translated into Kinyarwanda, French and Swahili. The flyers provided location/time details for data collections and were distributed by the community partner's Congolese staff member. Locations listed on the flyers for data collections were homes within the Congolese community identified by the staff collaborator. Data were collected between October 2017 and March 2018 in a large urban city in North Carolina at homes within the local Congolese community, as well as after a service at a Congolese church. Participants who completed the survey and measurements received a 25.00 gift card to Walmart. The primary investigator in this study had previous training in cross-cultural communication and anthropometric measurements. All research assistants (n=4) were trained by the principal investigator prior to data collection. This study was approved by the Institutional Review Board at Winthrop University (IRB-18001) prior to any data collection. Informed oral and/or written consent was obtained prior to any data collection. All interpreters/translators used during the study received brief training regarding the purpose of the study and signed a statement of confidentiality.

Methods

The survey developed for this project was reviewed for content by three experts within the field of immigrant and refugee health. Content reviewers were identified based on extensive expertise (research, clinical or community-based) working with African refugee populations and were invited via email to review the survey. Based on feedback, several questions and response choices were re-worded, and some additional questions were added. After content validation, the survey was translated into Kinyarwanda, French and Swahili (the survey was also available in English). Survey sections included: 1) demographics, 2) medical care access and general health concerns/conditions, 3) dietary and physical activity changes since arrival to the US, 4) dietary acculturation/changes and dietary habits and perceptions, 5) weight

concerns and general health and/or dietary concerns. Due to the quantity of data collected and the focus of this paper, not all data collected was included in this manuscript. Anthropometric and clinical measures, including height, weight, and blood pressure, were also obtained.

Data Collection

Data were collected at homes within two apartment complexes with high numbers of resettled Congolese refugees—as well as one other separate occasion, after a service at a Congolese church. Individuals who volunteered their homes to be used for data collection were identified by a Congolese case worker at the local resettlement agency. Kinyarwanda, French and/or Swahili interpreters were present during data collection(s) to assist the PI and research team with consent and data collection, as well as questions from the participants during data collection. Survey data were collected orally. After completion of the survey, height, weight and blood pressure were obtained. Height was recorded to the nearest 0.1cm with a stadiometer and weight was taken to the nearest 0.1 kg on a calibrated digital scale. Systolic and diastolic blood pressure were obtained for all participants, with their left arm at rest, by a research assistant with prior clinical training.

Analysis

Data analysis of the close-ended survey questions, anthropometric data, and blood pressure results included descriptive analysis, as well as multivariate logistic and linear regression analysis using IBM SPSS 25.0. Height and weight were used to calculate BMI in kg/m2 and were classified using categories outlined by the Centers for Disease Control and Prevention. [21] Blood pressure risks were classified using the newly revised and released 2017 American College of Cardiology (ACC) and the American Heart Association (AHA) guidelines. [22] These categories were not utilized to diagnose hypertension, but rather to group data collected within categories outlined by the most up to date and professional guidelines. Descriptive statistics included frequencies, mean, and SD of survey response data, as well as tallying open-ended responses and listing them in order of decreasing frequency (**Table 1**). Multivariate logistic regression analysis were performed to examine potential influences on BMI changes. The binary dependent variable BMI non-obese ($\leq$ 29.9 kg/m2) vs. overweight/obese (>30 kg/m2) were examined using the independent variables: socio-demographics, dietary changes, and PA changes. Logistic regression was not performed with blood pressure categories due to the abnormal distribution (e.g. only four individuals had blood pressure within normal ranges). Multivariate linear regression analysis was selected to examine the possible influencers on high blood pressure. The continuous variables systolic and diastolic blood pressure (mmHg) were regressed using the same independent variable listed above (**Table 2** – **Table 4**).

