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Sub-Saharan African immigrant Cardiovascular Disease and risk factor control: Facilitators and Barriers in the use of or in accessing chronic disease management services in the Calgary municipal area

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Sub-Saharan African immigrant Cardiovascular Disease and risk factor control: Facilitators and Barriers in the use of or in accessing chronic disease management services in the Calgary municipal area

by

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A THESIS

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Abstract

The objective of this study was to explore facilitators and barriers to chronic disease management programs and resources among Calgarian sub-Saharan African (SSA) immigrants with cardiovascular disease (CVD)/ related risk factors (i.e. hypertension, diabetes, and hypercholesterolemia). Utilizing mixed methods design, descriptive statistics from a survey assessing CVD management practices and service use was collected, among a sample of adult SSA immigrants in Calgary. Participants with related risk factors were selected for interviews on barriers to self-health management. Participants with CVD-related conditions accessed health care services through primary access points; mostly family doctors (n=68, 88.31%). Participants over 40 years with CVD-related conditions reported highest management difficulties (n=26, 25.49%). Thematic analysis showed, low morbidity and good healthcare provider relationships, were facilitators to successful CVD-related disease management; whereas, high morbidity and work stress were barriers. Differences in age and morbidity appear to influence CVD testing and health management styles for this sample.

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I owe you both for much of my inspiration to complete this

I know you would have been proud

Give thanks in all circumstances; for this is God's will for you in Christ Jesus.

1 Thessalonians 5:18

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Several medical and specialized terms will be used throughout this dissertation to describe key concepts in the study that are not common knowledge. This section provides a legend and explanations for these terms and their acronyms as they apply to the study.

Sub-Saharan African (SSA) – having to do with or from the region of Africa that lies below the Sahara desert.

African Diaspora- a label that is used to describe dispersed people of African origin due to slave trade activities such as African Americans, African Caribbean and African Brazilians.

Cardiovascular disease (CVD) – This includes any type of disease that affects the heart or blood vessels usually by way of blockage.

Chronic Disease -Also known as non-communicable disease (NCD) are types of diseases that are not passed from person to person. They are of long duration and generally slow progression. The four main types of non-communicable diseases are cardiovascular diseases (like heart attacks and stroke), cancers, chronic respiratory diseases (such as chronic obstructed pulmonary disease and asthma) and diabetes [1].

CVD related risk factors/conditions – for the purposes of this study it refers to any of the following conditions; high cholesterol, type II diabetes, hypertension, heart disease, stroke and combinations thereof.

Hypertension or High blood pressure *(HBP)*-consistent elevated blood pressure greater than 140/90 or 130/80 for those with diabetes. This is also a risk factor for CVD.

Interim Federal Health Plan (IFHP) - provides limited temporary coverage of health-care costs to protected persons who are not eligible for provincial or territorial health insurance plans and where a claim cannot be made under private health insurance. These protected persons include resettled refugees, refugee claimants, certain persons detained under the Immigration and Refugee Protection Act and other specified groups. [2]

Hemoglobin A1C (HgBA1c) - is an important blood test used to determine if one has diabetes or how well their diabetes is being controlled. Measures above 6.5 are indicative of poor blood sugar control which can lead to further diabetes complications related to CVD. Hemoglobin A1c provides an average of your blood sugar control over a six to 12 week period.

Total Cholesterol to High Density Lipoprotein cholesterol ratio (T-chol:HDL)- A medical test used to determine the total amount of good cholesterol (High Density Lipoprotein) in comparison to bad cholesterol (Low Density Lipoprotein) in one's blood stream. This test is used to determine if someone does indeed have high bad cholesterol and at increased risk for developing CVD.

The following 3 immigration class definitions are based on the Canadian *Immigration and Refugee Protection Act (IRPA)* (Service Canada 2001, c. 27) which was last updated as of May 27th 2014

Family class –these are immigrants who are sponsored by a Canadian citizen or permanent resident of close relation such as spouses, common-law partners, children, parents or grandparents. Acceptance to Canada is based on a point system [3].

Economic and Independent class –immigrants who are allowed to reside in Canada based on their previous work experience and perceived benefit to the Canadian economy. Their acceptance into Canada is based on a points system. This includes skilled workers, business immigrants, live-in caregivers and provincial nominees [3].

Refugee class –these are immigrants to Canada who fear for their lives and have been displaced from their homes in their country of origin. Such individuals are often victims of war based on ethnic or religious discrimination. They are not granted permanent residence based on a point system but for more diplomatic or humanitarian reasons [3].

E-Health or Online Health Management Resources- All available online and print information provided by health programs, community services and community organizations that provide chronic health management information for cardiovascular disease and CVD risk factors. These resources are accessible to the public or specific to individuals with those chronic conditions but must be within Calgary city limits.

Francophone- a person who speaks French

Facilitators-These are things that aid utilization of or make access to chronic health management resources easier.

Barriers-These are things that hinder utilization of or prevent access to chronic health management resources.

Cultural Context- The environment or situation that is relevant to the beliefs, values, and practices of the culture under study.

Executive summary

Previous research findings suggest that immigrants from sub Saharan Africa (SSA) have unfavourable cardiovascular risk profiles in Canada. These are individuals who have African ancestry but emigrated from any of the 49 African countries that lie below the Sahara desert to Canada within the late 20th or 21st centuries. Given the recent arrival of this group in comparison to more established immigrant communities a gap exists in clinical understanding of SSA immigrant cardiovascular disease management practices in Canada. The author of this thesis examines which available chronic disease resources focused on cardiovascular disease and risk factors that are used or not used among a purposive sample of sub Saharan African immigrants in Calgary (a large city in Canada with an increasing SSA immigrant population). Another focus of this study is to investigate potential facilitators and barriers to use of available chronic disease management programs and resources among Calgary sub Saharan African immigrants with diabetes, high cholesterol, hypertension, heart disease and/or stroke.

The methodology used in this study followed an explanatory sequential mixed methods design in which quantitative analysis was explained through a qualitative follow up. It is suggested that the sequential mixed methods design used in this study allows for the qualitative data from the interviews to aid in the development of more in-depth description of the mechanisms underlying the quantitative survey results. Moreover, the logical structured design of sequential explanatory mixed methods makes it easier for learning researchers to transition from one stage to the next .This study design also provided an opportunity for comparison and triangulation of the quantitative survey and qualitative interview results. The reason for using this type of mixed methods design was to provide additional perspectives

and insight to the use of CVD management resources among the SSA community in Calgary that would not be possible using one method alone.

There were two theoretical frameworks used in the design of this study. The first was the "knowledge-to-action cycle" which provides a structured outline for the application of research evidence into practice. Key parts of the knowledge to action cycle included in this project were: identifying the knowledge to action (KTA) gap as it relates to the knowledge needs of SSA immigrants, adapting knowledge to the local Calgary context, and assessing barriers and facilitators to knowledge use. The second framework used was the "Integrated theory of health behaviour change" (ITHBC) that explores a person's capacity to adopt positive health behaviours, which can then inform the development of future health interventions. The first data collection step was based on a background literature search on the topic of SSA immigrant CVD and related condition management. This served as the means to establish were gaps in knowledge needs were for SSA immigrants and their health care providers. The second step of conducting an environmental scan of CVD and related health management resources available to SSA immigrants in the Calgary area was used to adapt knowledge of CVD and related health services to the local Calgary context. The environmental scan was used in the development of a cross sectional quantitative survey that was distributed to a convenience sample of 226 SSA adult (age 18 years and above) immigrants residing in Calgary. This quantitative cross-sectional survey included questions that collected information on barriers and facilitators to health management of CVD and related conditions among SSA immigrants. In the final part of the study, semi structured qualitative interviews were conducted with a purposively sampled subset of 8 immigrants

who had completed the quantitative survey questionnaire and disclosed that they had at least one of the CVD related conditions of interest in the study. The ITHBC was used to assess behavioural and other personal barriers to health management among interviewees that could not be captured using a survey.

The quantitative data from the survey was analysed using contingency tables. These tables compared binary groupings based on age, gender and CVD-related diagnosis to response variables related to facilitators and barriers to care such as "access to a family doctor" or "not getting time off work" respectively. The Fisher's exact test and two sample Mann-Witney test were used to analyze frequencies and proportions. All quantitative analysis was completed within STATA 11. Qualitative interviews were analysed using thematic analysis which involves the generation of emergent themes from coded interview responses. This is a reiterative process and continued till no new themes emerged from coded interviews. After both quantitative and qualitative data was collected the process of triangulation of both results took place which compared the findings from both forms of data collection to see if convergence or divergence of findings occurred.

The scan of CVD-related health care resources that are publically available and accessible to SSA immigrants in Calgary revealed 23 possible services. All but one of the available services are funded completely by the Alberta government. These various health care resources can be received in the following forms: two outpatient health services, six disease-specific and seven general education classes, one self-management workshops, two supervised exercise classes, or one online health management educational tools.

Interesting quantitative survey results obtained from the study are described below. Household income among males (n=138) was higher than that of females (n=88) (p=0.044). More participants over 40 (n=53, 52%) had CVD related conditions than younger participants (n=24, 19%) ($p < 0.001$). Participants 18-40 used CVD-related diagnostic services less than older participants, especially for diabetes testing (p=0.018), cholesterol testing (p=0.001) and hypertension (p=0.023). Herbal medication use was higher in those over 40 with CVD-related conditions (30% vs. 4%) (p=0.015). Access to physician-led primary health care services was high in the entire sample (73%) and among those with CVD-related conditions (88%). Moreover, the most reported facilitator to care was "perceived seriousness of one's health situation" (56%) while the most reported barrier to care was "not getting adequate advise" (15%). Participants older than 40 years with CVD - related conditions expressed more difficulty managing their health than younger participants (49% vs. 38%).

There were eight themes that emerged from the qualitative analysis of the interviews. One theme from the interviews was a genuine appreciation for the health care system among participants which was often compared to participant experiences with less developed health care systems from their SSA countries of origin.

Another theme was older age and doctor directed care in which the majority of older participants were seen to prefer a paternalistic approach to the patient doctor relationship. Most participants using this approach to their CVD management were less aware of self-management strategies or health services and less likely to use them if they were not referred to them by their doctor.

The third theme observed was adherence to medical regiment and supplement use. In this theme it was clear to see that participants who had multiple drug treatments for more than one CVD related condition often expressed more difficulty maintaining their drug regiments. Moreover these interview participants were more likely to reduced use of prescribed medications in favour of herbal medications on the premise that herbal medication was more natural and less associated with adverse reactions.

The fourth theme observed was low morbidity and increased self-directed care activities. For this theme it was clear to see that participants who were managing only one CVD related condition were often younger and more likely to use self-directed forms of care by applying health information received from several sources in addition to doctor recommendations.

The fifth theme observed in the interviews was the relationship with one's healthcare provider. Specifically participants expressed that having a good relationship with their health care provider was key to their ability to manage their various health conditions and proved to be a major facilitator to CVD related condition management in interview responses.

Theme six was focused on other facilitators to CVD related condition management that emerged from interview response which were health literacy and health information sharing. Interview responses revealed participants to use knowledge gained from health care providers and family and friends within health care background to improve their ability to manage their own health.

Theme seven focused on barriers to CVD related condition management expressed by interview participants and it was revealed that work related stress proved to be the most identified barrier for the participants. Participants often made note that at times the need to

complete work tasks superseded addressing health care issues. This often led to stressful work environments that exacerbated symptoms of their various health conditions.

The last theme that emerged from the interview process was intrinsic motivation in managing disease. Interview responses revealed that there was a difference in the commitment to maintenance of self-management strategies based on personal motivation and perceived difficulty of self-management strategies associated with CVD-related burden. Older interview participants and those with multiple CVD-related conditions expressed reduced motivation to self-regulate their CVD-related conditions.

Overall the process of triangulation revealed that the findings from the interviews did add further clarity and depth to the results obtained from the previous surveys. This shows that convergence of data was achieved in the results.

The implications from this study are as follows.

1. Younger SSA participants within this study (ages 18 to 40) had the highest proportion of individuals who had never had a blood pressure reading or cholesterol test. Given their increased risk of early onset of CVD related disease, collaboration is required between health professionals and young members of the SSA immigrant community in Calgary to raise awareness of regular testing and monitoring of blood pressure and other CVD related conditions. This can also help to increase awareness and hopefully use of complementary CVD-related health management self-care initiatives offered within the city.
2. To avoid medication compliance issues with older SSA immigrants it is advised that a collaborative approach be used in regards to medication treatment plans where input from both the doctor and older SSA immigrant patient are included. Improved

understanding and communication between healthcare providers and older SSA immigrant patients in regards to CVD medication regime difficulties and herbal medicine use appears needed.

3. Occupation related stress management is of great importance for this SSA immigrant sample. It would be advised to inform members of the SSA immigrant community in Calgary of occupational health services that they could contact for assistance. Patient Education on current stress self-management health programs which address this issue within the community or at their various places of work is also a possibility.
4. The current chronic disease management database used for diabetes management in Calgary has potential to serve in a greater capacity as a chronic disease management registry which is not currently available. The inclusion of immigrant status data, plus data on other chronic disease management programs offered, as well as mandatory use of this registry among all doctors who treat individuals with chronic conditions would help to create program evaluation measures specific to immigrant groups. These immigrant specific measures could then be compared to nonimmigrant participants to provide a measure of evaluation for the program in regards to the differences in program attendance and level of health improvement.

In conclusion, the identified barriers and facilitators to CVD and related condition management for SSA immigrants in Calgary are similar to those expressed by other immigrant groups. The level of access to primary healthcare services is relatively high for SSA study participants. Yet, awareness of supplementary health management services that promote self-management of CVD and related conditions is low. Work related stress and low medication adherence appear to be barriers to proper CVD management. However, good

doctor-patient relationships, high health literacy and health information sharing appear to facilitate CVD management for this sample. Lastly, there are differences in health management styles preferred by study participants based on the number of CVD-related conditions they may have and their age which may increase or reduce the chance that they would take part in self-management programs.

Due to the limitations of this study further research is required that will include SSA immigrant participants with low English proficiency as well as comparisons of SSA immigrant with other immigrant groups in Calgary. A longitudinal study of SSA immigrants would help to examine the exact relationship between health management strategies, patient morbidity and age in further detail.

I: INTRODUCTION

1.1 Problem and significance of study:

Throughout history, immigration has played a crucial role in the social-cultural and economic development of Canada. Currently, 1 in 5 Canadians is foreign born and immigrants make up 20.6% of the country's population and form two-thirds of the annual population growth [4, 5]. From 2006 to 2011 about 145,700 immigrants arrived from Africa, which constitutes 12.50% of the total newcomers who arrived during that period [5]. This number was an increase from the previous 5 years, where the percentage of newcomers arriving from Africa was 10.30% [5]. The immigrants of interest in this study are those belonging to the sub-Saharan African group. These are individuals who have African ancestry but emigrated from any of the 49 African countries that lie below the Sahara desert to Canada within the late 20th or 21st centuries [6]. Though SSA immigrants include people of various ethnic groups, some immigrant health researchers suggest that immigrants from this region of the world generally share common health beliefs, diets, health behaviours, risk factors, disease experiences and migration experiences that are distinct from that of other regional groups within the African diaspora [6, 7]. In Calgary sub-Saharan African (SSA) immigrants are one of the fastest growing communities. They formed 7.1 percent of the new population growth for 2005 and were the fourth largest group of new immigrants for that year in Calgary [8]. As of 2011 this number increased to 9.73% and they still are the fourth largest group of new immigrants in Calgary after the Chinese, South Asian and South East Asian communities respectively [5].

Immigrants from this region of the world are thought to be healthier than their Canadian-born equivalents. This is at least in part because they meet the stringent mental and

physical requirements to relocate to Canada[9]. However, once adjusted to their new home, the "healthy immigrant effect" disappears. In fact this can lead to the "immigrant overshoot" phenomenon in which an immigrant or refugee's health status falls below the average health status of the non-immigrant population several years after resettlement. This phenomenon has been identified in the literature in regards to increased prevalence of cardiovascular risk factors among African immigrants and refugees compared to non-immigrant Europeans and Americans [10-12]. Though no data specific to Alberta is available, a few Canadian studies found that blacks (including sub-Saharan African immigrants) have the most unfavourable cardiovascular risk profiles of any ethnic group in Canada [13, 14]. Plausible explanations for this include genetic factors, perceived racism, poor health literacy, lack of social networks and cultural barriers to seeking care or available health resources [15, 16].

However, it is important to note that the terminology used to describe SSA immigrant populations in health research from Canada, USA and Europe is not standardized[6]. More often than not SSA immigrants are grouped under the umbrella term black with other individuals of African ancestry such as African Americans or African Canadians and African Caribbean immigrants. Though all these groups share phenotypical similarities and heightened risk of developing CVD related conditions, there still remains great heterogeneity in health behaviour observed between these groups. Results from some American studies suggest that smoking behaviour is less prevalent in SSA immigrants compared to African Americans or Caribbean individuals [17, 18]. Moreover, willingness to exercise among SSA immigrants especially women is considerably less than that of their African American counterparts [19]. Yet these differences are often masked when health researchers pool the various groups together as black. This reduces the effectiveness of using the term to identify

health access and utilization needs specific to any one of the regional groups of African ancestry [6].

Currently, there is a dearth of Canadian literature available on chronic health disparities specific to Sub-Saharan African immigrant groups. This may be related to the fact that immigrant communities from SSA are fairly recent in their arrival to Canada. Therefore, chronic disease research on this population of immigrants is not as extensive as that of the Chinese or Indian immigrants who have had a considerably longer presence in Canada [5]. To date, health researchers have focused on the prevalence of infectious diseases such as tuberculosis, hepatitis C and HIV among SSA population [20-22]. This highlights a research gap around identification of potential barriers and facilitators to chronic disease risk management among sub-Saharan immigrants living in Canada. Moreover, as the population of Canada continues to grow so will the numbers of SSA immigrants within major cities such as Calgary. In order to properly address the CVD and related illness needs of current and future SSA immigrant populations in Calgary, knowledge translation research is required. This will help in determining barriers and facilitators to health care utilization as well as inform health care resource planning for this SSA immigrant population.

1.2 Purpose:

The purpose of this study is to explore the use of publically available cardiovascular disease or associated risk factor (i.e. hypertension, diabetes and hypercholesterolemia) chronic disease management resources by sub Saharan African immigrants including refugees in Calgary, Alberta. This is in order to better understand the facilitators and barriers to the utilization of these resources. The specific publicly available chronic disease management resources of interest include online information, print information, and community services and organizations.

1.3 Rationale:

There is a gap in clinical understanding of Sub Saharan African immigrant cardiovascular disease management practices in various developed nations including Canada [10, 23]. In this study the principal researcher will explore and describe facilitators and barriers to the utilization of cardiovascular disease management resources by sub Saharan African immigrants within the City of Calgary. This study will provide a unique Canadian perspective to the literature on this topic as well as inform resource planning initiatives for the growing SSA immigrant population in the city of Calgary.

This research will be conducted using a mixed methods design that consists of a quantitative survey followed by semi-structured qualitative interviews among a purposeful sample of SSA immigrants. By using a mixed methods design, the principal researcher will achieve a robustness of evidence related to facilitators and barriers to CVD-related management for SSA immigrants within a Canadian context [24]. Furthermore the knowledge to action framework as well as the Integrated Theory of Health Behaviour Change will both be used in the identification and investigation of barriers and facilitators to CVD and related condition management. The two theoretical frameworks are used to provide a holistic view of the issue.

1.4 Theoretical framework:

Addressing immigrant health care needs requires input from multiple stakeholders, including health care practitioners, researchers, policy makers, general public and immigrants themselves. Making sure all these key stakeholders are aware, understand and utilize new research knowledge is a challenging process. Knowledge translation (KT) can help to address these knowledge-to-practice gaps and has been shown to be an appropriate approach

for immigrant health exploration [25]. KT is defined as a dynamic and iterative process that includes synthesis, dissemination, exchange and ethically sound application of knowledge to improve the health of individuals, provide more effective health services and products, and strengthen the health care system [26]. The knowledge-to-action cycle provides a theory-based framework for the application of research evidence into practice [27]. The knowledge-to-action cycle contains 2 main parts, the knowledge funnel in the centre surrounded by the action loop [28]. There are 7 steps within the knowledge action loop: i) identifying the knowledge to action gap, ii) adapting knowledge to local context, iii) assessing barriers and facilitators to knowledge use, iv) selecting tailoring and implementing interventions, v) monitoring knowledge use, vi) evaluating outcomes, and vii) sustaining knowledge use (Refer to Appendix A for further description). The steps relevant to this thesis include identifying the knowledge to action (KTA) gap as it relates to the knowledge needs of SSA immigrants, adapting knowledge to the local Calgary context, and assessing barriers and facilitators to knowledge use. The literature search highlighted some of the current knowledge gaps. An environmental scan of local CVD-related health resources accessible to SSA immigrants in Calgary will be used to determine the local context. More specifically, information obtained from the environmental scan will be used to determine if the available resources are pertinent to SSA immigrants, as well as accessible and practical in use [29]. A cross sectional survey and qualitative semi–structured interviews will then be used to explore the facilitators or barriers to use of CVD-related resources among SSA immigrants in Calgary.

Common barriers to knowledge use within health care include a lack of awareness of certain health issues, along with current behavioural (habitual) practices of individuals or groups of people [30]. The latter barrier often requires a more in-depth study of how people

choose to change their health behaviour and their interactions with one another. To explore the behavioural choices of SSA immigrants in the management of CVD-related conditions, the Integrated Theory of Health Behaviour Change (ITHBC) was used. The ITHBC explores a person's capacity to adopt positive health behaviours, which can then inform the development of future health interventions. In ITHBC it is assumed that behavior change is dynamic and iterative. One's desire and motivation are preconditions to health behaviour change, and self-reflection aids progress [30]. Positive social influences can move one's interest and willingness, just as positive relationships help to support and maintain change [30]. The assumptions made within ITHBC support that in the management of chronic conditions, such as CVD, person-centered interventions are more effective than standardized interventions in facilitating behavior change [30]. This is due to fact that patients with manageable chronic conditions are expected to look after themselves, which requires motivation and a desire to do so [31].

Within the ITHBC there are three things required to inspire improved health behavior change. These include: adopting health knowledge and beliefs, increasing self-regulation skills and abilities, and enhancing social facilitation to health management [30] (Refer to Appendix B for theory diagram). If individuals engage in self-management behaviors this is seen as a proximal outcome, which in turn impacts the long-term outcome of improved health status [30]. By applying this theory one can propose that SSA immigrants with cardiovascular-related conditions would be more likely to engage in the recommended health behaviors if they have information about and embrace health beliefs consistent with the expected behavior change. Furthermore, SSA immigrants would be able to change their health behaviour if they experience social facilitation from medical personnel, family,

friends, media, and the internet that positively influence and support preventative health behaviors [30]. This theory is relevant to this study because it assists in determining what behavioral and social elements are necessary to facilitate use of the CVD-related disease management services among the SSA immigrant population.

1.5 Literature review:

1.5.1 Barriers to healthcare:

Within the last decade barriers to healthcare access for the general public have been a major focus of the Canadian health care system and a large body of literature has developed in an effort to address this issue [32]. Barriers specific to healthcare access for immigrants have also been noted in quantitative and qualitative Canadian publications [15, 33, 34]. These articles describe immigrant barriers in terms of specific geographical groups (e.g. Chinese or South Asian) or by resident status (i.e. family class, economic class, or refugee). Results from a cross sectional survey of elderly Chinese Canadian immigrants identified language, long wait lists and poor knowledge of available health services as the top 3 barriers [35]. In contrast, a 12 year longitudinal study on a group of Canadian immigrants from the 2008 National Population Health Survey showed that utilization of health care resources by immigrants was not statistically different from Canadian-born individuals [36]. In fact, immigrants on average reported better access to a regular doctor than their Canadian counterparts [36]. The transferability of these results to the SSA immigrant population is unclear since all immigrants combined formed only 11% of the sample and the authors aggregated heterogeneous groups of immigrants (e.g. South Asian, Asian, African) into one category called non-white immigrants [36]. Furthermore, no data on immigrant status was collected that could add further clarification of the differences between these groups.

Canadian literature has described barriers to health care access as falling into the

following categories: i) institutional and structural, ii) financial, or iii) cultural and personal [15]. Institutional and structural barriers to care for new immigrants include things such as health coverage waiting periods that prevent immediate access to healthcare upon arrival for family class and economic immigrants [15]. Refugees are given access to healthcare upon arrival through the Interim Federal Health plan (IFHP), should they qualify [15]. However, Canadian refugees are likely to experience more institutional barriers since changes within the IFHP took effect on June 30th 2012 [37]. The past holistic coverage plan, once accessible to all refugees, has been replaced with 3 distinct coverage levels based on one's refugee class and does not cover comprehensive health services for refugees who come from a designated country of origin (DCO), which are countries that are deemed politically stable by the Canadian government [37]. This change has made it far more difficult for refugees to navigate the healthcare system, causing confusion among them and their healthcare providers who are now required to do additional administrative work in order to determine if the refugees they treat are still eligible for coverage under the IFHP. This can create further delays and barriers in accessing care for this vulnerable population [37]. In July 2014 after much public debate on the legitimacy of the recent changes made to the IFHP, the federal court of Canada ruled the cuts in service provision to refugees based on their country of origin to be unconstitutional [38]. Now the government has 4 months to revise the current structure of IFHP to include comprehensive coverage for all refugees regardless of their country of origin. This will help to restore necessary health care services to all refugees in need. However, much work needs to be done to reduce the confusion that this whole process has caused, leading Canadian refugees to forgo seeking medical attention even in cases where they would be covered [37].

Financial barriers to care are common to all immigrant groups upon arrival, but this

barrier is more persistent in refugee and family class immigrants [15]. Economic class immigrants typically have greater access to financial and social network resources than the other immigrant classes [39]. This may be due to their higher education and prior business skills, which act as aids in their employment search [39]. However, most economic immigrants face credentialing issues and are often forced to take jobs below their academic skill level [39]. Underemployment has also been linked to increased financial barriers leading to stress among immigrant groups especially new African immigrant parents. This has also been connected with poor physical and mental health management among immigrants leading to chronic conditions [39, 40].

Cultural and personal barriers to care are well described within the refugee and family class immigrants. Issues related to preference for traditional medicine, low trust in medical practitioners, isolation and fear of being misunderstood due to language difficulties all contribute to poor health access for family class and refugee immigrants.

