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Modifiable Risk Factors For Cardiovascular Disease As Perceived By Women In Kenya

Catherine Wanjiru Lawrence
University of Vermont

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MODIFIABLE RISK FACTORS FOR CARDIOVASCULAR DISEASE AS
PERCEIVED BY WOMEN IN KENYA

A Thesis Presented

by

Catherine Lawrence

to

The Faculty of the Graduate College

of

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Thesis Examination Committee:

Sarah Abrams, PhD., RN, Advisor

Jeanne Shea, PhD., Chairperson

Carol Buck-Rolland, EdD., APRN

Cynthia J. Forehand, PhD., Dean of the Graduate College

Abstract

Cardiovascular disease (CVD) worldwide has grown exponentially in the last two decades and while sub-Saharan Africa (SSA) has been grappling with the crippling effects of epidemic infectious diseases such as HIV/AIDS and malaria, cardiovascular disease is now emerging as a grievous concern. Research and resources have largely been directed toward understanding and curtailing infectious diseases in the African continent. But as the risk of cardiovascular disease reaching endemic proportions in sub-Saharan Africa becomes more evident, research is critically needed in order to understand how to manage it and more importantly to direct the development and implementations of culturally relevant prevention strategies.

The risks and effects of CVD are present in both men and women across the globe, but there are differences in their occurrence based on gender that are worth considering. Women in sub-Saharan Africa, who are already burdened with the disadvantage of access to health care by virtue of their gender alone, are likely to be most adversely affected by CVD. Socioeconomic status (SES), epidemiologic transition and urbanization, lifestyle changes, and gender-based violence are all factors implicated in the compounded risk for CVD among women in this region.

To understand how women in a sub-Saharan region perceive CVD and its risk factors, this descriptive phenomenological study set out to answer the following research question: How do Kenyan women perceive the modifiable risk factors for CVD? Furthermore, how do they perceive its effects on their lives and their families? Two samples from central Kenya representing an urban and rural area were selected and interviewed in a focus group setting.

A number of themes were extrapolated from the interviews. The modifiable risk factors were perceived to be independent of CVD. Diet modification and physical activity were found to be helpful in controlling these diseases but clear understanding on their effects on overall cardiovascular health was lacking. Cigarette smoking generated the least discussion because none of the women were smokers. The effects of having either hypertension or type two diabetes included financial cost, emotional burden on the women and their families, and the concern of losing a breadwinner from disease or illness.

These results have implications in nursing practice, public health, primary care provision, and national and global policies. They also shed light on areas of potential consideration in prevention program design and implementation. Awareness, though felt by the women to be slowly gaining in Kenya, is key to disease prevention. There is limited research on this subject matter in SSA and more studies are needed to understand the scope and effects of CVD in this region.

Dedication

For the women of sub-Saharan Africa - I hope to honor you, your strength, and resiliency through this study and through my work in the future.

Acknowledgements

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Chapter 1

Introduction

Significance

Africa's global burden of chronic diseases, along with that of poor countries of Asia and Latin America is significant (Aikins et al., 2010; Marquez and Farrington, 2013). While 69% of the deaths in Africa are from infectious causes, in Sub-Saharan Africa (SSA) age-specific mortality rates from chronic diseases are actually higher than in virtually all other regions of the world, in both men and women (Aikins et al., 2010). Moreover, cardiovascular disease (CVD) is the leading cause of death in low income countries (Hendriks et al., 2008; Marquez and Farrington, 2013) and over the next ten years SSA is projected to see the largest increase in death rates from CVD, cancer, and other chronic diseases (Aikins et al., 2010; Bloomfield et al., 2011). The high mortality rates from infectious diseases means that local health ministries, public health organizations (local and international), and policy makers are reluctant to divert already scarce resources towards areas of emerging need such as CVD prevention and treatment (Aikins, et al., 2010; BeLue et al., 2009).

The risks and effects of CVD are borne by both men and women across the globe, but there are differences in their occurrence based on gender that are worth considering. Women, who are already burdened with the disadvantage of access to health care by virtue of their gender alone, are likely to be most adversely affected by CVD. They are at increased risk of disease (infectious and/or chronic) due to among other reasons a lack of control over finances and resources, being least likely to seek care in order to avoid

disrupting family routine, child care responsibilities, and preferential treatment afforded to their male counterparts (WHO, 2013). Socioeconomic status (SES), epidemiologic transition and urbanization, and lifestyle and dietary changes are all factors implicated in the compounded risk for CVD among women compared to men.

Purpose of the study

Understanding that CVD is likely to add to the endemic/epidemic burden of disease in SSA, and that women in particular are disadvantaged when it comes to health care access and disease management and treatment, the purpose of this study was to understand how or what women in Kenya perceive the modifiable risk factors for CVD to be. Perceived effects of the disease on their personal lives and the lives of their families was also studied. The aim is to inform the approach to CVD prevention in SSA by answering the following research question: How do Kenyan women perceive the modifiable risk factors for CVD? Furthermore, how do they perceive that CVD affects their personal lives and the lives of their families?

Theoretical Framework

The social ecological model of health behavior is rooted in themes concerning the interrelations among environmental conditions and human behavior and well-being (Stokols, 1996). There has been recent increased interest in the use of this model partly because of its promise for guiding comprehensive population-wide approaches to behavior change that will reduce serious and prevalent health problems. Ecological models focus on the nature of people's transactions with their physical and sociocultural

surroundings and incorporate constructs of models that focus on psychological, social, and organizational levels of influence (Sallis, Owen, & Fisher, 2008). These models integrate multiple theories adding the constructs of environment and policy to form comprehensive frameworks for health interventions and are applied towards many health behaviors or are tailor-made for specific categories. More recently for example, ecological models have been incorporated in the concepts of community capacity for health improvement and promotion through the mobilization and channeling of community assets, the diversification of a community's existing pool of assets over time, and the empowerment of community members to sustain health improvement efforts throughout extended periods through their continuing investments of time, energy, and other resources in pursuit of collectively defined health priorities (Stokols, Grzywacz, McMahan and Phillips, 2003). Health improvement efforts are sustainable only if they are designed to meet the specific needs of a given population- in the case of this study in SSA.

The core concept of the social ecological model of health behavior is that behavior has multiple levels of influences and these include the intrapersonal (biological, psychological), interpersonal (social, cultural), organizational, community, physical environmental, and policy (Sallis, Owen, and Fisher, 2008). At each level of influence, comprehensive intervention approaches that systematically target mechanisms of change can be developed. The core principals proposed to achieve this goal by Sallis, Owen, and Fisher (2008) are:

1. There are multiple levels of influence on specific health behaviors.

2. Influences on behaviors interact across these different levels.
3. The approach should be behavior-specific and the most relevant potential influences at each level should be identified.
4. The most effective in changing behavior should be multi-level interventions.

The social ecological model of health behavior is not without challenges, one of which is grasping the extent of the multi-level influences. In order to understand these influences, one must seek insight on the context of the targeted health behavior. By studying the perceptions of the modifiable risk factors of heart disease by women in Kenya, this study hopes to gain some understanding of what could influence the prevention of heart disease in SSA.

The interplay between social ecological influences of health behavior and the role of culture in the context of understanding these behaviors are key to this study. The Transcultural Nursing Theory was developed by Madeline Leininger, a nurse theorist, over an extended period beginning in the 1960s. This theory provides an integral part of how nurses practice in healthcare and guided the development of this study. Leininger's theory helps learners to discover and explain diverse and universal culturally based care factors influencing the health, well-being, illness, or death of individuals or groups. According to McEwen and Wills (2011), this theory also helps to create knowledge of care given to people who value their cultural heritage. The ability to provide culturally compatible care that contributes to people's health and well-being seems undeniably relevant, especially now when the patterns of travel, migration, immigration and emigration are changing ever so rapidly. There also continues to be a global movement of

health care provision beyond borders that benefits greatly from understanding health in the context of one's cultural setting.

There is perhaps no other place that ignites thoughts and discussions of the influences of culture as Africa does. Despite certain Western influences largely as a result of colonization and migration patterns, African people (in their tribes and communities) have maintained ways of life influenced by cultural beliefs passed down through generations. This way of life includes their perceptions of and approaches to illness, health, and wellbeing. Understanding these perceptions could make health-related discussions more relevant to African people. Important concepts that include differences in etic and emic views, professional care, and folk health all come together to form an umbrella under which culturally relevant care is provided in regions such as SSA.

In undertaking the task of describing how women in rural communities in sub-Saharan Africa understand the modifiable risk factors of cardiovascular disease within the context of their own culture, the following three action and decision modes of the theory of cultural care diversity and universality could then be applied: First, cultural care preservation and/or maintenance, comprised of developing assistive, supportive, or enabling professional actions or decisions would help these women within their own culture preserve or maintain a state of health free of CVD. Second, cultural care accommodation and/or negotiation would help in developing actions and decisions that would help these women adapt or negotiate for beneficial or satisfying health statuses. Third, cultural care repatterning or restructuring which entails assistive, supportive, or enabling professional actions or decisions would help these women change their life ways

for new and different patterns that are culturally meaningful and satisfying, or that support healthy and beneficial life patterns (Leininger, 1988, p. 156).

Chapter 2

Literature Review

The World Health Organization (WHO) estimates that about 60% of deaths in the world are caused by non-communicable diseases (World Health Organization, 2002). This is a significant increase from the number as it stood at the turn of the 20th century (about 10% worldwide). An estimated 17.5 million people died of CVD in 2005. This represented 30% of all global deaths of which 80% were from low and middle income countries (WHO, 2007). It is further predicted that by 2020 the mortality rate from CVD is expected to increase by 120% for women and 137% for men (Hawkes, Gould, and Hofman, 2004). These are significant projections that highlight the need to explore the nature and magnitude of CVDs and other non-communicable diseases in developing countries.

Communicable, maternal, nutritional, and newborn diseases continue to dominate in Africa's health scene. Five of the biggest challenges in SSA are pregnancy and childbirth complications, newborn illness, childhood infections, malnutrition, and human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS) (Kinney et al., 2010). Consider the fact that over half of the maternal deaths worldwide occur in SSA where little to no progress has been made in mitigating or eliminating maternal health risks (Alvarez et al., 2009). These deaths are mainly as a result of direct obstetric complications such as hemorrhage, hypertension, sepsis, and obstructed labor, that occur around the time of childbirth. Alvarez et al. (2009) found in an ecological study on the factors associated with maternal mortality in Sub-Saharan Africa that educational,

sanitary and economic factors play a role in the high maternal mortality rate in this region. There was a significant correlation in their study between maternal mortality and access to prenatal care, births assisted by skilled health personnel, access to an improved source of water, adult literacy rate, primary female enrolment rate, education index, the Gross National Income per capita, and the per-capita government expenditure on health. These are important findings that transcend maternal health. They overlap in their association with other disease patterns in this region.