Table 1. Obesity and Hypertension Risk Profile of Congolese Refugees

Category/Measure	Criteria	Frequency (%)
Self-Reported Weight Change		
Weight Loss		7 (19)
No Change		8 (22)
Weight Gain		21 (58)
BMI Categories (kg/m2)		
Underweight	<18.5	1 (2)
Normal	18.5-24.9	16 (35)
Overweight	25-29.9	17 (37)
Obese	$\geq$ 30	12 (26)
Blood Pressure*		
Normal	Less than 120/80 mm Hg	4 (8.7)
Elevated	Systolic between 120-129 and diastolic less than 80	4 (8.7)
Hypertension I	Systolic between 130-139 or diastolic between 80-89	20 (43.5)
Hypertension II	Systolic at least 140 or diastolic at least 90 mm Hg	15 (32.6)
Hypertensive Crisis	Systolic over 180 and/or diastolic over 120	3 (6.5)

*Blood pressure categories were used to categorize readings only for risk identification and are not intended to indicate or suggest a clinical diagnosis.

Table 2. Mutivariate Logistic Regression Results for Obesity (BMI > 30 kg/m^2) Predictiors* with Congolese Refugees

Variables	B	Std Error	Sig	Exp (B)	95% CI Interval for B	
					Lower Bound	Upper Bound
Sex (male vs. female)	-1.944	.999	.052[m]	.143	.020	1.015
Age (years)	.066	.037	.072[m]	1.069	.994	1.149
High Kcal foods[a]	.184	.271	.497	1.202	.707	2.044
Walking[b]	-.476	.579	.411	.622	.200	1.933
Time in US (years)	.015	.085	.856	1.015	.860	1.199

*Model: r^2= (Cox & Snell) 0.260, (Nagelkerke) 0.373
[a] Values indicate increases in soda, fruit juice, salty snacks, sweets and/or fried foods after arrival to the US with a score of "0" indicating no increase and a score of "5" indicating increases in all 5 categories.
[b] Values indicate changes to daily walking after arrival to the US with a score of "0" indicating reduced walking, "1" walking remained the same, and a score of "2" walking increased.
[m] Indicates marginal statistical significance (p>0.05 & ≤0.1)

Table 3. Linear Regression Results for Systolic Blood Pressure (mmHg) Predictors* with Congolese Refugees

Variables	B	Std Error	Standardized Coefficients Beta	Sig	95% CI Interval for B	
					Lower Bound	Upper Bound
Sex (male vs. female)	-8.264	5.781	-.249	.163	-20.055	3.527
Age (years)	.314	.223	.244	.169	-.141	.770
High Kcal foods[a]	1.855	1.907	.167	.338	-2.034	5.744
Walking[b]	-.647	3.299	-.033	.846	-7.374	6.081
Time in US (years)	.069	.638	.019	.914	-1.231	1.370

*Model r^2 = 0.138
[a] Values indicate increases in soda, fruit juice, salty snacks, sweets and/or fried foods after arrival to the US with a score of "0" indicating no increase and a score of "5" indicating increases in all 5 categories.
[b] Values indicate changes to daily walking after arrival to the US with a score of "0" indicating reduced walking, a score of "1" indicating walking to have remained the same, and a score "2" walking increased.
[m] Indicates marginal statistical significance (p>0.05 & ≤ 0.1)

Table 4. Linear Regression Results for Diastolic Blood Pressure (mmHg) Predictors* with Congolese Refugees

Variables	B	Std Error	Standardized Coefficients Beta	Sig	95% CI Interval for B	
					Lower Bound	Upper Bound
Sex (male vs. female)	-4.986	3.772	-.223	.196	-12.679	2.707
Age (years)	.142	.146	.164	.336	-.155	.439
High Kcal foods[a]	-1.034	1.244	-.138	.412	-3.572	1.503
Walking[b]	-4.005	2.152	-.306	.072[m]	-8.394	.385
Time in US (years)	-.463	.416	-.186	.274	-1.311	.386

*Model: r^2= 0.194
[a] Values indicate increases in soda, fruit juice, salty snacks, sweets and/or fried foods after arrival to the US with a score of "0" indicating no increase and a score of "5" indicating increases in all 5 categories.
[b] Values indicate changes to daily walking after arrival to the US with a score of "0" indicating reduced walking, "1" walking remained the same, and a score of "2" walking increased.
[m] Indicates marginal statistical significance (p>0.05 & ≤0.1)
* Indicates statistical significance (p<0.05)

Results

The final sample included Congolese participants (n=48) who arrived in the US from a total of fourteen countries with the majority having previously resided in refugee camps in Tanzania, Rwanda, Malawi and Namibia, with a mean refugee camp residence of 15.2 SD 5.3 years. Most households had five or more members, 47.7% were married, and 72.7% of these households had children. The average time in the US was 2.75 SD 4.2 years, 17% had attended school previously, 66.7% were employed and 65.9% reported receiving supplemental nutrition assistance program (SNAP) benefits with mean benefits totaling 301.4 SD 198.9 US$.