A qualitative study conducted in Calgary Canada looked at specific language barriers to accessing care experienced by immigrant (n=16) and non-immigrant (n=10) francophone residents in the predominantly English speaking city [41]. The immigrants that took part in this study were primarily of SSA origin [Benin, Burundi, Cameroon, Chad, Gabon, Togo, Ivory Coast and Congo (DRC)] [41]. The interviews revealed that both francophone immigrants and non-immigrants shared the same language barriers to accessing family doctors who spoke French in Calgary. Though most participants in this study expressed some fluency in English there was a common need to speak with a health care professional who could also speak French in order to makes sure expressed health concerns were completely understood and not misinterpreted. Having access to French speaking healthcare providers acted as a facilitator

to forming a strong relationship with the health care provider and improved health [41]. Immigrant participants expressed much stress and displeasure when dealing with English speaking doctors and using language interpreter services that they would often forgo seeking medical attention until they felt the issue was very serious. They also intentionally withhold heath information they felt was private from language interpreters. This was all due to the fear of being misinterpreted and the view that language interpreters were strangers [41]. Overall, this study highlighted regional language barriers to care among French speaking SSA immigrants who reside in predominantly English-speaking areas such as Calgary.

The majority of Canadian literature focuses on barriers to health care access in general terms that can be applied to immigrants overall, but are not specific to SSA immigrants [13, 42]. There is a scarcity of research in Canada that has explored facilitators to health care access for this population. This is an important issue to address since African immigrants in Montreal and other cities in developed nations have been shown to have increased risk for cardiovascular disease after adjusting to western or modern diets [43].

1.5.2 Chronic health disparities within African immigrant groups:

Health status is not equal among all groups of immigrants or refugees, with some having higher risk for certain chronic diseases than others [9]. This has clinical implications for physicians and allied health professionals providing care to these communities. There are two forms of CVD that affect African immigrants: ischemic and non-ischemic [44]. The ischemic form is common in the developed world and is increasing in urban areas of Africa [44]. It is characterised by narrowing of the coronary arteries causing reduced blood and oxygen supply to the heart [44]. The non-ischemic form of CVD is more prevalent in Africans residing on the continent and is caused by events not related to reduced blood flow, such as bacterial

infections of the heart, malformed blood vessels or enlarged and weak ventricles [44]. A cross-sectional survey study of 145 immigrants from West Africa in the Washington DC area was conducted in 2013. Study participant risk factors for CVD were measured using the Framingham CVD score (FRS10), with scores above 10% indicating high risk [12]. The average Framingham CVD score for the 56 men in the sample was 11%, while the average for women was 7%. Immigrants from West Africa were found to have a higher risk of developing CVD after residing in America for more the 10 years [12]. Furthermore, the study results showed that West African men had a statistically higher prevalence of CVD risk factors at a younger age (13%) than women (3%) [12]. However, women had a higher risk of being overweight or obese than men. Such findings indicate that the healthy immigrant effect is quickly replaced by the immigrant overshoot phenomenon for SSA immigrants living in North America [11].

Current Canadian literature in chronic health disparities within African immigrant groups is limited in respect to CVD and related conditions; however African immigrant chronic health disparities related to mental health have been discussed more thoroughly in Canadian studies. Several periodicals have reported that Ethiopian, Somalian, Sudanese and other SSA immigrant groups had a high prevalence of poorly controlled chronic mental conditions such as depression or anxiety in association with traumatic experiences from their home countries or loneliness, and discrimination experienced in Canada [40, 45, 46]. Interestingly other studies have made connections between poor mental health among SSA immigrants and the exacerbation of CVD related conditions among African immigrants often in relation to increased or sustained mental stress [16, 47].

Authors of another study interested in health care service utilization used a sample of

adult Ontario residents (20 years of age and older) who had used diabetes services. The researchers used administrative health data and immigration records to calculate age specific and age adjusted prevalence rates for diabetes among study participants. This was then compared to the country or region of birth and the length of time each participant had lived in Ontario[48]. The results showed that the prevalence of diabetes mellitus among SSA immigrants was consistently higher than that of participants from North America. The odds ratio for a diabetes diagnosis among SSA immigrant men was 2.31 (95% CI 2.17 – 2.45), in reference to North American or Ontario residents. For SSA immigrant women the odds ratio for a diabetes diagnoses was 1.83 (95% CI 1.72-1.95) [48]. They also found an increased rate of diabetes occurring at a younger age (35-49 years) for immigrants. To address this earlier onset of diabetes among SSA immigrant populations in Ontario, the authors suggested that more targeted self-health management initiatives should be made available for younger immigrants [48].

Another study compared cardiovascular risk profiles for Caucasian, Chinese, south Asian and black (including SSA immigrants) residents of Ontario [13]. Black African and Caribbean immigrants in this study had the most unfavourable cardiovascular risk profile of any ethnic group with a hypertension prevalence of 19.8 % and a diabetes prevalence of 8.5% [13]. However, the overall prevalence of heart disease in the black population was considerably lower at 3.4% [13]. This paradoxical relationship could be due to genetic factors that decrease risk of clinical events in the black population or poor survival rates after heart attacks [13].

In a study involving telephone interviews of over 706 randomly selected participants from Toronto Canada and 838 participants from Vancouver [16], participants who self-

identified as belonging to a specific race were asked questions about their hypertension status in relation to stress level, perceived racism and socio-demographic variables such as income, education level, and age. There were 47 participants who self-identified as black (including African immigrants). The results demonstrated that blacks had the highest reported percentage of hypertension (25.5%) in comparison to all other race groups (i.e. White, Asian, South Asian, and Other) [16]. Also blacks had the lowest education level and income among the sample, with 38.3% having high school education or less and 36.2% having incomes below $40,000. In regard to perceived number of discriminatory experiences and daily stress, blacks also expressed the highest occurrence rate (51.1% for 5 or more discriminatory experiences; 27.7% for daily stress) [16]. However, only educational attainment was an independent predictor of high risk of hypertension within black participants [16]. These results suggest that socioeconomic status may explain at least part of the racial inequalities related to the increased prevalence of hypertension among blacks which includes African immigrants. Yet, further research with more African immigrant samples are required in exploring how societal stresses such as discrimination are dealt with among SSA immigrants to Canada and how this relates to heightened levels of hypertension expressed in this immigrant group.

Research on chronic health issue for African immigrants elsewhere in the world has shown significant parallels to the Canadian literature. European and U.S. research has shown that blacks, including SSA immigrants, have a relatively healthy lipid profile compared to Caucasians and South Asians but are still prone to premature CVD disease and diabetes [10]. Another study from Europe has shown that SSA immigrants are at higher risk of hypertension, diabetes, heart disease and stroke than their English and Dutch native

counterparts [10]. Poor health seeking behaviours among the SSA immigrant community are thought to be their greatest risk for poor chronic health in Europe and Australia [10, 11]. A systematic review of the health of African immigrants arriving in the U.S. found that the focus of care was on infectious disease and not chronic diseases such as coronary artery disease [49]. Overall, the literature has found that SSA immigrants have a unique presentation pattern of chronic illness, especially in terms of CVD-related risk factors. However, there is a gap in the literature on how SSA immigrants understand and view chronic illness.

1.5.3 Chronic disease management for immigrants/refugees:

The government of Canada has created various public health chronic disease management programs targeted at diabetes and cardiovascular disease for the general population headed by the Centre for Chronic Disease Prevention and Control (CCDPC). These programs provide surveillance and strategic leadership in the development of chronic disease prevention and control strategies [50]. However, the population level focus of these programs does not accommodate ethnic or immigrant status data collection [50]. Therefore, needs specific to ethnic groups may not be included in the implementation of surveillance and disease prevention or control strategies within the national level of care. Instead, provincial and municipal health regions have partnered with immigrant communities and immigrant service organizations to provide culturally relevant chronic disease awareness and management programs specific to ethnic groups on an ad hoc basis [51-53].

Some chronic health self-management programs have been developed in Canada for blood glucose and blood pressure monitoring [51]. These programs are in the initial development stages and have incorporated immigrant populations. However, the implementation plan of some of these programs has been criticized as being poorly effective

[51]. In the case of Alberta, the province wide healthcare system has successfully run health self-management programs to assist with chronic disease burden. The self-management service is called the Alberta Healthy Living Program (AHLP) and provides chronic disease management services in the form of classes, workshops and exercise instruction. The program uses a community-based chronic disease management approach to address a wide range of health conditions that include CVD, hypertension, high cholesterol, stroke and diabetes [54]. In addition, the program can be tailored to provide specific services to vulnerable populations including immigrants, high risk visible minorities and refugees within a community who express a heightened burden of a chronic condition in relation to the general population of Alberta [54]. Within Calgary, the AHLP participants from 2005 to 2007 with diabetes were shown to have a significant reduction from baseline in Hemoglobin A1C (HgbA1C) and in total cholesterol to HDL cholesterol ratios (T-chol:HDL) measures [54]. Although the general outcomes for AHLP participants with diabetes in Calgary are positive, there is no literature of how immigrants who used AHLP fair in comparison to other participants of the program. Also no literature is available regarding the use of this AHLP service among the SSA immigrant population in Calgary or Alberta.

A search of the literature did not identify any Canadian publications regarding community based self-management chronic disease initiatives specific to SSA immigrant populations. However, in Ontario a cross-sectional survey did look at self-management, health service use and information seeking behavior among 48 Caribbean immigrants of African descent in comparison to 54 Canadian born participants. The results showed that Caribbean immigrants and Canadian born participants differed on several social demographic variables. The Caribbean immigrant participants were statistically less educated, had more

jobs, and were more likely to be underemployed than the Canadian born participants [55]. In regard to diabetes-self management practices, Caribbean immigrants were statistically more likely to report smoking avoidance (89.6% vs 64.8%)[55], reduced dietary carbohydrates (81.3% vs. 51.9%), and reduced dietary fat (89.6% vs. 69.8%) in comparison to Canadian participants. In regard to use of health care services, black Caribbean immigrants with diabetes were more likely to get an eye exam by a health care professional (91.7% vs. 71.9%) and undergo hemoglobin A1c testing every 3 months (45.8% vs. 24%). In regard to accessing information to manage diabetes, both black Caribbean immigrants and Canadian born participants reported doctors as their main source of health information. However, a significantly higher proportion of black Caribbean immigrants utilized Nutritionist/Dietitians (64.6% vs. 40.7%) and Nurses (47.9% vs. 24.1%) as sources of information on managing diabetes in comparison [55]. Black Caribbean participants were statistically more likely to use community health centers, whereas hospitals were more frequently visited by Canadian born participants. Nurse Educators were also more commonly used for diabetes care among black Caribbean immigrants as compared to Canadian born participants [55]. Though black Caribbean immigrants and SSA immigrants do share common ancestry, there may be cultural and other behavioral factors that differ between the two groups which could lead to differing self-management, health service use and information seeking behavior not seen in Canadian Caribbean black immigrants. Therefore research focused on Canadian SSA immigrant chronic disease management is in need of further exploration.

There is a shortage of published Canadian studies that have shown what CVD or related chronic condition health services or tools are accessed by the SSA immigrant population [56, 57]. There is one Canadian based study that shows that traditional medicines are

still used to treat chronic illnesses, such as asthma and diabetes, among Ghanaian immigrants [58]. An earlier Canadian qualitative interview study including African immigrant women showed a mixed use of traditional (e.g. herbal remedies, solitude, divination, spirituality and prayers) and conventional (e.g. family doctors, psychiatrists, hospital emergency wards, diet regulation, relaxation and psychotherapy) medicine services among SSA immigrants in regards to treatment of chronic and mental conditions [56].

The use of conventional medical services was higher in younger or more acculturated populations of SSA immigrants in Canada [56]. However, when these individuals did not feel the result of conventional medicine was to their satisfaction the use of traditional medicine was often incorporated into their treatment of mental ailments [56]. It should be noted that the Canadian literature on this topic with respect to SSA immigrants is more focused on use of chronic health resources to treat mental illness rather than CVD and related conditions. On the other hand, there are several known health resources for CVD and related condition management within Calgary that are accessible to SSA immigrants such as specialized medical clinics, community health centres, disease education classes, and health workshops [59]. It is the familiarity and usage patterns of these CVD-related condition management services among SSA immigrants with CVD related conditions that is unknown. Therefore, the principal researcher of this thesis hopes to explore the use of CVD-related condition management services among SSA immigrants in detail. This will provide much needed insight on how and what factors influence SSA immigrant access of CVD related chronic disease management tools. More details on specific CVD and risk factor management programs currently available to the SSA immigrant population of Calgary are described in appendix E.

1.5.4 Age differences in utilization of online health and self–directed care resources

In Canada a person's age plays a large role in how that individual chooses to manage their health. This is especially apparent in the use of online health information and other self-directed care resources. Although no Canadian literature was identified regarding age differences in online health info seeking among SSA immigrants or age differences within SSA immigrants in the use of self-directed care, there is literature comparing Canadians by age and use of internet health. Additionally, there is literature about how Canadian immigrants as a whole use self-directed care.

Results from a 2009 Statistics Canada survey revealed that more than half (52%) of old adults (age 65 and over) had used the internet in the past to search for health information, younger adults (age 45 to 65) used the internet for health information more often [60]. The younger adults were more experienced internet users and thus able to navigate the health websites more efficiently than older Canadians. Also, the study found that older adult respondents were more inclined to seek health information from their doctor than searching on their own [60]. A more recent cross sectional study looking at internet use among 83 older Atlantic Canadians found that 89% (n=74) of participants had used the internet to search for health topics in the past. However, only 32% of survey respondents indicated that they searched the internet every day [61]. Moreover, older internet users had challenges discerning the credibility of health information they found online, which proved to be one of the barriers to using online health information correctly among this group [61]. The findings from this Canadian based study are interesting but should be interpreted with caution as the sample was selected from volunteers who were otherwise exposed to technology more than the average older adult in Canada. Also the study participants were more educated than the

average older Canadian. The result may not be the same for less educated, less computer literate and less socioeconomically advantaged older adults.

In regard to immigrant self-directed care for chronic conditions and age differences, two Canadian articles were identified. Both articles focused on self-care in relation to diabetes mellitus diagnosis. One study used the results of the Canadian Community Health Surveys of 2005 and 2007 to compare differences between immigrants and non-immigrants diagnosed with diabetes mellitus in relation to their preferred healthcare or self-care practices [62]. For self-care practices, immigrants were less likely to perform weekly foot self-examinations (OR=0.70 and 0.65 respectively) in comparison to non-immigrants [62]. Also, immigrants were less likely to smoke (11.0% vs 19.2%in 2005; 10.5% vs. 17.5% in 2007) [62]. In regard to healthcare seeking behaviour, immigrants were diagnosed with diabetes slightly later in life than non-immigrants [62].

The authors of the second study looked at population-level health care data among Ontarians newly diagnosed with non-gestational diabetes between January and June 2006 (N=46,553) [63]. This population level data was linked to a diabetes self-management education program registry to identify those who attended within 6 months of diagnosis [63]. The results of the study showed that only 20.6% of patients newly diagnosed with diabetes actually attended the self-management class within the first 6 months of diagnosis. Attendance was highest among participants who were younger in age, with only 11.9% of patients above age 80 who attended classes [63]. New immigrants were also less likely to attend the program than immigrants who had been residing in Ontario for a longer period of time [63]. The findings of the above studies suggest that age is an important factor in how individuals access and use health care information in Canada. However, more research is needed to

identify barriers to self-management needs among high risk groups such as immigrants.

1.5.5 Chronic disease explanatory models and risk perception among SSA immigrants:

Few research findings are available on the perceptions of SSA immigrants regarding chronic disease. However, U.S. and European interviews and focus groups with SSA immigrants have provided some insight into what they feel as it relates to risks to their health within their new home countries. Qualitative researchers conducted a study on participants' thoughts concerning health deterioration among 63 local African immigrants residing in New York City [64]. During this study the African immigrants expressed 4 main causes of the pattern of health deterioration they were observing within their community. The first was changes in health behaviours such as reduced involuntary exercise due to modern conveniences. Second was increased stress due to desire of moving up the economic ladder and the presence of financial responsibilities in America and back home. Third were worries of environmental exposures such as more pesticides and hormones in foods participants consumed. Barriers to health care services, such as insurance costs, were the fourth perceived cause of poor health [64].

In the Netherlands one qualitative study examining the explanatory models for hypertension among 16 Ghanaian, 15 African-Surinamese, and 15 Dutch native patients revealed that all three groups had difficulty in describing the concept of hypertension. The perceived cause of hypertension differed greatly among the groups and it was often in line with cultural dietary habits. Ghanaian participants more often described hypertension as having too much blood in one's body, while Surinamese participants described the condition as rising blood looking for a way out. The Dutch native participants described high blood pressure as thick blood or the heart being under strain to pump [65]. Most Ghanaian participants

described eating too much fufu, undercooked red meat, starchy foods and beer as the cause of their hypertension [65]. The Surinamese participants blamed their salty diet for hypertension. Some native Dutch participants blamed high liquorice consumption [65].

Both Ghanaian and Surinamese immigrants felt that their hypertension was aggravated from climatic changes and a stressful acculturation process to Dutch life [65]. Unique to the Ghanaians, stress from the cultural responsibility of sending money back to relatives in Ghana was also thought to be a contributor to their hypertension. Furthermore, 69% of Ghanaian participants perceived their hypertension to be episodic and not chronic in nature. Many felt the removal of stressful situations in one's life and returning to Ghana would remove hypertension [66]. Therefore the majority of Ghanaian participants (63%) were not following recommended medication regiments to control their hypertension at the time of study [66]. Many of these Ghanaian participants also discontinued treatment when traveling to their homelands [66].

The presentation of hypertension usually has no clinical symptoms. However, the immigrant participants from both Ghana and Surinam perceived headaches, dizziness, and weakness as signs of elevated blood pressure more often than their Dutch native counterparts [65]. Most Ghanaian and Surinamese participants stated that they would rest and seek medical attention or take medication immediately at the unset of any symptoms. Furthermore, stroke, heart attack, liver and kidney problems were all identified as complications of poorly controlled hypertension among the Ghanaian sample. However, the most noted complication among the Ghanaian participants was sudden death [65]. This contributes to the high concern related to hypertension among this Ghanaian immigrant population. These individuals often perceived the onset of complications from hypertension as unpredictable [65].

Very few participants in this study identified being overweight (7/46) or lack of exercise (4/46) as a risk factors for hypertension even though 75% of the sample was overweight. Also only 4 participants (none of which were Ghanaian) identified having hypertension as a risk factor for CVD [65].

The perceived causes, symptoms and consequences of hypertension among the Ghanaian and Surinamese immigrant sample were more divergent from medical explanations than those of native Dutch participants [65]. Migration was often the platform used to explain the development of hypertension among the immigrant groups. It is therefore important for clinical programs to note that cultural specific factors, along with the specific living conditions immigrants experience in their new environment, are contributors to their understanding of chronic disease [66]. This qualitative study informed the current study on SSA immigrant barriers and facilitators to CVD risk factor management in Calgary. The proposed study will provide further insight into how SSA immigrants understand and live with CVD and related risk factors in a western country. Furthermore, this study can provide a clearer understanding to potential barriers and facilitators to seeking care for CVD related illnesses that are most relevant to SSA immigrants.

1.6 Research question:

What are the facilitators and barriers to use of available chronic disease management resources among Calgary sub Saharan African immigrants with cardiovascular disease or associated risk factors (hypertension, diabetes, hypercholesterolemia)?

1.7 Research objectives:

1) To examine which available chronic disease resources focused on cardiovascular disease and risk factors are used / not used among a purposive sample of sub Saharan African immigrants in Calgary.
2) To explore facilitators and barriers to use of available chronic disease management programs and resources among Calgary sub Saharan African immigrants with diabetes, high cholesterol, hypertension, heart disease and/or stroke.

II: RESEARCH DESIGN AND METHODS

2.1 Overview:

The methodology used in this study followed an explanatory sequential mixed methods design in which quantitative analysis was explained through a qualitative follow up. Creswell (2014) suggested that the sequential mixed methods design used in this study allows for the qualitative data from the interviews to aid in the development of more in-depth description of the mechanisms underlying the quantitative survey results [67]. Moreover, the logical structured design of sequential explanatory mixed methods makes it easier for novice researchers to transition from one stage to the next[67] .This study design also provided an opportunity for comparison and triangulation of the quantitative survey and qualitative interview results. The reason for using this type of mixed methods design was to provide additional perspectives and insight to the use of CVD management resources among the SSA community in Calgary that would not be possible using one method alone. The first part of the study involved an environmental scan of CVD and related health management resources available in the city. The environmental scan was used in the development of a cross sectional quantitative survey that was distributed to SSA adult immigrants residing in Calgary. In the final part of the study, semi structured qualitative interviews were conducted with a purposively sampled subset of immigrants who had completed the quantitative survey questionnaire. Further details of the methods utilized in this study have been provided below.

2.2 Resource review (Environmental scan):

The objective of the environmental scan was to develop a comprehensive document outlining the information and resources that were publically available to SSA immigrants in

Calgary at the time of the study, which were used to inform the survey questionnaire and the semi-structured interview guide. The principal researcher performed an environmental scan of all online or print information relevant to CVD and risk factor management available to SSA immigrants in Calgary (see Appendix E). Sources of information came from online resources such as: government health web sites (Alberta health/Health Link Alberta), health organization websites (Heart and Stroke foundation, Canadian Diabetes association), local chronic health disease management program brochures, articles and other grey literature (i.e. published material not available in academic journals or thesis databases such as program scheduled reports and health management booklets). All relevant information collected from a web search was cross referenced with publicly available data collected through in-person visits or phone calls to relevant health clinics and community organizations.

During these visits and calls the principal researcher spoke with key informants working at these locations to gain further details regarding how CVD and risk factor programs were run and incorporated any missing information. Information on health management programs and services addressing heart disease, stroke, hypertension, high cholesterol, diabetes mellitus, nutrition and obesity were included in the environmental scan, as these are identified modifiable risk factors listed by the Heart and Stroke foundation of Canada. The data collected included: i) a short summary of what the resource or program was intended for; ii) program transportation or service costs to participants; iii) plus scheduled times or frequencies of when the program was offered. In addition, information on iv) program translation service availability, v) program focus (CVD vs related risk factor condition) and vi) mode of health information management delivery (e.g. consult, printed forms, videos or workshops) were also collected for addition to the environmental scan.

Lastly, health program or service details on the following topics were also addressed in the environmental scan: vii) doctors referral required, viii) program focus, ix) types of health professionals involved in program x) and efforts required by participant to access and understand the program information. In addition, collection of all legislative documents related to CVD and risk factor management that include information relevant to SSA immigrants in Calgary was incorporated.

2.3 Quantitative survey:

2.3.1 Study population and sampling

The population for this study included all SSA immigrants above the age of 18 that lived in the Calgary municipal area. This number was not easily estimated using the latest Canada census information from the National Household Survey (NHS) completed on May 10th 2011 because of how data on an immigrant's country of origin, immigrant status and immigrant's age were aggregated. The NHS sample included individuals younger than 18 years of age and (with exception of Egypt, Morocco, and Algeria) all North African countries were aggregated with other SSA nations under the "other place of birth in Africa" category [68]. The closest estimate of the population of SSA immigrants residing in Calgary, based on data from the NHS, is 23,720 [68]. Furthermore, SSA immigrants who were refugees or using student or work visas were not included in the 23,720 but were aggregated with immigrants from other parts of the world under the "non-permanent residents" category [68]. Due to NHS sample separations, plus limited statistics and literature on CVD related studies specific to SSA immigrants in Canada, the sample size estimate for this thesis was based on a similar cross sectional survey study. The author of this study looked at comparisons of health status and use of healthcare resources and treatment strategies for Ethiopian (n=198) and Nigerian

(n=164) immigrants to the United States [69].

The participants from the Chaumba study were selected purposively from a probability sample of 12,500 participants in the 2003 wave of the New Immigrant Survey (NIS) longitudinal study [69]. A slightly reduced sample size of 200 – 250 SSA immigrant participants was utilized for this thesis due to the fact that the sample frame for SSA immigrants in the city of Calgary is much smaller than what would be required for country wide study. Though the Chaumba study was not focused on CVD, it explored general health and mental health issues among individuals similar to the population of interest in this thesis and served as a sufficient model for sampling.

The quantitative survey was piloted among a small purposive sample of 13 African adults from the Abrong- Ahafo Calgary Canadian Association. The principal researcher sought the assistance of the Chairman of the Abrong-Ahafo association in the Calgary area to recruit participants using snowball sampling. The inclusion criteria utilized for the pilot study required that participants were of SSA ethnic origin, 18 years of age or older, had immigrated to Canada from a SSA nation, and spoke conversational English. The inclusion criteria for the piloted survey were extended to the final survey.

A convenience sample, of willing participants who were present at SSA immigrant association or church meetings, as well as snowball sampling techniques was used for the final survey. Specifically, the researcher informed African community organization leaders of the study and asked for their assistance in recruiting participants from their Ghanaian, Cameroonian, Nigerian, Sudanese, Kenyan and Ethiopian organizations and church groups. As an initial step, study information presentations were held at various African organizations' general monthly meetings and at relevant church meetings. At these

organizational and church meetings participants were informed of the purpose and rational for this study. The principal researcher then handed out copies of the survey to those present at the meetings. Completion of the survey was voluntary. The survey participants were given an opportunity to complete the survey and return it to the principal researcher before leaving the venue. Alternatively, participants could mail the survey in provided envelopes to the researcher, call the cell phone number of the principal researcher for pickup, or leave the survey in a closed box left at the organization or church where the researcher could pick it up at a later time. In addition, snow ball sampling was used to recruit participants who did not attend meetings at the listed African associations or churches but belonged to the SSA immigrant community of Calgary. This resulted in more additional trips to pick up surveys from participants who were not members of African associations or churches.

The survey sample was divided and analyzed based on age group, gender and presences of CVD-related conditions. Overall, men have a higher risk of developing CVD than women and this risk increases with age. However, CVD risk increases sharply for women after menopause to that of men of a similar age [70]. Furthermore, the more CVD – related conditions (co-morbidities) a person has, the higher their risk for CVD [70].

2.3.2 Survey development

The development of the final survey involved the use of a pilot among 13 SSA immigrant individuals. This step was done in order to determine the readability, understanding, length of time to complete, and comprehensiveness of the survey as a whole and on specific target questions. Participants were asked to complete the survey and then provide their verbal feedback in addition to rate (good, okay, bad, and not necessary) item topics in the survey. The first three topics were: i) length of time needed to complete the

survey; ii) ability to understand and answer targeted questions on health management behaviour and facilitators or barriers to accessing care accurately and with minimal assistance; plus iii) perceived acceptability of questions about health conditions, prescribed medications, smoking behaviour and income. The fourth and fifth topics covered were: iv) perceived accuracy with which respondents believed they would be able to answer sensitive questions and v) any suggestions for improvement in understanding. The feedback was collected using in-person interviews where the principal researcher asked each participant questions and took notes of their responses. The pilot results were summarized and analyzed. Any survey areas where the majority of participants rated an item as somewhat relevant, difficult to understand or not relevant were reviewed and revised using the comments provided from the participants. The final questionnaire incorporated all edits and included key changes in items related to the inclusion of more time frames for testing CVD related conditions. Also, final edits to the survey included the reduction of listed symptoms of CVD and related conditions, the addition of more places to access and use health care services, and also the inclusion of questions on perceived views on the importance and difficulty in managing one's health.