Sub-Saharan Africa also carries over half of the world's deaths of newborns and children. Apart from still-born births, 1/3 of which occur during delivery, newborn deaths have been attributed to three main causes in this region: infections (sepsis/pneumonia, tetanus, and diarrhea), intrapartum-related conditions such as birth asphyxia, and preterm births (Black et al., 2010). Importantly, up to 90% of newborns who die have been reported to be low birth-weight (<2,500 grams). Among children, 28% of the global burden of underweight children in developing countries has been found in SSA. It is important to recognize that undernutrition contributes to child mortality as it increases children's risk of dying from infections such as pneumonia, diarrhea, and malaria, which account for two-thirds of child deaths (Black, Cousens, et al, 2010). One-third of child deaths have been reported to be due to nutritional deficiencies including vitamins and essential minerals as well as sub-optimal breastfeeding.

Infectious disease burden in Sub-Saharan Africa

Infectious diseases are perhaps the main reason why (and justifiably so) chronic diseases have been under-recognized in SSA. Their toll on the African continent has been

unprecedented with the magnitude beyond which Africa seems able to handle. HIV/AIDS kills millions of people every year and for a part of the continent with only 13% of the world's population, SSA has 68-70% of the world's population of people living with the disease (UNAIDS, 2013). One would argue that with figures like this, it would be inexcusable for the global community not to intervene. Tuberculosis (TB) is second only to HIV/AIDS with about 1.43 million deaths reported in 2013 (The World Bank, 2013). Political instability and poverty have taken a toll in the implementation of preventive programs, but the most influential factor in the increased burden of TB in SSA has been found to be linked to HIV/AIDS (Jameson et al., 2006). Already immunocompromised individuals with HIV/AIDS have a higher susceptibility of infection with the TB bacteria. As early as twenty years ago, the incidence rate of TB in Africa was low and the number of new infections had greatly reduced thanks in part to early intervention and education. But the incidence trajectory changed significantly and a resurgence of the disease began with the rapid rise of HIV/AIDS infections in SSA (Jameson, et al., 2006). Malaria, which is endemic to Sub-Saharan African countries, also carries a heavy death toll in this region. Over half a million lives have been lost each year due to this infection with 20% of childhood deaths attributed to the disease (Jameson et al., 2006). As is the case with most of these infectious diseases, malaria strikes hardest among those living in poverty who also receive the worst care and have highly deleterious economic consequences from their illness (Breman, Martin, and Mills, 2004).

Feiken et al. (2011) reported on the burden of common infectious disease syndromes from population-based surveillance in rural and urban Kenya. The authors

found that individuals in poor Kenyan communities still suffer from a high burden of infectious diseases. This study was conducted from June 1, 2006 to May 31, 2008 among greater than 50,000 persons participating in population-based surveillance in impoverished, rural western Kenya (Asembo) and an informal settlement in Nairobi, Kenya (Kibera). From control arms of clinical trials in malaria-endemic areas of western Kenya, incidence rates of symptomatic and asymptomatic malaria parasitemia were 1–2 episodes per person-year. The mortality pattern in the surveillance areas of this study, with highest rates among young children then rising again in young adults, was found to be typical of parts of Africa with high levels of HIV. Both urban and rural communities had an intolerable burden of illness, with children experiencing illness in up to one-quarter of the year. High morbidity and mortality in poor African settings continue to hamper development without more effective interventions to control these common infectious disease syndromes.

The burden of infectious diseases worldwide and especially in SSA as mentioned above has been dire and the amount of attention has been warranted in order to curtail their grim effects. Over the last two decades, the global health landscape has altered rapidly. The global burden of diseases, injuries, and risk factors studied by the Institute for Health Metrics and Evaluation under the auspices of the World Health Organization (2010) showed that the leading causes of death and disability have changed from communicable diseases in children to non-communicable diseases in adults. Dramatic progress has been made in reducing the loss of life from many of these communicable

diseases and conditions and even though they still account for the most health loss in the region, their relative burdens are much lower today than 20 years ago.

Of the aforementioned infectious diseases that have plagued SSA, there is none whose burden has declined as much as that of malaria. While it varies among countries in the region, O'Meara, Mangeni, Steketee, and Greenwood (2010) found that the scaling up of prevention, diagnosis, and treatment of the disease has had significant effects in reducing the number of cases. This has been mainly due to an increase in funding for disease control and the procurement and distribution of effective means of prevention (such as insecticide-treated bednets and indoor residual spraying) and treatment. In regards to specific countries in SSA, malaria rates have declined in southern Africa (South Africa, Mozambique, Swaziland), the Horn of Africa, Eritrea, and Ethiopia (O'Meara et al., 2010). Early and scaling up of specific interventions as well as introduction of malaria control measures is credited with the decline seen in these countries. Tuberculosis on the other hand has not shown such promise in relenting. Although HIV/AIDS has shown some decline in certain African countries, it continues to ravage this region, as does TB. Drug resistant, multi-drug resistant (MDR TB), and extensively drug resistant (XDR TB) strains of the bacteria that causes TB have made the war against this disease difficult (Centers for Disease Control and Prevention, 2014).

HIV/AIDS, TB, and malaria are the primary infectious diseases that tip the scale in health care in SSA. More tropical diseases have been shown to plague this region such as hook worm infections (a leading cause of anemia among pregnant women in SSA), schistosomiasis, and lymphatic filariasis (Hotez and Kamath,2009). These are diseases

whose effects on the body are known fairly quickly once infection occurs. It may be that non-communicable diseases, whose progression is insidious do not appear to pose a real threat now, but understanding their outcomes and their long term effects might affect how early prevention is approached. It is therefore important to grasp the context of the infectious disease burden in order to understand the urgency in averting yet another crisis in SSA in the form of non-communicable diseases such as CVDs.

Millennium Development Goals

A significant reason for the under-recognition of chronic diseases is the United Nation's Millennium Development Goals (MDG) process. In September 2000 MDGs were adopted by world leaders who came together at the United Nations Headquarters in New York after a decade of major United Nations conferences and summits. This new partnership committed 189 nations to reduce extreme poverty in developing countries by the year 2015. Of the eight goals, three specifically, target health issues:- to reduce child mortality by two-thirds relative to 1990 , to reduce maternal mortality by three-quarters relative to 1990, and to prevent the spread of human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS), malaria, and other diseases (Beavers and Horton, 2005; Sachs and McArthur, 2005). Representatives of chronic disease specialties were not appreciably involved in the process and have expressed that the omission of these diseases is dire especially in low-income and middle-income countries. The MDGs are too narrowly defined and do not include the diseases affecting the majority of the world's population such as CVD (Fuster, Voute, Hunn, and Smith, 2007). The authors argue that there is compelling evidence now to include chronic disease prevention and

awareness in the MDG goals and that to truly begin to reduce poverty, both infectious and chronic diseases must be addressed. Beevers and Horton (2005) outlined four compelling arguments for the inclusion of CVD and other chronic diseases in the MDG process, arguments that again echo sentiments expressed earlier in this discussion. First, in regions like SSA, the burden of disease data has shown an impending predominance of CVD and other chronic diseases. Infectious diseases remain a concern but several factors such as epidemiological transition reveal a change in the gravity of the threat of chronic diseases. Second, in SSA and other low-to-middle income countries worldwide, the economic impact of CVD is more significant as it strikes younger working-class people at higher rates. Coupled with the combined effects of tobacco and obesity, the growing prevalence of CVD further takes a toll on the economic prospects of low-income workers. Third, a need to build health systems that are sustainable and that can efficiently manage overall health needs has been identified (Beevers and Horton, 2005). It would make sense to establish systems that tackle both infectious and chronic diseases, as well as focus on primary prevention as a whole, versus systems that are built vertically disease by disease. Often, as is the case in SSA, these diseases overlap so that in many cases managing just one is no more effective than doing nothing at all. Comprehensive health systems would be economically, socially, and financially beneficial in these regions. Fourth, cost-effective policies, programs and treatment initiative for CVD and other chronic diseases already exist at national and community levels that would have major effects on poverty and general health. Policymakers can help save lives and prevent diseases such as hypertension, diabetes, tobacco consumption, and abdominal obesity by spearheading the implementation of such programs and initiatives. It is therefore possible

to address chronic diseases concurrently with infectious ones, a point that the MDG process is presently lacking.

Although the MDG targets have not changed to explicitly include chronic diseases in their goals, since 2005, when the call for recognition of such diseases as impacting health and poverty worldwide gained some momentum, the WHO has recognized there is scope for doing so within Goal 6- combat HIV/AIDS, malaria and other diseases. Other diseases in this case made to include chronic diseases such as CVD. This is a scope adopted by such countries as Mauritius, Czech Republic, and Thailand (WHO, 2014). MDGs are a concerted and coordinated political action without which the gains achieved in reducing the burden of infectious disease will crumble as a new wave of preventable illness engulfs those least able to protect themselves.

Chronic diseases- a growing concern

In spite of the infectious disease burden in SSA, it has been suggested that the phenomenon of epidemiologic transition is responsible for the trend change in chronic disease incidence and prevalence. Epidemiologic transition refers to “the shift that occurs in developing countries as mortality from infectious diseases and nutritional deficiencies decreases and mortality from non-communicable diseases increases” (Deaton et al., 2011). These non-communicable diseases include those attributed to diet, sedentary lifestyle, medical access, smoking and other behaviors, such as cardiovascular disease (CVD), cancer, chronic lung disease and diabetes. Epidemiologic transition has been defined as being a reflection of economic development, urbanization, industrialization, and changes in social organization within countries and regions with increased exposure

to risk factors driven by changes in diet, physical activity, and environment. Considering the decreased burden of infectious diseases in SSA over the last 20 years (WHO, 2010), it seems logical to deduce that this transition could be taking place in this region and it may help explain the growing need for research towards preventive measures against such diseases as CVD.

Sliwa et al. (2008) conducted the Heart of Soweto study with the aim of better understanding the characteristics and burden imposed by heart disease in an urban African community in probable epidemiological transition. This prospective cohort study conducted from January 1 to December 31, 2006, detailed clinical data relating to the presentation, investigations, and treatment of all 1593 patients (who enrolled in the study) with newly diagnosed cardiovascular disease that attended the cardiology unit at the Chris Hani Baragwanath Hospital in Soweto, South Africa. One of the findings was that prevalence of cardiovascular risk factors was very high, with 56% of the patients diagnosed with hypertension, 44% of whom were also obese. Only 13% patients had no identifiable risk factors, whereas 59% had several risk factors. These results showed strong evidence that Soweto, South Africa was in fact going through epidemiological transition and the threat to the present and future cardiac health has broadened the complexity and spectrum of heart disease in that community.