Prior to their arrival in the US, most reported access to a physician with primary use of care focusing on acute issues (80.5%). Few participants (11.6%) reported a currently diagnosed chronic disease (hypertension, diabetes, heart disease), and 30% reported they were currently on medications. Moreover, over half denied any current health concerns (57.8%). More participants were uninsured (52.5%). The most frequently self-reported health concerns included previous malaria or typhoid, as well as gastrointestinal concerns (e.g. ulcers, pain).

In addition to healthcare access concerns, participants reported changes to their diet and lifestyle (PA changes). Sixty-seven percent of participants reported their physical activity levels to have decreased since their arrival in the US. All food groups were reported to have increased post-arrival to the US. Meat consumption was reported to have the greatest increase with the lowest reported food consumption increases in dairy (62.9% vs. 41.7% respectively). Fruit and vegetable consumption was reported to have increased (50%). Increased consumption of sugar sweetened beverages (soda and fruit juice) and high kcal foods (e.g. sweets, salty snacks, fried foods) were also reported (52.8%, 58.5% respectively). Traditional foods were maintained by some (all or mostly for meals, 36.2% and 8.5% respectively), however, more reported incorporation of American foods (51.1%). Dietary changes were most commonly reported to be associated with less time to prepare meals, as well as increased resources, and access to a wider variety of foods. Traditional foods were reported and included: starchy foods (cassava, fufu, ugali, plantains, sweet potatoes, corn/maize, potatoes, rice) vegetables and greens, beans, meat, fruit, milk, in addition to a wide variety of new foods incorporated, (e.g. pizza, hamburgers).

Anthropometric and blood pressure results identified a variety of chronic disease related risk factors, in addition to self-reported adverse dietary and lifestyle changes (**Table 1**). Fifty-eight percent of participants reported weight gain and sixty-three percent were identified as overweight and/or obese, with women demonstrating higher BMIs vs. men (29.8 kg/m2 vs.25.6 kg/m2). Elevated blood pressure was identified in all but four participants—whose results ranged within elevated or hypertensive level blood pressure categories, and three participants were found to be within hypertensive crisis categories.

Diet and lifestyle changes as well as sociodemographic, dietary change and PA change variables were also examined to predict obesity and elevated blood pressures (systolic and diastolic). Results of multivariate logistic regression did not identify significant predictors associated with obesity (**Table 2**).

Results of multivariate linear regression analysis did not identify significant predictors of systolic or diastolic blood pressure (**Table 3** and **Table 4**).

Discussion

The objectives of this study were to examine: 1) obesity and hypertension risk post-resettlement, 2) diet and lifestyle behavior changes associated with obesity and hypertension risk, and 3) social and environmental contextual factors of obesity and hypertension risk with Congolese refugees resettled in the US. The study includes an under-studied African refugee group at high risk for obesity, hypertension, reduced access to healthcare in combination with adverse diet and lifestyle changes.

Comparisons of study findings are difficult as studies including African refugees or immigrants are limited, and existing studies often group participants by race instead of nationality. For example, the rates of elevated blood pressure identified in this study corroborate with studies of black individuals (primarily African Americans) within in the US; however, refugees are a unique group and comparison should be taken with caution. [23,24,25] Research available for comparison has identified elevated hypertension risk in samples which combined African refugees (including Congolese) vs. other refugee groups. [8] Hypertension risk has also been found to increase by 6.6-6.8% for each additional year a refugee resides in the US. [8] The prevalence of elevated blood pressure, high rates of overweight and obesity (63% BMI > normal), and the likelihood of increasing rates over time, is concerning. Despite identified risk for hypertension (e.g. only four participants had blood pressure within the normal range) self-reported diagnosis of hypertension or high blood pressure was rare. This lack of awareness may not be surprising due to the lack of symptoms associated with the condition and the documented under-use of primary care by refugees—where elevated blood pressure