The survey was written in English at a grade six reading level using the Flesch–Kincaid Grade Level statistic test available in Microsoft Word 2010. In addition, thesis committee members assisted in assessment of the face and content validity of the modified survey. Further edits were made to the survey accordingly based on supervisory committee member suggestions.

Moreover, the survey included data on disease presentation, disease management and population statistics items previously used in the National Population Health Survey,

Canadian Community Health Survey, Health Services Access Survey and the Longitudinal Survey of Immigrants to Canada from Statistics Canada [71]. Information collected from the environmental scan and survey pilot were used in the development of the final survey and also helped to adapt the current knowledge on CVD management into a context appropriate for SSA immigrants in Calgary. The knowledge-to-action cycle was integral to survey development, since the survey was designed to address the "barriers to knowledge use" step within the knowledge to action cycle. This was specific to the assessment of personal barriers (e.g. treatment adherence), health system level barriers (e.g. wait times) and facilitators among SSA immigrants in regards to health management of CVD and related risk factor conditions. Moreover, the Integrated Theory of Health Behavior Change (ITHBC) was incorporated into the questionnaire through the addition of Likert scale items that measured the perceived difficulty and importance of managing one's health among the sample. Additional elements of the ITHBC were included in survey, such as questions focused on sources of social influence (e.g. family support) to health care use and management.

The survey included multiple choice questions related to basic demographic information (e.g. age, sex, education, income level, languages spoken, duration of time residing in Canada), health information related to cardiovascular disease status (e.g. history of diabetes, hypertension, elevated cholesterol, smoking; previous stroke or TIA; history of coronary artery disease including angina, myocardial infarction, congestive heart failure) and health resource utilization (e.g. regular visits to a family doctor or other clinics; use of online or written health resources; barriers and facilitators to health care use or management). Likert scale questions focused on a participant's perceived importance and ability to manage their own health. Information collected from the environmental scan of CVD-related services and

programs available to the SSA immigrant community in Calgary were used to design items in the questionnaire related to health resource utilization. The final questionnaire took about 30-40 minutes to complete. Copies of the questionnaire in the first and final draft have been included within Appendix C.

2.3.3 Statistical analysis

For the quantitative survey, the main analytical strategy was to create descriptive statistic tables. In order to assess the level of facilitators and barriers to CVD-related health resources the sample was divided into binary groupings based on age (18-40 years vs. over 40 years), gender (male, female) and CVD-related diagnoses (no CVD-related diagnosis vs. a CVD-related diagnosis). These binary groupings were put into contingency tables and used in comparison with other variables that were considered possible facilitators or barriers to health care (i.e. diagnostic services or testing, treatment modalities, occurrences of differing CVD-related conditions, use of herbal medication, access to primary or secondary health care services, and perceived level of self-health management). The frequency and proportions related to barriers and facilitators identified were compared using the Fisher's exact test and the two sample Mann-Witney test. All analysis was completed within STATA 11.

2.4 Qualitative interviews:

2.4.1 Qualitative study sample

Participants had voluntarily indicated that they wanted to be interviewed on the quantitative survey before they were contacted. Individuals were then selected for qualitative interviews based on sampling criteria. Specifically, survey answers from participants were used as a criterion sampling strategy for the interview portion. In general, individuals whom

consented to participate, disclosed their CVD-related medication or CVD-related treatments in the questionnaire, and were linked with one of the targeted cultural groups or associations within the city of Calgary (Ghanaian, Cameroonian, Sudanese, Nigerian, Kenyan, Ethiopian or other sub-Saharan African group) were considered for an interview. Participants also had to be 18 years of age or older, had immigrated to Canada from a SSA nation, were of SSA decent and spoke English, and had been diagnosed with or received treatment for at least 1 type of CVD-related condition (i.e. any combination of hypertension, high cholesterol, type II diabetes, heart disease or stroke). A conscious effort was made to include participants of various ages, disease presentations, SSA backgrounds and sexes. It was anticipated that up to 16 participant interviews would be required. However, the actual sample size was based on saturation of themes.

2.4.2 Interview development

The Knowledge-to-Action cycle (assessing barriers/facilitators to knowledge use) and the ITHBC were used to inform the semi-structured interviews. Specifically, interview questions were designed to allow participants with CVD-related conditions to express their thoughts on things that had facilitated or prevented them from accessing health services or using available health information resources in the City of Calgary. The ITHBC was incorporated into the interview by including questions that allowed participants with CVD-related conditions to describe how they managed their own health and any issues they faced in the process of doing so. The results of the environmental scan additionally helped in the development of interview question related to health services or health information accessed and familiarity with self-health management resources. The participants' understanding of facilitators and barriers to accessing or using the resources and managing their CVD-related

conditions were the primary focus of the interview.

All interviews were completed in person by the principal researcher and data was recorded using a digital audio - device. Interviews took approximately 45 – 60 minutes and were transcribed verbatim by the principal researcher. For more details on interview please refer to interview guide in Appendix D.

Participant responses were used to identify barriers and facilitators to health service or health information use through thematic analysis described later in the text. The observed pattern outcomes and themes within the interview notes were reviewed to see if the themes supported the predicted outcomes based on the ITHBC during the interpretation stage. Themes were developed based on readings of the transcripts and identifying study outcomes as being similar to predicted results according to ITHBC.

2.4.3 Interview analysis

Interview data was analysed using standard thematic analysis. This process involved seven steps as described by Witelock: 1) preparation of data for analysis, 2) sequential reading of interview text and coding items of interest, 3) codes of interest sorted in to proto-themes, 4) examination of proto-themes and attempted initial definition, 5) careful re-examination of the text for relevant incidents of data for each proto-theme, 6) construction of final theme form and 7) reporting of each theme [72]. Interviews were transcribed verbatim to written documents formatted with large margins, which increased space for note taking. The interview transcripts read through twice. During the initial reading, the principal researcher made notes of the main issues identified by interview participants in order to obtain an idea of the various topics embedded in the transcripts. For the second reading the principal researcher examined the text closely line by line and applied codes to bits of text based on

the main topics identified in the initial transcript reading. Codes that related to similar topics were then grouped into categories that formed proto-themes. The process in which codes were assigned to each proto-theme was examined to determine the proto-theme's current meaning, which provided an acting definition. The proto-themes were then refined through careful re-examination of the codes within them. Proto-themes that did not have much data to support them or contained diverse codes were revised into new themes that cohered together meaningfully, while maintaining clear and identifiable distinctions between themes. Lastly, definition and supporting interview data were re-examined for the final development of each theme, using all the material relating to it. Each theme title was finalized, and the definition of the theme, as well as quotations from the interviews that supported the theme, were presented in the qualitative results of the thesis.

2.4.4 Triangulation

A mixed methods design presented the opportunity to use methodological triangulation. The survey questionnaire results, semi structured interviews and health resource review (environmental scan) document were compared to each other using triangulation. The use of this technique helped to offset any weaknesses specific to any one method of research. This created a convergence of evidence that could lead to facts [73]. In this case these facts were specific to the subject of SSA immigrant CVD-related health service use in Calgary. It is important to note that triangulation does not always lead to convergence. It is possible for the results of one method of analysis to yield dissimilar findings from others used in a study. This divergence in evidence does not mean a study is inherently flawed but rather informs the researcher that the relationship under exploration could be more nuanced than was thought of originally [67]. This requires that the researcher explain the source of the

differences observed in the findings by revisiting their collected data and conducting more surveys or interviews as necessary. The interpretation of divergent findings may uncover unexpected results and provide an enhanced explanation for the relationship under study [67]. Overall, both convergent and divergent results of triangulation are important to report. However, in the case of this study there were no divergent findings to discuss so only convergent results of triangulation were observed. This provided a way to analyze the research question from different methodological perspectives and added a depth to the results that would not have been possible using a single-strategy study, thereby increasing the validity and utility of the findings [74].

2.4.5 Study Rigor

To insure that rigour was maintained, the principal researcher checked that methodological congruence was kept between the quantitative survey and qualitative interviews. This was accomplished in sequential steps starting with making sure that the research question and objectives were clearly focused. Second, the environmental scan document, survey, and interview methods were designed in a way that complemented each other, so that areas of weakness in one method were buffered by strengths of another. For example, survey questions were focused on providing demographic statistics on disease presentation and CVD-related health service use and management among the SSA sample that could not be covered in an interview. On the other hand, the interviews provided the principal researcher with detailed experiences of participants related to facilitators and barriers that could not be covered in a survey. Furthermore, qualitative description is a method that gives a comprehensive summary of human experience without a painstaking level of interpretation[24].

In accordance to the qualitative description and explanatory mixed method design discussed by Sandelowski plus Teddlie &Tashakkori respectively, rigor was maintained in the study by incorporating the following points: 1) comprehensive yet flexible systematic sampling, 2) ensuring participants had the freedom to speak, 3) on-going attention to context, and 4) ensuring comprehensive data collection, accurate transcription and data-driven coding [75, 76]. The first was maintenance of a comprehensive sample strategy that was significantly larger in the quantitative portion of the study than the qualitative portion. Teddlie & Tashakkori state that use of this style of sampling in explanatory mixed methods helps to increase the validity of the study [76]. Moreover this made it possible to have a smaller yet flexible purposive sample plan for the following qualitative portion of the study. The purposive sample criteria were used to recruit SSA immigrant participants with CVD related conditions who described their level of health service access and health management in relation to personal facilitators and barriers to care, as well as personal behavioral strategies. This flexible purposive sampling technique allowed for interviews to continue till theoretical saturation and this made sure that the data collection was finished when no new categories emerged and the relationships between data in existing categories were clear. This primary step also formed the basis for the second point of rigor maintenance, which was insuring participants had the freedom to speak. A flexible semi-structured interview guide with open ended questions was used to insure that participants had the ability to respond to questions from their own point of view. Also in the process of allowing interview participants to tell their experiences in their own words, a sense of partnership and trust between interviewer and participant was created that made it easier for participants to divulge more information when probed and strengthened the participant-driven data collection process. The next step

used in rigor maintenance was ensuring on-going attention to context of the interviews. This was done during interviews by the principal researcher making short notes on voice intonation changes, and emotional responses of interviewees as they answered questions. Furthermore, as the interviews were being transcribed the principal researcher made an effort to incorporate the nonverbal emotional cues observed during the interview. Any other verbal emotional cues (e.g. laughter, pauses, or whimpering) found while listening to the interview recordings were also transcribed into the text as they appeared. This provided a means of interpreting the responses in the context they were received. To ensure the emotional interpretations were correct, frequent confirming and probing questions were asked to obtain further details behind emotional responses. The forth step used to maintain rigor was insuring accurate transcription and data driven coding. This aspect of rigor maintenance involved the use of thematic analysis for all interviews. Thematic analysis has been used in previous qualitative research related to chronic disease management and has been a proven qualitative analytic tool for developing codes and themes that are determined from interview data themselves [24].

In mixed methods research there are often different terms used to describe the notion of validity and reliability within study results. Teddlie & Tashakkori use the term "inference quality" to describe the evaluation of methodological rigour (study design quality) and interpretive rigor (the evaluation of accuracy and authenticity of conclusions) in mixed methods studies[76]. There are four components of inference quality: within design consistency, conceptual consistency, interpretive agreement, and interpretive distinctness[76].

The term design consistency refers to the study design being consistent with the research question, observations, and measurements. It may also refer to the appropriateness

or sufficiency of the data analysis techniques and how well the analysis leads to sound interpretations and conclusions from the data collected. In this study much work was put into insuring the research question and objectives informed development of the data collection and analysis tools. This was achieved through the use of the "Knowledge to action framework" and the "Integrated theory of health behaviour change", both of which guided aspects of data collection, analysis and interpretation which helped to promote quantitative and qualitative data complementation. The use of the environmental scan, surveys, and then interviews was done so that each successive form of data collection was enriched by the findings of the previous, which promoted sound interpretations and conclusions.

Conceptual consistency is the second aspect within inference quality and it refers to the extent to which quantitative and qualitative findings are similar to each other and to the existing body of literature. This aspect of inference quality was addressed during the triangulation and interpretation portion of the thesis and it was shown that that the findings of the interview did support and strengthen the results obtained from the survey. Furthermore, the findings form the survey and interview portion of the study did show significant similarities to current literature on immigrant chronic disease health management in developed nations.

The third aspect of inference quality is interpretive agreement and this is described as the involvement of other researchers in validating the reliability of ones findings [76]. To address the reliability and validity of items included in the survey, members of the graduate student's thesis committee provided their input and suggestions on what items in the survey were important to include or revise. This helped to develop strong agreement on the relevance of the questions included in survey [77]. In regards to the interview coding and theme

identification, help in identifying themes was provided by a member of the primary researcher's thesis committee who specialized in qualitative research . This member of the research committee provided assistance in editing and identifying new themes once initial thematic analysis had taken place. This helped to improve the reliability of the codes and themes chosen. The fourth part of inference quality in mixed methods research is interpretive distinctness[76]. This is described as the process of ruling out other possible explanations for findings. This was achieved through the use of participant interview responses which helped to elaborate and strengthen the statistical tests observed within quantitative portion of the study. Furthermore, in the process of bracketing during the interpretation of results (which is explained below) the principal researcher was made aware of possible alternative explanations for findings and made considerable effort to look deep within the data collected for data driven reasons for the observed outcomes.

In addition, reflexivity was an important part of the data analysis procedure. Reflexivity has been described as recalling upon the ways in which our own values, experiences, interests, beliefs, political commitments, wider aims in life and social identities have shaped the research[78]. This helped the principal researcher identify their role and acknowledge their preconceived notions during the data collection and analysis process. However, bracketing of these notions was necessary to prevent them from muddling the data collection and analysis interpretations. To help with the bracketing task a reflective journal using a digital recorder was used by the principal researcher. Within the journal the principal researcher took note of his opinion on factors affecting SSA management of CVD-related conditions based on personal experience. These opinions were then made aware to the principal researcher ahead of data collection and analysis, which encouraged and informed

him to look deeper into the interview data and identify other data-driven reasons for the observed occurrences. This helped to minimize the impact of the preconceived notions of the principal researcher during data collection and analysis. Dependability or reliability in this study was maintained by using 2 distinct methods of analysis (surveys and interviews) to measure the same phenomenon. This was then triangulated with the resource review document data to look for convergence of themes [79].

2.5 Ethics:

As this study involves the participation of human participants ethics approval was sought and granted from the local research ethics board (CHREB). Furthermore consent forms were provided to all participants informing them of the confidentiality and safe keeping of any information they divulged during the pilot, survey or interview. In accordance with the CHREB all data collected from the pilot, survey and interviews are stored in locked cabinets within the Research Supervisor's office and the documents will be kept till June 2024 (12 years) before they are destroyed. The storage locations for identifying data (consent forms) are kept in a separate location from other forms of collected data. Participants were able to decline participation at any time and minimal self-identifying information was collected. All surveys and interviews were stripped of all identifiers during the analysis process and coded. Lastly all electronic data and spread sheets are stored on a secure Alberta Health Services online server.

III: RESULTS

3.1 Quantitative results

This portion of the thesis will focus on numeric results, descriptive data and statistical analysis obtained from the environmental scan of CVD-related health care resources and the CVD-related health service use survey questionnaire. Details for the environmental scan have been placed in Appendix E.

3.1.1 Environmental scan:

The scan of CVD-related health care resources that are publically available and accessible to SSA immigrants in Calgary revealed 23 possible services. All but one of the services are funded completely by the Alberta government. These various health care resources can be received in the following forms: outpatient health services, disease-specific and general education classes, self-management workshops, supervised exercise classes, or online health management educational tools.

3.1.1.1 Outpatient health services

The scan identified 6 locations (26.09% of all programs identified in the scan) where outpatient health services are provided for CVD-related conditions. Of these 6 locations, 4 also provide educational tutorials and classes. All 6 locations are accessible year round, but there are weekday working hour restrictions (Monday to Thursday or Friday; 8:00 am to 4:00 or 4:30pm) for 5 of the locations. The Acute Stroke Services program located at the Foothills Medical Centre is the only one open 24 hours a day 7 days a week. There were 3 outpatient services that are offered at multiple locations within the Calgary area: Diabetes, Hypertension and Cholesterol Services, 24 Hour Blood Pressure Monitoring Service, and the Atrial Fibrillation Clinic service. The remaining services are provided through one location

within the city and include: Calgary Refugee Health Clinic, Stroke Prevention Clinic, and Acute Stroke Services program. In regards to service related cost, only the Diabetes, Hypertension and Cholesterol Services program includes a fee of $5 CAD for a course booklet on self-management tips that are used during the educational component of the program. All locations can be reached by public transit. Only one of the six locations has free parking on site (the Calgary Refugee health clinic). All of the programs, except for the Calgary Refugee Health Clinic, require a doctor's referral before participants can receive services.

The average wait times for these programs vary greatly (10 minutes to as long as 10 weeks). In the case of the Diabetes, Hypertension and Cholesterol Services program, wait times from the referral call to receiving services are highly dependent on patient volume, severity of case and times of scheduled programs. Therefore service wait times can be anywhere from a few days to multiple weeks. The Stroke Prevention Clinic has specific wait times they adhere to, based on the stroke risk of patients who are referred to them. High risk patients are seen within 24 - 48 hours, moderate risk patients are seen within 48 hours – 7 days, and lower risk patients are seen within 14 - 21 days. In the 24 hour blood pressure monitoring clinic patients/clients can wait up to 6 weeks from the initial patient referral call. The Acute Stroke Services program has an average wait time of 2 - 6 weeks from the time of referral. The average wait time for services after referral to the atrial fibrillation clinic can be 8 - 10 weeks.

Those receiving refugee specific services may wait anywhere from 10 minutes to an hour depending on the amount of staff working or the demand for health services at the time. However, education classes offered at this location take place at set schedules and one must

make an appointment in advance to attend such classes. The Calgary Refugee Health Clinic functions similar to that of a family medicine clinic where services included: prevention and health promotion, diagnosis and management of acute, sub-acute and chronic problems, rehabilitation and supportive care. Yet, due to the refugee focus of the program, emphasis is placed on infectious disease screening, immunization, nutrition, chronic disease management, eye health, oral health, audiology, mental health and prenatal health[80].

Most programs provide information in English (or French if available). In the case that the recipient does not understand the information fully, they can be accompanied by a caregiver or family member to act as translator. Alberta Health Services (AHS) within the Calgary zone also provides in-person (20 languages) and over the phone (200 languages) translation services. However, this translation service does not provide a large number of African language translations as services are focused more on larger immigrant communities within the city. Other than translation services, only the Calgary Refugee health clinic program provides specific services for SSA immigrant and refugee populations within Calgary.

Of the 6 locations, only the Calgary Refugee health clinic provides both primary preventative health information and disease management information. The remaining 5 programs only provided disease management information, as they focus on specific health conditions. The Calgary Refugee health clinic is also the only one that focuses on both CVD and related risk factor. The health information provided in all of the six programs is usually in the form of consultations with a physician, nurse, or other health professional. However, there are other forms of health information that are distributed to patients when necessary, such as printed forms or booklets about self-management, monitoring or rehabilitation

programs. Information is also provided in tutorial format in the case of teaching patients how to use medical equipment, such as heart monitors or insulin pumps.

All of the 6 locations had specific target populations that they served. For 5 of them, the target population is clearly explained as part of the referral requirements (Appendix E). In the case of the Refugee health clinic, it is important to note that although this service is meant to be used by refugees, currently not all refugees are eligible to receive government-assisted healthcare. In June 2012 there were budget cuts to the Interim Federal Health program that provides the funds to cover general healthcare needs for all refugees within their first 2 years in Canada [2]. These cuts in health coverage disqualified refugee claimants who by Canadian standards came from a Designated Country of Origin (DCO). The Canadian Government defined Designated Countries of Origin as countries that do not normally produce refugees, respect human rights and offer state protection [2]. Although these new changes were put in place to streamline the processing of refugee claims, it now leaves many refugees in Canada without general health coverage. However, changes to current refugee coverage are imminent following a federal judgment that specified that the current refugee health plan needs to be revised as it is unconstitutional[38].

3.1.1.2 Disease-specific and general education classes

Eighteen (78.26%) of the health programs involved disease-specific or general education classes related to CVD-related conditions. Four of these health programs (Calgary Refugee health clinic, Stroke Prevention Clinic, Diabetes, Hypertension and Cholesterol Services and 24 Hour Blood Pressure Monitoring Service) also provide outpatient services as described above. The remaining 14 (60.87%) education services are part of the Living Well with a Chronic Condition program, which is funded by AHS and is designed specifically to

support individuals with long-term medical conditions. Among these 14 education services, 6 are disease specific classes covering the topics of diabetes, preventing diabetes, high blood pressure, high cholesterol, and stroke. The other 8 education classes focus on general health topics such exercise, nutrition, stress management plus vitamin or herbal supplement use for individuals with chronic conditions. Most of the education classes offered by the Living Well program are only available during specific times of the year. However, there are a few classes that are offered throughout the year. The classes take place in 14 locations around Calgary, including community health centres, recreational centres, diagnostic testing centres and cultural centres. All of these locations are accessible by public transit. Due to scheduling and room booking requirements, interested members of the public need to call the Living Well program to sign up for classes in advance. The classes are anywhere from 1 to 2 hours in length and usually have a maximum capacity of 25 participants per session. These classes are open to the general public with certain chronic conditions and do not require a doctor's referral. Some of the education classes include a $5 charge for course booklet materials. Free parking is also available at some of the locations. Wait times range from 1 week to 2 months depending on the schedule and participant demand (i.e. classes with low sign up numbers are usually postponed to later dates). Class instruction is usually in English but participants are allowed to come with a family member or caregiver to help facilitate communication. In addition, the program includes some class instruction and class materials in French, Spanish, Cantonese, Mandarin, Tagalog and Punjabi. Interpretation and translation from AHS could be requested upon class enrollment. The disease specific classes are more focused on providing disease management information, while information in the general health classes focus more on primary preventative health topics. The classes are facilitated by

healthcare professionals. Participants receive health information through several means including tutorials, printed forms, visuals, consultation, and group discussions. The class topics are comprehensive in regards to chronic disease prevention and management, and they do cater to the needs of major immigrant groups in Calgary.

Each disease specific and general education class is offered during different times through the week; however, several of these times conflict with the standard 9am to 5 pm work week. There are a few classes that are offered on nights and weekends. Currently none of the classes are facilitated in native African languages.

3.1.1.3 Self-management workshops

Another service provided by the Living Well with a Chronic Condition program is a self-management workshop called, "Better Choices, Better Health ™". Like the education classes, the workshop does not require a doctor's referral but interested people have to call the Living Well program to join. The workshops are offered once a week for 6 weeks, and each class was about 2 ½ hours long. The workshops occur at the same 14 Calgary locations as the education classes. All the workshops are free of charge and the wait times range from 1 week to 1 month. The workshops are designed to be a meeting place for people with chronic conditions where they share ideas, while learning and practicing skills to live as healthy as possible with their chronic disease. The topics covered are specific to chronic disease management and focus on: goal setting and problem solving, coping with pain and fatigue, managing difficult emotions, relaxation techniques and self-talk, communication and creating positive relationships with one's health care team [59]. Like the education classes, participants were able to come with a family member or a caregiver and have access to translation services provided by AHS. To cater to immigrant needs, workshop instruction is

also provided in French, Spanish, Cantonese, Mandarin, Tagalog and Punjabi. Unlike the education classes, the workshops are facilitated by trained lay individuals with chronic conditions or caregivers of persons with chronic conditions.

3.1.1.4 Supervised exercise program

Another part of the Living Well with a Chronic Condition program is supervised exercise classes. These classes are offered at various community fitness locations within Calgary and require participants to call the Living Well program to enroll. Exercise classes take place 2-3 times a week for 8 weeks. Although no physician referral is required to join, potential participants are required to come in for an initial health and fitness assessment before they are able to partake in the exercises program. There is a cost of $80 dollars associated with the program but there are subsidies available for those who qualify. Three levels of fitness supervision are provided [59]. The exercise classes are usually provided in English but participants can request translation services through AHS. The exercise classes are usually facilitated by a team of health professionals.

3.1.1.5 Online health education portal

The Living Well with a Chronic Condition program also has a website that focuses on CVD-related self-management and is publically available at http://wcm.ucalgary.ca/cdm/. This website was developed by health professionals at the Endocrinology and Metabolism Program of AHS in conjunction with the University of Calgary. This site serves as an online health portal for chronic disease management information on Diabetes, CVD, Hypertension, High cholesterol, and many more conditions. This web page was designed for both healthcare professionals and the general public. Printable handouts, links to online tutorials on specific chronic disease topics, and links to trusted sites are available on the portal. There

is health information in various languages. However, In order to access, navigate and use the online information efficiently, users should be both computer and English literate in addition to having access to the internet and a printer.

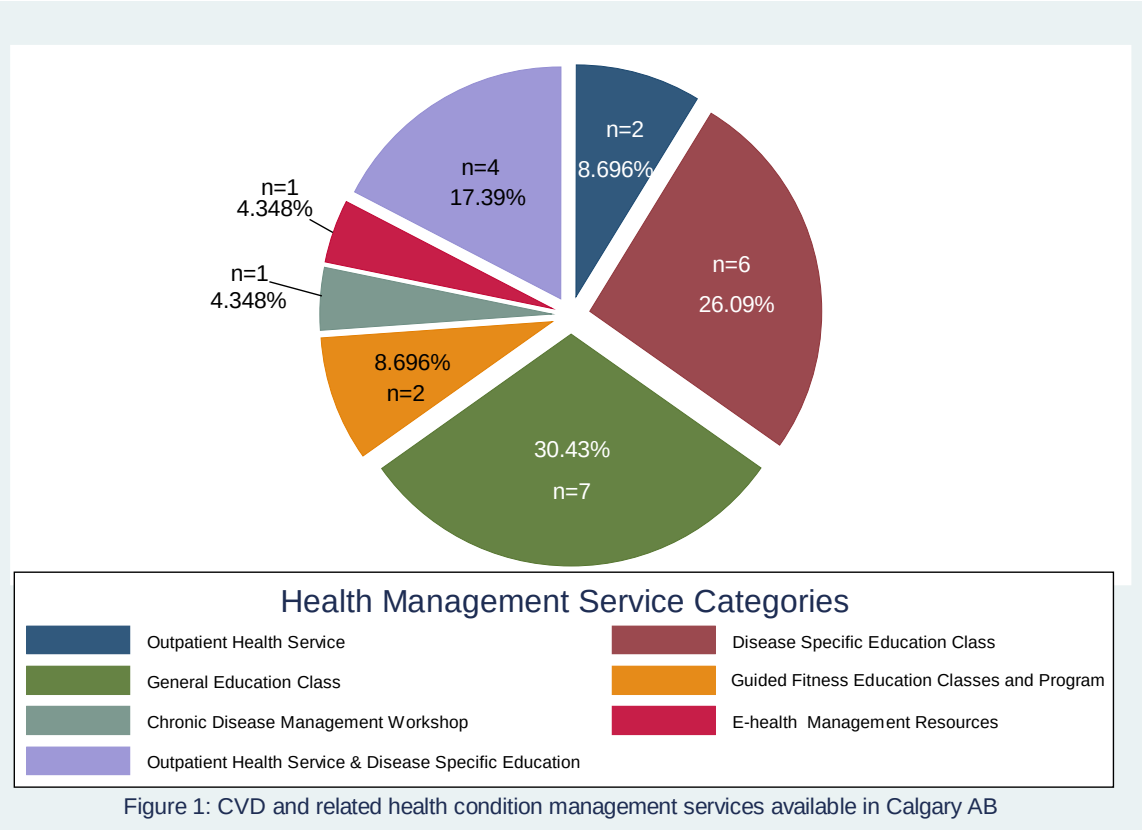

Figure 1: Types of CVD and related health condition management services available to SSA immigrants in Calgary Alberta

3.1.2 Quantitative survey

3.1.2.1 Survey development

Using data from the environmental scan, a preliminary survey was developed and evaluated for face and content validity with a convenience sample of 13 sub-Saharan African immigrants residing in the Calgary area. These individuals were selected from several social organizations and met inclusion criteria. There were a total of 8 (61.5%) male and 5 (38.5%)

female participants. The most commonly reported condition among these participants was hypertension (6 participants, 46.1%), followed by type II diabetes (3 participants, 23.1%) and high cholesterol (1 participant, 7.7%). No participants reported ever having had a heart attack or stroke. Only one participant indicated that they had smoked in the past. Most of the participants (84.6%) were over the age of 40 and had a high school education (46.1%). The most common (46.2%) number of years lived in Canada was 11 to 15. All participants during survey development were of Ghanaian decent and spoke English. The most commonly reported (38.5%) annual income level was greater than $40,000. 38.5% reported their level of perceived bodily health as "fair", while perceived mental health (53.9%) and perceived spiritual health (53.9%) was generally rated as "good".