Among older people in Africa (age 60 and above), coronary heart disease and stroke have been identified as being the leading causes of death and are responsible for more than one quarter of the deaths in this age group (Jamison et al., 2006). This means that in addition to the burden of infectious disease, epidemiologic transition is responsible

for emergent health problems in the form of chronic diseases. Urban areas in Africa have seen an increase in obesity and hypertension and between 2000 and 2030 the number of people living with diabetes in SSA is expected to more than double (Wild, Roglic, Green, Sicree, and King, 2004). Urbanization is a key component in the rise of CVD in SSA. With 40% of Africans living in urban areas and over half expected to do so by 2030 (World Urbanization Prospects, 2007), addressing the health effects of this transition is important.

Kenya is a prime example of a sub-Saharan African country in transition. It too suffers under the double burden of infectious and chronic diseases. Its greatest killers today are HIV/AIDS, diarrhea and respiratory infections. Nearly forty Kenyan women die due to pregnancy-related causes every day (WHO, 2013). Urbanization has resulted in an increase in diabetes, stroke and heart disease. Africans used to label these diseases as “Western ailments” but millions are now affected in the continent, including the very young. High blood pressure and cancer, anxiety, and depression, which erode the quality of life and productivity, are starting to emerge as Kenya’s new diseases. By 2027, Kenya is predicted to suffer more from these newer diseases than traditional more infectious ones even if deaths through injuries (especially car accidents) are excluded (Fengler & Ramana, 2013).

Mathenge, Foster, and Kuper (2010) conducted a cross-sectional population-based study on urbanization, ethnicity and cardiovascular risk in a population in transition in Nakuru, Kenya. Nakuru’s main ethnic groups are Kikuyu and Kalenjin. One third of the population in Nakuru is urban and this is a Kenyan county that is broadly representative

of Kenya in terms of ethnic diversity and economic activities. For this study, 100 clusters of 50 people aged 50 and above were selected and classified as 'rural' and 'urban' using the classification of the district statistical office. The clusters were selected through probability proportionate to size sampling. Examination clinics were held over a two-day period at the convenience of the participants and trained nurses were employed to conduct the interviews. Socio-demographic and lifestyle information was collected from the participants and nurses also measured blood pressure, height, weight and waist and hip circumference, as well as a random finger-prick blood sample to measure glucose and cholesterol levels. Of the 4396 subjects examined (88%), 1437 (33%) lived in urban areas and 2959 (67%) lived in rural areas of Nakuru.

The results of the study showed a high prevalence of hypertension (50.1%, 47.5-52.6%), obesity (13.0%, 11.7-14.5%), diabetes (6.6%, 5.6-7.7%) and high cholesterol (21.1%, 18.6-23.9). Even after adjustment for socio-demographic, lifestyle, obesity and cardiovascular risk markers, hypertension, diabetes and obesity were more common in urban compared to rural groups. Kikuyus also had a higher prevalence of hypertension, obesity, diabetes and high cholesterol compared to Kalenjins, even after multivariate adjustment. CVD risk markers were clustered both across the district and within individuals. The majority of cases with diabetes received treatment (68%) while few received treatment for hypertension (15%). CVD risk markers differed between the ethnic groups and certainly differences in physical characteristics may explain the discrepancy in these risk markers (Kikuyus were generally shorter and heavier among both men and women). But, the urban-rural differences in CVD risk markers are more likely to be

explained by differences in health behavior, including diet and physical activity and the subsequent differences in lifestyle may in turn explain some of the differences in CVD risk markers between the two ethnic groups. This study's findings also showed a higher prevalence of obesity among women compared to men in Africa, one that is in line with other research findings according to the researchers. The researchers in this study concluded that the burden of CVD risk markers in Kenya is high, especially in urban areas. This further underscores the urgency and importance of prevention programs geared towards the risk factors for CVD in SSA.

Evidence from a health and demographic survey using the WHO STEPwise approach to chronic disease risk factor surveillance in Webuye (in western Kenya) resulted in significant findings that further drive the need for CVD prevention programs (Bloomfield et al., 2013). A moderate prevalence of cardiovascular risk factors with 24% of the population having at least two was found. Among older men and those with less education tobacco and alcohol use was more common though compared to other African countries using the STEPwise instrument alcohol use here is low. This difference could be due to financial resources, social and religious norms, the legal drinking age, and communal drinking patterns. Tobacco use is comparable to some other African countries. Adequate intake of fruits and vegetables was found to be rare and this is confirmatory of other findings in SSA. Cost, availability, taste preferences, and the need for storage of fresh fruits and vegetables are factors that may contribute to this finding. It is also interesting to note that in Western Kenya it is not uncommon to cook vegetables for hours and thereby taking away any nutritional value - a point that was taken into

consideration in this survey. Work and travel constitute physical activity in this region with little time for recreational activity. Farming, which is the main type of work performed in Webuye, and walking and bicycling, which are the main modes of transportation, contribute greatly to the high rates of physical activity reported in this surveillance. Once again, this finding is similar to others in SSA and this suggests that physical inactivity is not a major predictor of CVD in SSA. And lastly, it is rare to self-report high blood sugar and self-report of high blood pressure is low in this population. Women had higher rates of self-report of high blood pressure than men. Although prevalence of these two risk factors in Webuye is unclear a lack of awareness may be a contributory factor. Similar studies in other countries in the region such as Tanzania and Ethiopia for example found that 65% and 50% respectively of those found to have hypertension were unaware of their condition (WHO, 2013; Tesfaye, Byass, and Wall, 2009). In this survey, women have had higher rates of self-report of high blood pressure due to the fact that they were home more often than men at the time of the surveys and because of their better health seeking behaviors that would make them better aware than their male counterparts. Studies in SSA have also shown that women are more likely than men to report high blood glucose as well. This could be because of check-ups during pregnancy. But overall, as with high blood pressure, lack of awareness, misconceptions about the causes, and access to appropriate medical services are factors that contribute to poor reporting. So overall, this survey revealed that even in western Kenya, a peri-urban region, cardiovascular risk factors are indeed present.

Research is minimal on the Sub-Saharan region's experience with CVD and this likely correlates with the general lack of attention given to this health problem and the historical emphasis of infectious disease prevention. A few studies have emerged which have shown quantifiable presence of the risk markers for CVD in SSA. Research in Kenya, Nigeria, and South Africa for example points to the increased prevalence of hypertension, type II diabetes, hyperlipidemia, and hypercholesterolemia- all associated with higher risk for CVD (Oladapo, Salako, Sadiq, Soyinka and Falase, 2010; Kaduka, Kombe, and Mwangi, 2012; Njelekela et al., 2009). These studies revealed a change in socioeconomic status (SES), urbanization, and lifestyle that appears to correlate with the increase in incidence of CVD in this region (Njelekela et al., 2001).

CVD is an emerging serious health problem in sub-Saharan Africa and the consensus is that more research is needed to better understand how to create and implement prevention programs to meet the needs of the people living in this region. The projection that by 2030 ischemic heart disease and cerebrovascular diseases (both cardiovascular in nature) will overtake HIV/AIDS as the leading causes of death in SSA cannot be mentioned enough (Kengne, Ntyintyane, and Mayosi, 2012). These researchers found by reviewing the existing cohort studies on cardiovascular disease in this region that reliable information about the distribution of known risk factors, how they change with time and how they relate to cardiovascular outcomes is of major importance but still lacking in Africa. This is especially critical while there is still a window of opportunity during which it might be possible to introduce preventive measures against the full development of this epidemic. According to this review study, because the major

determinants of cardiovascular diseases have already been identified from numerous studies across the globe and they are found to be consistent across populations and regions, they may not need to be ‘rediscovered’ in sub-Saharan Africa. However, Reddy and Yusuf (1998) recognized that a better understanding of the epidemiology of these determinants of CVD in SSA will permit the development of more effective public health interventions to forestall a future epidemic. In spite of the aforementioned statistics and numbers showing the urgency of the situation, chronic diseases remain under-recognized by policy makers, development aid agencies, and leading foundations (Fuster and Voute, 2005).

The importance of knowing the presence of these risk factors of CVD in SSA is critical. This knowledge drives the development of treatment options and guides prevention. And yet paucity remains on how or what the people of SSA understand these risks to be. One of only a few studies found on this issue is by Oladapo et al. (2013). The authors surveyed the knowledge of hypertension and other risk factors for heart disease among the Yoruba population in rural southwestern Nigeria. In this community-based descriptive, non-interventional, cross-sectional survey conducted from December 2002 to November 2005 in Egbeda Local Government Area (ELGA), hypertension was used as an entry point to assess heart disease knowledge. A structured questionnaire was used to interview 2000 subjects in order to assess knowledge of various aspects of modifiable cardiovascular (CV) risk factors. The researchers found that 59% of the respondents sought medical information from family/friends/leaders of trusted groups, 24.6% from the media (radio, newspapers), and 9.1% from doctors/nurses/health workers. There was

overall poor knowledge of CVD and its risk factors. About 56% of the respondents could not identify a single risk factor of CVD and of those who were able to, only a few could correctly identify the relationship between CV risk factors and CVD with some misconceptions. When adjusted for age, gender, and marital status, those with more years of formal education, a positive family history of CVD, and self-reported history of diabetes mellitus were more likely to have a good level of knowledge of hypertension and other CV risks. The results of this study only helped to confirm the existence of limited knowledge and misconceptions of CVD and its risk factors in this particular population. These gaps in knowledge mean that early detection and preventive practices are significantly lacking. Oladapo et al. (2013) echoed the sentiments of other researchers in this review that there is an urgent need to develop and implement culturally appropriate public awareness, health educational, and health promotional programs about CVD risk factors for this community which can be adapted for other rural populations.

Awah, Kengne, Fezeu, and Mbanya (2007) studied the risk factors of cardiovascular diseases and diabetes as perceived by people living in an urban setting in Cameroon. Previous studies in 1994 and 1998 studied the risk factors of CVD most prevalent in Cameroon and found that obesity was more common in urban areas than rural and more so among women than men. These studies did not venture into other possible risk factors and neither did they address the issue of how Cameroonians perceive these risk factors. It is the latter of the two points that was the focus of this research by Awah et al. (2007). In this research, the perception of risk factors by select stakeholders was studied using focus group discussions and in-depth interviews over a five month

period in the Cameroonian capital of Yaoundé. The stakeholders were community representatives, health care providers (nurses and physicians including cardiologists, patients, family members caring for patients from within the study community), senior government administrators in the ministry of health, and patients with hypertension, diabetes, and stroke.