would most commonly be identified. [26,27] In addition, lack of reported health insurance (52%) may further impede access to healthcare services where blood pressure is commonly taken. It is possible that, even for the insured, the barriers around accessing quality care reduce both its utilization and its impact. The lack of symptoms combined with the barriers refugees already face —particularly African refugees— to obtaining access to quality healthcare may further contribute to the adverse outcomes associated with unmanaged hypertension. [12,13] Although there is evidence that refugees under-use healthcare services vs. non-refugees, community-based interventions have been a successful approach to the promotion of health and may be platforms with which to screen for and address CDs and related lifestyle factors. [28,29] The Congolese value their faith and most attend church, therefore, working with Congolese pastors and congregations may be a strong culturally appropriate and community-based approach to access this group.

Findings from this study also identified adverse lifestyle changes associated with hypertension and obesity risk including, reduced PA and dietary changes post-resettlement in the US. Sixty-seven percent of participants reported that their PA levels declined, 58% reported weight gain and 63% were identified as overweight or obese. Low PA and excess weight are specific risk factors for hypertension and are commonly the focus of non-pharmacological medical management. [15] Culturally preferred outlets for PA within Congolese communities have been reported in other studies and these findings may offer avenues for clinicians or researchers to promote. Qualitative studies with Congolese have identified bike riding, soccer, and dancing as preferred ways to exercise—with soccer and dance identified as more culturally appropriate. [30,31] Another consideration for researchers and practitioners attempting to address PA are environmental barriers. Lack of safety in resettlement areas, such as apartment complexes in lower-socioeconomic neighborhoods, has been identified as a common barrier to PA. [32] Although there may be several barriers to PA, these are areas that need to be addressed and culturally tailored to support weight loss and to reduce long-term weight gain.

In addition to physical activity food habits may increase or alleviate hypertension and obesity risk. Participants in this study reported consumption of a traditionally starch heavy diet including cassava, fufu, potatoes, rice, but also dark leafy greens, legumes, fish and fruit. They also reported adverse dietary changes including increases in high kcal foods including sweets, salty snacks, fried foods, meats as well as sugar sweetened beverages (e.g. soda, fruit juice) and "new" foods including pizza and hamburgers. Individuals also reported increased consumption of fruits, vegetables and dairy. It is important to evaluate dietary patterns, particularly when addressing obesity and hypertension risk. The DASH diet (Dietary Approaches to Stop Hypertension) is an evidence-based therapeutic diet, with demonstrated effectiveness in reducing and managing hypertension and heart disease risks, and it can be tailored to individual preferences as it focuses on food groups vs. specific foods. [33] The diet is rich in vegetables, fruits, whole grains, fat-free or low-fat dairy products, lean protein (e.g. fish, poultry, beans). It provides fat from nuts and vegetable oils and limits saturated fats (e.g. meats, certain oils) and sugary foods and beverages. [33] The DASH diet is also rich in potassium which may balance adverse effects of excess sodium and support healthy blood pressure. [34,35] Several high potassium foods are found in the traditional Congolese diet including potatoes, dark leafy greens, legumes, nuts and fish and consumption of these foods should be promoted. In addition to promoting culturally tailored DASH diet food patterns, portion sizes are also important. The Congolese diet contains many starchy foods and redistributing the healthful traditional foods (e.g. cassava, greens) for balance, as well as appropriate portions of starchy and energy dense foods, would help support a healthy weight and reduce obesity related CDs while maintaining traditional foods and cultural preferences.