Only 2 participants (15.4%) had never had their blood pressure measured, while 12 (92.3%) participants could not recall if they had ever had a high cholesterol test. One participant (12.5%) out of the 8 participants who identified as having a CVD-related condition was not taking any prescribed treatment to manage their condition; 10 participants (76.9%) indicated that they had a family doctor and only 1 participant (7.7%) indicated that they were using herbal medicine to manage their CVD-related condition. When participants were asked about where they often went to receive health information, a doctor's office was the most reported answer for both weekdays (9 participants, 69.2%) and evenings or weekends (5 participants, 38.5%). Five participants (38.5 %) indicated that they had used the internet in the past year to access online health information and 4 participants (30.8 %) indicated that they lived in close proximity to health care services. There were 8 participants (61.5%) who said they were able to access health care services for their most recent need and 3 participants (23.1%) sought medical advice as a result of encouragement from family

members. However, there were 4 participants (30.8%) who indicated they were not able to access health care services for their most recent health need. Two of these participants (50.0 %) indicated that they were not able to access health services because they did not know who or where to call for specific health concerns.

In terms of completing the survey, all pilot participants were able to complete it within 20-30 minutes. The majority found that the wording of questions related to facilitators and barriers was easy to understand. The only concern raised was that it was unclear when to indicate "no" versus "not applicable" for disease related questions. To address this issue, new skip section directions were put into the final survey. All participants found the questions concerning health conditions, prescribed medications, smoking behavior and income acceptable to answer. Some survey respondents were not too sure how accurate their responses would be to some of the medical testing questions. Most of the participants (92.31%) found the question related to ever having done a cholesterol test a bit difficult to answer, as many could recall having blood work done in the past but they were not sure what it was for.

To address this issue, the question was rewritten to include various time frames in which the participant could have had the test done, in hopes that participants would be better able to recall more recent tests.

There were a few additional suggestions that participants provided to potentially improve the survey. One was to include questions highlighting the symptoms of the various diseases of interest. This would have provided a way of potentially identifying individuals at risk but who had not yet been diagnosed. After careful consideration, it was decided not to include symptom related questions within the survey analysis. This decision was made due to

the fact that signs and symptoms of CVD related conditions are not exclusive to these conditions alone. Another suggestion was to include long wait times as one of the options for why individuals did not access health services. In addition, participants suggested that the options for the question addressing where participants usually accessed online health information should be increased to include “home” and “do not access online health information” as possible choices. The survey was modified to address both of these suggestions. Based on input from the supervisory committee, questions related to self-health management were added as a way to measure survey participants’ opinions of health management.

A final version of the survey was distributed to various SSA community groups and churches within the Calgary Area using a convenience sampling strategy. Overall, 230 surveys were distributed to potential participants and 226 were returned completed (response rate = 98.3%). Most of the surveys were collected during the general meetings at the organizations and churches where the principal researcher attended; as participants were given time to complete the survey during or after the meeting.

Table 1 Demographic data of Sub-Saharan African immigrants in Calgary participating in the study, stratified by gender

Variable	Category	Male (n=138)		Female (n=88)		Total (N=226)	
		Number	%	Number	%	Number	%
Age group							
	18 – 30 years	34	24.64	31	35.23	65	28.76
	31 – 40 years	31	22.46	28	31.82	59	26.11
	41 – 50 years	51	36.96	22	25.00	73	32.30
	51 – 60 years	16	11.59	5	5.68	21	9.29
	61 and Over	6	4.35	2	2.27	8	3.54
Level of education							
	None to Completed Elementary	10	7.25	5	5.68	15	6.64
	Some High school to High school Graduate	31	22.46	23	26.14	54	23.89
	Some Trade School to College diploma	33	23.91	31	35.23	64	28.32
	Some University to Master's Degree	60	43.48	29	32.95	89	39.38
	Specialized Degree, PhD or Post Doctorate	4	2.90	0	0	4	1.77
Years lived in Canada							
	Less than 1 year	11	7.97	6	6.82	17	7.52
	1-5 years	34	24.64	24	27.27	58	25.66
	6-10 years	36	26.09	23	26.14	59	26.11
	11-15 years	19	13.77	13	14.77	32	14.16
	16-20 years	13	9.42	14	15.91	27	11.95
	Greater than 20 years	25	18.12	8	9.09	33	14.60
Language groups spoken*							

Variable	Category	Male (n=138)		Female (n=88)		Total (N=226)	
		Number	%	Number	%	Number	%
Language groups spoken*	Afro-Asiatic	25	14.04	15	12.10	40	13.24
	Nilo-Saharan	10	5.62	3	2.42	13	4.30
	Niger-Congo	93	52.25	64	51.61	157	52.00
	Bantu	5	2.81	2	1.61	7	2.32
	European (other than English)	24	13.48	25	20.16	49	16.22
	Other Language	21	11.80	15	12.10	36	11.92
Annual household income [a] ♦							
	<$15,000	9	6.77	14	16.28	23	10.50
	$15,001 to $35,000	43	32.33	27	31.40	70	31.96
	$35,001 to $40,000	10	7.52	11	12.79	21	9.59
	> $40,000	71	53.38	34	39.53	105	47.95
Perception of physical health							
	Poor to Fair	11	7.97	8	9.09	19	8.41
	Good	30	21.74	21	23.86	51	22.57
	Very Good	62	44.93	32	36.36	94	41.59
	Excellent	35	25.36	27	30.68	62	27.43
Perception of mental health [b]							
	Poor to Fair	8	5.89	6	6.90	14	6.28
	Good	22	16.18	18	20.69	40	17.94
	Very Good	54	39.71	33	37.93	87	39.01
Perception of mental health [b]	Excellent	52	38.24	30	34.48	82	36.77
Perception of spiritual health [c]							
	Poor to Fair	8	5.88	6	6.82	14	6.25
	Good	20	14.71	14	15.91	34	15.18
	Very Good	52	38.24	29	32.95	81	36.16
	Excellent	56	41.18	39	44.32	95	42.41
Currently smoke							

Variable	Category	Male (n=138)		Female (n=88)		Total (N=226)	
		Number	%	Number	%	Number	%
Currently smoke	No	125	90.58	81	92.05	206	91.15
	Yes	13	9.42	7	7.96	20	8.85
Ever smoked							
	No	115	83.33	79	89.77	194	85.84
	Yes	23	16.67	9	10.22	32	14.16

N=226 unless otherwise specified
*Sum of sample values for variable may total over226 as individuals could select more than one option.
[a] 7 participants did not respond to the question
[b] 3 participants did not respond to the question
[c] 2 participants did not respond to the question
(♦) Denotes a p-value that is at or below the 0.05 level of significance from a 2-sided Fishers exact test

3.1.2.2 Survey demographics

As seen in Table 1, males formed the majority of participants in this survey (61.1%). The most represented age group was 41-50 years (32.3%). The education level for the overall sample was relatively high with many respondents having at least some university education (n=89, 39.38%). Over 50% of the survey participants had lived in Canada for 10 years or less. The most spoken African languages among the sample belonged to the Niger-Congo language group (n=157, 52%).

Many survey participants had high household incomes, with almost half of them indicating they earned more than $40,000.00 CAD per year (n=105, 48.0%). The household income among males was significantly higher than among females (p=0.044). 93 participants (42.5%) reported household incomes at or below $35,000.00 CAD, which is the average low income cut off for households after tax (Statistics Canada, 2013). 39.1% of male participants reported household incomes approximately at or below the low income cut off average, compared to 47.7% of female participants.

The self-perception of physical, mental and spiritual health among survey participants was very high overall, with more than 60% indicating at least very good health. The majority

had never smoked cigarettes (n=194, 85.8%).

3.1.2.3 Cardiovascular disease (CVD) and risk factors by age group and gender in study sample

Table 2: Rate of cardiovascular disease (CVD) and risk factors among the study sample, stratified by age group

CVD related condition	18 to 40 years n= 124		Greater than 40 years n=102		Total N=226	
	Number	%†	Number	%†	Number	%†
Stroke or heart disease (CVD)	3	2.42	8	7.84	11	4.87
Hypertension *	14	11.29	45	44.12	59	26.11
Smoking [a]	15	12.10	17	16.67	32	14.16
Other risk factors * **(high cholesterol, diabetes)**	13	10.48	25	24.51	38	16.81

†The denominators for the rate calculations in Table 2 were the number of 18 to 40 year old, greater than 40 year old and total respondents to the survey. The exact numbers were 124 for the 18 to 40 year old column, 102 for the greater than 40 year old column, and 226 for the total column.
[a] this includes all individuals who mentioned that they have ever smoked in the past or are currently smoking
(*) Denotes a p-value that is below the 0.05 level of significance from a 2-sided Fishers exact test
Sample participants were allowed to select multiple risk factor conditions.

A higher percentage of participants greater than 40 years of age self-identified as having CVD or a related condition than participants belonging to the 18 to 40 age group, for all CVD related conditions of interest in this study (Table 2). Hypertension was the most commonly identified CVD-related condition for both the younger (n=14, 11.29%) and older age groups (n=45, 44.22%) Also hypertension was the most reported form of CVD related condition among the whole sample regardless of age group n=59 (26.11%). A statistically significant difference in proportions of hypertension between the 18-40 and 40 plus age group was also observed among the sample ($p < 0.001$). Stroke and heart disease was the least reported condition among the sample (n=11, 4.87%). The proportional difference of stroke and heart disease between the younger (n=3, 2.42%) and older (n=8, 7.84%) survey participants did approach statistical significance ($p= 0.069$). Participants between 18-40 years of age who had ever smoked (n= 15, 12.10%) were similar in proportion to that of

participants 40 years of age and above (n=17, 16.67%). There was no statistical difference observed between the proportion of older and younger study participants who had ever smoked (p= 0.344). Further statistical significant differences were observed in diabetes and high cholesterol proportions of the 18-40 (n=13, 10.48%) and 40 plus age group (n= 25, 24.51%) the p-value was 0.007.

In addition seventy-seven individuals (34.07%) indicated that they had 1 or more of the following CVD-related conditions: stroke or heart disease, hypertension, smoking history, high cholesterol, and diabetes mellitus. More men (n= 51, 36.96%) than women (n=26, 29.55%) indicated that they had one or more CVD-related conditions. However, there was not a statistically significant difference by gender (p= 0.314) (table not included).

3.1.2.4 Diagnostic testing service use among SSA immigrants by age group

Table 3: Use of diagnostic testing services for CVD or risk factors among survey respondents, stratified by age group

Variable	Category	18 to 40 years		Greater than 40 years		Total		Fisher's Exact Test
		n=124	%	n=102	%	N=226	%	(P-value)
Last blood pressure measurement								
	< 6 months ago	58	46.77	63	61.76	121	53.54	(0.023)*
	6 months to < 1 year ago	17	13.71	18	17.65	35	15.49	
	≥ 1 year ago	15	12.10	7	6.86	22	9.73	
	Never Tested	34	27.42	14	13.73	48	21.24	
Last diabetes test								
	< 1 year ago	24	19.35	30	29.41	54	23.89	(0.018)*
	≥ 1 year ago	7	5.65	13	12.75	20	8.85	
	Never Tested	93	83.4	59	57.84	152	67.26	
Last cholesterol test								
	< 1 year ago	23	18.55	33	32.35	56	24.78	(0.001)*
	≥ 1 year ago	5	4.03	14	13.73	19	8.41	
	Never Tested	96	77.42	55	53.92	151	66.81	
Ever tested for heart disease or stroke								
	Yes	55	44.35	61	59.80	116	51.33	(0.023)*
	No	69	55.65	41	40.20	110	48.67	

The denominators used in the Table 3 percent calculations correspond to the column totals for each age group.
(*) Denotes a p-value that is below the 0.05 level of significance from a 2-sided Fishers exact test

On table 3 the use of CVD-related condition testing stratified by age are presented. Most participants had a blood pressure measurement within the last 6 months (n=121, 53.54%). There was a statistically significant difference by age group (p= 0.023), with

respondents over 40 having had their blood pressure measured more recently. In the case of diabetes testing, the majority in both age groups reported never being tested (83.40% and 57.84%). However, statistically more respondents aged over 40 years indicated that they had been tested for diabetes than respondents 40 years or younger (p= 0.018). Most participants had never been tested for high cholesterol (n= 151, 66.81%). There were significantly more individuals greater than 40 years of age that had actually used diagnostic testing services than younger individuals (p=0.001). Within the separate age categories, participants who were older than 40 (n=61, 59.80%) had more tests for heart disease and stroke than those 40 years and younger (n=55, 44.35%) (p= 0.023).

3.1.2.5 Age group differences in treatment modalities for respondents with CVD and related conditions

Table 4: Treatment modalities used among survey participants with CVD or risk factors grouped by Age

Treatment types	CVD Related conditions															
	Stroke or heart disease				Hypertension				Other risk factors (high cholesterol, diabetes)				All CVD or risk factor conditions combined			
	Less than or equal to 40 n=3	%†	41 years or older n=8	%†	Less than or equal to 40 n= 14	%†	41 years or older n= 45	%†	Less than or equal to 40 n=13	%†	41 years or older n=25	%†	Less than or equal to 40 n=24	%†	41 years or older n=53	%†
Drug	1	33.33	6	75.00	5	35.71	37	82.22	6	46.15	17	68.00	8	33.33	44	83.02
Diet	0	0	3	37.50	7	50.00	17	37.78	7	53.85	11	44.00	12	50.00	23	43.40
Exercise	0	0	2	25.00	2	14.29	15	33.33	6	46.15	6	24.00	7	29.17	19	35.85
Other	NA	0	NA	0	0	0	5	11.11	2	15.38	3	12.00	2	8.33	7	13.21
None	2	66.66	1	12.50	4	28.57	1	2.22	3	23.08	1	4.00	8	33.33	3	5.66
Fisher's exact p-value	(0.231)				(0.007)*				(0.354)				(0.004)*			

† The percent proportions shown in each column were calculated using the sub sample n value as the denominator for each of the 3 groups. The frequency and percent values total over the column n or 100% respectively as individuals were allowed to select more than one type of treatment. The n in the total column corresponds to the total number of participants who identified as having 1 or a combination of CVD and related conditions. (*) Denotes a p-value that is below the 0.05 level of significance from a 2-sided Fishers exact test "NA" stands for not applicable

This section focuses on the preferred courses of treatment for survey respondents with CVD-related conditions based on their age group (Table 4). For every CVD-related condition, consistently lower numbers of study participants 18-40 years old suffered from the condition compared to those older than 40 years. Moreover, most stroke and heart disease study participants older than 40 preferred to use drugs as treatment (n=6, 75.00%), while most stroke and heart disease study participants 18-40 years were not using any sort of treatment for their condition (n=2, 66.66%). However, there was no statistical difference observed between stroke or heart disease participant age groups and their choices of treatment (p= 0.231). In the case of hypertension 50% (n =7) of participants between 18-40 years reported diet as one of the main ways they treated their condition, while 82.22% (n=37) participants older than 40 years used drug treatments. There was a statistically significant difference in hypertension treatments between age groups (p=0.007). There was no statistical difference observed between the 18- 40 year group and the over 40 years old group who indicated they had high cholesterol and/or diabetes mellitus (p= 0.354). Within the older group, 68.00% (n=17) of individuals were using medication to treat their CVD related condition. However, within the 18-40 group choice of treatment was evenly distributed between diet (n=7, 53.85%), medication (n=6, 46.15%) and exercise (n=6, 46.15%). When all CVD-related conditions are combined, it was clear that most participants 40 years or older used medication (n=44, 83.02%) as their primary treatment (Table 4). This was not the case for participants with CVD-related conditions between the ages of 18-40, where diet (n=12, 50.00%) was the primary treatment. Those 18-40 years old with CVD-related conditions were also less likely to seek treatment (n=8, 33.33%) than those over 40 years (n=3, 5.66%) (p=0.004).

3.1.2.6 Herbal medicine use among CVD and risk factor condition survey participants by age

Table 5: Survey participants use of herbal medications to manage their CVD and/or related risk factor conditions, grouped by age

Age groups of survey participants with CVD and/or risk factors							
Use of herbal medications	18 to 40 years old		41 years and above		Total		Fishers Exact Test
	n=24	%	n=53	%	n=77	%	(p-value)
Yes	1	4.17	16	30.19	17	22.08	(0.015)*
No	23	95.83	37	69.81	60	77.92	

(*) Denotes a p-value that is below the 0.05 level of significance from a 2-sided Fishers exact test

The information found in table 5 describes the use of herbal medications or supplements among participants with CVD-related conditions. Most participants with CVD-related conditions (n=60, 77.92%) did not use herbal medications or supplements as a means of treatment. However, of the 17 participants (22.08%) who did indicate that they used herbal medications, the overwhelming majority of them were over 40 (n=16). Overall, the difference in use of herbal medications between 18-40 year old and over 40 years old participants with CVD-related conditions was statistically significant (0.015).

3.1.2.7 Differences in how participants with and without CVD conditions access health information

This portion of the results section will focus on the primary and secondary access point to health information. It will examine the differences in choices of places to seek health information among participants with and without a self-identified CVD-related condition. In regards to survey respondents who lived close to a healthcare facility, there was no statistical difference observed in access (p=0.112) between those with CVD-related conditions (n=62, 80.52%) and those without (n= 104, 69.80%).

Table 6: Primary and secondary access point for health information identified by survey participants, grouped by CVD or risk factor status

		No CVD or risk factor condition n=149		Have CVD or risk factor condition n=77		Total N=226		Fishers exact test
Primary access points to health information		Number	%	Number		Number	%	(p-value)
Variable	**Category**							
Family Doctor	Yes	98	65.77	68	88.31	166	73.45	(<0.001)*
	No	51	34.23	9	11.69	60	26.55	
Doctors Office	Yes	93	62.42	67	87.01	160	70.80	(<0.001)*
	No	56	37.58	10	12.99	66	29.20	
Community Health Centre	Yes	9	6.04	6	7.79	15	6.64	(0.587)
	No	140	93.96	71	92.21	211	93.36	
Walk-in Clinic	Yes	85	57.05	47	61.04	132	58.41	(0.573)
	No	64	42.95	30	38.96	94	41.59	
East Calgary Health Centre	Yes	16	10.74	14	18.18	30	13.27	(0.147)
	No	133	89.26	63	81.82	196	86.73	
Tele-health phone line	Yes	32	21.48	11	14.29	43	19.03	(0.215)
	No	117	78.52	66	85.71	183	80.97	
Hospital	Yes	26	17.45	18	23.38	44	19.47	(0.293)
	No	123	82.55	59	76.62	182	80.53	
Emergency	Yes	43	28.86	28	36.36	71	31.42	(0.290)
	No	106	71.14	49	63.64	155	68.58	
Secondary access points to health information		Number	%	Number	%	Number	%	Fishers exact (p-value)
Variable	**Category**							
Family Members	Yes	25	27.7	17	22.08	42	18.58	(0.369)
	No	124	83.22	60	77.92	184	81.42	
Friends	Yes	6	4.03	10	12.99	16	7.08	(0.025)*
	No	143	95.97	67	87.01	210	92.92	
Online Health Sites	Yes	37	24.83	12	15.58	49	21.68	(0.127)
	No	112	75.17	65	84.42	177	78.32	
Other	Yes	4	2.68	0	0.00	4	1.77	(0.302)
	No	145	97.32	77	75.6	222	98.23	

The denominators used in the Table 6 percent calculations correspond to the column totals for participants with CVD or a risk factor condition (n=77), participants without CVD or risk factors (n=149) and the total number of participants in this survey (N=226). (*) Denotes a p-value that is below the 0.05 level of significance from a 2-sided Fishers exact test

There were significant differences in regards to access to primary and secondary point of health information between participants with or without CVD-related conditions (Table 6). The first was the family doctor's office, where participants with CVD-related conditions reported a higher proportion of visits (88.31%) to their family doctors for health information ($p < 0.001$). A higher proportion of participants with CVD-related condition (n=67, 87.01%) had visited any doctor's office for health information compared to participants without such conditions (n=93, 62.42 %) ($p < 0.001$).

In the case of other primary access points for health information, there was no statistical difference observed between those with and without CVD-related conditions for the following access points: community health centre, walk-in clinic, East Calgary Health Centre, tele-health phone line, hospital and emergency. The other primary access points to health information were not used by the majority of participants in this study and the Calgary refugee clinic was not accessed by any study participants.

For the secondary access points to health information, participants with CVD-related conditions were significantly more like to use friends as a means of secondary access (12.99% vs. 4.03%, p=0.025). The use of online health sites was another secondary access point for health information which showed some differences between those with and without CVD-related conditions. Overall most participants in the study did not access health information online (n=177, 78.32%). However, among those who used online health sites there was a greater proportion of respondents who did not have CVD-related conditions (n=37, 24.83%) than those who did (n=12, 15.58%) (p= 0.127)

3.1.2.8 Primary and secondary health information resource use among participants with CVD or risk factor conditions with reference to time.

Table 7: Primary and secondary health information resource time of visit for survey participants with CVD or risk factor conditions, by age group

		18-40 years old with CVD and/or risk factor n=24		**41 years or older with CVD and/or risk factor n=53**		**Total n=77**		**Fishers exact test**
Primary access points to health information		Number	%	Number	%	Number	%	p-value
Variable	**Category**							
Doctors Office	Daytime/weekday	14	58.33	27	50.94	41	53.25	(0.272)
	Evening/weekend	0	0.00	1	1.89	1	130	
	Both	5	20.83	20	37.74	25	32.47	
	None	5	20.83	5	9.43	10	12.99	
Walk-in Clinic	Daytime/weekday	8	33.33	12	22.64	20	25.97	(0.751)
	Evening/weekend	1	4.17	4	7.55	5	6.49	
	Both	7	29.17	15	28.30	22	28.57	
	None	8	33.33	22	41.51	30	38.96	
East Calgary Health Centre	Evening/weekend	0	0.00	1	1.89	1	1.30	(0.680)
	Both	1	4.17	1	1.89	2	2.60	
	None	23	95.83	51	96.23	74	96.10	
Tele-health phone line	Daytime/weekday	1	4.17	0	0.00	1	1.30	(0.003)*
	Evening/weekend	1	4.17	0	0.00	1	1.30	
	Both	3	12.50	0	0.00	3	3.90	
	None	16	66.67	50	94.34	66	85.71	
	Time of Access not Indicated	3	12.50	3	5.66	6	7.79	
Hospital	Daytime/weekday	0	0.00	2	3.77	2	2.60	(0.597)
	Evening/weekend	2	8.33	2	3.77	4	5.19	
	Both	1	4.17	1	1.89	2	2.60	
	None	21	87.50	48	90.57	69	89.61	
Emergency	Daytime/weekday	1	4.17	2	3.77	3	3.90	(0.652)
	Evening/weekend	3	12.50	8	15.09	11	14.29	
	Both	2	8.33	1	1.89	3	3.90	
	None	18	75.00	42	79.25	60	77.92	
Secondary access points to health information		N	%	N	%	N	%	Fishers exact p-value
Variable	Category							
Family Members	Daytime/weekday	1	4.17	3	5.66	4	5.19	(0.048)*
	Evening/weekend	0	0.00	1	1.89	1	1.30	

		18-40 years old with CVD and/or Risk factor n=24		41 years or older with CVD and/or Risk factor n=53		Total n=77		Fishers Exact test
Secondary access points to health information		N	%	N	%	N	%	p-value
Family Members	Both	3	12.50	0	0.00	3	3.90	(0.048)*
	None	20	83.33	49	92.45	69	89.61	
Friends	Daytime/weekday	2	8.33	4	7.55	6	7.79	(0.608)
	Evening/weekend	1	4.17	0	0.00	1	1.30	
	Both	1	4.17	2	3.77	3	3.90	
	None	20	83.33	47	88.68	67	87.01	
Online Health Sites	Daytime/weekday	1	4.17	0	0.00	1	1.30	(0.001)*
	Evening/weekend	1	4.17	0	0.00	1	1.30	
	Both	1	4.17	0	0.00	1	1.30	
	None	15	62.50	50	94.34	65	84.42	
	Time of Access not Indicated	6	25.00	3	5.66	9	11.69	

The denominators used in the Table 7 percent calculations correspond to the column totals for 18-40 year old participants with CVD or a risk factor condition (n=24) , 41 and older participants with CVD or a risk factor condition (n=53) and the total number of participants with CVD or a risk factor in the study (n=77) respectively
(*) Denotes a p-value that is below the 0.05 level of significance from a 2-sided Fishers exact test

Among those who used family members as a source of health information, participants 40 years or younger had a higher frequency of contacting family at both morning and evening times (n=3, 12.50%). Older participants preferred to seek health information from family members during the daytime (n=3, 5.66%). This difference in time and use of family members for health information was significantly different between age categories (p= 0.048). Online health sites were used less frequently by participants over 40 years of age (n=3, 5.66%), while participant 40 years and younger were evenly distributed in the times they accessed online services (p = 0.001).