The results of this study showed that among health care providers prevalence of CVD risk factors was perceived to be high. Yet among the other stakeholders this opinion was inconsistent. Most in the group thought diabetes higher among the middle-class and hypertension more prevalent in the upper and lower classes. Most thought that hypertension and diabetes were more prevalent in men than women because men carried the burden of providing for their households whether they were sick or not and regardless of whether their wives were sick or not. Biological risk factors were unknown to most participants except health care providers who declared diabetes and hypertension to be “brother and sister,” - in that they go hand in hand. Regarding behavioral risk factors, nutritional value was considered lower now than years past across the board, citing higher cost of nutritional foods as a major reason. Changing lifestyles (more sedentary) and low awareness from lacking proper health promotion government programs were cited by most as the reason for the rise on obesity rates. Smoking and alcohol consumption were considered to be higher, citing old habits by the older generations that are hard to break and social pride and peer pressure for the younger generations of today.

These results helped to highlight two key points:- the common misperception that CVD and diabetes are diseases of the elderly and affluent, and governments do not

necessarily consider these diseases worthy of investment of resources and on grounds that the young people are unaffected. Some of the aforementioned health studies have helped to counter the findings in this study. CVD in SSA is no longer an elder disease and in fact with the changes in lifestyle and epidemiologic shift younger and younger individuals are falling to the grip of CVD. This revelation makes it critically important to invest resources now at local, national, and international levels to mitigate the personal, social, and financial consequences of CVD. This study also showed that there is a level of awareness of the risk factors of CVD and diabetes among the people and a willingness to adopt advised lifestyle changes but they are often held back by poverty, a lack of personal enthusiasm, and a level of unwillingness by health care providers to invest the time in education. Finally, the potential of collaboration among community members, local governments and public health officials, and health care providers is important to note. Building effective health promotion programs needs the concerted efforts of all the stakeholders. As suggested in this study, translating global awareness strategies to meet the needs of people at a grassroots level will take knowledge and skills of the greater community.

To further emphasize the need for research regarding CVD in SSA, Dalal et al. (2008) argued that prospective cohort studies can be used to study multiple complex diseases and risk factors simultaneously over an individual's lifetime. These studies would be crucial in understanding the etiology, course, and outcome of such diseases and again such studies have informed the design of prevention programs. Dalal et al. (2008) also posit that research studies provide an incomparable resource for the training of

public health researchers. It appears that some research has been done on the risk of CVD in Africa in an attempt to explain trends and extrapolate information that could be useful in targeting health promotion and prevention activities. However, most of these studies conclude that the amount of research done is worryingly low, so much so that there is a growing call for much more to be done.

Women and Cardiovascular Disease in SSA

Every year, 3.3 million women die of heart attacks and 3.2 million die of strokes globally (WHO, 2013). The risks and effects of CVD are present in both men and women across the globe and in Africa among adults aged 60 years and older CVD is already the leading cause of death among men and is second among women (Mensah, 2008). Studies have been done documenting the experiences of women during infectious disease epidemics such as HIV (Dugassa, 2009; Tsai and Subramanian, 2012) and there seems to be a few studies regarding specific markers for CVD among both men and women in SSA (Fowkes et al., 2006; Longo-Mbenza et al., 2008; Opie, and Yackoob, 2005). However, literature is limited on their perception and understanding of CVD and its risk factors. This would be important (as noted in literature regarding the seriousness of chronic diseases in SSA) in development of awareness and prevention-based programs.

One of the risk factors for CVD that has been found to be more prevalent among women than men in SSA is the presence of metabolic syndrome. Metabolic syndrome was defined as “hyperinsulinemia (the upper fourth of the fasting insulin level among nondiabetic subjects) or hyperglycemia (fasting glucose ≥ 110 mg/dl) in addition to at least two of the following: waist girth ≥ 94 cm, dyslipidemia (triglycerides ≥ 150 mg/dl or

HDL cholesterol <40 mg/dl), or BP \geq 140/90 mmHg or taking BP medication.”

(Takamiya et al., 2004). In a study by Kaduka and colleagues (2012) on the prevalence of metabolic syndrome among an urban population in Kenya, the overall prevalence of the syndrome was 34.6% and higher in women compared to their male counterparts (40.2 vs. 29%, respectively). This study was comprised of 539 participants (50.5% men and 49.5% women with a mean age of 38 +/- 13 years) each assessed for risk factors of metabolic syndrome. Low HDL cholesterol and high waist circumference were more prevalent in women compared to high blood pressure in men. Other African countries where studies have yielded similar results include Tanzania, Cameroon, Seychelles, and West African nations like Ghana. In Cameroon and Ghana, central obesity and hypertension were the most prevalent risk factors for CVD and were also observed to be higher in women than men (Mogre, Mwinlenaa, Oladele, and Amalba, 2012).

Hypertension is also another risk factor for CVD whose prevalence in SSA is varied in the region between males and females and between rural and urban areas. The study by Mathenge, Foster, and Kuper (2010) on urbanization, ethnicity and cardiovascular risk in a population in transition in Nakuru Kenya showed hypertension to be highly prevalent in this county. Another study from Tanzania involving urban, rural, and seminomadic participants aged 47 to 57 years conducted in 1987 and resurveyed in 1998 revealed a marked increase over that period with overall prevalence increasing from 25.4% in men to 41.1% and from 27.2% to 38.7% in women (Njelekela, Negishi, et al., 2001; Njelekela, Sato, et al., 2003). A systematic review by Addo, Smeeth, and Leon (2007) found that overall in SSA, the prevalence of hypertension in urban areas is high

with lower detection, treatment, and control levels reported. And specifically among women it is reported that they have better detection, treatment, and control rates than men in both SSA and high income countries. This has been suggested to be because women have increased chances of having blood pressure measured on contact with a health facility during pregnancy and related health conditions. Women also probably accept more readily the diagnosis of hypertension even in the absence of symptoms and recognize the need to stay healthy to support their families and are therefore more willing to comply with treatment and get controlled.

Yet other risk factors have been determined to put women at higher risk of CVD. Njelekela et al. (2009) studied the gender-related differences in the prevalence of cardiovascular disease risk factors in Tanzania. In this cross-sectional assessment, the researchers used a randomly selected sample of 250 middle-aged women and men from an urban district of Dar es Salaam. One hundred fifteen men and 94 women were enrolled in the study. Women were significantly more likely to have poorer indicators for education ($p = 0.005$), income ($p = 0.005$), and occupation ($p = 0.0001$), compared to men, and men were significantly older ($p < 0.001$) and had higher rates of smoking ($p < 0.0001$) and alcohol intake ($p = 0.003$). After adjusting for age, occupation, wealth factor, income, education, and physical activity, the following risk factors for CVD were found to be significantly higher in women compared to men: mean body mass index (BMI), waist and hip circumference, and waist-to-height ratio (WHR), and lower systolic and diastolic blood pressure level, compared to men. Triglycerides, total, LDL-, and HDL-cholesterol, and fasting blood glucose levels did not significantly differ by gender. There

was higher prevalence of obesity, abdominal obesity, higher WHR, metabolic syndrome, and elevated HDL-cholesterol among women compared to men.

According to Sliwa (2012), the predominant pattern of cardiovascular diseases in Sub-Saharan Africa women is that of poverty-related conditions (rheumatic heart valve disease, untreated congenital heart disease, tuberculous pericarditis). However, the prevalence of the traditional risk factors for cardiovascular diseases such as hypertension and obesity has been found to be high in a number of Sub-Saharan settings, although they vary considerably among countries and urban/rural locations and specific subpopulations. Sliwa (2012) found that there is a paucity of data on the cardiovascular health of women in SSA, particularly their propensity for various forms of heart disease, access to health care, treatment received within the respective healthcare system, response to therapy, and mortality. It is worth mentioning that considering more often CVD and its risk factors in women is unmasked during pregnancy when they are more likely to seek health care, improvement in health services with coordination of maternal health services and non-communicable diseases is needed. There is a need for increased awareness of the general public and health workers about the burden of cardiovascular diseases in SSA and prevention programs must be included in the health research agenda for the African continent.

In addition to the aforementioned CVD risk markers and their effects on women in SSA, there are other factors worth mentioning that have been suggested to affect women in this region in relation to health. These include gender inequality (under which the effects of gender-based violence fall), family responsibilities, and the cost of seeking

care. These factors are thought to affect the way women approach CVD prevention and intervention. Gender, which defines power relations in society, determines what is expected, allowed and valued in a woman or a man in a given context (United Nations, 2006). In African society gender roles and norms are greatly influenced by culture and these socially constructed gender differences between men and women affect roles and responsibilities, access to resources and decision-making power (Madkan, Giancola, Sra, and Tyrene, 2006). Generally, women in SSA are afforded little to no decision-making power and their role is primarily that of child-bearer, home maker and keeper, and income earner. This makes women in this region more vulnerable to the effects of CVD due to gender-based discrimination, violence, and economic vulnerability.

This study was designed to improve understanding of how women in Kenya describe their knowledge of CVD risk factors by answering the following research questions: how do Kenyan women perceive the modifiable risk factors for CVD? Furthermore, how do they perceive CVD affects their personal lives and the lives of their families?

Chapter 3

Methods

Research design

A non-interventional descriptive phenomenological approach over a six week period was used to explore the perception of modifiable risk factors for heart disease among women in Kenya. Descriptive phenomenology was developed by Husserl in 1962 and it emphasizes descriptions of human experience by bracketing (holding in abeyance prior beliefs or opinions about the phenomenon being studied), intuiting (remaining open to the meanings of the phenomenon as attributed by those who have experienced it), analyzing, and understanding or defining the phenomenon (McEwen and Wills, 2011). At the broader level two counties (one urban and one rural) served to fulfill a contextual function. The main data for the research objective came from units at the narrower level (individuals interviewed in focus group settings). This process involved bracketing pre-understandings of these risk factors and how they are related to CVD and approaching the study with an open mind in order to welcome different possibilities that may emerge.

Sample and Setting

Approval from the University of Vermont's Institutional Review Board was given and a research permit acquired from Kenya's National Council for Science and Technology. To acquire the Kenyan research permit, affiliation with a Kenyan institution for higher education was required and this was graciously granted by the researcher's Kenyan alma mater Africa Nazarene University. A total of 10 women were interviewed in two focus group settings- one in an urban area and the other in a rural area. Central

Kenya was primary location from where the women were selected (see Appendix A). The rural setting was Kiambu County, located north of the capital city of Nairobi. According to the Kenya National Bureau of Statistics (2009), Kiambu County has a total population of about 1.6 million people with a slightly higher number of women compared to men (820,000 and 802, 000 respectively). As is the case in most of Kenya, Kiambu's economic climate is one driven primarily by small-scale farming (African Institute for Policy Development, 2012). Both men and women sustain themselves and their families through this kind of farming and for this reason, Kiambu is an ideal setting for the purpose of this study.

The urban setting selected for this study was Nairobi County, which is also Kenya's capital city. Nairobi is Kenya's largest city with a population of about 3.1 million people (UNdata, 2012). Nairobi is Kenya's melting pot, composed of people from all walks of life, tribes and ethnicities with varied backgrounds. It houses Kenya's central business district with a thriving manufacturing industry which sets it apart from other Kenyan regions sustained mainly by agriculture and tourism. Because of these differences, Nairobi served as the ideal setting for selecting the urban sample for this study.