Limitations
Although there were many valuable findings in this work, there were also limitations. Recruitment and sampling occurred via a community partner, who was a member of the targeted community, and sampling was not randomized. Participants came from communities within one geographic location, which may reduce generalizability to groups in other locations—as food resources, walkability, healthcare access and other factors vary between locations. The sample size was small, but comparable to several other studies focusing on African refugees and/or immigrants. [11,14,16,20] The sample size and homogenous make-up of the sample (all Congolese refugees from a small number of communities within the same city with similar length of time in the US) may have also impacted analysis results. The survey was specifically developed for this project and its content was validated by experts within the field of refugee/immigrant health. However, the survey guide was not piloted, or face validated with the target Congolese audience, which may reduce the validity of the survey instrument. Blood pressure was taken only once, which limits blood pressure data interpretation, and therefore, we describe our results as "hypertension risk". Some participants, on one data collection day, did not complete the qualitative food frequency questionnaire section of the survey, and thus, there were instances of missing data throughout the survey. In retrospect, the survey may have been too lengthy, resulting in frustration on the part of the interpreters and participants, and limiting data collection. Future use of the survey most likely needs to reduce its length and/or work with the interpreters to ensure complete data collection(s). Despite these limitations, we (this study) offers findings regarding health risks and related diet, lifestyle, and socio-environmental factors with an understudied, newly arrived refugee group.

Conclusion

This work identified high levels of overweight, obesity and hypertension risk, as well as adverse diet and lifestyle changes in recently arrived Congolese refugees —a group for which research is particularly sparse. Findings in this study reveal specific lifestyle factors which can be targeted to develop culturally appropriate interventions — including the promotion of a DASH diet culturally tailored to include traditional, Congolese foods. We also suggest the promotion of PA to focus on culturally appropriate outlets including dance and/or soccer. Churches may be strong community partners to screen for CD risks and/or promote nutrition, physical activity and a healthy lifestyle.

Future efforts to address disparities Congolese and other African refugees commonly face should also include building connection between resettled refugee communities and accessible health services such as community based and/or free and charitable clinics. In addition to improved access to care, provision of culturally competent care is needed to ensure utilization. For example, while evidence-based guidelines already exist for lifestyle management of CDs like hypertension, language barriers and limited cultural competency of providers may be barriers which impede efforts both to assess and address these non-pharmacological, lifestyle factors which most commonly include nutrition and PA. The development of resources to support clinicians in providing culturally appropriate care are warranted to fill gaps between best clinical practices and culturally competent care. Lastly, future research should continue to examine behavioral and socio-environmental factors impacting health outcomes within the Congolese. Research should also evaluate culturally appropriate and targeted community programming and/or resources for clinicians to promote health and address inequities commonly experienced by African refugees.

Acknowledgements

References

1. Mossaad N, Baugh R. Refugees and asylees: 2016 [report on the internet]. Washington (DC): Office of Immigration Statistics; 2018 Jan [cited 2020 Aug 28]. Available from: https://www.dhs.gov/sites/default/files/publications/Refugees_Asylees_2016_0.pdf
2. The UN Refugee Agency. Congolese refugees [report on the internet]. UNHCR; [cited 2020 Aug 28]. Available from: https://www.unhcr.org/558c0e039.pdf
3. The UN Refugee Agency. DR congo emergency [internet]. UNHCR; DR congo emergency; updated 2020 Mar [cited 2020 Aug 28]. Available from: https://www.unhcr.org/en-us/dr-congo-emergency.html
4. Houser N, Baiden P, Fuller-Thomson E. Diabetes and hypertension in congolese church personnel: an emerging epidemic? J Community Health. 2017 Jun;42(3):453–60. https://doi.org/10.1007/s10900-016-0276-5 PMID:27752861
5. Katchunga PB, M'Buyamba-Kayamba JR, Masumbuko BE, Lemogoum D, Kashongwe ZM, Degaute JP, Kabinda JM, M'Buyamba-Kabangu JR. Hypertension in the adult congolese population of southern kivu: Results of the Vitaraa Study. Presse medicale (Paris, France: 1983). 2011 Mar 3;40(6):e315-23.
6. Longo-Mbenza B, Ngoma DV, Nahimana D, Mayuku DM, Fuele SM, Ekwanzala F, et al. Screen detection and the WHO stepwise approach to the prevalence and risk factors of arterial hypertension in kinshasa. Eur J Cardiovasc Prev Rehabil. 2008 Oct;15(5):503–8. https://doi.org/10.1097/HJR.0b013e3282f21640 PMID:18830083
7. Schwartz SJ, Unger JB, Zamboanga BL, Szapocznik J. Rethinking the concept of acculturation: implications for theory and research. Am Psychol. 2010 May-Jun;65(4):237–51. https://doi.org/10.1037/a0019330 PMID:20455618
8. Golub N, Seplaki C, Stockman D, Thevenet-Morrison K, Fernandez D, Fisher S. Impact of length of residence in the united states on risk of diabetes and hypertension in resettled refugees. J Immigr Minor Health. 2018 Apr;20(2):296–306. https://doi.org/10.1007/s10903-017-0636-y PMID:28852919
9. Redditt VJ, Graziano D, Janakiram P, Rashid M. Health status of newly arrived refugees in toronto, ont: part 2: chronic diseases. Can Fam Physician. 2015 Jul;61(7):e310–5. PMID:26175382
10. Rhodes CM, Chang Y, Percac-Lima S. Development of obesity and related diseases in african refugees after resettlement to united states. J Immigr Minor Health. 2016 Dec;18(6):1386–91. https://doi.org/10.1007/s10903-015-0278-x PMID:26392397
11. Bellamy K, Ostini R, Martini N, Kairuz T. Perspectives of resettled african refugees on accessing medicines and pharmacy services in queensland, australia. Int J Pharm Pract. 2017 Oct;25(5):358–64. https://doi.org/10.1111/ijpp.12324 PMID:27896894