3.1.2.9 Participant reasons for not accessing medical services

For participants with CVD-related conditions, the most frequently reported reason for not seeking medical services when they should have was simply being too busy with other matters (n=15, 19.48%), followed by long wait times for health services (n= 13, 16.88%). Similarly, for

participants without CVD-related conditions, the most frequently reported reason for not seeking medical services within the last year was being too busy with other matters (n=25, 16.78%), followed by Doctor's not being available to be seen (n=22, 14.77%).

There was a statistically significant difference between participants who had CVD-related conditions and those who did not when participants were asked if they were able to access health services for their most recent health need. The results showed that participants with CVD-related conditions (n=67, 87.01%) were more often able to access health service on a recent occasion than participants without such conditions (n=105, 70.47%) (p= 0.005).

3.1.2.10 Barriers and facilitators to accessing healthcare information or advice

Survey participants were given the opportunity to identify barriers in accessing health care information. In the overall sample, the three most frequently reported barriers were: 1) "not getting adequate advice" (n= 33, 14.60%), 2) "language problems" (n=17, 7.52%), 3) "deciding not to seek health advice" (n=15, 6.64%). Among survey participants with CVD-related conditions the most commonly reported barriers to accessing health information were similar to those barriers identified by participants without CVD related conditions.

In addition to barriers, participants were asked about facilitators to accessing health information from various health sources. Overall, the three top answers were: 1) the perceived seriousness of one's health situation (n=99, 43.81%), 2) respectful health care providers (n=40, 17.70%), and 3) encouragement from family members (n=31, 13.72%). For participants with CVD-related conditions the top three recorded facilitators to health care information were similar to the overall sample but in a slightly different order: 1) "the perceived seriousness of one's health situation (n=43, 55.84%), 2) encouragement from family members (n=14, 18.18%) and 3) respectful health care providers (n= 13, 16.88%).

3.1.2.11Other quantitative findings

Participants were asked to rate the difficulty of managing their health using a 5-point Likert scale. Results comparing the 2 age groups revealed that they were statistically different in median distributions (z=-2.918, p=0.0035). Furthermore, when age group, morbidity (none vs. 1 CVD condition vs. 2 or more CVD conditions) and perceived difficulty level in health management (very easy –easy vs. fair-very hard) were compared, a significant difference of proportions was observed between the variables ($p<0.001$). As seen in Figure 2 below, a smaller proportion of 18-40 year old individuals with 1 CVD related condition indicated difficulties in managing their health (n=6 , 4.84%) than their counterparts with 1 CVD related condition within the over 40 age group (n=16, 15.69%). Also, fewer participants with 2 or more CVD conditions within the 18-40 year old age group indicated difficulties in managing their health (n= 3, 2.42%) than their older counterparts (n=10, 9.80%). In contrast, among participants with no CVD related morbidities there were no differences in the number of participants having difficulty managing their health between the age groups (27.42% vs. 25.49%). The Fishers exact test comparing 18-40 years of age chart distributions to the over 40 chart distribution produced a significant difference ($p < 0.001$).

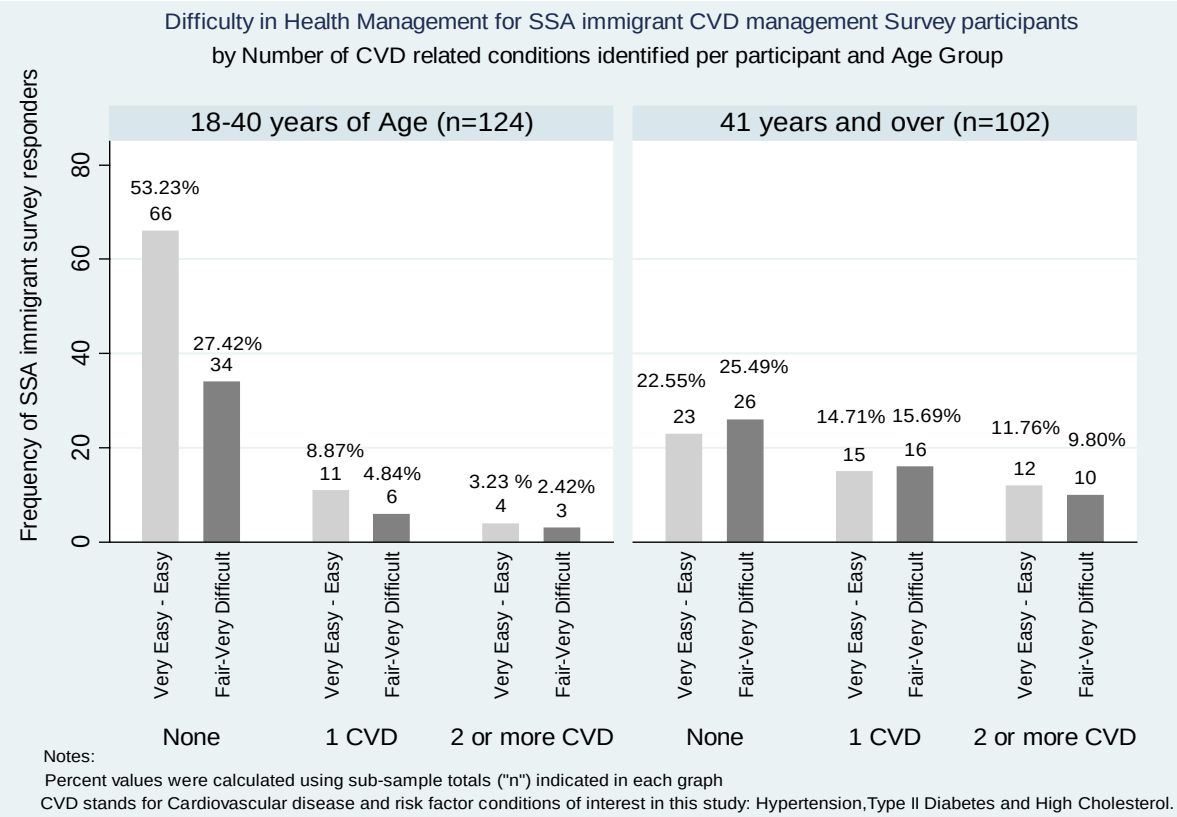

Figure 2: Expressed difficulty in health management for Sub-Saharan African (SSA) immigrant cardiovascular disease (CVD) management by age group and number of CVD related conditions per participant.

3.2 Qualitative results

Overall there was a general consensus of satisfaction with the access to healthcare among SSA immigrant study participants, which will be discussed in more detail below. The themes of importance that emerged from the interview responses include issues of doctor-directed care versus self-directed care, adherence to medical regiment and self-medication, intrinsic motivation, plus facilitators and barriers to personal health management. In this section, triangulation of the qualitative and quantitative findings are revealed, demonstrating the robustness of the results.

3.2.1 Interview participant demographics

The anticipated number of interviews was 16. However, thematic saturation was achieved after 8 individual interviews. Six of the participants were male (75.00%). All participants interviewed were over the age of 40, with 4 (50%) of the participants being between 41-50 years, 4 (50%) between 51-70 years. In regards to education received, 5 (62.50%) of the participants had at least some university education. The interview participants had spent a varying number of years in Canada, ranging from less than 1 year to over 20 years. The types and number of health conditions also varied: 6 (75.00%) of the participants were diagnosed with hypertension, 2 (25.00%) had suffered a heart attack or stroke in the past, and 5 (62.50%) participants had high cholesterol or diabetes. The household income of interview participants ranged from less than $40,000.00 to over $40,000.00 per annum. Interview participants included immigrants from the following SSA countries: Cameroon, Ghana, Nigeria and Sierra Leon. Interview participants were not that different from the survey participants.

3.2.2 Thematic Analysis

3.2.2.1 ***Theme 1*****:** ***<u>Genuine appreciation for health care system</u>*** **-** When asked about access to health care services in Calgary, most respondents were positive. Participants were generally content with the access to the array of health care services in Calgary, as illustrated by the following comments:

"Oh they're easy to find ... I have my doctor, have my pharmacist, I know where to go. Yah… so that would be my positive experience the fact that I am here and I have the resources, medication, and doctors that know what to do that will help you… I mean the system works well where you know what the system can do for you and Calgary, Canada have the best medical systems so… [whisper] and it's also free! [laughs] If you are a Canadian citizen it is free. If you

have life insurance or insurance coverage it's free so the system is good." (Male, 51-70 years old, managing 3 CVD related conditions)

"Uh I was lucky I was here in Calgary. I knew if I supposed to be in…. I am from Africa. In case I was in Africa I should have been dead by now! Because the facilities, hospital, and other amenities would not be available for this my chronic condition.…but here everything is at my disposal the only thing I have to do is incase this thing showed up I call 911 they will show up at my house pick me up, take me to the appropriate facility where I will need help … so being here has helped a lot. And I know the Alberta health services and the city of Calgary they are doing very well… that is the great job their doing in keeping… that those who have these diseases…are always kept up to date with services"… "Yeah like home care, home care people to come and take care of me … so I know they are always updated… even they just called to know how I am doing and I said I still need them. So they have been coming to give me some injections because of the blood clot I had. So this morning I had one injection. So I know tomorrow they will be coming for another one. In case I need to take shower or anything they are prepared to do it for me."(Male, 51-70 years old, managing 3 CVD related conditions)

Participants often favorably compared health care services in Canada to those provided in Africa:

"*The healthcare system here is pretty good. Umm … I originated from Nigeria where I lived for many years… I know the access to medical care there was not and still not as good as here. So …when I see any sign that is not favorable… I can easily book an appointment and be able to see a doctor within 24 hours to 48 hours of noticing umm any abnormality. Either in terms of I don't like the way my diastolic or systolic measurements are going. So being in Calgary has been an advantage in the sense that you have better access to healthcare than where I originated from in*

Nigeria."(Male, 51-70 years old, 1 CVD related condition)

"Well, at least I can say most of their services are free which is really good. There is no limitation that says okay I didn't do this test because of price so that's a very good thing."(Female, 41-50 old, 1 CVD related condition)

The fact that most interview participants were able to access care in Calgary was comparable to the findings of the quantitative survey. Specifically, like the interview participants who all had CVD- related conditions, survey participants who had CVD-related conditions had a higher proportion accessing care from a family doctor (n=68, 88.31% p value= >0.001) or doctor's office (n=67, 87.01% p value= >0.001) than those without CVD-related conditions.

3.2.2.2 Theme 2*: *Older age and doctor-directed care - There was a recurring theme among the older interview participants (those above 50 years) concerning the fact they primarily used health care services that involved a doctor or to which a doctor had referred them. In most cases the participants who used only doctor-directed care were not aware of complementary health management services that did not require a doctor's referral.

"Uh … I haven't thought of that… I haven't thought of that myself… I don't know if there is a place I can go to get information about my health. Maybe from the computer … yeah but I don't know which website to go you see. I don't know of any website so if it exists I have no idea ... All I know is when I get sick I have to go to my doctor's office or I have to call in the emergency and once they are there they can take me to the appropriate quarters and I think they will help me out."(Male, 51-70 years old, managing 3 CVD related conditions)

After being asked who he obtained health information from, one participant indicated that the family doctor was all he required or used for obtaining health information: "*it's the family doctor, family physician*". (Male, 51-70 years old, 1 CVD related condition)

As seen in Table 4, survey participants over 40 years with CVD-related conditions had a higher proportion of physician-prescribed medication use (n= 44, 83.02% p value=0.004) as compared to younger participants (n=8, 33.33%).

3.2.2.3 ***Theme 3*****: *Adherence to medical regiment and supplements*** - As previously discussed, interview participants who were above 50 years of age were usually using medications as treatment. However, many of these older participants had more than one CVD-related condition and would therefore require multiple medications. Some of these interview participants expressed great difficulty with regards to managing their drug regiment, as seen in the following statement:

"It's complex I am diabetic, and the diabetes I do take metformin and I do take glycocide to reduce the sugar level. Then I have ...my thyroid was removed so because of that I do take Synthroid… Synthroid gives me energy to walk. Without the Synthroid I couldn't wake up. I would have collapsed here right now! So every day I take one Synthroid every morning. Then apart from the Synthroid I have the blood pressure medication which I take 2 times a day. They are all here [points to medicine cabinet]. Then I have uh… uh… oh... their names are all here… [points to list of medications]That is why the pharmacy has grouped them for me. So this morning I took this one here, then 11 o'clock I took this one here and 4 pm I will take this … oh I would let them make it one tablet for me! [laugh] and I would take one tablet because this is too much! Cause right now if I do take this then the stomach start blowing up and the pain starts coming at the back. But I have no choice I have to take them … everything is with liquid you see…. So when the liquid gets inside more sometimes I don't feel like going to washroom to pee. Then still it [stomach] wants to explode. Then I will be in pain. And it is not easy taking the pain medication because when I take the pain medication I get constipation. Since about a week ago I

have the pain medication but I don't drink them because the doctor says I should be very careful with the pain medication." (Male, 51-70 years old, managing 3 CVD related conditions)

This participant was doing his best to adhere to the medical regiment provided by his doctors even though it proved to be difficult. Other older participants, who also expressed difficulties with managing their multiple medications, were less keen to follow doctors' orders and would often reduce the times they used the medications to when they personally felt the need to use them:

"*Uh ... I do question my doctor on the validity of using the medication constantly especially the one for high blood pressure … If my blood pressure has stabilized why do I need that medicine? So I don't get a reasonable answer that I want so I take it only when I feel I need to. .. So the same thing with my diabetic medicine- The recommendation is [to] take 2 twice every day. Well If I go to the gym in the morning or in the evening and exercise … I know that I don't need it. So the difference is that either I take the tablets or I do the insulin I can't do both because I found out that if I do both I end up waking up at midnight all shaky or have too low blood sugar. So you have to know … when it's good to take the prescription … I'd like to get out of the high blood pressure because my blood pressure has stabilized I would like to get off that medication but so far my doctor is saying no … I mean If I take that medication as prescribed I could die one day because my blood sugar is too low … so I have to know what this medicine is doing for me!... That's right! … well I know what the medicine is doing for me , I know what the doctor wants me to do and I find a compromise because it all depends on how I feel … I know how I feel … If I take that… Pop that medicine in my mouth… I hate medicine to be honest with you so if I don't have to take it I would be glad not to. But that's what I'm doing so I do what I think is best for me. There is no advantage in taking too much medicine that is unnecessary so… I don't*

know… I don't think my doctor will like it but why take it if I don't need it?" (Male, 51-70 years old, 3 CVD related conditions)

"*With the prescription drugs I was taking anti-cholesterol prescription drugs but eh I stopped these a few months ago because sometimes they have--- the effect I used to have –I do not feel too good sometimes when I get these things. Although I substitute them with a supplement which is eh ... co-enzyme to help me too, because that is what they told me will have to be taken if you are taking those drugs. At the same time I'm taking some supplements to help, which has to do with the heart issues and just to cut down a little bit on the high amount of drug dosage… So one has to be careful on which one it is you go to buy sometimes some of them could be even detrimental to your health especially when you mix them up with the prescription drugs you may be doing yourself more harm than good! So I would advise that eh … where we take very great care of what we… how we implement what we read and it's normally good to contact your doctor because whatever I take, whatever supplement I take I discuss that with my family doctor for him to see what it is like or what will be the effect if I take this and take this."* (Male, 51-70 years old, 3 CVD related conditions)

"Umm well there is really a number of supplements I have been recommended uh for example; umm when my case has been analyzed and I have been found to be lacking eh---low potassium and I am supposed to either supplement with tablets or use natural sources like banana and things like that. The first option would be to go for the natural one since bananas are much better but then again I'm not a big eater of fruits so in recent times I have just been using potassium supplement in lieu of …my lack of taking them from natural sources."(Male, 51-70 years old, 1 CVD related condition)

This theme was seen among all interview participants who indicated they used herbal

supplements or vitamins in conjunction with their prescribed treatment. Similarly, within the quantitative results older participants did not just have a higher proportion on prescribed medications if they had CVD-related conditions (Table 4), but they also had a higher proportion of herbal medication use (Table 5).

3.2.2.4 Theme 4: Low morbidity and increased self-directed care activities– Most interview participants, who had just 1 CVD related condition, often sought health advice from places other than the doctor's office such as from books, family or friends, television, and pamphlets from health facilities:

"*Also here too umm sometimes news , when you listen to the news and TV you could hear some people talking about it (diabetes) exercise and all that … and sometimes my husband also help--does it , any information he sees new [from books, pamphlets or in the media] he lets me know*". (Female, 41-50 years old, 1CVD related condition)

" *Oh now I have reduced a lot of stuff…well medically the doctors did not tell me to not eat salt but I have just decided to put less salt, less fat ,everything that will help me lose weight too. So I'm just trying to eat normal…there is a lot of--We are bombarded with a lot of information, on the radio they say don't eat fat, don't eat white bread, exercise, eat fruit after every meal, eat good food for good health condition, all those things…"*(Male, 41-50 years old, 1 CVD related condition)

"*First, I want to think about the publicity because even when I go to hospitals I always see flyers on diabetes. The internet too tells us a lot about that diabetes and here in Calgary I am on medication and I appreciate the Calgary health system because I have a personal supervisor (nurse)–somebody who supervises my sugar level. So every 3 months I go for blood tests and I get advice… I sometimes work in the hospital so I usually visit unit 37 which is a diabetic unit. I*

always look for new flyers, I always look for websites you know that… I do a lot of research on the internet". (Female, 41-50 years old, 1 CVD related condition)

Even in the case where they had access to doctors, interview participants with less number of CVD related morbidities seemed to show a preference and even more motivation to search for alternative sources of health information where they could do their own research and maintain more autonomy in decisions about their care:

"So then I myself don't see the value in …getting a family doctor for myself because I don't think the doctor owns me –I like having different opinions on my health." (Male, 41-50 years old, 1 CVD related condition)

It is important to note that younger participants, as demonstrated in the quantitative survey, had less CVD-related conditions (n= 24, 31.17%) compared to their older counterparts (n=53, 68.83%). Among younger participants that did have a CVD-related condition, the majority had only 1 CVD-related condition (n= 17, 70.83%). Additionally, the quantitative results indicate that younger participants with CVD-related conditions, similar to the comments of the younger interviewees, had higher proportional use of alternative sources of health care access and did not get tested for their conditions as often as older participants.

3.2.2.5 <u>Theme 5: Relationship with health care provider</u> - Interview participants often stated that having a good relationship with their doctor and members of their healthcare team was very instrumental in maintaining their health, especially for participants who were older:

"*Well I am grateful to my family doctor for his help … I mean throughout on his professional advice … and eh… I am happy also that I have heeded to his professional advice"*(Male, 51-70 years old, 3 CVD related conditions)

"*But now I go to lab, I do my lab work and meet my nurse we discuss my condition, am I*

improving. Normally when they tell you you're improving, you are a bit elated, you feel happy."(Female, 41-50 years old, 1 CVD related condition)

"*Well I think the system works well for those who know what the system does or could do for them. I mean just like anything knowledge is power. I learned through my doctors about what my condition is and how to deal with it and it has been very helpful. .. To be honest it has been very helpful. The doctors were nice but it also helped to have a family doctor … a doctor that knows your condition and … knows what it means and how to deal with it. So my medical doctor is-she is very good and she has helped me*" (Male, 51-70 years old, 3 CVD related conditions)

The third most commonly reported facilitator to CVD-related care was respectful health care providers within the quantitative survey (n= 13, 16.88%). This demonstrates that positive doctor patient relationships can support health care management among individuals.

3.2.2.6 Theme 6: Facilitators to management of health condition - The interview participants did mention several things that helped them to access health information. Some facilitators included health literacy and health information sharing. It was evident in several participant interviews that health literacy and effective use of health knowledge was an important facilitator to successful health management.

When asked how health services in Calgary helped in managing CVD-related conditions the following comment was made in regard to health knowledge and how important it was to apply or use this knowledge.

"I think as I said knowledge is power so it is what one chooses to do with the knowledge they get. Doesn't matter how you get that knowledge but once you know it what do you do with It? Yeah so being here has empowered me to take care of myself and my condition" (Male, 51-70 years old, 3 CVD related conditions)

Another participant gave the following statement after being asked to describe lifestyle changes they had made since being diagnosed with hypertension, which illustrate the role of health knowledge when adopting health behaviors that reduce the chances of developing more CVD-related conditions.

"*I have been able to …maintain my blood pressure and try as much as possible not to have … not to have eh… diabetes because heart issues are normally associated with diabetes or so … because I try to keep --- to make sure that I don't eat as much sugar as possible… just get a minimum amount of sweet or sugar… and I don't take these substitutes of sugar and so I avoid them completely because this is what I am reading in manuals that some of them have adverse effects so I avoid them if it is sugar I want to use … I take a bit of sugar ---just a minimum and that is it*." (Male, 51-70 years old, 3 CVD related conditions)

When a different participant was asked how they monitored their blood pressure at home, they expressed the use of health knowledge obtained from their healthcare provider in identifying symptoms of poor hypertension control that required a doctor's attention.

"*In most of the time when I feel headache I first check my blood pressure ... because I have noticed and the doctor told me that could be –not always – but he told me it could be one of the signs and generally when I feel headache… I wake up and I just check my blood pressure. Or if I feel tired like tired and without reason, without exercising or doing any effort I check it and these are the 2 occasions that I always check to know if I'm doing right or not."*(Male, 41-50 years old, 1 CVD related condition)

The aforementioned statements show that in order for participants to be successful with monitoring their own health conditions they first must be able to understand their health situation. Within the quantitative portion of this study, the majority of the survey sample (n=157,

69.47%) had an education level above high school and all participants were able to converse in English, so this sample would have been expected to have high health literacy.

Another facilitator to care was health information sharing. Participants described instances where transfer of health knowledge, from a family or friend, was used by the participant to improve their own health. The following quotes were from participant responses to questions about how they were able to manage their health condition at home and if they consulted individuals outside of their healthcare team for health management advise:

"My wife is a nurse so when she sees something that's not good she will tell me." (Male, 41-50 years old, 1 CVD related condition)

"*From my observation is that I used to have a wife and she was Canadian right and she studied something in school called "consumering" (how to eat good) –So within that period I was with her I never had excessive fat and she too went from like 300—I think she was like 260 pounds today she is about 140 pounds. Then just by eating salad at lunch all those things and vegetables she kept a good diet."* (Male, 41-50 years old, 1CVD related condition)

"Hmmm I did talk about it with my brother two summers ago he is in Winnipeg and he is also a diabetic and we just compared what he is doing versus what I'm doing so he is also in the medical field… so he is a nurse so... we just talked … I don't know anybody else here in Calgary that is diabetic so … yah I manage." (Male, 51-70 years old, 3 CVD related conditions)

3.2.2.7 <u>Theme 7: Barriers to management of health condition</u> - There was one main barrier to care that was expressed across participant interviews. This was related to their work environment. More specifically, several interview participants expressed difficulties in the amount, place and time required for work that contributed to work-related stress and not being able to manage their health effectively.

"*Well I lost a job several times and most of the time too I did not find myself with a job… I well yeah I panic but it never amounted to high blood pressure. So I make sure when I don't sleep and fair well, it is a normal part of life."*(Male, 41-50 years old, 1 CVD related condition)

"At work I try to stay relaxed and not under pressure despite the volume of the work but I'm trying my best… maybe there is another way to do it [laugh] you let me know!"(Male, 41-50 years old, 1 CVD related condition)

"Uh… maybe because of the stressful workload we have here sometimes I feel really weak and dizzy you know! Sometimes, some days it's okay some days I just can't do anything. I just believe it is part of the symptoms." (Female, 41-50 years old, 1 CVD related condition)

"*When we come we have to do 2 jobs, But when we come because we have to run fast to get a room for the down payment and last month, then you have to run fast again to start moving and find a nice place to go, so all those stresses amount, then lack of information quality resting, so that disease [stroke /hypertension] is very frequent for us because it's the life they have given us [western society]."* (Male, 41-50 years old, 1 CVD related condition)

Most participants who mentioned work as a barrier were unable to seek medical services when they wanted to because of work commitments. Among survey participants, 19.48% (n=15) with CVD-related conditions did not access care in the past year because they were too busy with other matters.

3.2.2.8 Theme 8: Intrinsic Motivation in managing disease - The last theme that emerged from the interviews related to self-motivation in terms of continued maintenance of health care treatments like diet, medication, exercise or other health management needs:

"...yah I know it affects my life because I try to pay attention to my condition, I'm trying not to drink beer, or smoke because the doctor told me it would not be good for my condition. I'm

trying to stay away from alcohol from cigarette and trying also to exercise most of the time as much as I can. It's not easy but I'm still trying daily to manage it that way…" (Male, 41-50 years old, 1 CVD related condition)

"*Really because I try as much as possible to manage my health and then to maintain my diet and take my medication as required.. I have not actually experienced negative I mean encountered negative experiences for … I mean things so far are going good for me."* (Male, 51-70 years old, 3 CVD related conditions)

"*Yeah if you discipline yourself you know what to do to live longer. Discipline is number one for me I don't know about others… I could say a lot of discipline, one should discipline him or herself even whether you have any health condition or not. Going to exercise is good, regular exercise is good, and watch what you eat I know the Africans we like eating heavy, heavy kind of food. When they see you you're not looking too plump and that… they think that you are not enjoying your life. That is not life, it is not life so one should monitor –regular exercise is good and watch what you eat."*(Female, 41-50 years old, 1 CVD related condition)

The responses shown above display a common thread in understanding among participants that disciplined monitoring of one's daily activities is important in maintaining one's good health. That would help to explain why a large proportion of survey responses, both young (66.67%) and old (92.45%), diet or exercise as treatment modalities to manage CVD-related conditions. However, there were also participants who expressed difficulties in maintaining high motivation in respect to the self-management of their health condition. In the case of many older participants' issues with forgetting medications and social pressures often made it difficult for them to adhere to their medication, diet or exercise programs:

"*I think most of the problem too is there is just a lot of food. When I came to Calgary in 2010 I*

then dated a girl and she was working at a pizza restaurant and she is very fond of the food. Whenever she has large tummy I have large tummy too. [laugh] Whenever she will give me food I would be crying like a large baby ... "No… I can't finish this food man!" [laugh]. She was the one who made this [points to stomach] [laughs]" (Male, 41-50 years old, 1 CVD related condition)

"*Well there are many Canadians that are diabetic that haven't taken control of it. I think a lot of it has to do with the personality and the choices that we make for ourselves."* (Male, 51-70 years old, 3 CVD related conditions)

"Umm I guess from my personal perspective… the biggest weakness for me is being able to adhere to 2 things: number 1, the constant monitoring ,you know , because once you have the machine at home you know it very easy to be lazy about it—procrastination "I'll do it tomorrow " for example I don't know when I last did it! Then the Diet I'm not a fruit person but I know that the fruits are very, very important to me." (Male, 51-70 years old, 1 CVD related condition)

The quantitative survey also supported this finding, as the majority of participants with more than one CVD-related condition indicated having significant higher difficulty in managing their health ($p<0.001$).