Participants in this study were all women age 21 years and older with either a personal history/experience with heart disease (or it's risk factors), or have some knowledge of heart disease through the experience of other family member(s). The women also had to be able to speak and understand either English or Kiswahili (the languages used to conduct the interviews). An eligibility check list was used to verify that

participants met the inclusion criteria (see Appendix B). This was filled out and eligibility verified by researcher prior to obtaining consent. A co-translator was recruited to assure ethical integrity of the consent, interview, and data analysis processes of this study. The co-translator was informed of the purpose and content of the study, and having extensive research background meant that training her was only on the specifics required for this study.

Women were recruited through purposeful snowballing, with one contact from each county represented recruiting the rest of the group from among friends and acquaintances. The initial contacts were recruited through word of mouth as the researcher began by engaging with local community members in various settings (church, market days, and other social events) to gain entry. Each sample was comprised of five key female informants. The key informants were selected based on their age, some knowledge or experience of heart disease (as mentioned earlier), knowledge of the culture, and willingness to collaborate in the research. Purposive selection of the participants ensured that they each had varied backgrounds in terms of education level, occupation, acculturation, and interests. Although it is unclear how many women were approached to achieve the target samples with the snowballing technique, none of the initial contacts reported any problems finding participants for this study.

Procedures

Following sample selection, verbal consent was sought from each group. Full disclosure of the aim and purpose of the study was given to the participants in both English and Kiswahili. Verbal consent was sought from the participants in the group

settings. Agreeing to participate in the interviews implied consent and this was explained and made clear prior to the start of each group interview. To assure consistency, the consent was translated from English to Kiswahili and then back-translated to English. The co-translator also served as a witness and co-signed the consent form to affirm that this process was clear for all participants and to assure that the consent process was honest and open. The translator was present for all discussions to ensure that all questions were clarified appropriately. The interviewees were under no coercion to participate and they could exit the study at any time without repercussion. Of note, no participants exited the study. No monetary or gift compensation to participate was issued to the interviewees and this further protected against coercion.

Two in-depth focus group interviews were conducted between June and July 2014, each lasting from two to two and a half hours. This length of time was sufficient for discussion especially because of the amount of content covered and the willingness of the participants to want to share their experiences and knowledge. The researcher and co-translator were both present at each focus group. The interviews were conducted in the home of a participant and one in a local church hall. These locations and the time of the interviews were picked and agreed upon by the participants themselves.

The interviews were semi-structured based on open-ended questions that guided and prompted the discussion on the included specific modifiable risk factors for heart disease modifiable (see questionnaire in Appendix C). The women were asked to talk about their experiences and through these experiences talk of their knowledge or perception of the modifiable risk factors. The questions were initially developed in

English, translated to Kiswahili and back-translated to English to check for consistency. Some of the conditions such as hypertension and diabetes have local terminologies and these were used. Where local terminologies were absent, lengthy descriptions to convey the meaning were utilized. Sometimes the key informants or translator were called upon to clarify the questions where necessary. The women's questions about heart disease and its risk factors that came up during the interviews were answered before the discussion continued.

The interviews were audio recorded and feedback was ongoing as the data was being transcribed. The researcher maintained possession of the audio recordings. For safety, the audio files were stored in a locked safe at the researcher's residence. Over the course of the 6 weeks, prolonged involvement by the researcher was also used to gather as much data as possible. In order to encourage openness and to add to the authenticity and honesty of the study, the researcher shared her own family's experience with CVD, specifically struggles with Type 2 diabetes and hypertension. Space and person triangulation added to the rigor of this study through use of two samples from two different locations and although interviewing was conducted in group settings, the responses were varied and often individualized among the participants. The discussions that arose from the interviews were rich and added to the validity of the research.

Data Analysis

The interviews were audio-recorded and transcribed verbatim. They were then translated into English and once again verified by the co-translator for accuracy. To analyze the data collected, Colaizzi's analysis method, composed of 7 phases, was used

(Colaizzi, 1978). The first phase of data analysis using this method comprised of listening and re-listening to the participants' descriptions of their understanding of the risk factors to acquire a feeling for their experience and make sense of their account. The second phase tied in closely to the first- extracting significant statements that pertain directly to the phenomenon. The third phase comprised of formulating meanings for these significant statements to hopefully discover or illuminate various hidden contexts of the phenomenon. In phase 4, the formulated meanings were categorized into clusters of themes that were common to all participants. To confirm consistency between the researcher's conclusions and participant's original stories, these clusters were referred to the original transcriptions. Phase 5 involved integration of the findings into exhaustive description of the phenomenon. In the final two phases, the findings were validated by communicating with some participants to determine how they compared with their experiences and any changes offered by participants were incorporated into the final description of the essence of the phenomenon.

Throughout this analysis process using Colaizzi's analysis methodology, NVIVO 10 software was utilized to help with organizing and coding the collected data. This is a platform software used to analyze unstructured data in qualitative studies. Using this software allowed for matrices to be developed and in these the different themes were extrapolated and summarized together. This software also allowed for easier formulation of quasi-statistics regarding the demographic data of the participants.

Chapter 4

Results

Sample

Tables D1 and D2 in Appendix D depict demographic and CVD risk factors represented in the sample of this study. The women from the urban sample had an average age of 57.4 years while their rural counterparts averaged 58.8 years. Age among all the participants ranged between 43 years and 71 years. Five women in total were interviewed in English while the remaining five were interviewed in Kiswahili. All spoke Kiswahili but given the choice of language for the interviews the rural women preferred Kiswahili and the urban women preferred English. The tribal backgrounds varied from Kikuyu, Meru, Embu, and Kamba. Most of the women were married, one widowed and one single. They all had children. All the women in the rural group had a personal medical history of CVD and/or its risk factors and one participant had experience from both a personal and family history experience. In the urban group, two had experience only from a personal level, one only through the experience of a family member, and two from both a personal and family history experience. Regarding lifestyle backgrounds, six out of the ten women were actively working either through self-employment or working for someone else. Professions represented included accountants, secretaries, school administrators, grounds laborers, and farm workers. The remaining four (one from the urban area and three from the rural area) were retired but maintained their livelihoods through family-owned businesses (a flour mill and small scale farming). Education levels

varied with five having graduated from high school, three with some post-secondary education, and all having at least some primary school level education.

Experiences with CVD

At the onset of the interviews, the women were asked to share their experiences with CVD or its risk factors. All but one of the participants had a personal medical history of either CVD or one or both of its risk factors. These women either had hypertension (HTN) and/or Type II diabetes (DMT2). In the urban sample, three had HTN, one had DMT2, and one had both conditions. Among the rural sample, two had HTN, two had DMT2, and one had both. One participant's experience (urban) was through taking care of her husband who has HTN. The women with a personal history were all on oral medication for their diseases and only 1 from the rural sample was on subcutaneous insulin for DMT2. The women were open and forthcoming about their experiences with these risk factors and in fact seemed eager to share. For them, it was a rare opportunity to speak about this subject matter and it was expressed that this is important to do if it helps to raise awareness. As one of the interviewees in the urban group (U1) stated “kama utarudi kusaidia watu huku lazima tuongee juu ya magonjwa kama haya” [If you will come back to help people here we must talk about such diseases.]

Diagnosis for most of these women was delayed by either a lack of knowledge of their symptoms or denial that they were more symptomatic than they were willing to admit. Reported ongoing symptoms included unrelenting headaches, visual disturbances, generalized malaise, fatigue, excessive thirst and urination, and numbness and tingling in

extremities. One woman's husband demanded (against her will) that she seek care after constantly waking up at night to use the bathroom. For others, diagnosis was made during visits for other causes. One woman was initially diagnosed while being worked up for fibroids, and for another participant the initial presentation was gestational hypertension and a recurrence of elevated blood pressure post-partum. For seven out of the ten women (70%), it was not until after some time (months for some) that they sought care regardless of symptoms. Several times during the discussions it came up that the doctors at the hospitals and clinics were shocked that the women made it so long without much worse consequences. For example, one of the urban women (U3) who was diagnosed with DMT2 stated "My initial blood glucose when checked by the doctor was 32 mmol/L. At the time this number meant nothing to me because I did not know the seriousness of that reading." This was the general consensus by majority of the women, whether it was blood glucose or blood pressure readings. Another of the urban women (U5) who had had ongoing malaise before finally seeking care reported, "My blood pressure on arrival to the hospital was 180/110. The way the doctor looked at me when he saw that reading made me realize this was serious."

There was only one participant whose experience was through having to take care of her husband with hypertension. This is something she described as having done for many years and as much as she was involved in his life, through these interviews she realized she did not know much about the disease and other risk factors for heart disease. His diagnosis, as she recalled, was not much different at all from the interviewees. He too suffered headaches for weeks before seeking care and being diagnosed. He sought care of

his own accord because as she said even she did not understand then the possibility of a more serious etiology. Her experience as a caregiver and therefore one of someone on the outside looking in was unique. Aside from being healthy overall, without major health complaints, she also brought to light the question of cultural influences on familial relationships that affect health decisions. She described her involvement in her husband's health decisions as going only as far as he wanted her to. For example, during health check-ups she often accompanies him to the clinic but most of the time she sits in the waiting room at his request while he goes in to meet with the doctor. The only time she recalled attending a doctor's visit with her husband was when he was first diagnosed. So even though they are married, he did not necessarily share his health information with her nor did she insist.

A few other participants shared experiences of family members that they knew who had CVD or its risk factors. Death from a suspected heart attack for one of the participant's relative was an eye opener. For others it was knowing relatives who have or had DM2 or HTN. Some women questioned the role of genetics in acquiring diseases like DM2 and deduced that by identifying relatives who have been sick it is almost impossible to deny the link. This was one of the questions discussed with researcher about the differences between modifiable and non-modifiable risk factors for CVD. Genetics was explained as a non-modifiable risk factor. When asked about how open these relatives were about their diagnoses, the women showed mixed reactions. For some it was well known and openly discussed in the families, and for others the opposite was true. And yet even with knowing family members affected by CVD, it was still an

unknown disease. It was known that so-and-so was sick with the “sugar disease” or “died suddenly because it his or her time” and yet these were never clearly understood and therefore were only dealt with when acute problems arose.

Health as a private issue was a theme echoed by other women both the urban and rural focus groups. While relationships were different, they talked about certain things (including health) being personal even within a marriage or family setting. The women thought this to be particularly true among men. One of the rural interviewees (R4) stated, “I think men have a hard time admitting they are sick. They do not want to talk about their health problems to other people.” The idea of being perceived by others as sick or unwell was thought to in some way take away from the ‘manliness’ of men and therefore a probable reason why it was perhaps more difficult for them to open up about their health concerns. As previously noted these women seemed eager to share their experiences and knowledge because for them awareness was more important. These focus group interviews also provided them opportunities to ask questions and hopefully gain more insight.