12. Hauck FR, Corr KE, Lewis SH, Oliver MN. Health and health care of african refugees: an underrecognized minority. J Natl Med Assoc. 2012 Jan-Feb;104(1-2):61–71. https://doi.org/10.1016/S0027-9684(15)30123-1 PMID:22708249

13. Kim EJ, Kim T, Conigliaro J, Liebschutz JM, Paasche-Orlow MK, Hanchate AD. Racial and ethnic disparities in diagnosis of chronic medical conditions in the USA. J Gen Intern Med. 2018 Jul;33(7):1116–23. https://doi.org/10.1007/s11606-018-4471-1 PMID:29736755

14. Boise L, Tuepker A, Gipson T, Vigmenon Y, Soule I, Onadeko S. African refugee and immigrant health needs: report from a community-based house meeting project. Prog Community Health Partnersh. 2013;7(4):369–78. https://doi.org/10.1353/cpr.2013.0045 PMID:24375177

15. Whelton PK, Carey RM, Aronow WS. Acc/aha/aapa/abc/acpm/ags/APhA/ASH/ASPC/nma/pcna guideline for the prevention, detection, evaluation, and management of high blood pressure in adults: a report of the American College of Cardiology/American heart Association. Task force on clinical practice guidelines//J. Am. Coll. Cardiol.-2017.-Nov 13. Почки. 2018;7(1).

16. Drummond PD, Mizan A, Burgoyne A, Wright B. Knowledge of cardiovascular risk factors in west african refugee women living in western australia. J Immigr Minor Health. 2011 Feb;13(1):140–8. https://doi.org/10.1007/s10903-010-9322-z PMID:20140515

17. Himmelgreen DA, Pérez-Escamilla R, Martinez D, Bretnall A, Eells B, Peng Y, et al. 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. Am J Phys Anthropol. 2004 Sep;125(1):90–6. https://doi.org/10.1002/ajpa.10367 PMID:15293335

18. Renzaho AM, McCabe M, Swinburn B. Intergenerational differences in food, physical activity, and body size perceptions among African migrants. Qual Health Res. 2012 Jun;22(6):740-54.

19. Wieland ML, Tiedje K, Meiers SJ, Mohamed AA, Formea CM, Ridgeway JL, et al. Perspectives on physical activity among immigrants and refugees to a small urban community in minnesota. J Immigr Minor Health. 2015 Feb;17(1):263–75. https://doi.org/10.1007/s10903-013-9917-2 PMID:24052480

20. Gichunge C, Somerset S, Harris N. Using a household food inventory to assess the availability of traditional vegetables among resettled african refugees. Int J Environ Res Public Health. [online publication] 18 Jan 2016 [cited 2020 Aug 28];13(1):1-12. PMID:26797623

21. Centers for Disease Control and Prevention. (n.d.). Healthy weight: BMI. Retrieved from https://www.cdc.gov/healthyweight/assessing/bmi/adult_bmi/index.html

22. New ACC/AHA high blood pressure guidelines lower definition of hypertension. American College of Cardiology [newspaper on the internet]. 2017 Nov 13 [cited 2020 Aug 28]: Available from: https://www.acc.org/latest-in-cardiology/articles/2017/11/08/11/47/mon-5pm-bp-guideline-aha-2017