Overall the results of this mixed methods study have identified what health services are accessed and used among this sample of SSA immigrants in addition to the barriers and facilitators to health management that they face in Calgary. The interviews have also shed light on differing health management strategies and health information use among sample participants in relation to their level of morbidity.

IV: DISCUSSION

The purpose of this study was to explore the use of healthcare resources by sub Saharan African immigrants in Calgary, Alberta to better understand the facilitators and barriers to the utilization of these resources in relation to heart disease, stroke, hypertension, diabetes mellitus and hypercholesterolemia (CVD- related conditions). The environmental scan identified that, in addition to family doctor and specialist services, there were multiple complementary health care programs available to SSA immigrants. These multiple health care resources can be received in numerous forms, including outpatient health services, general and disease-specific education classes, self-management workshops, supervised exercise programs, and online health management supports. In fact, the majority of the SSA immigrant sample did not have much difficulty in accessing health services. Actually, the majority of participants with CVD-related conditions were able to access health care services through various primary access points, including family doctor, other doctor's office or walk-in clinics. However, participants with CVD-related conditions were often unaware of complementary healthcare programs to aid in self-management of CVD-related conditions which was reflected in the low use of these health resources among the sample. Moreover, it is interesting to note that both the quantitative and qualitative results obtained on the facilitators and barriers to CVD and related health condition management for SSA immigrant participants in this sample were shared with facilitators and barriers identified in publications of other immigrant populations in Canada [52].

4.1 Health access and genuine appreciation for healthcare system:

The primary resercher's finding that SSA immigrants with CVD-related conditions were able to access required health care services are consistent with the available Canadian literature. In the Canadian longitudinal study, which looked at health access among immigrant populations

using national health survey data, comparable results for health service access were seen among non-white immigrant groups of men (adjusted odds ratio (aOR) 1.28, 95% CI: 0.73–2.23) and women (aOR 1.23, 95% CI: 0.64–2.36) in reference to Canadian born participants [36]. Another study looking at health access of Western Canadians demonstrated that 95% of Western Canadian residents had regular access to a family doctor, including immigrants with chronic health conditions [81].

The majority of interview participants expressed much gratitude for the health care system available in Calgary. Participants with multiple CVD-related conditions made specific comments on the ease of which they could access healthcare professionals. Furthermore, interview participants often made appreciative references to the "free" or subsidized services provided, and interview participants often rated the health care access they received in Calgary as much higher than that of their SSA African countries of origin. Their experiences with the less developed healthcare services in the participants' countries of origin may have contributed to the appreciative nature of the interview participants and made such individuals more accepting of Western medicine practices [82]. In accordance with the ITHBC, the appreciation for the health care system shown by participants could make it easier for such participants to adopt the health practices and health beliefs provided within the Canadian context.

4.2 Older age, multiple co-morbidities and doctor-directed care:

Older study participants, who also more often had multiple CVD-related conditions, appeared to primarily use health care services that involved a doctor or to which a doctor had referred them. In most cases, the interview participants who used only doctor-directed care were either not aware of or did not attempt to access secondary or complementary health management services that did not require a doctor's referral. These older participants seemed to trust their

healthcare providers and were comfortable relying on their doctor's knowledge and decisions to manage their care. A possible explanation for this may have been related to their increased morbidity that required more frequent doctor involvement in condition management. A population based US survey, conducted to determine individual preferences for decision making in health care, showed that older individuals of African descent preferred to rely on physicians for medical knowledge rather than looking for information to manage their health themselves [83]. Possible reasons offered by the authors to explain this preferred doctor-directed care included the increased morbidity associated with age and differing cultural expectation with age [83].

A survey conducted by Statistics Canada looking at the use of alternative health information sources among the Canadian population also found that older respondents were more inclined to seek health information from their doctor than searching on their own [60]. In accordance with the ITHBC, participants exhibiting this preference in health management would have gained and agreed with knowledge from their doctor. Additionally, due to high levels of morbidity and complexities of managing several chronic conditions many of these participants may believe that taking part in self-management would not be effective due to low confidence in their abilities to self-manage [30]. Individuals with this mindset to health management are more reactive than proactive in the way they deal with health concerns, often relying on only doctor recommendations before they initiate a health behaviour change. However, without encouragement and frequent visits to their healthcare provider, positive health behaviour changes may not be maintained among this group [30].

The type of doctor-patient relationship referred to above is known as paternalism within the literature and is observed among several older immigrant groups and non-immigrant groups [84]. A positive aspect of this type of doctor-patient relationship is that it does not place undue

stress on the patient to make healthcare decisions on available types of treatment when they are unable or don't feel comfortable doing so [84]. However, doctors who use this health care style usually inform patients only of their own recommended treatment and may neglect to disclose information on alternative services also available and beneficial to the patient. This one sided form of doctor-patient communication may be simple to follow in some cases. Nonetheless, when older patients start experiencing problems maintaining their treatment they are more likely to reduce or stop treatment because their level of comfort with the doctors' orders were not taken into account by the doctor when the treatment was prescribed [84]. Research findings on beneficial doctor-patient relations have also indicated that collaborative styles of health care management where both the patient and the doctor work together on deciding the best course of medication treatments usually increase drug compliance [84].

4.3 Adherence to medical regiment and herbal medicine or supplement use:

Older study participants with CVD-related conditions used more medications. However, many were diagnosed with more than one CVD-related condition, which would have meant they required use of multiple medications. Older participants with CVD-related conditions also used more herbals or supplements. Although, these older participants made a conscious effort to adhere to drug regiments, they also expressed thoughts related to difficulties in managing these complex drug regiments. Some participants clearly expressed concerns about unpleasant or adverse drug side effects that made them less likely to adhere completely in regard to medication use. In addition, interview participants placed significant importance on how they felt and were very self-aware of how their bodies reacted when taking certain medications.

Although some older participants were using herbals and supplements that were not originally part of their prescribed medication regiments, they did make conscious efforts to still

involve their health care provider in the health care decisions. A possible reason for this observed behavior could be related to cultural SSA beliefs that promote the idea that natural health treatments are better for the body. Studies completed in the Netherlands looking at SSA immigrant use of hypertensive medications found that African immigrants would often lower prescribed treatments to supplement the medication treatment with natural options [66]. Furthermore, two Canadian based studies have also shown high preference of African immigrant use of natural (herbal) medication, especially when the Africans perceived they did not benefit much from conventional medicine in treatment of chronic and mental conditions [58, 85]. According to the ITHBC, this observed behavior in regard to reduced adherence to prescribed medications in favour of medication supplements would suggest that survey participants had not fully adopted health beliefs consistent with their health care providers. These participants appeared to maintain health knowledge consistent with both their health care provider and their own cultural beliefs. Consequently, some older individuals adopted mixed health management strategies. The risk that participants could adopt unsafe practices within their chosen style of medication management is of concern [30].

4.4 Younger age, low morbidity and use of self-directed care:

Younger study participants, who were often only diagnosed with one CVD-related condition, showed more use of alternative health services. These services included the use of online health sites and tele-health. Some interview participants commented on actively searching for health information from health websites, health books or magazines, health brochures, and even the radio and television health shows when making health management decisions. The use of more self-directed forms of health treatment among younger participants with low morbidity could be explained by the fact that such participants did not have to deal with

complicated health management plans. In addition, the level of chronic disease progression they experienced could have been considerably less than those with multiple CVD-related conditions. According to the ITHBC, this low progression of one's chronic illness would have enhanced a person's belief in their ability to maintain their health condition by applying self-management strategies [30]. A Canadian study looking at self-care tasks achieved by several immigrant groups versus non- immigrant participants diagnosed with diabetes mellitus showed that immigrants who engaged in self-management tasks (i.e. daily monitored blood glucose tests, physical activity, and reduced smoking) were less likely to have other chronic conditions than non-immigrants in the study (OR 0.59; 95% CI: 0.41, 0.84) [62].

4.5 Relationships with healthcare providers:

Survey participant with and without CVD-related conditions both reported the importance of a positive healthcare provider relationship among their top 3 enablers to health management activities. The importance of a good health care provider relationship was also clearly expressed among interview participants, especially among participants who were older with multiple CVD conditions. There was a common sense of gratitude for the healthcare navigation and health guidance or encouragement interview participants received from their health care providers which many participants claimed made a positive difference in level of health management they were able to maintain. This finding is in accordance with the ITHBC as it states that positive social interactions with one's health care provider or team is a key part in insuring beneficial health behaviors were adopted by patients and helped improve self-management skills [30]. One Canadian study explored how black Caribbean immigrants accessed health care services and used self-management strategies for diabetes care in Toronto, compared to Canadian born diabetics. The results showed that black immigrant patients had a higher

proportion that took part in self-management activities in partnerships with their health care team [55].

4.6 Facilitators to management of health:

Other facilitators to health management among survey participants included the seriousness of their health condition and family encouragement to seek health care. Similarly, facilitators mentioned by interview participants included health literacy and heath information sharing. Interview participants often used the health literature they had attained to help determine the serious of their condition and when to seek further medical attention. In addition participants who showed a high level of understanding in regard to their health condition and treatments expressed less difficulty managing their CVD-related conditions. Health information sharing, especially between family members with health knowledge, was used as a tool to improve their own health management. The findings of the ITHBC found that high health literacy was associated with knowledge and beliefs that would be in line with healthcare providers. Therefore, patients with high health literacy would have an easier time adopting health management strategies [30]. Furthermore, the act of health information sharing between interview participants and their family members proved to be a source of emotional and informational support and could be considered as a form of social facilitation to health management [30]. Other Canadian and North American articles have also shown that improved health literacy and family or social support play a significant positive role in health management of various immigrant groups such as the Chinese, Indian and Mexican immigrant groups [49, 86-88]. This indicates that most facilitators to health management that were identified within this SSA immigrant sample are universal and can be found in other immigrant groups.

4.7 Barriers to management of health:

The most commonly reported barriers to health care management and service access were not getting adequate health advice and language problems. These barriers are similar to ones found in another Canadian study [36]. Furthermore, the most frequently reported reason for not seeking medical services was simply being too busy with other matters, followed by long wait times for health services. Both of these circumstances have been previously identified as barriers to care among Canadian immigrants in general [36]. Interview participants commonly identified work-related stress, brought on by job loss, high workloads and tight deadlines, as a barrier to health. Other clinical studies have found a connection between psychosomatic stresses brought on by work and increased instances of CVD morbidity and poor CVD control [89, 90]. According to the ITHBC individuals who place other goals ahead of their health often face difficulties with managing their health [30]. Study participants did reveal financial security to be at times more important to themselves than health management needs. Participants with other (financial) goals as their priority did not visit their healthcare providers or access health information regularly. Such individuals faced difficulty in managing their health during stressful work situations. This behavior of putting work needs ahead of health needs is also common in other Asian and Latin American immigrant groups especially among those facing issues of underemployment [4, 15, 17].

4.8 Intrinsic Motivation and perceived difficulty of self-management:

The study results showed that the majority of participants with CVD-related conditions displayed a common thread of understanding in regard to self-monitoring of one's daily activities as a means of maintaining good health. This helped to explain why a large proportion of survey responders, both young and old, used diet or exercise as treatment modalities for CVD-related conditions. However, closer analysis of participant interview responses revealed that there was a

difference in the commitment to maintenance of self-management strategies based on personal motivation and perceived difficulty of self-management strategies connected to CVD-related burden. Older interview participants and those with multiple CVD-related conditions expressed reduced motivation to self-regulate their CVD-related conditions. This manifested as forgetfulness in required monitoring, procrastination in taking medications as prescribed and easily giving in to social pressures that did not benefit their health such as food indulgence. The ITHBC highlights that self-motivation is a required step in health management to change ones behavior. The theory states that self-motivation is required in goal setting and self -maintenance of health goals [30].

The increased use of self-management health strategies among younger Canadians with diabetes has been noted in the literature [63]. Other Canadian publications have noted that older south Asian Canadian immigrants with CVD-related conditions have expressed difficulties with self-management of their conditions as well indicating that this unfavorable health behavior is present in other immigrant groups [91]. Another possible reason for the low motivation among older immigrant SSA participants with CVD-related conditions may be related to the length of time an individual has been diagnosed with those conditions. A self-management tool usability study for UK residents with CVD determined that older participants used self-health management intervention less frequently if they had been diagnosed more than 6 years prior to the beginning of the program. Authors of the study stated that older CVD diagnosed participants explained that they had all the information they needed to manage their health care through past experiences and didn't require the use of a new self-management tool [92].

4.9 Limitations:

This study has produced useful information in regard to CVD-related condition health management activities of SSA immigrants in Calgary. However, due to lack of sample frames for SSA immigrant communities in Calgary, the sample used in the study was not randomly selected. This limits the generalizability of the results of this study to SSA immigrant groups residing in Calgary. However, much time was devoted to researching related North American studies using SSA immigrant samples and recent Canadian Census data on SSA immigrant populations in Calgary to help develop a sample size that would be large enough to be somewhat representative of the SSA immigrant population in the city.

Another study limitation was the inability to establish cause and affect relationships between variables due to the cross-sectional design of the survey. However, interviews were added to the analysis procedure to shed light on other possible factors that influenced the variable relationships observed in the study. Due to logistic reasons SSA immigrants who did not understand English at least at a Grade 6 comprehension level were not included in the sample. It is possible that participants meeting the English proficiency required in the study may have had higher rates of acculturation to Canada and experienced less difficulty in accessing and managing their health [93, 94]. Therefore the results of this study should be interpreted with respect to SSA immigrants with at least some proficiency in English which still represents the majority SSA immigrants residing in Calgary[5].

Moreover, doing a mixed methods study is difficult for a single researcher to carry out due to time, expense, and the ability required to learn about and conduct multiple methods and approaches to understand how to mix the methods appropriately[95]. Fortunately, the primary researcher received training in both quantitative and qualitative research methodologies during

the course of his studies. Furthermore, there was a possibility that the quantitative phase would have not shown any statistical differences among respondents making it difficult to sample individuals purposively for interview using the sequential explanatory mixed method. However this did not prove to be an issue for this study as the primary researcher took extensive effort to recruit individuals of diverse backgrounds and disease presentations within the SSA community to participate in the study. Lastly, recall bias, interviewer bias and social desirability issues may have occurred during the questionnaire and interview process which may have further affected data analysis. Nevertheless, these issues were anticipated and were managed by comparing results with previous related literature, bracketing interviewer preconceived notions to reduce influence on interview results, and using triangulation of evidence collected as a means to confirm validity of results.

4.10 Strengths:

The high survey response rate was a definite strength to this study as it helped to insure that issues related to non-response bias were kept to a minimum. Also the use of a sequential explanatory mixed methods design is logically structured which helps a learning researcher to manage moving from the quantitative stage of the study to the next with ease [67]. The strength of this study was in the use of both a cross-sectional survey and semi structured interviews which increased the depth of analysis .This also allowed for further exploration of possible interpretation of data concerning SSA immigrant CVD-related condition management that could not have been achieved using one method alone. The theoretical frameworks of the Knowledge to Action cycle that underpinned the study design and the use of the Integrated Theory of health behavior change (ITHBC) that assisted in the interpretation of participant interview results also complemented each other nicely. Knowledge Translation enabled the identification of

facilitators and barriers to health care management within the sample that could then be later used to develop more effective interventions to reduce system, provider and personal level barriers to CVD health management among the SSA population in Calgary. Furthermore, ITHBC provided an additional tested platform of interpreting behavior related barriers in interview findings based on a holistic perspective taking into account: knowledge and health beliefs, self-regulation skill ability, and aspects of social facilitation.

4.11 Implications:

This study offers valuable information about health management behaviors and needs of the SSA immigrant population in Calgary, which could inform future healthcare resource planning for this population. One issue that should be addressed in future program development is the low use of CVD-related services among SSA immigrants below 40 years of age. Although chronic conditions such as CVD are considered to be associated with older age, the immigrant overshoot phenomenon moves new SSA immigrants from low to high risk of developing CVD-related conditions at an earlier age. For example, there is a trend of increased rate of pre-hypertension among SSA immigrants in their 30's identified in the literature [96-98]. However, younger SSA participants within this study (ages 18 to 40) had the highest proportion of individuals who had never had a blood pressure or cholesterol reading. Increased collaboration is required between health professionals and young members of the SSA immigrant community in Calgary to raise awareness of regular testing and monitoring of blood pressure. This can also help to increase awareness and hopefully use of complementary CVD-related health management self-care initiatives offered within the city. Possible ways of going about this include holding health management forums within SSA community churches and organizations that are led by medical professionals who can perform screening tasks within this community. It

would be advised to make these health management opportunities available after standard work hours or on weekends to increase turnout numbers. Also, handing out health brochures concerning hypertension management and prevention in relation to diet and exercise at African community events may also increase awareness of this issue.

Based on the paternalistic style of care preferred by the majority of older SSA immigrant participants, it is often assumed that doctors' orders are not to be challenged. Therefore, when older SSA immigrants experience difficulty managing medical directives, they are more likely to alter their treatment as they see fit without disclosing changes to their doctor. To avoid this situation it is advised that a collaborative approach be used in regards to medication treatment plans where input from both the doctor and older SSA immigrant patient are included. For example, improved understanding and communication between healthcare providers and older SSA immigrant patients in regards to CVD medication regime difficulties appears to be needed. Patient preference for herbal medication and supplements should be addressed in consultation with health care providers. Once healthcare providers are informed (have the opportunity to research) about the proposed herbal supplements, it is then possible for them to make knowledgeable decisions on the safety and effectiveness of the supplemental drug in question. This is the key information that needs to be communicated to patients considering use of such supplements. Moreover, effort to include patient concerns within alternative options for treatment may improve patient medication adherence.

Moreover, in order to address work stress issues among this sample. It would be advised to inform members of the SSA immigrant community of occupational health services that they could contact for assistance or inform them of current self-management health programs which address this issue. This could be done during health days at their various places of work. In

addition inviting Occupational health professionals to speak at the various SSA immigrant community churches or organizations would help to improve awareness of proper work related stress management techniques that would not compromise their health.

Currently Alberta Health Services (AHS) has established several self-management CVD and related condition based health programs throughout the province including the city of Calgary. The data concerning individuals who attend the self-management health programs in Calgary are collected and put into a database linked to the patient's electronic medical record. This data is used to currently monitor how individuals referred to the program are managing their various chronic conditions over time. Also this information is used to monitor disease management goals set by doctors, clinics, and the province. Though this information is very vital to current evaluation processes within AHS this chronic disease management database is not in use by all doctors in Calgary who may have patients with chronic conditions. Moreover, no quality indicators from this chronic disease management database provide information on the number of immigrants taking part in these self-management programs. The inclusion of immigrant status data as well as making this database available to all doctors who treat individuals with chronic conditions would help to create program evaluation measures specific to immigrant groups. These immigrant specific measures could then be compared to nonimmigrant participants to provide a measure of evaluation for the program in regards to the differences in program attendance and health improvement.

4.12 Conclusion:

Though the level of access to primary health care services is relatively high among study participants, the number of participants aware of and using supplementary health management services was low. This may be due to several factors including reduced communication of

available supplementary health management resources. Although some barriers to health care use do exist, such as work related stress and low medication adherence, the results also show that good doctor-patient relationships and high health literacy are important facilitators to health management among this immigrant population. Moreover, both quantitative and qualitative results revealed that issues contributing to the SSA immigrant sample's CVD and related condition management were also common among other immigrant groups in Canada. Interestingly, there was a difference observed in the style of health management preferred among SSA participants, with the self-management being utilized more among younger study participants with only one CVD-related condition; in comparison to the doctor-directed care style observed among the majority of older SSA participants with more than one CVD-related condition. However, regardless of age and morbidity participants expressed high motivation to be involved within their health management.

4.13 Future research:

This study has provided valuable description and insight on facilitators and barriers to CVD-related health management needs of SSA immigrants residing in Calgary. However, comparative studies are needed that include SSA immigrant participants with low English proficiency as well as other immigrant groups in Calgary.

This mixed methods study revealed an interesting relationship between SSA immigrant participant's age, level of morbidity and preference for certain styles of health management. However, the exact relationship between health management strategies, patient morbidity and age is not fully explained. A longitudinal study would help to examine this relationship further.

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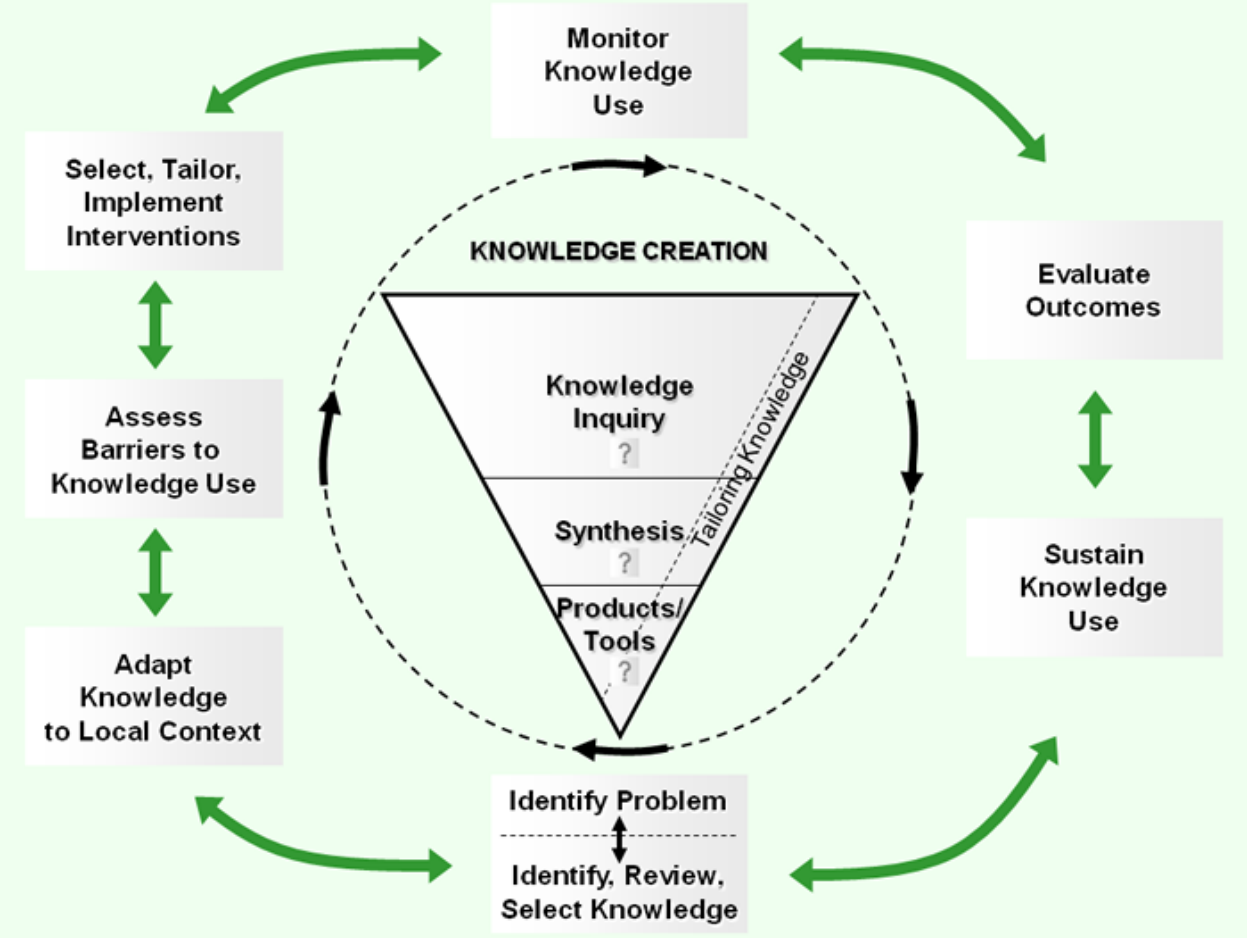
Appendices A: Knowledge to Action Cycle



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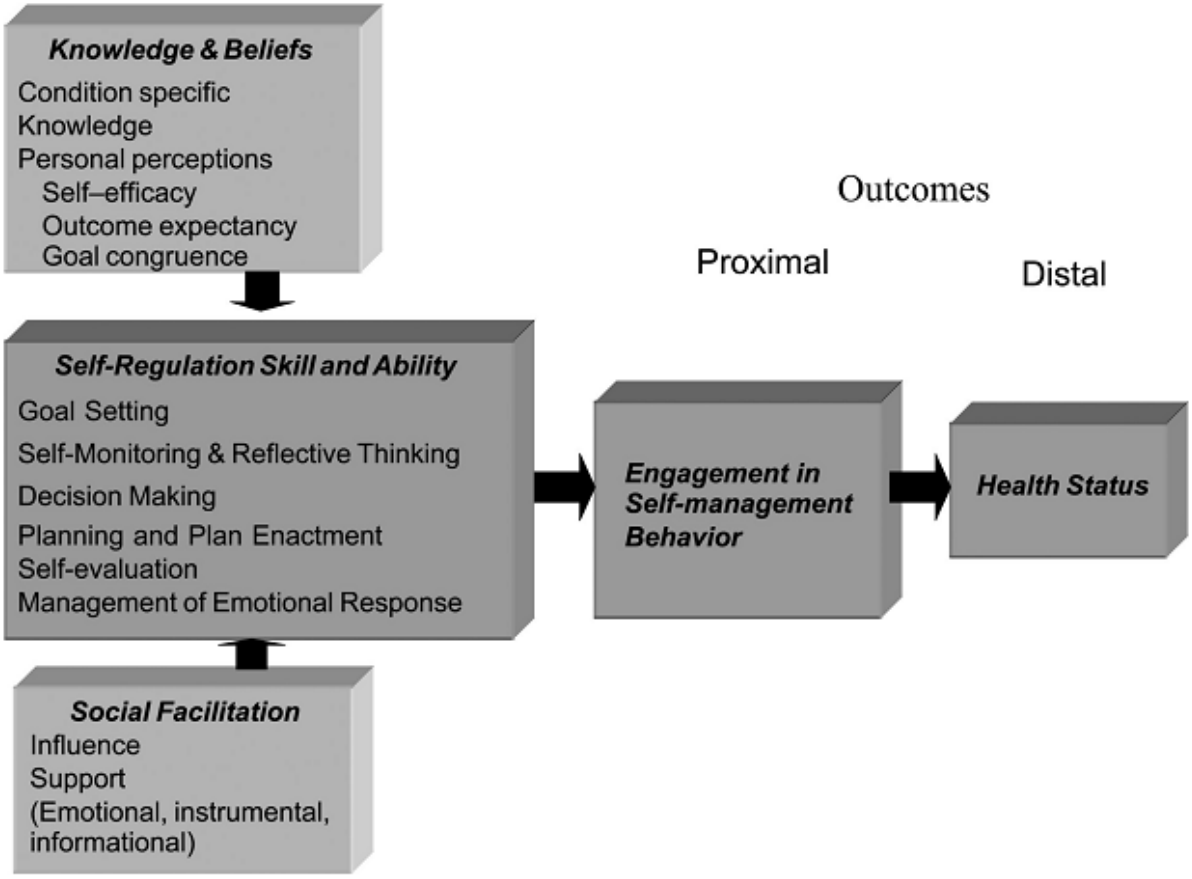
Appendices B: Integrated Theory of Health Behaviour Change diagram