Diabetes Mellitus Type 2

The women in the focus groups were asked to talk about their understanding of how DMT2 is related to CVD. Three women from the rural group and two from the urban had DMT2 as a risk factor. For all five women with diabetes their thoughts were that this is not a ‘good’ disease in that when it was not well controlled they felt unwell and were unable to go about their daily lives. One of the rural participants (R1) stated, “When your sugar is too high or too low you cannot function.” Another from the urban

group (U2) echoed similar sentiments when she stated, “If your sugar fluctuates a lot it is the worst feeling because you just feel sick.” For those who had had the disease for many years there was an understanding of symptoms when experiencing hypoglycemic or hyperglycemic events. For one woman in the rural group, there was a disconnect between symptomatology and whether this was hypoglycemia/hyperglycemia or something entirely different. She (R3) stated, “Sometimes I get very shaky and I cannot think clearly. I am not sure if this has to do with diabetes or something else is going on.” When queried about their discussions with health providers regarding this disease, the focus was keeping blood glucose under control by primarily taking their medications as prescribed and then through diet modification.

The question asked to determine the knowledge of the relationship between DMT2 and CVD was “How do you think this disease is related to the heart and the risk of getting heart disease?” One of the women talked about having had a chest x-ray and being found to have what she described as a “dark spot” which she took to mean a “dark spot” in her heart. She was then advised by her doctor not to miss any doses of her medications although previously she had done so on numerous occasions. For the women with the disease (and the rest of the participants) there was an unclear connection between DMT2 and heart disease. The main theme was that these were thought to be two entirely different and independent disease processes. One of the women in the urban group (U4) stated, “I know of diabetes and high blood pressure but I do not know how they relate to CVD.” For some of them their discussions with their providers in this regard were limited to strict adherence to medication because the opposite would mean

the disease affects other vital organs such as the liver, kidneys, and heart. Hearing that DMT2 is considered a major risk factor for heart disease was new information to them. The fact that having DMT2 predisposes them to getting a heart attack seemed unnerving and this was evident in their expressions of angst. It had to be clarified that while this should be a concern the fact that DMT2 is classified as a modifiable risk factor means that it is within their power to prevent its progression to heart disease.

It is important to mention the issue of prevalence as brought up by the women in the rural focus group. Their perception was that cases of DMT2 are more prevalent now in that area than before and that it seems younger people in their 30s and 40s are getting the disease as well. As if in unison, the women talked of the number of people they each knew, both men and women, who had DMT2. It seemed to the participants that more of their friends and relatives were getting diagnosed. Furthermore, there was a perceived change in how more open people are in talking about the disease which they attributed (to a great extent) to slowly increasing awareness. For them, “Health Sunday” was a prime example of this. All but one of the women in this focus group attend the same church and “Health Sunday” is a church day whose focus is discussion of selected health topics. Doctors in the congregations often volunteer to lead these discussions. In years past, they would have been lucky to have members of the congregation step up to talk about their experiences much less speak up to ask a question for fear of being “found out”. Now, within the last few years, there has been no shortage of people to share their experiences and in fact they often have to limit the number of questions asked due to time concerns. It

is possible that DMT2 as a risk factor for CVD has come up in these discussions but this was not something that any of the women explicitly recalled.

All the women in both groups were familiar with the disease and seemed to understand its severity if not well managed or controlled. Once again they all echoed the importance of adherence to medication therapy. Other lifestyle modifications such as diet were also important in controlling DMT2. But the running theme was that following the doctor's orders on how to take medication was most important. For all, specifics of how diabetes can lead to heart disease was unknown but it was clearly understood and echoed that controlling the disease was of great importance.

Hypertension

Seven out of the 10 women interviewed had hypertension (HTN) and all were on medication therapy. As mentioned earlier, symptoms at diagnosis varied and many of the women delayed seeking care. Even after initial diagnosis, it was a struggle for some to keep their blood pressures under good control. Adherence to medication was optional and dietary and lifestyle modifications were not implemented. Fluctuating blood pressures affected their lives greatly because it meant some days were less productive than others on account of the severity of their symptoms. This was mostly because of a lack of understanding of the disease. Over time, an awareness of symptoms and possible interventions made it easier for the women to manage the disease themselves. Things like avoiding stressful situations, taking an extra dose of medication, and avoiding salt were mentioned as interventions.

HTN seemed slightly better understood by some of the women as a risk factor for heart disease. The fact that it affects one's vessels was the link to heart disease identified by the women. How this was described in the urban group for example was that if one thinks about it, vessels are everywhere in our bodies. With HTN it means that the vessels are working harder than they should to allow blood flow. This effect can be anywhere—legs, kidneys, liver, heart, brain. From a lay-person's point of view, this was a rather succinct explanation of how HTN can cause CVD. This understanding came from years of living with the disease and for some of the women with HTN, their own research led them to this conclusion. And yet there were a few women who lacked this insight and did not understand that HTN can lead to CVD. The women who had DMT2 were the least knowledgeable expressing that not having the disease made it of no consequence to them. This group reported routinely having their blood pressures checked during hospital or clinic visits no matter the reason, and where nothing has been said to them about the readings it is assumed that all is well. Worth noting, follow-up visits for HTN (and DMT2) were primarily on an as needed basis. Where the women felt fine and their ailments were under control they never sought care or follow up. It was only when symptomatic for a period of time that they were evaluated by their providers. Travel expense and time away from jobs/home responsibilities were given as reasons for this. The idea that one goes to the hospital only when sick was a sentiment that came across when discussing provider visits.

Information from health care providers was found by the women to be either very minimal or altogether lacking for both HTN and DMT2. Focus, it seems, was on

adherence to medication and proper dietary measures. But with regards to reasons why HTN (and DMT2 for that matter) should be well controlled, this was not a discussion had with their doctors. For one of the women, this was an issue of great contention and in fact one that seemed to upset her up a bit. The idea that, in her opinion, doctors offer up no vital information regarding the importance of disease prevention and control, and that at times they seem annoyed if you ask “too many” questions, was one that she and the other women found unconscionable (as the other women nodded). It was expressed by one of the women (U3) that,

One is lucky if one has the wherewithal to find out more about the disease on his/her own. But for simple-minded folks who trust and rely entirely on the instructions provided by their doctors, withholding such important information is ultimately a great disservice to them.

Cigarette Smoking

This was the least influential and concerning risk factor for CVD among the women. Every one of them reported that they were non-smokers and had never smoked. They also had no family members living with them who smoked as far as they were aware. For this reason, the answer to the question of their thoughts on how cigarette smoking can cause CVD was almost unanimous and it was best stated by one of the women in the urban group (U1), “I have never smoked and no one around me smokes or is allowed to smoke. So I do not even think about smoking and I cannot tell you how it relates to CVD.” They all agreed that it is an unhealthy habit and that people who smoked were, according to them, unhygienic and lacked proper moral standards. One of the

women suggested that cigarette smoking in Kenya was generally on the decline and others seemed to agree with her. Asked why, she cited increased government regulations and oversight as well as the rising cost of cigarettes. There was a general consensus that when made to choose between cigarettes and alcohol Kenyans seem to choose the latter, one of the women calling Kenya “a drinking nation.”

Diet

Diet modifications were found to be imperative and helpful for all the women interviewed. These modifications were deemed necessary in part because of instructions from their health care providers to help control DMT2 and HTN. Limiting fats, starchy foods, salt, and sugar, and increasing intake of fruits, vegetables, and fiber were the dietary modifications discussed. Where a meal consisted of carbohydrates and vegetables, ugali [a meal made with water and ground maize flour]with greens for example, the idea was to have more of the greens and less of the ugali. Another specific topic of discussion was sugar consumption particularly in tea. Kenyan people love their tea. It would be unusual to visit someone’s home without an offer of a cup of tea. One of the aspects of this tea ritual is the addition of plenty of milk and sugar to make it a rich drink. Enter a diagnosis of DMT2 and changes are warranted including limiting sugar intake. Limiting or altogether cutting off sugar in tea is often one the main modifications. For almost all the women taking sugarless tea was now a part of their lifestyle. For one or two it was still a work in progress.

Salt consumption was not found to be particularly concerning by the women. Most of them were aware of the need to limit this especially in relation to controlling

HTN. Adding salt while preparing meals was a common practice but only to taste. In terms of food preparation, cooking vegetables down is a common practice in Kenya (and among Africans in general). When asked about this, it was the general consensus that most of the women have turned to par-boiling their vegetables to get rid of the “raw” taste. They seemed more aware of how nutrients are lost with over cooking but still were not fans of consuming raw vegetables as in salads. Meats were mainly boiled, grilled or fried in either just a little bit of oil or with none at all.

For many of the women, dietary modification was not a necessarily difficult transition just one that was more purposeful after diagnosis. One of the issues that generated a great discussion was the change in diet generally in Kenya. During their younger years, these women never had to worry about what food they consumed for the most part because it was grown locally (many families either had their own small gardens or traded with neighbors or family members who grew their own food). The food was prepared at home making use of whatever ingredients they had on hand. Diets consisted of beans, maize, rice, potatoes, carrots, greens, cabbage, fish, beef, and chicken. Today, fast food is popular especially among the younger generation living in the bigger cities and towns. As stated by one of the women in the urban group (U5), “fast food joints are on every street corner here in Nairobi. But even in rural areas they are very common now.” According to the women, fast food is detrimental in that it is loaded with fat and salt. Chips (French fries), fried chicken, hamburgers, and pizza constitute the main meals of many Kenyan families today. One of the women pointed out that she has noticed an

increasing central obesity among many young Kenyans today and alluded to the fact that this was in part due to these dietary changes.

Another aspect of dietary modifications discussed by the women was the cost of healthy eating. For some who are unable to grow their own food, the cost of fruits and vegetables (and food in general) is a barrier to healthy living. Often the choice is made between buying fruits or vegetables and sometimes interchanging these has been the way to go. Consumption of these is also sometimes spaced out on a given week, some days going without fruits or vegetables. But they have learned over time to give up other items or goods in order to afford these necessary foods.

The women considered diet modification as a necessary part of managing DMT2 and HTN but beyond this they did not clearly understand how diet is regarded as a modifiable risk factor for CVD. Being obese or overweight as a product of the type of foods consumed was rarely brought up in discussion. One woman in the rural group (R5) mentioned, "I was advised by the doctor to watch my weight." This, however, was never discussed in further detail. Yet it was also clear to the women that limiting fat, sugar, and salt intake was detrimental to their health in relation to their chronic conditions. Atherosclerosis was an unfamiliar term to them and the idea that fat can cause plaques and clog up of one's arteries resulting in acute heart disease was an unknown. They mentioned again that this was not information that they had heard from their health care providers.