23. Bell CN, Thorpe RJ Jr, Bowie JV, LaVeist TA. Race disparities in cardiovascular disease risk factors within socioeconomic status strata. Ann Epidemiol. 2018 Mar;28(3):147–52. https://doi.org/10.1016/j.annepidem.2017.12.007 PMID:29317176

24. Singh GK, Daus GP, Allender M, Ramey CT, Martin EK, Perry C, et al. Social determinants of health in the united states: addressing major health inequality trends for the nation, 1935-2016. Int J MCH AIDS. 2017;6(2):139–64. https://doi.org/10.21106/ijma.236 PMID:29367890

25. Young DR, Fischer H, Arterburn D, Bessesen D, Cromwell L, Daley MF, et al. Associations of overweight/obesity and socioeconomic status with hypertension prevalence across racial and ethnic groups. J Clin Hypertens (Greenwich). 2018 Mar;20(3):532–40. https://doi.org/10.1111/jch.13217 PMID:29432662

26. Whelton PK, Carey RM, Aronow WS, 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA guideline for the prevention, detection, evaluation, and management blood of high pressure in adults: executive summary. J Am Coll Cardiolj [journal on the internet] 2018 May 7 [cited 2020 Aug 28];71(19)2199-2269. Available from: https://www.onlinejacc.org/content/accj/71/19/2199.full.pdf

27. Guess MA, Tanabe KO, Nelson AE, Nguyen S, Hauck FR, Scharf RJ. Emergency department and primary care use by refugees compared to non-refugee controls. J Immigr Minor Health [online publication]. 2019 Aug 1 [cited 2020 Aug 28];21(4):793-800

28. Gunnell S, Christensen NK, Jewkes MD, LeBlanc H, Christofferson D. Providing nutrition education to recently resettled refugees: piloting a collaborative model and evaluation methods. J Immigr Minor Health. 2015 Apr;17(2):482–8. https://doi.org/10.1007/s10903-014-0056-1 PMID:24946935

29. Michael L, Brady AK, Russell G, Rhodes SD, Namak S, Cody L, et al. Connecting refugees to medical homes through multi-sector collaboration. J Immigr Minor Health. 2019 Feb;21(1):198–203. https://doi.org/10.1007/s10903-018-0757-y PMID:29767402

30. Ilunga Tshiswaka D, Ibe-Lamberts KD, Whembolua GS, Fapohunda A, Tull ES. "Going to the gym is not congolese's culture": examining attitudes toward physical activity and risk for type 2 diabetes among congolese immigrants. Diabetes Educ. 2018 Feb;44(1):94–102. https://doi.org/10.1177/0145721717749578 PMID:29284353

31. McMorrow S, Saksena J. Voices and views of Congolese refugee women: A qualitative exploration to inform health promotion and reduce inequities. Health Educ Behav. 2017 Oct;44(5):769–80. https://doi.org/10.1177/1090198117726572 PMID:28868929

32. Sastre L, Haldeman L. Environmental, nutrition and health issues in a US refugee resettlement community. MEDICC Rev. 2015 Oct;17(4):18–24. https://doi.org/10.37757/MR2015.V17.N4.5 PMID:26947277

33. U.S. Department of Health & Human Services. National Heart, Lung and Blood Institute. DASH eating plan; [cited on 2020 Aug 28]. Available from https://www.nhlbi.nih.gov/health-topics/dash-eating-plan

34. Sebastian A, Cordain L, Frassetto L, Banerjee T, Morris RC. Postulating the major environmental condition resulting in the expression of essential hypertension and its associated cardiovascular diseases: dietary imprudence in daily selection of foods in respect of their potassium and sodium content resulting in oxidative stress-induced dysfunction of the vascular endothelium, vascular smooth muscle, and perivascular tissues. Med hypotheses. 2018 Oct 1;119:110-9.

35. Klemm S. Eat right [internet]. 2019 Oct 2 [cited on 2020]. Available from: https://www.eatright.org/food/vitamins-and-supplements/types-of-vitamins-and-nutrients/what-is-potassium