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Appendices C: Survey DRAFT 1

Sample questions for Cross Sectional Survey on CVD related health service use and management for SSA Immigrants in Calgary

Demographic Questions

1. **What is your gender? Please circle one of the following.**
   - **A. Male**
   - **B. Female**

2. **Please circle the age group you belong to?**

A.	**18-25 years**	**G.**	**51-55 years**
B.	**26-30 years**	**H.**	**56-60 years**
C.	**31-35 years**	**I.**	**61-65 years**
D.	**36-40 years**	**J.**	**66-70 years**
E.	**41-45 years**	**K.**	**71-75 years**
F.	**46-50 years**	**L.**	**76 and older**

3. **What is the highest level of formal education you have attained? Please circle one of the following.**

A.	**No formal education**	**I.**	**Some university**
B.	**Some elementary school or elementary school completed**	**J.**	**Bachelor's degree**
		K.	**Master's degree**
C.	**Some high school**	**L.**	**Degree in dentistry, medicine, veterinary medicine, optometry, law or theology**
D.	**High school graduation**		
E.	**Some trade school or apprenticeship training**	**M.**	**Doctorate**
F.	**Trade certificate or apprenticeship completed**	**N.**	**Other: Please Explain**
G.	**Some college (or cégep)**		_____
H.	**College/Cégep diploma or certificate**	**O.**	**Don't know**

4. **For how many years have you lived in Canada? Circle one option only please.**

A.	**Less than 1 year**	**D.**	**11 to 15 years**
B.	**1 to 5 years**	**E.**	**16 to 20 years**
C.	**6 to 10 years**	**F.**	**More than 20 years**

5. In what languages can you speak? Circle all that apply

A.	**Amharic**	**K.**	**Kriol**
B.	**Dinka**	**L.**	**Yoruba**
C.	**Lingala**	**M.**	**Igbo**
D.	**Akan (Twi, Fante)**	**N.**	**English**
E.	**Hausa**	**O.**	**German**
F.	**French**	**P.**	**Italian**
G.	**Arabic**	**Q.**	**Portuguese**
H.	**Oromo**	**R.**	**Spanish**
I.	**Swahili**	**S.**	**Other**
J.	**Somali**		**_____**

6. What is <u>the first</u> language that you learned at home? Circle all that apply

A.	**Amharic**	**K.**	**Igbo**
B.	**Dinka**	**L.**	**English**
C.	**Lingala**	**M.**	**French**
D.	**Akan (Twi, Fante)**	**N.**	**Arabic**
E.	**Hausa**	**O.**	**German**
F.	**Oromo**	**P.**	**Italian**
G.	**Swahili**	**Q.**	**Portuguese**
H.	**Somali**	**R.**	**Spanish**
I.	**Kriol**	**S.**	**Other**
J.	**Yoruba**		**_____**

7. Around what level is your household income level? Please <u>circle only one</u> of the options.

A.	**Less than $10,000**	**E.**	**$25,001 to $30,000**
B.	**$10,001 to $15,000**	**F.**	**$30,001 to $35,000**
C.	**$15,001 to $20,000**	**G.**	**$35,001 to $40,000**
D.	**$20,001 to $25,000**	**H.**	**Greater than $40,000**

Health Questions

8. In general, would you say your body feels ...

A. Excellent
B. Very good
C. Good
D. Fair
E. Poor
F. Refuse to answer
G. Don't know

9. In general, would you say your mind feels ...

A. Excellent
B. Very good
C. Good
D. Fair
E. Poor
F. Refuse to answer
G. Don't know

10. In general, would you say your spirit feels ...

A. Excellent
B. Very good
C. Good
D. Fair
E. Poor
F. Refuse to answer
G. Don't know

11. At the present time do you smoke cigarettes daily, occasionally or not at all? Circle one option only.

A. Daily
B. Occasionally
C. Not at all

12. Have you ever smoked cigarettes? Circle one option only.

A. Yes, Daily
B. Yes, Occasionally
C. No

13. Have you ever had your blood pressure taken? If you answered No or Don't Know skip questions 14 to 19.

A. Yes
B. No
C. Don't Know

14. When was the last time that you had your blood pressure taken? Please <u>circle only one of the options</u>.

A. Less than 6 months ago

B. 6 months to less than 1 year ago

C. 1 year to less than 2 years ago

D. 2 years to less than 5 years ago

E. 5 or more years ago

F. Don't Know

15. Has a doctor ever told you that you have high blood pressure?

A. Yes

B. No

C. Don't Know

16. Do you receive any treatment or medication for your blood pressure?

A. Yes

B. No

C. Don't Know,

17. What kind of treatment or medications do you use for your blood pressure? Circle all that apply.

A. Drug

B. Diet

C. Exercise / physiotherapy

D. Other _____

18. Do you know the name of your blood pressure medication or treatment? *Please write the name in space provided.*

A. Yes _____

B. No

C. Don't Know

19. Do you understand why the doctor gave you this blood pressure medication or treatment?

A. Yes

B. No

C. Don't Know

20. Do you have diabetes or high sugars diagnosed by a doctor? <u>If you answered No or Don't Know please skip questions 21-24</u>.

A. Yes

B. No

C. Don't Know

21. Do you receive any treatment or medication for your diabetes or high sugars?

A. Yes

B. No

C. Don't know

22. What kind of treatment or medication do you use for your diabetes or high sugars? Circle all that apply.

A. Drug

B. Diet

C. Exercise / physiotherapy

D. No treatment

E. Other – Specify_____

23. Do you know the name of your diabetes or high sugar medication or treatment? *Please write the name in space provided.*

A. Yes _____

B. No

C. Don't Know,

24. Do you understand why the doctor gave you this diabetes or high sugar medication or treatment?

A. Yes

B. No

C. Don't Know,

25. Do you have high cholesterol diagnosed by a doctor? If you answered No or Don't know Skip questions 26 to 29.

A. Yes

B. No

C. Don't Know,

26. Do you receive any treatment or medication for your high cholesterol?

A. Yes

B. No

C. Don't Know

27. What kind of treatment or medication do you use for your high cholesterol? Circle all that apply.

A. Drug

B. Diet

C. Exercise / physiotherapy

D. No treatment

E. Other – Specify_____

28. Do you know the name of your high cholesterol medication or treatment? ***Please write the name in space provided.***

A. Yes _____

B. No

C. Don't Know

29. Do you understand why the doctor gave you this high cholesterol medication or treatment?

A. Yes

B. No

C. Don't Know,

30. Have you ever had a stroke diagnosed by a doctor in Canada? <u>If you answered No or Don't know please skip questions 31 to 33.</u>

A. Yes

B. No

C. Don't know

31. Do you suffer from any of the following symptoms since your stroke? Please circle all that apply.

A. Weakness or paralysis on one side of your body.

B. Trouble reading, talking, thinking or doing math.

C. Trouble walking or moving.

D. Trouble learning or remembering new information.

E. Need frequent instructions and feedback to finish tasks.

F. Vision problems

G. Difficulty picking up objects, buttoning a shirt, or tying your shoes.

H. Do not suffer from any symptoms

32. Do you know the name of your stroke medication or treatment? *Please write the name in space provided.*

A. Yes _____

B. No

C. Don't Know,

33. Do you understand why the doctor gave you this stroke medication or treatment?

A. Yes

B. No

C. Don't Know,

34. Have you ever had a heart attack (damage to the heart muscle)?

A. Yes

B. No

35. Do you have heart disease diagnosed by a doctor? <u>If you answered No or Don't Know please skip questions 36 and 37.</u>

A. Yes

B. No

C. Don't Know

36. Do you know the name of your heart disease medication or treatment? *Please write the name in space provided.*

A. Yes _____

B. No

C. Don't Know,

37. Do you understand why the doctor gave you this heart disease medication or treatment?

A. Yes

B. No

C. Don't Know

38. Are you using any herbal medicines to manage your diabetes (high sugar), blood pressure, high cholesterol, stroke and/or heart disease?

A. Yes

B. No

C. Don't Know,

Resource Questions

39. Thinking about the past 12months and about the health services in your area, which did you contact most often when you needed health information or advice for yourself or a family member from 8 am to 5pm Monday to Friday?

A. Doctor's office
B. Community health centre
C. Walk-in clinic
D. Calgary Refugee Clinic
E. East Calgary Health Centre
F. Telephone health-line (e.g. Health Link)
G. Hospital
H. Emergency room/ urgent care centre
I. Immigrant support services
J. Family members
K. Friends
L. Online health sites
M. Other members of community (non-healthcare workers)
N. Have not required health information or advice
O. Other
_____

40. Thinking about the past 12 months and about the health services in your area, which did you contact most often when you needed health information or advice for yourself or a family member from 6pm – 7am and Weekends?

A. Doctor's office
B. Community health centre
C. Walk-in clinic
D. Calgary Refugee Clinic
E. East Calgary Health Centre
F. Telephone health-line (e.g. Health Link)
G. Hospital
H. Emergency room/ urgent care centre
I. Immigrant support services
J. Family members
K. Friends
L. Online health sites
M. Other members of community (non-healthcare workers)
N. Have not required health information or advice
O. Other
_____

41. Do you have a family doctor?

A. Yes
B. No

42. Do you own or have access to a computer at home?

A. Yes
B. No

43. Where do you access online health information most of the time? (please circle only one option)

A. cell phone
B. friend's house
C. library
D. do not access online health information
E. other _____

44. **During the past 12 months, have you used the Internet to search for medical or health information to manage your own health? <u>If you answered No or Don't Know skip question 44.</u>**

A. Yes
B. No
C. Don't know

45. Did the health information you found online help you with your health problem?

A. Yes, the Internet answered all my questions
B. Yes, the Internet answered some of my questions.
C. No, the internet did not answer any of my questions.

46. During the past 12 months, have you used the Health Link phone line to talk to someone about medical or health information to manage your own health? <u>If you answered No or Don't know skip question 47</u>.

A. Yes
B. No
C. Don't know

47. Did the health information given to you on the Health Link phone line help you with your health problem?

A. Yes, Health Link nurse answered all my questions
B. Yes, Health Link nurse answered some of my questions.
C. No, Health Link nurse did not answer any of my questions.

Barrier Questions

48. Thinking of the most recent time you required health care, were you able to access health services?

A. Yes
B. No

49. If you answered Yes to question 48, did you get the health information or the advice you needed during your last health care visit?

A. Yes

B. No

50. If you answered No to question 49, why did you not get the health info or advice you needed? Circle all that apply

A. Did not know who to call

B. Doctor not available - at time required (e.g. on holidays, inconvenient hours)

C. Too busy

D. I Didn't get around to it / I didn't bother

E. Language problems

F. Personal or family responsibilities

G. Dislike doctors / afraid

H. Decided not to seek advice

I. Did not get adequate info or advice

J. Service not available

K. Could not get time off work

L. Other

_____

Facilitator Question:

51. If you answered yes to question 49, why were you able to get the health information or advice you needed? Circle all that apply

A. The health service is close by

B. I felt the health situation was serious

C. I was able to find a health service provider who spoke my language

D. Family members encouraged me

E. Friends encouraged me

F. I found health care providers that were respectful

G. Other_____

Thank you for your participation!

If you said that you have diabetes, high blood pressure, high cholesterol, stroke, and/or heart disease:

The research team would like to invite you for an interview about how you manage your heart condition in Calgary.

If you would like to be interviewed please provide your name and phone number below, and someone from the research team will be in contact with you shortly.

Name:_____

Phone: _____

Appendices C: Final Survey

Final questions for Cross Sectional Survey on CVD related health service use and management for SSA Immigrants in Calgary

Demographic Questions

1. What is your gender? Please circle one of the following.

A. Male
B. Female

2. Please circle the age group you belong to?

A. 18-25 years
B. 26-30 years
C. 31-35 years
D. 36-40 years
E. 41-45 years
F. 46-50 years
G. 51-55 years
H. 56-60 years
I. 61-65 years
J. 66-70 years
K. 71-75 years
L. 76 and older

3. What is the highest level of formal education you have attained? Please circle one of the following.

A. No formal education
B. Some elementary school or elementary school completed
C. Some high school
D. High school graduation
E. Some trade school or apprenticeship training
F. Trade certificate or apprenticeship completed
G. Some college (or cégep)
H. College/Cégep diploma or certificate
I. Some university
J. Bachelor's degree
K. Master's degree
L. Degree in dentistry, medicine, veterinary medicine, optometry, law or theology
M. Doctorate
N. Other: Please Explain _____
O. Don't know

4. For how many years have you lived in Canada? Circle one option only please.

A. Less than 1 year
B. 1 to 5 years
C. 6 to 10 years
D. 11 to 15 years
E. 16 to 20 years
F. More than 20 years

5. In what languages can you speak? Circle all that apply

A. Amharic
B. Dinka
C. Lingala
D. Akan (Twi, Fante)
E. Hausa
F. French
G. Arabic
H. Oromo
I. Swahili
J. Somali

K. Kriol
L. Yoruba
M. Igbo
N. English
O. German
P. Italian
Q. Portuguese
R. Spanish
S. Other
_____

6. What is <u>the first</u> language that you learned at home? Circle all that apply

A. Amharic
B. Dinka
C. Lingala
D. Akan (Twi, Fante)
E. Hausa
F. Oromo
G. Swahili
H. Somali
I. Kriol
J. Yoruba
K. Igbo
L. English
M. French
N. Arabic
O. German
P. Italian
Q. Portuguese
R. Spanish
S. Other
_____

7. Around what level is your annual household income level? Please <u>circle only one</u> of the options.

A. Less than $10,000
B. $10,001 to $15,000
C. $15,001 to $20,000
D. $20,001 to $25,000
E. $25,001 to $30,000
F. $30,001 to $35,000
G. $35,001 to $40,000
H. Greater than $40,000

Health Questions

8. In general, would you say your body feels ...

A. Excellent
B. Very good
C. Good
D. Fair
E. Poor
F. Refuse to answer
G. Don't know

9. In general, would you say your mind feels ...

A. Excellent
B. Very good
C. Good
D. Fair
E. Poor
F. Refuse to answer
G. Don't know

10. In general, would you say your spirit feels ...

A. Excellent
B. Very good
C. Good
D. Fair

E. Poor
F. Refuse to answer
G. Don't know

11. At the present time do you smoke cigarettes daily, occasionally or not at all? Circle one option only.

A. Daily
B. Occasionally
C. Not at all

12. Have you ever smoked cigarettes? Circle one option only.

A. Yes, Daily
B. Yes, Occasionally
C. No

13. Have you ever had your blood pressure taken? If you answered No or Don't Know skip questions 14 to 19.

A. Yes
B. No
C. Don't Know

14. When was the last time that you had your blood pressure taken? Please circle only one of the options.

A. Less than 6 months ago
B. 6 months to less than 1 year ago
C. 1 year to less than 2 years ago
D. 2 years to less than 5 years ago
E. 5 or more years ago
F. Don't Know

15. Has a doctor ever told you that you have high blood pressure?

A. Yes
B. No
C. Don't Know

16. Do you receive any treatment or medication for your blood pressure?

A. Yes
B. No
C. Don't Know
D. Not Applicable (N/A)

17. What kind of treatment or medications do you use for your blood pressure? Circle all that apply.

A. Drug
B. Diet
C. Exercise / physiotherapy
D. Other _____
E. Not Applicable (N/A)

18. Do you know the name of your blood pressure medication or treatment? ***Please write the name in space provided.***

A. Yes _____

B. No

C. Don't Know

D. Not Applicable (N/A)

19. Do you understand why the doctor gave you this blood pressure medication or treatment?

A. Yes

B. No

C. Don't Know

D. Not Applicable (N/A)

20. Do you often have any of the following symptoms? <u>Circle all that apply</u>

A. Frequent urination B. Abnormal increase in appetite C. Sudden loss in weight (not because of dieting)

D. Feeling very weak and tired E. Tingling or numbness in hands, legs or feet F. feel thirsty very often.

21. Have you ever been tested for Diabetes or High blood sugars?

A. Yes, within the last year

B. Yes, within the last 5 years

C. Yes, within the last 10 years or greater

D. No, I have never been tested for diabetes or High blood sugars

22. Do you have diabetes or high sugars diagnosed by a doctor? <u>If you answered No or Don't Know please skip questions 23-26</u>.

A. Yes

B. No

C. Don't Know

23. Do you receive any treatment or medication for your diabetes or high sugars?

A. Yes

B. No

C. Don't know

24. What kind of treatment or medication do you use for your diabetes or high sugars? Circle all that apply.

A. Drug

B. Diet

C. Exercise / physiotherapy

D. No treatment

E. Other – Specify_____

25. Do you know the name of your diabetes or high sugar medication or treatment? ***Please write the name in space provided.***

A. Yes _____

B. No

C. Don't Know,

26. Do you understand why the doctor gave you this diabetes or high sugar medication or treatment?

A. Yes

B. No

C. Don't Know

27. Have you ever been tested for high cholesterol

A. Yes, within the last year

B. Yes, within the last 5 years

C. Yes, within the last 10 years or greater

D. No, I have never been tested for High Cholesterol

28. Do you have high cholesterol diagnosed by a doctor? <u>If you answered No or Don't know Skip questions 29 to 32.</u>

A. Yes

B. No

C. Don't Know

29. Do you receive any treatment or medication for your high cholesterol?

A. Yes

B. No

C. Don't Know

30. What kind of treatment or medication do you use for your high cholesterol? Circle all that apply.

A. Drug

B. Diet

C. Exercise / physiotherapy

D. No treatment

E. Other – Specify_____

31. Do you know the name of your high cholesterol medication or treatment? ***Please write the name in space provided.***

A. Yes _____

B. No

C. Don't Know

32. Do you understand why the doctor gave you this high cholesterol medication or treatment?

A. Yes

B. No

C. Don't Know

33. Have you ever had any of the following tests done? Circle all that apply

A. Blood clotting test B. CT Scan of Brain and neck C. MRI of Brain and neck D. Carotid Ultrasound
E. Cerebral Angiogram F. No , I have never had any of these tests G. Don't Know

34. Have you ever had a stroke diagnosed by a doctor in Canada? <u>If you answered No or Don't know please skip questions 35 to 38.</u>

A. Yes
B. No
C. Don't know

35. Do you suffer from any of the following symptoms since your stroke? Please circle all that apply.

A. Weakness or paralysis on one side of your body.
B. Trouble reading, talking, thinking or doing math.
C. Trouble walking or moving.
D. Trouble learning or remembering new information.
E. Need frequent instructions and feedback to finish tasks.
F. Vision problems
G. Difficulty picking up objects, buttoning a shirt, or tying your shoes.
H. Do not suffer from any symptoms

36. What kind of treatment or medication do you use to manage symptoms of stroke? Circle all that apply.

A. Drug
B. Diet
C. Exercise / physiotherapy
D. No treatment
E. Other – Specify_____

37. Do you know the name of your stroke medication or treatment? *Please write the name in space provided.*

A. Yes _____
B. No
C. Don't Know,

38. Do you understand why the doctor gave you this stroke medication or treatment?

A. Yes
B. No
C. Don't Know,

39. Have you ever had a heart attack (damage to the heart muscle)?

A. Yes
B. No
C. Don't Know

40. Have you ever had any of the following heart tests done? Circle all that apply

A. Electrocardiogram (EKG / ECG) B. Chest X Ray C. Stress Test D. Tilt Table Test E. Echocardiogram

F. Coronary Angiogram G. Electrophysiology (EP) Test H. CT Heart Scan I. Myocardial Biopsy J. Heart MRI
K. Pericardial Tap L. No , I have never had any of these tests M . Don't Know

41. Do you have heart disease (heart damage) diagnosed by a doctor? <u>If you answered No or Don't Know please skip questions 42 and 44.</u>

A. Yes
B. No
C. Don't Know

42. What kind of treatment or medication do you use to manage your Heart damage or Heart disease? Circle all that apply.

A. Drug
B. Diet
C. Exercise / physiotherapy
D. No treatment
E. Other – Specify_____

43. Do you know the name of your heart disease medication or treatment? *Please write the name in space provided.*

A. Yes _____
B. No
C. Don't Know,

44. Do you understand why the doctor gave you this heart disease medication or treatment?

A. Yes
B. No
C. Don't Know

45. Are you using any herbal medicines to manage your diabetes (high sugar), blood pressure, high cholesterol, stroke and/or heart disease?

A. Yes
B. No
C. Don't Know

Resource Questions

46. Thinking about the past 12 months and about the health services in your area, which did you, contact most often when you needed health information or advice for yourself or a family member during the day (8 am to 5pm) Monday to Friday?

A. Doctor's office
B. Community health centre
C. Walk-in clinic
D. Calgary Refugee Clinic
E. East Calgary Health Centre
F. Telephone health-line (e.g. Health Link)
G. Hospital
H. Emergency room/ urgent care centre
I. Immigrant support services
J. Family members
K. Friends
L. Online health sites

M. Other members of community (non-healthcare workers)
N. Have not required health information or advice (N/A)
O. Other _____

47. Thinking about the past 12 months and about the health services in your area, which did you, contact most often when you needed health information or advice for yourself or a family member during the night (6pm – 7am) and Weekends?

A. Doctor's office
B. Community health centre
C. Walk-in clinic
D. Calgary Refugee Clinic
E. East Calgary Health Centre
F. Telephone health-line (e.g. Health Link)
G. Hospital
H. Emergency room/ urgent care centre
I. Immigrant support services
J. Family members
K. Friends
L. Online health sites
M. Other members of community (non-healthcare workers)
N. Have not required health information or advice (N/A)
O. Other _____

48. Do you have a family doctor?

A. Yes
B. No

49. Do you own or have access to a computer at home?

A. Yes
B. No

50. Where do you access online health information most of the time? (please circle only one option)

A. cell phone
B. friend's house
C. library
D. do not access online health information
E. home
F. other _____

51. During the past 12 months, have you used the Internet to search for medical or health information to manage your own health? <u>If you answered No or Don't Know skip question 52.</u>

A. Yes
B. No
C. Don't know

52. Did the health information you found online help you with your health problem?

A. Yes, the Internet answered all my questions
B. Yes, the Internet answered some of my questions.

C. No, the internet did not answer any of my questions.

53. Do you believe the health information you find online is always correct?

A. Yes, health information found online is often right

B. Yes, health information found online is sometimes right

C. No, health information found online is not reliable.

54. During the past 12 months, have you used the Health Link phone line to talk to someone about medical or health information to manage your own health? <u>If you answered No or Don't know skip question 55</u>.

A. Yes

B. No

C. Don't know

55. Did the health information given to you on the Health Link phone line help you with your health problem?

A. Yes, Health Link nurse answered all my questions

B. Yes, Health Link nurse answered some of my questions.

C. No, Health Link nurse did not answer any of my questions.

Barrier Questions

56. Do you live close to any health care facilities like a walk in clinic, doctor's office or hospital?

A. Yes

B. No

C. Don't Know

57. In the past, what has stopped you from accessing health services within Calgary? Circle all that apply

A. Did not know who to call

B. Doctor not available - at time required (e.g. on holidays, inconvenient hours)

C. I was too busy

D. I Didn't get around to it / I didn't bother

E. Personal or Family responsibilities

F. I was not covered under the Alberta health insurance plan

G. The health service I needed was not available in this City

H. The health service was too expensive

I. I don't like or don't trust Doctors

J. I could not get time off work

K. The wait times were too long

L. I have never needed to access health care services in Calgary

M. (N/A) Nothing has ever stopped me from accessing health care services in Calgary

58. Thinking of the most recent time you required health care, were you able to access the health services you needed?

A. Yes

B. No

C. Don't Know

59. If you answered Yes to question 58, did you get the health information or the advice you were looking for during your last health care visit?

A. Yes
B. No
C. Don't Know

60. If you answered No to question 59, why did you not get the health information or advice you needed? Circle all that apply

A. Language problems
B. I was afraid to ask for information or advise
C. Decided not to seek advice
D. Did not get adequate information or advice
E. The health information was not available
F. Other _____

Facilitator Question:

61. If you answered yes to question 59, why were you able to get the health information or advice you needed? Circle all that apply

A. I felt the health situation was serious and I needed to seek medical advise
B. I was able to find a health service provider who spoke my language
C. Family members encouraged me to seek medical advice
D. Friends encouraged me to seek medical advise
E. I found health care providers that were respectful
F. Other_____

Personal Views on Health Management:

62. I think managing my own health is …

A. Very Easy B. Easy C. Fair D. Difficult E. Very Difficult

63. In general I think it is important to manage my own health condition.

A. Strongly Agree B. Agree C. Neutral D. Disagree E. Strongly Disagree

64. Medical professionals should have a greater responsibility in making sure patients can manage their health condition effectively?

A. Strongly Agree B. Agree C. Neutral D. Disagree E. Strongly Disagree

Thank you for your participation!

If you said that you have diabetes, high blood pressure, high cholesterol, stroke, and/or heart disease:
The research team would like to invite you for an interview about how you manage your heart condition in Calgary.
If you would like to be interviewed please provide your name and phone number below, and someone from the research team will be in contact with you shortly.

Name: _____

Phone: _____

Appendices D: Interview Guide

- What does your heart condition (high blood pressure, stroke, diabetes, cardiovascular disease) mean for you?
- What are some things here in Calgary that help you manage your (high blood pressure, stroke, diabetes, cardiovascular disease)?
- Have you made lifestyle changes because of chronic health information or services you received in the past? Could you please describe these?
- Can you tell me how you typically obtain information about your (high blood pressure, stroke, diabetes, cardiovascular disease)?
- Have you faced difficulties in finding ways to manage your (high blood pressure, stroke, diabetes, cardiovascular disease) here in Calgary and if so can you describe them please?
- How would you say these chronic care issues affect your everyday life?
- Can you tell me of any positive experiences you have had with managing your (high blood pressure, stroke, diabetes, cardiovascular disease) here in Calgary.
- Can you tell me of any negative experiences you have had with managing your (high blood pressure, stroke, diabetes, cardiovascular disease) here in Calgary.