Physical Activity

Physical activity was an interesting topic to explore because in the age groups represented in the two areas, the idea of exercise meant different things to the women depending on their degree of urbanity. Of all the risk factors discussed in these interviews, the topic of exercise elicited the most differences in perception. For the women in the urban group exercise meant setting aside a designated time where they would engage in formal work-outs. One of the women (U4) stated with others in the group agreeing, "I go the gym two to three times a week, usually after work." Others talked of exercising at home using exercise tapes or videos, doing self-developed routines, or swimming. Staying active at work or around the home also constituted some form of exercise. Engaging in a formal exercise routine was the main idea from the urban group. In contrast, the women in the rural group had no structured or formalized exercise routines instead for them their activities of daily living constituted exercise. These women worked either as manual laborers employed locally or ran their own farms or businesses. Their main mode of transportation was on foot- walking to various destinations whenever possible. As summed up by one of the participants in this group (R2), "Our lives are so busy from the moment we wake up until we go to bed at night that there would be no time or energy left to exercise if we wanted to. This keeps us moving and active." This, they said, had always been the case- that their parents worked hard physically, as did their parents before them, and they have maintained this work ethic which keeps them physically active.

When queried about the effects of sedentary or inactive lifestyles in relation to CVD once again there was no clear link. Staying active was considered a way of life and

the opposite was “plain laziness”, something that was frowned upon. Exercise in general was considered generally good for one’s health. It was evident that staying active and/or exercising was important for these women. Just as with the question on dietary modification, changes were discussed regarding active lifestyles or the lack thereof. The advent of slowly improving infrastructure, more and more people driving to their destinations, and the countless taxi services available everywhere, was seen to have an effect on people’s lifestyles. Where people once had to walk a distance to the nearest bus station for example now there are motor-cycle taxi services called ‘boda bodas’ that negate the need to walk. From the most urban to the most rural area one will find a ‘boda boda’. These are cheap and therefore widely used now. Aside from the safety concerns raised, these changes were seen to increase inactive lifestyles. Many families and individuals now own vehicles, explaining the nightmarish traffic situations within the city of Nairobi. But even more concerning is that these vehicles also represent the increasing number of people whose lives are sedentary. There was almost a longing in these discussions for earlier times when life was simpler and less complicated. These were described as times when people woke up “at the crack of dawn,” did some chores, went to work, came home and worked some more, called it a night and repeated the next day.

All these risk factors overlap and this fact was noted by the women in the focus groups. By the time they got to discuss exercise they had made the connection that diet and exercise affect both DMT2 and HTN, and all affect cardiovascular function. Interestingly enough, according to the women exercise was never mentioned by their

health care providers. It never came up in conversation that this should be incorporated in their lifestyles at the very least to keep them healthy.

Effects of CVD on their lives and their families

The final question asked of the women was to talk about how they felt CVD affected their lives and the lives of their families. The common themes included the financial cost and mental/emotional burden of living with any type disease or illness. All these women talked about the cost of their medications. For some it was not too bad and they were able to afford the purchases but for most their medications were expensive. This might possibly explain why at the time of diagnosis adherence to therapy for many was sporadic over time. Having to deal with a new unplanned expense was difficult for them. Monthly purchases of medications for hypertension and diabetes was the norm and insurance coverage was not an option for most and so out-of-pocket expenses were incurred. Time away from work when sick was also a significant factor regarding financial effects. Some of these women were either the sole breadwinners for their families or had to work to contribute financially for their families' upkeep. It was incredibly difficult to take time away from work because of illness and often they continued to do so until they were physically incapacitated. Waiting until they were seriously ill and physically unable to function, they explained, was the reason why at the time of diagnosis doctors were frankly shocked that they were not in worse condition. One woman explained how when she first went to the hospital and they planned to admit her she begged to be allowed a few more hours to finish some work-related tasks then return to the hospital the following day for care. The thought of being out of work was

difficult to grasp for many of the women. It was not unheard of for them to muddle through illness for the sake of being able to provide for their families. Now, as they have lived with the diseases for a while, they have learned the importance of taking care of themselves to mitigate the frequency of sick-days and therefore staying healthy enough to keep working.

This expense went beyond the women themselves often involving other family members to assist financially. One of the urban women (U1) stated,

Sometimes I just have no money for the medication so my daughter helps me out. I hate when I have to ask her to help me out that way. It is difficult to be in such a situation you know.

It was not an easy thing to do but for many it was necessary. This connected closely with the emotional/mental burden of disease. Worry and anguish added to the stress of illness and for these women it was not that they worried about themselves so much as they worried about how their families would take the news of diagnosis. For some, immediate family members (mainly their children) lived far from home and it was difficult sometimes to keep them updated. Ironically, lacking a clear understanding of the disease made it easier to “down-play” its seriousness and somehow ease this burden for their families. Sick days were particularly hard because they took the women away from their regular routines and also heightened worries and concerns of family members.

From a personal perspective having CVD or its risk factors for these women was really no different than having any other illness. Perhaps after these interviews their

perspectives may have changed but regardless of the chronic nature of HTN and DMT2 for them life goes on. They have homes and families to take care of, work responsibilities, and responsibilities within their communities (church, women's groups). For the women, these were their priorities and they would keep going as long as they possibly could. It became clearer over time the importance of staying healthy and controlling their diseases in order to continue living and thriving in their personal lives. Because the greater risk of CVD from having HTN and DMT2 was almost entirely unknown to most of these women their focus was on taking their medications as prescribed and some lifestyle modifications but with the goal of keeping them going through their routine daily lives.

Throughout the interviews, another theme that came up often enough among the women was the role played by their faith- a trust and belief in God. All the women interviewed identified themselves as Christian and relied on their faith to get them through life in general. This belief appeared to have a great influence on how HTN and DMT2 affected their lives. Medical interventions for these women were done in conjunction with prayer and trusting that God would see them through. Phrases like "I trust that God still has a purpose for my life" or "We pray and leave the rest to God," were repeated numerous times during the interviews. This appeared to make it easier for the women to live with their diagnoses, to get through acute episodes, and certainly helped to ease some of the worry and emotional toll of illness. Without prayer and belief in God, they said, their lives and how they handled situations regarding their health really would be different.

Chapter 5

Discussion

The investigator intended to answer the question of how Kenyan women perceive the modifiable risk factors for CVD and how they perceive its effects on their personal lives and the lives of their families. It may be the first research of its kind to study to implement qualitative methodology to explore perceptions of modifiable risk factors for cardiovascular disease by women in Kenya. The use of focus group methodology ensured that the findings were grounded in the experiences and views of the participants and allowed themes that were important to the participants to emerge. The rural and urban groups represented two distinct sub-sets of the population, which allowed for better population representation as well as comparative analysis.

The women in this study had the experience of either one or two of the significant risk factors for CVD- hypertension and type 2 diabetes. Despite these diagnoses the knowledge of CVD and its modifiable risk factors was minimal to none. HTN and DMT2 were understood to be independent diseases not related to CVD. Their experiences with these two risk factors for the majority of the participants was personal as well as from having witnessed family members live with these chronic diseases. The role of their health care providers in giving information relevant to prevention of CVD in the presence of existing risk factors was perceived as poor and lacking. It was customary to be diagnosed with a specific health problem and have follow-up visits that focused only on that problem. Information was kept at the minimal and the highlighted goal was primarily to take medications as prescribed and change unhealthy eating habits. Yet in spite of a

lack of understanding that HTN and DMT2 pose a greater cardiovascular risk, the study participants seemed to have made some changes in their lifestyles that are in fact cardio-protective. Aside from taking their medications as prescribed by their doctors, they also made changes to their diets. Low fat, low salt, low sugar, and low carbohydrate diets with increased fruit and vegetable intake were indicated as the norm for them since diagnosis. The change process was a step-wise approach and at times sporadic but they understood it to be necessary to control HTN and/or DMT2. Information that cholesterol from a high fat diet results in atherosclerosis which is part of the CVD pathophysiology was entirely unknown to them. The women appeared delighted to know that this dietary modification goes beyond controlling HTN and DMT2 and that in the greater scheme of things it helps to protect their cardiovascular system.

Smoking elicited the least discussion for the sole reason that none of the women were past or present smokers. For them, not having a risk factor meant that they did not think about it or even knew much about it. Smoking was understood to be a 'bad' habit and generally frowned upon especially among women. But the 'badness' was that it was regarded as unhygienic and an uncouth habit. There was no mention of the health risks of smoking including the risk for CVD. One of the women mentioned a general decline in cigarette smoking and she mentioned this might be in part due to increased government regulation. This thought is consistent with Kenya's ban on advertising in print and electronic media, on cigarette sticks and packets, ban on sponsorship of sporting or other events by tobacco companies, ban on endorsements, cash rebates, and participation in lotteries, ban of smoking in most public buildings such as cinema halls, health

institutions, education facilities, restaurants, public service vehicles, aircrafts, passenger ships, trains, a mandate that all cigarette packets must print in English and Kiswahili a warning of the health risks of smoking, requirement that constituents of tar, nicotine and carbon monoxide be prominently displayed, age verification at point of sale, a ban on sales in places to which minors have access, and a ban on sponsorship of school events (Nturibi, Kolawole, and McCurdy, 2009). However, in their review study Nturibi, Kolawole, and McCurdy found an increase in prevalence of cigarette smoking in Kenya and especially in the younger population.

For the women in the rural group, their activities of daily living (formal employment, chores in their own homes, family run businesses/farms) constituted a form exercise. Keeping busy with these activities was felt to be a satisfactory form of exercise. This was consistent with findings of the surveillance study by Bloomfield et al. (2013) whereby for people in Webuye [a county in Western Kenya] work and travel constitute physical activity. Other studies in SSA have yielded similar results. For most of the women in the urban group having time set apart from their daily routines to engage in physical activity was how they exercised. This included activities such as walking or swimming. There was an overall sense that being sedentary was akin to laziness and so the idea of always ‘doing something’ was encouraged. It would be remiss not to mention that as busy and active as these women are or try to keep through either work or exercise, studies in Kenya have found women to be more obese than their male counterparts (Mathenge, Foster, and Kuper, 2010). Central obesity or increased abdominal girth are more prevalent among women in Kenya. These are known risk factors for CVD. Again,

physical activity or exercise were a part of their daily lives but without bearing in mind their benefits in preventing CVD. Rather these were part of a routine to get things done, to ward off the perception of laziness, and more importantly to make a living.

The effects of CVD on their personal lives and the lives of their families were perceived in terms of a number of factors. These included monetary cost, decreased productivity and loss of income if and when they are sick, and the mental and emotional burden on them personally and on their families. The idea that in spite of illness they must carry on with their lives and their faith and belief in God in times of illness were also perceptions expressed when discussing effects of CVD on their lives. The overarching theme was found to be their need to “keep going” despite their conditions. Women play a vital role in African society and no less important than their male counterparts. Their role has changed beyond home making and many are also breadwinners. It is within this context that the idea of life going on regardless of circumstances falls. Perhaps lacking a clear understanding of what these risk factors mean in the setting of CVD does in fact aid in this somewhat laid back mentality to the effects of disease. Without this mentality it means that they worry and are consumed by their wellbeing, sick days take them away from their livelihoods longer which in turn affects income and affordability of costly medications, and calls into question the effectiveness of a faith that they hold in such high regard.

Limitations

There were a number of limitations to this study. The sample size was small and inadequate to represent the entire Kenyan population. The sample could also have been

more varied in age, life experience, and experience with CVD. Yet even though the experiences were limited to HTN or DMT2 these similarities provided a common ground among the participants that made for richer discussions. The method used does not call for generalizable information and the sample provides only limited understanding of the phenomenon and should not necessarily be applied to other populations. But this study does add a new dimension to studies of Kenyan women and how they perceive the risk factors of CVD. The probability of researcher bias is higher in descriptive phenomenological studies but reflexive journaling and ongoing feedback with participants done throughout the analysis process helped to guard against this limitation.

Implications

From an advanced nursing practice perspective (where applicable), this study highlights the importance of meeting the nurse practitioner competencies set forth by the National Organization of Nurse Practitioner Faculties (2011). Of these competencies, the one that captures the implications in practice related to this research is the leadership competency whereby an advanced practice nurse assumes complex and advanced leadership roles to initiate and guide change. Behavior modification is key to preventing CVD and advanced practice nurses play a vital role in guiding patients through these behavior and lifestyle changes. Advanced practice nurses should also have the ability to provide leadership in the translation of new knowledge into practice as highlighted in the practice inquiry competency. Learning how individuals perceive disease or disease risk factors creates new knowledge or adds a different dimension to prior knowledge. This

new knowledge should then be translated or added to existing practice to meet the specific needs of individuals.

In Kenya, although the role of advanced practice nurses does not exist, nurses are still pivotal in the provision of health care. In 1991, the Nursing Council of Kenya (responsible for setting standards related to the education and practice of nurses) began issuing private practice licenses that enable nurses to run private clinics and nursing homes. Today, most clinics and dispensaries are run by nurses (US President's Emergency Plan for AIDS Relief, 2012). This puts nurses in Kenya in an important position capable of leading CVD prevention strategies. These implications in nursing practice are tied closely to those in the provision of primary care. Disease prevention is best implemented at the primary care level. Therefore primary and secondary prevention of CVD at the primary care level should be made a priority in SSA. Once again, nurses, who are at the forefront of patient care in Kenya are integral in the provision of primary care that prioritizes chronic disease prevention. There are also implications in the importance of providing care that is culturally congruent to populations. "Care is universal and varies transculturally" (Leininger, 1988). Awareness of cultural influence on how an individual perceives illness and well-being makes for better and well-rounded practitioners. The ability to facilitate the development of health care systems that address the needs of culturally diverse populations, providers, and other stakeholders is yet another NONPF competency that underscores the importance of cultural awareness in practice.

In the Kenyan public health system, this study highlights the need for increased awareness of CVD risk factors and the effects of epidemiologic transition on the Kenyan health landscape. Women have the potential to be significant gatekeepers for health promotion and disease prevention in African society based on their role in the homes and communities. If they lack the requisite information for healthy habits and lifestyles then this information is not passed on to their children and family members. This means that their role as potential “change agents” with respect to healthy behaviors is often underutilized. Women should therefore be a part of the planning and implementation process of CVD awareness programs in Kenya and in SSA.

Finally, national and global policies need to include chronic disease prevention and management. The Millennium Development Goals aimed to reduce extreme poverty in developing countries by 2015 (United Nations, 2008), a target year that is fast approaching. In order to achieve this, policies should already be addressing the effects of chronic diseases and should be part of national and international health agendas. Health, financial, agricultural, development and planning, and foreign affairs education policies have to address the consequences of chronic diseases on poverty in developing countries (WHO, 2013). These policies should be part of continuing efforts to reduce poverty beyond the MDGs and to improve the lives of people in developing countries.

Conclusion

From this study, the modifiable risk factors for CVD were perceived as independent characteristics, habits, or diseases (HTN and DMT2). They were known to be harmful, serious, and life threatening but unrelated to CVD. There was knowledge of

certain lifestyle modifications that are beneficial, such as diet change. These modifications were known to help control HTN and DMT2. However, the fact that they can be cardioprotective was unknown. Effects of these risk factors were serious primarily on routine daily life which heightened the need for the women to “carry on and work through good days and bad.”

The themes that emerged from this study highlighted a divide between what and how the women perceive the modifiable risk factors and how they are associated with CVD. These risk factors are inter-related and because diabetes is now considered the equivalent of having coronary artery disease this adds to the urgency of finding ways to bridge this knowledge gap. The perception of these women that awareness is slowly gaining is reassuring but in light of these findings there is clearly more work to be done. Part of the aim of this study was to highlight the need for prevention and awareness programs designed to meet the specific needs of sub-Saharan African populations. This study revealed that education needs to start from the very basics of what CVD is, its effects on the body, and then get to the heart of its risk factors and why it is imperative to tackle especially those that are considered modifiable.

More research is needed in order to understand the effects and trajectory of CVD in SSA. Future studies may include researching the perceptions of CVD and its risk factors by other groups such as men, younger populations, and health care providers. Case studies of nurse-run health care facilities would be helpful in order to learn more about the role of nurses in chronic disease prevention and management in SSA and identify areas of potential growth. Because SSA is very geographically diverse and this

influences people's way of life, quantitative analyses of CVD incidence and prevalence in geographically diverse regions would be important. Such studies would aid in mapping out the risk factors of CVD in SSA and would ultimately influence prevention strategies and interventions based on geographical differences. Lastly, review studies of the state of prevention programs in Kenya and SSA would also be helpful in identifying how they function, what needs adopting, expanding, or changing. In general, there is a paucity of qualitative studies on CVD. This research hopefully offers a starting point and highlights the importance of such studies in contributing to greater understanding of CVD in SSA.

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Appendix A

Kenya: brief demographic, health, and nursing information



Demography: According to UNICEF (2011), Kenya's population is approximately 40, 513, 000. The national languages are Kiswahili and English. The major religions are 45% protestant, 33% Roman Catholic, 10% Muslim, 10% indigenous, and 2% other.

Health : In 2010 life expectancy was 57 years (UNICEF 2011). Health challenges include HIV/AIDS and other infectious diseases such as TB and Malaria, inadequate maternal and child health care services, and the rise of non-communicable diseases as a result of epidemiologic transition,

Nursing: Based on information from the 2012 deployment data from the Kenya Health Workforce Information System (KHWIS), there are 19,591 nurses deployed at 4,187 health facilities across Kenya, including public, parastatal and faith-based facilities (PEPFAR, 2012).

Appendix B

Inclusion and Exclusion Criteria Checklist

Inclusion Criteria (list each criteria- must all be Yes)	Yes	No	*Supporting information
1. Female Age 21 years and older			ID Card: Yes _____ No _____
2. Fluent in Kiswahili or English			
3. Have personal history/experience with heart disease OR			
4. Have knowledge of heart disease from family experience			
Exclusion Criteria (list each criteria- must all be No)	Yes	No	
1. Female <i>Age under 21 years</i>			
2. Limited knowledge and fluency of Kiswahili or English			
3. Male			

***Supporting information to confirm subject eligibility includes but is not limited to: proof of age by National ID card; brief explanation on fluency of Kiswahili and experience and knowledge of heart disease.**

Appendix C

Interview questionnaire: English

Interview Questions

1. Tell me what you know about heart disease in general.
2. Tell me some risk factors you are familiar with for heart disease.
3. Tell me what you understand by the terms 'modifiable risk factors'
4. I will mention each modifiable risk factor for heart disease and I would like you to tell me more about. Tell me how you think it is related to heart disease (or not).
 - 4.1 Smoking
 - 4.2 Hypertension
 - 4.3 Physical inactivity
 - 4.4 Type 2 diabetes mellitus
 - 4.5 Diet
5. After discussing these risk factors for heart disease tell me how heart disease affects or would affect your life as women as individuals and in the context of your families.
6. Have you ever had a chance to discuss heart disease with your provider or other health worker and if so tell me how this was done and your understanding of that discussion?

Interview questionnaire: Kiswahili

Interview Questions translated to Kiswahili

1. Niambine mnayojua kuhusu ugonjwa wa moyo.
2. Ninataka tuongee kuhusu mambo au tabia hatari zinazoweza kufanya mtu apate ugonjwa wa moyo
3. Mnaelewa vipi nikiongea juu ya mambo au tabia hatari ambazo mtu mwenyewe anaweza kugeuza ili asipate ugonjwa yoyote?
4. Sasa nataka tuongee kuhusu hizi tabia au mambo hatari zinazoweza kugeuzwa. Nitasema majina tano na ningependa tuongee kuhusu hizi tabia moja kwa muda. Tunapongea kuhusu hizi tabia ningetaka kujua mnavyoelewa vile zinaweza kusababisha ugonjwa wa moyo. Kama hamjui ama hamwelewi niambieni hivyo.
 - 4.1 Kuvuta sigara
 - 4.2 High Blood pressure (shinikizo la damu)
 - 4.3 Kutofanya mambo kimwili au maisha ya uvivu
 - 4.4 Ugonjwa wa sukari (Diabetes)
 - 4.5 Vyakula
5. Kama kina mama, niambieni vile ugonjwa wa moyo unavyoathiri au unavyoweza kuathiri maisha yenu na maisha ya familia zenu.
6. Mwisho, mshawahi kuongea juu ya ungonjwa wa moyo na daktari au mfanyikazi wa afya? Kama ndio, niambine vile mlifundishwa na vile mlivyoelewa kuhusu huu ugonjwa.

Appendix D

Table D1: Demographic information of the women who participated in the focus groups.

	Urban Sample n = 5	Rural Sample n = 5
Age: mean range	57.4 43-69	58.8 51-71
Fluent in English	5	1
Fluent in Kiswahili	1	5
Personal history of CVD	4	5
Experience through family member with CVD	2	3
Formally Employed	4	2
Retired/Not formally employed	1	3
With own families	5	5
Married	3	5
Single/Widowed	2	0

Table D2: CVD/risk factors as represented in the samples

CVD/ Risk factors	Urban Group n = 5	Rural Group n = 5
Hypertension (HTN)	3	2
Type 2 Diabetes (DMT2)	2	1
Both HTN and DMT2	1	2
Smoking	0	0