Appendices E: Environmental scan of CVD related heath programs table

Program or Service Name	Discription	Seasonal Availability	Number of Locations in Calgary area	Service related cost
Calgary Refugee Health Clinics	Ambulatory health service/ Disease specific education	All year round 8 am - 4pm Weekdays only	2	NONE (so long as you are a refugee covered under the Interim Federal Healthcare Plan)
Diabetes, Hypertension and Cholesterol Services	Ambulatory health service/ Disease specific education	All year round 8 am - 4pm Weekdays only	3	5 dollars for course life style guide book
Stroke Prevention Clinic	Ambulatory health service/ Disease specific education	All year round 8 am - 4pm Weekdays only	1	NONE
24 Hour Blood Pressure Monitoring Service - Rockyview General Hospital	Ambulatory health service/ Disease specific education	All year round 9 am - 2pm Weekdays only or 8 am - 4 pm Mon to Thurs	3	NONE

Program or Service Name	Discription	Seasonal Availability	Number of Locations in Calgary area	Service related cost
Ambulatory Stroke Services - Foothills Medical Centre	Ambulatory health service	24 hours 7 days a week	1	NONE
Atrial Fibrillation Clinic /CAFA /Cardiac Atrial Fibrillation Assessment	Ambulatory health service	All Year round Mon-Fri 8am-4pm or 4:30pm depending on location	2	NONE
Cholesterol and Blood Pressure Essentials	Disease specific Education Class	Educational class is available at scheduled times all year round.	Varies among 14 locations	$ 5.00 for lifestyles booklet
Diabetes Essentials	Disease specific Education Class	Educational class is available at scheduled times all year round.	Varies among 14 locations	$ 5.00 for type 2 diabetes booklet

Program or Service Name	Discription	Seasonal Availability	Number of Locations in Calgary area	Service related cost
Eat Well For Good Health	General education Class	Educational class is available at scheduled times all year round.	Varies among 14 locations	NONE
Food and Mood	General education Class	Educational class is available at scheduled times from Oct. to Mar.	Varies among 14 locations	NONE
Introduction to insulin pump	Disease specific Education Class	Educational class is available at scheduled times from Oct. to Mar.	1	NONE
Living with stroke	Disease specific Education Class	Educational class is available at scheduled times all year round.	Varies among 14 locations	NONE

Program or Service Name	Discription	Seasonal Availability	Number of Locations in Calgary area	Service related cost
Pre-Diabetes Reducing your Risk	Disease specific Education Class	Educational class is available at scheduled times all year round.	Varies among 14 locations	NONE
Ready, Set, Move!	General fitness education Class	Educational class is available at scheduled times from Oct. to Mar.	Varies among 14 locations	NONE
Stroke 101	Disease specific Education Class	Educational class is available at scheduled times all year round.	Varies among 14 locations	NONE
Vitamins Minerals and Herbs	General education Class	Educational class is available at scheduled times from Oct. to Mar.	Varies among 14 locations	NONE
Nutrition: Eating Away from home and during Special Occasions	General education Class	Educational class is available at scheduled times all year round.	Varies among 14 locations	NONE

Program or Service Name	Discription	Seasonal Availability	Number of Locations in Calgary area	Service related cost
Nutrition: I Know I should Eat Healthy, But How?	General education Class	Educational class is available at scheduled times all year round.	Varies among 14 locations	NONE
Nutrition: The top 5 tips to reduce Calories	General education Class	Educational class is available at scheduled times all year round.	Varies among 14 locations	NONE
Nutrition: The truth about what works in weight management	General education Class	Educational class is available at scheduled times all year round.	Varies among 14 locations	NONE
Self-Management Workshop (Better Choices, Better Health TM)	Workshop	A series of 6 Educational classes are available at scheduled times all year round except for the month of December	Varies among 14 locations	NONE

Program or Service Name	Discription	Seasonal Availability	Number of Locations in Calgary area	Service related cost
Supervised Exercise Program	Guided Fitness Program	8 week exercise programs are available at scheduled times all year round	3	$80.00 but subsidies are available to those who qualify
Online Education site http://wcm.ucalgary.ca/cdm/	E-health management resources	all year round so long as you have access to internet.	NA	NONE

Program or Service Name	Accessible by Bus	Free Parking	Requires Doctors Referral
Calgary Refugee Health Clinic	YES	YES	NO
Diabetes, Hypertension and Cholesterol Services	YES	NO	YES
Stroke Prevention Clinic	YES	NO	YES
24 Hour Blood Pressure Monitoring Service - Rockyview General Hospital	YES	NO	YES

Program or Service Name	Accessible by Bus	Free Parking	Requires Doctors Referral
Ambulatory Stroke Services - Foothills Medical Centre	YES	NO	YES
Atrial Fibrillation Clinic /CAFA /Cardiac Atrial Fibrillation Assessment	YES	NO	YES
Cholesterol and Blood Pressure Essentials	YES for all locations	Depends on where class is held	NO
Diabetes Essentials	YES for all locations	Depends on where class is held	NO

Program or Service Name	Accessible by Bus	Free Parking	Requires Doctors Referral
Eat Well For Good Health	YES for all locations	Depends on where class is held	NO
Food and Mood	YES for all locations	Depends on where class is held	NO
Introduction to insulin pump	YES	NO	NO
Living with stroke	YES	Depends on where class is held	NO

Program or Service Name	Accessible by Bus	Free Parking	Requires Doctors Referral
Pre-Diabetes Reducing your Risk	YES	Depends on where class is held	NO
Ready, Set, Move!	YES	Depends on where class is held	NO
Stroke 101	YES for all locations	Depends on where class is held	NO
Vitamins Minerals and Herbs	YES for all locations	Depends on where class is held	NO
Nutrition: Eating Away from home and during Special Occasions	YES for all locations	Depends on where class is held	NO

Program or Service Name	Accessible by Bus	Free Parking	Requires Doctors Referral
Nutrition: I Know I should Eat Healthy, But How?	YES for all locations	Depends on where class is held	NO
Nutrition: The top 5 tips to reduce Calories	YES for all locations	Depends on where class is held	NO
Nutrition: The truth about what works in weight management	YES for all locations	Depends on where class is held	NO
Self-Management Workshop (Better Choices, Better Health TM)	YES for all locations	Depends on where class is held	NO

Program or Service Name	Accessible by Bus	Free Parking	Requires Doctors Referral
Supervised Exercise Program	YES for all locations	YES	NO but participant will be required to go through screening and health history check by program
Online Education site http://wcm.ucalgary.ca/cdm/	NA	NA	NO

Program or Service Name	Average Wait Times	Effort required to understand Health Information	Translation service Available
Calgary Refugee Health Clinic	10 minutes - 1 hour depending on the number of staff available and number of people seeking care	Medium: Health consult is done primarily in beginners English or French but language line is available for some languages with large immigrant groups here in Calgary	Yes, through Alberta Health Services face to face Interpreter or phone line
Diabetes, Hypertension and Cholesterol Services	Dependent on patient volume, severity of case and times of scheduled programs	Medium: Teaching and consultation are given in beginner English and French with focus on visual presentations and auditory direction	Yes, through Alberta Health Services face to face Interpreter or phone line
Stroke Prevention Clinic	High Risk patients seen 24 - 48 hours; Moderate Risk patients seen 48 hours - 1 week; Lower Risk patients seen 14 - 21 days .	Medium: Information is presented primarily in English The health service provided is based on consultation and brochures	Yes, through Alberta Health Services face to face Interpreter or phone line
24 Hour Blood Pressure Monitoring Service - Rockyview General Hospital	Up to 6 weeks from referral call	Medium: Information is presented primarily in English. However patient is able to bring family member to act as translator	Yes, through Alberta Health Services face to face Interpreter or phone line

Program or Service Name	Average Wait Times	Effort required to understand Health Information	Translation service Available
Ambulatory Stroke Services - Foothills Medical Centre	Time between doctor referral to beginning of rehabilitation program can be any where from 2 to 6 weeks	Medium: Information is presented primarily in English. However patient is able to bring family member to act as translator	Yes, through Alberta Health Services face to face Interpreter or phone line
Atrial Fibrillation Clinic /CAFA /Cardiac Atrial Fibrillation Assessment	There is an 8-10 week wait period after referral from your doctor to receive the care.	Medium: Information is presented primarily in English. However patient is able to bring family member to act as translator	Yes, through Alberta Health Services face to face Interpreter or phone line
Cholesterol and Blood Pressure Essentials	Time between classes can be 1 -2 months	Medium: Information is presented primarily in English. However participant is able to bring family member or care giver to act as translator	Yes, through language specific instructors but no current instructing is offered in African languages
Diabetes Essentials	Time between classes can be 2 weeks -1 month	Medium: Information is presented primarily in English. However participant is able to bring family member or care giver to act as translator	Yes, through language specific instructors but no current instructing is offered in African languages

Program or Service Name	Average Wait Times	Effort required to understand Health Information	Translation service Available
Eat Well For Good Health	Time between classes can be 1 -2 months	Medium: Information is presented primarily in English. However participant is able to bring family member or care giver to act as translator	Yes, through language specific instructors but no current instructing is offered in African languages
Food and Mood	When classes are available 1 week -1 month	Medium: Information is presented primarily in English. However participant is able to bring family member or care giver to act as translator	Yes, through language specific instructors but no current instructing is offered in African languages
Introduction to insulin pump	1 month - 2 months between classes	Medium: Information is presented primarily in English. However participant is able to bring family member or care giver to act as translator	Yes, through Alberta Health Services and language specific instructors but no current instructing is offered in African languages
Living with stroke	1 month - 2 months between classes	Medium: Information is presented primarily in English. However participant is able to bring family member or care giver to act as translator	Yes, through Alberta Health Services and language specific instructors but no current instructing is offered in African languages

Program or Service Name	Average Wait Times	Effort required to understand Health Information	Translation service Available
Pre-Diabetes Reducing your Risk	1 week to 1 month between classes	Medium: Information is presented primarily in English. However participant is able to bring family member or care giver to act as translator	Yes, through Alberta Health Services and language specific instructors but no current instructing is offered in African languages
Ready, Set, Move!	When classes are available 1 week to 1 month	Medium: Information is presented primarily in English. However participant is able to bring family member or care giver to act as translator	Yes, through Alberta Health Services and language specific instructors but no current instructing is offered in African languages
Stroke 101	Time between classes is within 2 months	Medium: Information is presented primarily in English. However participant is able to bring family member or care giver to act as translator	Yes, through Alberta Health Services and language specific instructors but no current instructing is offered in African languages
Vitamins Minerals and Herbs	1 to 3 months when classes are available	Medium: Information is presented primarily in English. However participant is able to bring family member or care giver to act as translator	Yes, through Alberta Health Services and language specific instructors but no current instructing is offered in African languages
Nutrition: Eating Away from home and during Special Occasions	Time between classes can be 1 -2 months	Medium: Information is presented primarily in English. However participant is able to bring family member or care giver to act as translator	Yes, through Alberta Health Services and language specific instructors but no current instructing is offered in African languages

Program or Service Name	Average Wait Times	Effort required to understand Health Information	Translation service Available
Nutrition: I Know I should Eat Healthy, But How?	Time between classes can be 1 -2 months	Medium: Information is presented primarily in English. However participant is able to bring family member or care giver to act as translator	Yes, through Alberta Health Services and language specific instructors but no current instructing is offered in African languages
Nutrition: The top 5 tips to reduce Calories	Time between classes can be 1 -2 months	Medium: Information is presented primarily in English. However participant is able to bring family member or care giver to act as translator	Yes, through Alberta Health Services and language specific instructors but no current instructing is offered in African languages
Nutrition: The truth about what works in weight management	Time between classes can be 1 -2 months	Medium: Information is presented primarily in English. However participant is able to bring family member or care giver to act as translator	Yes, through Alberta Health Services and language specific instructors but no current instructing is offered in African languages
Self-Management Workshop (Better Choices, Better Health TM)	Wait time between classes is at most is a week expect for December where the wait is a month	Medium: Information is presented primarily in English. However participant is able to bring family member or care giver to act as translator	Yes, through Alberta Health Services and language specific instructors

Program or Service Name	Average Wait Times	Effort required to understand Health Information	Translation service Available
Supervised Exercise Program	Wait time between program intakes can be as long as 8 weeks	Medium: Information is presented primarily in English but using lay terms when possible so most can understand	Yes, through Alberta Health Services and language specific instructors
Online Education site http://wcm.ucalgary.ca/cdm/	NA	High: Information is online and requires user to be both English literate and computer literate .	Yes, through Alberta Health Services some information is provided in other languages

Program or Service Name	Primary Preventive Health Information Provided	Disease Management Information Provided	Risk Factor/Comorbidity focus	CVD focus
Calgary Refugee Health Clinic	YES	YES	YES	YES
Diabetes, Hypertension and Cholesterol Services	NO	YES	YES	NO
Stroke Prevention Clinic	NO	YES	NO	YES
24 Hour Blood Pressure Monitoring Service - Rockyview General Hospital	NO	NO	YES	NO

Program or Service Name	Primary Preventive Health Information Provided	Disease Management Information Provided	Risk Factor/Comorbidity focus	CVD focus
Ambulatory Stroke Services - Foothills Medical Centre	NO	YES	NO	YES
Atrial Fibrillation Clinic /CAFA /Cardiac Atrial Fibrillation Assessment	NO	YES	NO	YES
Cholesterol and Blood Pressure Essentials	YES	YES	YES	NO
Diabetes Essentials	NO	YES	YES	NO

Program or Service Name	Primary Preventive Health Information Provided	Disease Management Information Provided	Risk Factor/Comorbidity focus	CVD focus
Eat Well For Good Health	YES	YES	YES	NO
Food and Mood	YES	NO	YES	NO
Introduction to insulin pump	NO	YES	YES	NO
Living with stroke	NO	YES	NO	YES

Program or Service Name	Primary Preventive Health Information Provided	Disease Management Information Provided	Risk Factor/Comorbidity focus	CVD focus
Pre-Diabetes Reducing your Risk	YES	NO	YES	NO
Ready, Set, Move!	YES	YES	YES	NO
Stroke 101	YES	NO	YES	YES
Vitamins Minerals and Herbs	YES	YES	YES	NO
Nutrition: Eating Away from home and during Special Occasions	YES	YES	YES	NO

Program or Service Name	Primary Preventive Health Information Provided	Disease Management Information Provided	Risk Factor/Comorbidity focus	CVD focus
Nutrition: I Know I should Eat Healthy, But How?	YES	YES	YES	NO
Nutrition: The top 5 tips to reduce Calories	YES	YES	YES	NO
Nutrition: The truth about what works in weight management	YES	YES	YES	NO
Self-Management Workshop (Better Choices, Better Health TM)	NO	YES	YES	NO

Program or Service Name	Primary Preventive Health Information Provided	Disease Management Information Provided	Risk Factor/Comorbidity focus	CVD focus
Supervised Exercise Program	NO	YES	YES	YES
Online Education site http://wcm.ucalgary.ca/cdm/	YES	YES	YES	YES

Program or Service Name	Types of Health Info Dissemination	Target Audience for Program	Provide Specific services for Immigrants
Calgary Refugee Health Clinic	Printed forms, Consults, and Self Management Programs	Refugees from select countries (within their first 2 years of being in Canada)	YES, but must be a refugee class
Diabetes, Hypertension and Cholesterol Services	Printed forms, Consults, and Course work	People diagnosed with hypertension, had a cardiovascular event, known cardiovascular disease, documented peripheral vascular disease with normal or abnormal lipid profiles, and/or abnormal lipid profile with one or more other risk factors.	NO
Stroke Prevention Clinic	Printed forms, Consults,	Adults over age 18 with minor stroke or TIA	NO
24 Hour Blood Pressure Monitoring Service - Rockyview General Hospital	Printed forms and Consults on how to use heart monitor	Individuals with suspected blood pressure issues and a Doctors referral using the 100206 (2008/12) or Medical and Surgical Services and Cancer Care Access & Triage form available on the Internet	NO

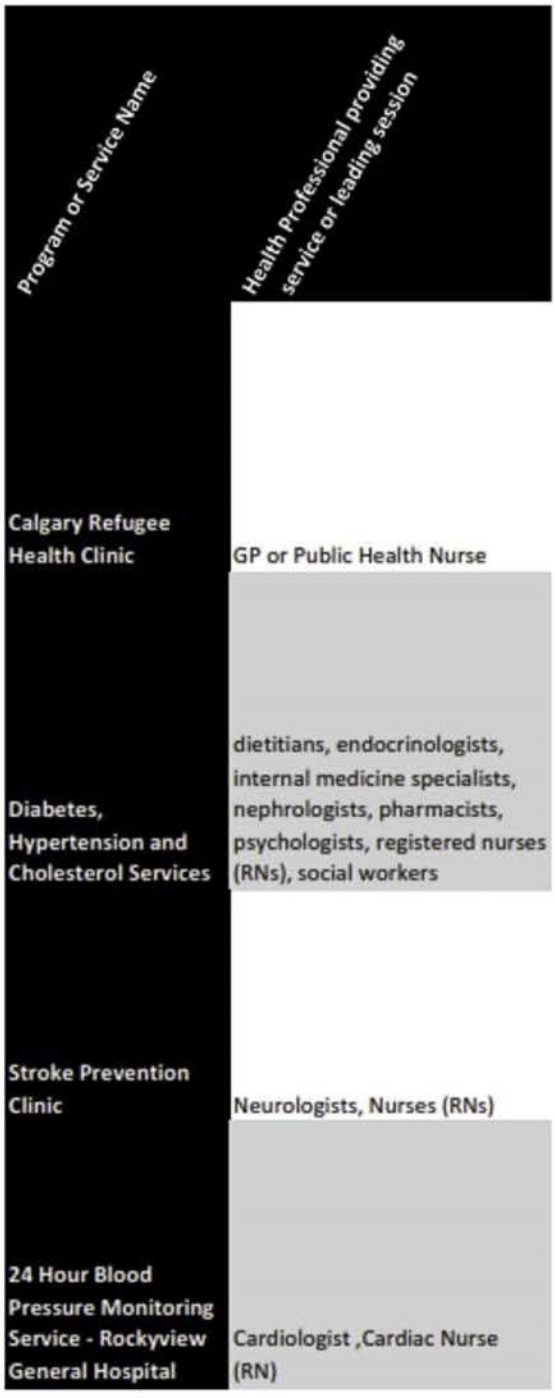
Program or Service Name	Types of Health Info Dissemination	Target Audience for Program	Provide Specific services for Immigrants
Ambulatory Stroke Services - Foothills Medical Centre	Printed forms, Consult, rehabilitation and monitoring programs	brain, spinal cord and stroke patients with doctors referrals and their families	NO
Atrial Fibrillation Clinic /CAFA /Cardiac Atrial Fibrillation Assessment	Printed forms, Consult, and monitoring programs	People with Referral form #103514 with attached documentation of Atrial Fibrillation, previous cardiac related tests and current blood work.	NO
Cholesterol and Blood Pressure Essentials	Class room setting using Printed forms, Consult, group discussion and visuals.	People with high blood pressure (blood pressure above 140/90, or above 130/80 for people with diabetes) or those who have been told they have high LDL cholesterol (also know as "bad" cholesterol), dyslipidemia, or high triglycerides	YES, but specific to French, Spanish, Cantonese, Mandarin, Tagalog and Punjabi speaking groups
Diabetes Essentials	Class room setting using Printed forms, Consult, group discussion and visuals.	People diagnosed with type 2 diabetes who have not been to diabetes classes before, or who would like a review of current diabetes information	YES, but specific to French, Spanish, Cantonese, Mandarin, Tagalog and Punjabi speaking groups

Program or Service Name	Types of Health Info Dissemination	Target Audience for Program	Provide Specific services for Immigrants
Eat Well For Good Health	Class room setting using Printed forms, Consult, group discussion and visuals.	People wanting to learn more about good nutrition to improve their health or manage a chronic condition.	YES, but specific to Cantonese, speaking group
Food and Mood	Class room setting using Printed forms, Consult, group discussion and visuals.	People wanting to improve their relationship with food	YES, but specific to French, Spanish, Cantonese, Mandarin, Tagalog and Punjabi speaking groups
Introduction to insulin pump	Class room tutorial using Printed forms, Consult, group discussion and visuals.	People with diabetes not on an insulin pump and those considering insulin pump therapy	YES, but specific to French, Spanish, Cantonese, Mandarin, Tagalog and Punjabi speaking groups
Living with stroke	Class room setting using Printed forms, Consult, group discussion and visuals.	People who have had a stroke or TIA	YES, but specific to French, Spanish, Cantonese, Mandarin, Tagalog and Punjabi speaking groups

Program or Service Name	Types of Health Info Dissemination	Target Audience for Program	Provide Specific services for Immigrants
Pre-Diabetes Reducing your Risk	Class room setting using Printed forms, Consult, group discussion and visuals.	People at high risk for developing diabetes, pre-diabetes, including Impaired Fasting Glucose (IFG), Impaired Glucose Tolerance (IGT), or have a family history of diabetes	YES, but specific to French, Spanish, Cantonese, Mandarin, Tagalog and Punjabi speaking groups
Ready, Set, Move!	Class room setting using Printed forms, Consult, group discussion and visuals.	People with a chronic condition looking to design their first exercise program, or trying to add more direction and purpose to an existing program	YES, but specific to Cantonese, speaking group
Stroke 101	Class room setting using tutorials, Printed forms, Consult, group discussion and visuals.	People wanting information on how to prevent stroke and TIA (Transient Ischemic Attack) and what to do if someone you know is having a stroke	YES, but specific to Cantonese, speaking group
Vitamins Minerals and Herbs	Class room setting using Printed forms, Consult, group discussion and visuals.	People interested in learning more about vitamins, minerals and herbs	YES, but specific to Cantonese, speaking group
Nutrition: Eating Away from home and during Special Occasions	Class room setting using Printed forms, Consult, group discussion and visuals.	People who want to learn more about nutrition to help them manage their weight	YES, but specific to French, Spanish, Cantonese, Mandarin, Tagalog and Punjabi speaking groups

Program or Service Name	Types of Health Info Dissemination	Target Audience for Program	Provide Specific services for Immigrants
Nutrition: I Know I should Eat Healthy, But How?	Class room setting using Printed forms, Consult, group discussion and visuals.	People who want to learn more about nutrition to help them manage their weight	YES, but specific to French, Spanish, Cantonese, Mandarin, Tagalog and Punjabi speaking groups
Nutrition: The top 5 tips to reduce Calories	Class room setting using Printed forms, Consult, group discussion and visuals.	People who want to learn more about nutrition to help them manage their weight	YES, but specific to French, Spanish, Cantonese, Mandarin, Tagalog and Punjabi speaking groups
Nutrition: The truth about what works in weight management	Class room setting using Printed forms, Consult, group discussion and visuals.	People who want to learn more about nutrition to help them manage their weight	YES, but specific to French, Spanish, Cantonese, Mandarin, Tagalog and Punjabi speaking groups
Self-Management Workshop (Better Choices, Better Health TM)	work shop setting using Print, Consult, discussion and visuals.	People with a chronic condition who want to gain confidence and learn skills to better manage their health. Support persons may also attend.	YES, mainly French, Spanish, Cantonese, Mandarin, Tagalog and Punjabi speaking groups

Program or Service Name	Types of Health Info Dissemination	Target Audience for Program	Provide Specific services for Immigrants
Supervised Exercise Program	workout instruction, Consultation, discussion and visuals.	This exercise program is designed for people who have chronic health conditions , can walk and take part in physical activity. There is an initial fitness assesment required.	YES, mainly Cantonese, Mandarin, Tagalog and Punjabi speaking groups
Online Education site http://wcm.ucalgary.ca/cdm/	Printable forms, visual diagrams, pictures, informative videos. Interactive quizzes	Care givers or people with chronic health concerns who are computer literate and want to learn more about self management of their own or loved ones condition.	YES, but limited to print information


Program or Service Name
Health Professional providing service or leading session
Calgary Refugee Health Clinic
GP or Public Health Nurse
Diabetes, Hypertension and Cholesterol Services
dietitians, endocrinologists, internal medicine specialists, nephrologists, pharmacists, psychologists, registered nurses (RNs), social workers
Stroke Prevention Clinic
Neurologists, Nurses (RNs)
24 Hour Blood Pressure Monitoring Service - Rockyview General Hospital
Cardiologist ,Cardiac Nurse (RN)

Program or Service Name	Health Professional providing service or leading session
Ambulatory Stroke Services - Foothills Medical Centre	Neurologists, Neurosurgeons, Nurses (RNs), Occupational Therapist, Physical Therapist, Psychologist, Recreation Therapist, Social Worker, Speech-Language Pathologist
Atrial Fibrillation Clinic /CAFA /Cardiac Atrial Fibrillation Assessment	Cardiologist ,Cardiac Nurse (RN)
Cholesterol and Blood Pressure Essentials	Registered Dietitians and Registered Nurses
Diabetes Essentials	Registered Dietitians and Registered Nurses


Program or Service Name
Health Professional providing service or leading session
Eat Well For Good Health
Registered Dietitians
Food and Mood
Registered Dietitians
Introduction to insulin pump
Registered Dietitian or Registered Nurse
Living with stroke
Nurse Clinician


Program or Service Name
Health Professional providing service or leading session
Pre-Diabetes Reducing your Risk
Registered Dietitian
Ready, Set, Move!
Physical Therapist, Athletic Therapist, fitness trainer
Stroke 101
Nurse Clinician
Vitamins Minerals and Herbs
Registered Dietitians
Nutrition: Eating Away from home and during Special Occasions
Registered Dietitians

Program or Service Name	Health Professional providing service or leading session
Nutrition: I Know I should Eat Healthy, But How?	Registered Dietitians
Nutrition: The top 5 tips to reduce Calories	Registered Dietitians
Nutrition: The truth about what works in weight management	Registered Dietitians
Self-Management Workshop (Better Choices, Better Health TM)	Trained volunteers with chronic conditions, Nurse Clinicians, Registered Nurses, Registered dietitians and other allied health professionals as needed

14 locations where Living well with a Chronic Condition Program takes place listed below

1.Cardel Place –11950 Country Village Link N.E.

2.Renfrew Aquatic and Recreation Centre–810 – 13th Avenue N.E.

3.Crowfoot YMCA–8100 John Laurie Boulevard N.W.

4.Vecova–3304 – 33rd Street N.W.

5.East Calgary Health Centre–4715 – 8th Avenue S.E.

6.Shawnessy YMCA–#400, 333 Shawville Boulevard S.E.

7.Calgary Chinese Elderly Citizens' Association 111 Riverfront Ave SW, Calgary, AB T2P 4Y8

8. Genesis Centre of Community Wellness #10, 7555 Falconridge Blvd. NE, Calgary, Alberta T3J 0C9

9.Calgary Jewish Community Centre–1607 – 90th Avenue S.W.

10.South Calgary Health Centre 4448 Front Street, Calgary, AB T3M 1M4

11.Holy Cross Centre 2210 -2nd St, SW Calgary, AB T2S 3C3

12. Sheldon M. Chumir Health Centre 1213 4 Street SW, Calgary, AB T2R 0X7

13. Calgary Foothills Primary Care Centre 60 Crowfoot Crescent NW Calgary, AlbertaT3G 3J9

14.Richmond Road Diagnostic and Treatment Centre. 1820 Richmond Rd SW, Calgary, AB T2T 5C7

*** Participants must call 403–943–2584 between Monday to Friday 8:00 am – 4:00 pm to register for an education class, the Better Choices Better Health Workshops, or Supervised Exercise Classes.**